

Social Inequalities in Health and Well-Being: The Role of Relational and Religious Protective Factors

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Scientific studies of social inequalities in health have proliferated in recent years (Feinstein 1993; Marmot, Shipley, and Rose 1984; Williams and Collins 1995). This literature, which links various indicators of socioeconomic status (SES) to health outcomes, documents the increased likelihood for diverse forms of disease, illness, and maladjustment among those at lower ends of the socioeconomic hierarchy. Initial epidemiological studies focused on describing SES gradients in health (e.g., Marmot, Shipley, and Rose 1984). Increasingly, however, the scientific focus has shifted toward identifying the intervening mechanisms (e.g., health behaviors, environmental conditions, psychosocial variables, biological processes) thought to account for SES-related health disparities (Adler et al. 1999). MIDUS has, in fact, been part of this inquiry—showing that midlife is a time when there are substantial socioeconomic differences in health, and further documenting the role of psychosocial factors (e.g., family background, social support, social strain, work characteristics, sense of control, perceived inequalities) in understanding health gradients (Marmot et al. 1998).

Despite evidence of SES gradients in health, it is the case that within levels of education, income, or occupational status, there are high levels of variability. That is, variability *within* socioeconomic grades is sometimes as pronounced as variability *between* SES levels, particularly as one moves down the SES hierarchy (Backlund, Sorlie, and Johnson 1999; Diez-Roux et al. 1995; Mustard et al. 1997). This within-grade variability, particularly at the low end, is the starting point for the present chapter, in which we use the MIDUS data to focus on individuals who show positive profiles of mental or physical health, despite having low educational standing. These individuals have somehow evaded the adverse health consequences associated with having limited education (i.e., a high school education or less). Thus, health-wise, they look more like those who are well educated (i.e., those who have a college degree or more). Our question is, What accounts for such positive health profiles, despite the lack of educational advantage?

To this query we bring two prior literatures, each of which suggest different categories of “protective factors” that might help explain a person’s good health and well-being, despite limited educational attainment. First, we consider the benefits that ensue from the social relational world. As highlighted later in the chapter, a growing body of research, across numerous scientific fields, underscores the salubrious role of positive social relationships in the maintenance of good health, both mental and physical. Second, we consider the role of religion and spirituality as a further concomitant of positive health profiles. This realm is also accompanied by a growing literature suggesting that those with high engagement in religious/spiritual beliefs and practices have lowered profiles of morbidity and mortality.

To both the relationship and religiosity realms, we bring an emphasis on *cumulative* effects—that is, we target the possible health benefits ensuing from having long-term profiles of the above protective factors. Thus, we use concurrent and retrospective data from MIDUS to measure *persistent* (from childhood to adulthood) social relational strengths and *persistent* (from childhood to adulthood) religious/spiritual practices. The objective is to evaluate whether these characteristics are part of the life-course profiles of those who lack educational advancement but yet have good physical and mental health. We construe such lives as embodying a form of resilience (Ryff et al. 1998) vis-à-vis a world of social inequalities. That is, our inquiry probes the hypothesis that good social relationships as well as religion/spirituality are protective factors that enable some individuals to remain healthy and well despite lack of educational attainment and its associated benefits.

PROTECTIVE FACTORS: SIGNIFICANT OTHERS
AND SIGNIFICANT BELIEFS
Social Relationships and Health

Across diverse disciplines, the social relational world has increasingly been linked to health outcomes. From initial work in the Alameda County study (Berkman and Syme 1979), epidemiologists have repeatedly shown that social isolation, or lack of social support, is linked to increased risk of various diseases as well as to length of life (Berkman and Breslow 1983; House, Landis, and Umberson 1988; Seeman 1996; Seeman et al. 1993). A review of eight major epidemiological studies (Berkman 1995) indicated that, in each case, mortality was significantly lower among those who were more socially integrated.

The social support literature has extended such epidemiological findings (Cohen 1988; Cohen, Underwood, and Gottlieb 2000; Cohen and Wills 1985) by distinguishing main effects (social support is good for health under all circumstances) versus buffering models (support from others is particularly beneficial for health when one is confronted with stress or adversity). This literature has also linked social support to stress and coping (Thoits 1995), family relationships (Pierce, Sarason, and Sarason 1996), personality (Pierce et al. 1997), and differential survival from various health challenges, including myocardial infarction (Ruberman et al. 1984) and cancer (Spiegel and Kimerling 2001). How significant others promote positive health behaviors and practices has also been of increased interest (Berkman 1995; Spiegel and Kimerling 2001; Taylor, Repetti, and Seeman 1997) in efforts to account for the routes through which the relational world influences health.

Among the most rapidly proliferating areas of research is the focus on the physiological mechanisms through which social relationships affect health (Cohen and Herbert 1996; Kiecolt-Glaser and Newton 2001; Ryff et al. 2001; Seeman 1996; Seeman et al. 1994, 2002; Seeman and McEwen 1996; Uchino, Cacioppo, and Kiecolt-Glaser 1996). To advance mechanistic understanding at the biological level, however, we must first understand the emotional features of significant social relations (Ryff and Singer 2001), because these likely activate intervening physiological processes. Also important is the need to monitor long-term profiles of these socioemotional strengths or adversities through time (Ryff and Singer 2000; Singer and Ryff 1999).

Psychological research has probed the significant emotional features of social relationships, whether in contexts of studies of attachment (Hazan and Shaver 1994), close personal relationships (Berscheid and Reis 1998; Reis and Patrick 1996), or marital quality (Bradbury 1998; Carstensen, Levenson, and Gottman 1995). Measures from such emotional features of the quality of social relationships have rarely made their way into population-level studies, although MIDUS was fortunate to have detailed assessments in these areas (Ryff et al. 2001). Questions included detailed items on the emotional features of key relationships (e.g., with spouse/partner, with mother and father during childhood). Although MIDUS data cannot address intervening physiological processes, the study can inform understanding, at the population level, of the links between socioemotional experience and various aspects of physical and mental health.

Regarding the interface between social relationships and social inequalities, such relationships can be construed as risk or protective factors for various health outcomes. On the one hand, the relational stress and conflict that may accompany economic strain or blocked life opportunities over the long term may contribute to adverse health. For other individuals, however, the relational realm may be an important source of strength and support vis-à-vis life difficulties, including those that follow from low standing in the socioeconomic hierarchy.

For example, our earlier work with a subsample of respondents from the Wisconsin Longitudinal Study revealed that those on positive relationship pathways (i.e., having good-quality relationships with parents in childhood and with spouse in adulthood) were less likely to have high allostatic load, an index of wear and tear on multiple physiological systems, compared with those on negative pathways (Singer and Ryff 1999). Importantly, these findings also demonstrated the protective benefits of positive relations in the context of persistent economic adversity. That is, individuals who had long-term economic disadvantage *but persistently good social relationships* had reduced likelihood of having high allostatic load compared with those with persistent adversity in both economic and social relational realms.

Using the MIDUS data, the objective of the present analysis is to investigate in a population-level study the extent to which persistent social relational strengths are part of the life histories of those who, despite low educational attainment, have good physical and mental health. In addition, as discussed later in this chapter, we examine the possible protective influence of religion and spirituality.

Religion/Spirituality and Health

A growing literature traversing diverse scientific disciplines (gerontology, medicine, psychology, sociology) is exploring the role of religion and spirituality in mental and physical health (Koenig 1998; Koenig, McCullough, and Larson 2001; Seybold and Hill 2001; Thoresen 1999). This work has identified multiple dimensions of religion and spirituality and explored their linkages to diverse mental and physical health outcomes. The intervening processes or mechanisms that link realms of religiosity and health have also been probed in various studies. Examples of these topics are selectively noted here as a prelude to how we used data from MIDUS to examine religion and spirituality as possible protective influences in the face of social inequalities.

The multidimensional nature of religion and spirituality has been elaborated in numerous publications, including a panel of experts commissioned by the Fetzer Institute and the National Institute on Aging. Their report (Fetzer Institute/National Institute on Aging 1999) identified ten dimensions of religion and spirituality (religious-spiritual history, preference affiliation, social participation, private practices, coping styles, beliefs and values, commitment, experiences, sense of support, and motivation for regulating and reconciling relationships) that have appeared in recent research. Further dimensions are elaborated in Hill and Hood's (1999) review of 125 measures of religion and spirituality. The similarities and differences between religion and spirituality have also received considerable attention (Hill et al. 2000). The task of linking religion and spirituality to health outcomes is thus both enriched and complicated by the diverse operational definitions of these domains.

Considerable work has focused on behavioral measures, such as church attendance, linked to health outcomes. Koenig and Larson (1998) found that people who attended church weekly (or more often) were significantly less likely to be admitted to a hospital in the previous year and had fewer hospital admissions and fewer days in the hospital than did those who attended less often. These associations remained after controlling for effects of age, sex, race, education, social support, depressive symptoms, physical function, and severity of illness. Religious attendance has also been found to predict mortality, with the relationship reduced only slightly after controlling for demographics, social support, health practices, and health conditions (Strawbridge et al. 1997; Koenig et al. 1999; Oman and Reed 1998). Three large national probability surveys from the 1970s and 1980s found that religious involvement (primarily religious attendance) was significantly associated with positive self-rated health, health satisfaction, and psychological well-being (Levin and Chatters 1998).

Numerous other studies have linked religion and spirituality to specific disease outcomes. For example, cancer mortality rates have been found to be lower among more religious groups (Dwyer, Clarke, and Miller 1990; Enstrom 1975), and a twenty-three-year longitudinal study found that those with higher degrees of religiosity experienced lower rates of death as a result of coronary heart disease, even after controlling for important risk factors (e.g., smoking; Goldbourt, Yaari, and Medalie 1993). The incidence of hypertension, a key risk factor for stroke and other cardiovascular disease, has been shown to correlate inversely with

religious attendance and private religious practices (praying, reading the Bible) (Koenig et al. 1998). Seybold and Hill (2001) summarize findings across multiple studies showing salutary effects of religion and spirituality on a wide array of health measures, including those just noted and others (e.g., chronic pain, cholesterol levels, surgery-related stress, cirrhosis, emphysema, kidney failure, and so forth).

The links between religion/spirituality and mental health have also received considerable attention, generally pointing to positive associations (Larson et al. 1992; Levin and Chatters 1998). For example, Ellison (1991) reported that individuals with strong religious faith reported higher levels of life satisfaction, greater personal happiness, and fewer negative psychosocial consequences or traumatic life events. Other samples of Mexican Americans (Levin, Markides, and Ray 1996) and African Americans (Levin and Taylor 1998) revealed positive links between various indicators of religiosity (e.g., attendance, prayer) and measures of life satisfaction, happiness, or psychological distress. Kendler, Gardner, and Prescott (1997) also found that high levels of personal devotion were related to lower levels of depressive symptoms, and Koenig, George and Peterson (1997) found that depressed cancer patients with higher intrinsic religiosity scores had more rapid remissions than did patients with lower scores.

The potentially harmful effects of religion have not been neglected. Seybold and Hill (2001) describe blindly obedient versions that have been associated with child abuse or neglect, intergroup conflict, and false perceptions of control. Religion has also been associated with authoritarianism, rigidity, dogmatism, and dependence (Gartner 1996), and harmful forms of religious coping have been associated with impaired mental health and poorer resolution of negative life events (Pargament 1997). Overall, however, the larger story is one of the salutary effects of religion on mental health.

Study of the way in which religion has affected health—that is, the mechanisms through which it influences health (Seybold and Hill 2001)—has focused on lifestyle and health behaviors (e.g., abstinence from smoking, alcohol, drug use, risky sex). Psychological factors may also mediate the links between religion and health via such processes as effective coping strategies, sense of control, attribution of meaning and purpose to negative life events, and optimistic explanatory styles. The links between religion and social support and community resources have also been proposed as mechanisms. Positive emotions associated with religiosity (e.g., forgiveness, hope, contentment, love) may also affect

various physiological mechanisms, possibly reducing arousal in the sympathetic nervous system and the hypothalamic-pituitary-adrenal axis or increasing immune competence.

MIDUS included various questions pertaining to religion and spirituality, including assessment of the importance of religion in one's early childhood. Thus, paralleling our social relational analyses, the focus was on the extent to which persistent religious profiles (from childhood through adulthood) might help to characterize the life trajectories of individuals who, despite limited educational attainment, have achieved high levels of health and well-being. We therefore preselected from the data set these high-functioning individuals (both high school-educated and college-educated) and then investigated whether they were similar to each other in protective factors, as well as distinguished from those at the low end of the educational hierarchy who showed poor profiles of health and well-being.

Analytic Approach and Key Predictions

Overall, our analytic approach converges with the growing interest in the study of extreme groups (Kagan, Snidman, and Arcus 1998) and the heightened emphasis on typologies in diverse areas of inquiry. Illustrations of such work include efforts to discern types of developmental trajectories (Robbins, John, and Caspi 1998), types of mental health (Singer et al. 1998), and types of well-being (Keyes, Shmotkin, and Ryff 2002; McKennell 1978; Shmotkin 1998). In the present inquiry, we begin with a focus on extreme groups—namely, those with particularly high (top 25 percent) or low (bottom 25 percent) health standing (mental and physical). Within such groups, we then create types of relationship histories (positive versus negative) and types of religion/spirituality histories (high versus low levels of involvement). The guiding hypothesis is that among those with especially good health and well-being (both high school-educated and college-educated), there will be a greater prevalence of positive relationship types and high religion/spirituality types than among those with poor health and well-being (bottom 25 percent) who have a high school education.

In addition to this prediction *within* educational groups, we also hypothesized that high school-educated individuals with good health (i.e., the resilient) would be significantly different from their same-education counterparts in poor health in the prevalence of the relationship and religious types, but would show no differences from the college-educated in good health. Because the central *between*-groups question was whether

relationship and religious histories of the resilient (low education/high health and well-being) would be comparable to those of the college-educated in good health but different from those of the high school-educated in poor health, we did not include comparison of the college-educated in poor health. This latter comparison is also more difficult to pursue, given the reduced variability in health outcomes among the highly educated relative to those lower in the educational hierarchy.

METHODS

Sample

For this investigation, we selected a subsample of MIDUS respondents on the basis of multiple selection criteria. Because the aim was to explore social relationships as potential influences on the links between educational standing and health, only persons who were married, or living with a partner, were included in the analysis. In addition, the sample was stratified by educational attainment to facilitate comparison of respondents who had a high school education or less with those who had obtained a bachelor's degree or more. These selection criteria resulted in a subset of 1465 respondents from the main MIDUS sample.

Measures

Described are the items from the MIDUS survey that were used to operationalize quality of social relationships and degree of religion/spirituality. Also summarized are the procedures used to create long-term relationship and religiosity profiles. Missing data were dealt with in a consistent manner across all scales and indices. That is, a minimum of half of the items used to construct each scale or index score had to be present in order to be included in analyses.

Significant Social Relationships

Maintaining a life-course approach, we asked respondents retrospective questions that evaluated the quality of their close relationships during both childhood and adulthood. Two sets of questions were used to evaluate the valence of parental relationships experienced during childhood. Each set of questions was sequentially asked about the respondent's mother (or woman who raised him/her) and father (or man who raised him/her). The four questions used to assess level of positive relational experiences included (1) How much did s/he understand your problems and worries? (2) How much could you confide in her/him about things

that were bothering you? (3) How much love and affection did s/he give you? and (4) How much time and attention did s/he give you when you needed it? Responses were obtained on a four-point scale, ranging from “a lot” to “not at all.” Items were reverse-coded so that higher scores represented more positive relations. Summary scores were then calculated across sets of items for each person’s mother and father, and the resulting two sums were averaged to create one score representing positive relations during childhood.

Negative parental relationships experienced during childhood were assessed via a series of three questions that explored whether, and to what extent, the respondent experienced negative and/or abusive behavior during their earlier years. The first of these three questions asked the respondent about being insulted, sworn at, or ignored. The second question inquired into whether the respondent had been pushed, slapped, or had objects thrown at him/her. And the third question explored the occurrence of more serious forms of physical abuse such as being kicked, bitten, or struck with an object. Responses were obtained on a four-point scale, ranging from “often” to “never.” Each set of questions was sequentially asked about the respondent’s mother (or woman who raised him/her) and father (or man who raised him/her). Items were weighted to reflect greater negativity associated with more severe forms of abuse. A summary score, representing negative relations during childhood, was then calculated in a manner similar to that for positive relations, with high scores denoting a low level of negative relations (i.e., more positive relations).

To combine the positive and negative scores into an index representing “childhood relations,” we divided each of the summary scores at the median. Respondents who scored at or below the median were assigned a 1, representing less positive relations, and those above the median were assigned a 2, designating more positive relations. These two variables were then added together, creating a variable that ranges from 2 to 4, representing an increasing gradient of positive relationships during childhood.

Relations during Adulthood

A respondent’s relations during adulthood were assessed by use of a series of questions that inquired about the respondent’s relationship with his/her spouse (or partner). Six questions explored positive features of connections with one’s partner: (1) How much does your spouse or partner really care about you? (2) How much does he or she understand the way you feel about things? (3) How much does he or she appreciate

		Adulthood relations		
		Mostly negative	Mixed	Mostly positive
Childhood relations	Mostly negative	A	B	
	Mixed	C		D
	Mostly positive		E	F

FIGURE 1. Creation of negative and positive relationship profiles.

you? (4) How much can you rely on him or her for help if you have a serious problem? (5) How much can you open up to him or her if you need to talk about your worries? and (6) How much can you relax and be yourself around him or her? Each response set was coded on a four-point scale, ranging from “a lot” to “not at all.” All of these items were reverse-coded, so higher scores reflect more positive relations during adulthood.

The following six questions explored negative relations with partners: (1) How often does your spouse or partner make too many demands on you? (2) How often does he or she make you feel tense? (3) How often does he or she argue with you? (4) How often does he or she criticize you? (5) How often does he or she let you down when you are counting on him or her? and (6) How often does he or she get on your nerves? Each question was coded on a four-point scale, with responses ranging from “often” to “never.”

An index representing “adulthood relations” was created by following the same process as that used for an index of childhood relations. Again, the resulting variable ranges are from 2 to 4, representing an increasing gradient in level of positive relations during adulthood.

Cumulative Relationship Profiles

To investigate whether respondents who varied on the basis of their educational status and health outcomes differed in terms of their relationship experiences over the life course, we created cumulative relationship profiles. Cross-tabulations were employed to identify two distinct profiles—one consisting of those individuals who had experienced predominantly negative relations, and the other representing those who experienced mostly positive relations from childhood to adulthood. Figure 1 presents a schema of the distributions used to identify these two contrasting groups. The rows in the grid represent scores on the childhood relations index, which was produced from a summary of both positive

and negative relations with a mother and father. The top row represents respondents who reported more negative relationships during their childhood, the bottom row designates those reporting more positive relations, and those in the middle row had mixed responses. The columns in the grid represent scores on the adulthood relations index, which summarized respondents' experience of positive and negative relations with their spouse/partner. The first column represents respondents who reported more negative relationships during adulthood, the last column designates those reporting more positive relations, and those reporting a mixed valence are represented in the middle column.

Using these cross-tabulations, we selected respondents who had experienced predominantly negative relationships during both their early and adult years (those in cells A, B, and C on the grid). The comparison group was identified as those individuals who reported more positive relations during both childhood and adulthood (cells D, E, and F on the grid).

Religion/Spirituality

Four questions were used to measure various aspects of religiosity or spirituality over the life course. One of the four questions explored religious experience during childhood: How important was religion in your home when you were growing up? Responses were obtained on a four-point scale, ranging from "very important" to "not at all important." Three questions that appraised respondents' connectedness to religion or spirituality as adults included (1) How often do you usually attend religious or spiritual services? (2) When you have problems or difficulties in your family, work, or personal life, how often do you seek comfort through religious or spiritual means, such as praying, meditating, attending a religious or spiritual service, or talking to a religious or spiritual advisor? and (3) When you have decisions to make in your daily life, how often do you ask yourself what your religious or spiritual beliefs suggest you should do? The first question was measured on a five-point scale, with responses ranging from "more than once a week" to "never." The other two questions were answered on a four-point scale, from "often" to "never." All responses were reverse-coded so that higher scores represent higher levels of religion/spirituality. A summary score was calculated to represent adult religion/spirituality across the three respective questions. This score was then divided into quartiles to obtain a variable based on a four-point scale that could be compared with the four-point scale of childhood religiosity in cross-tabulation analyses.

		Adulthood religiosity			
		Lowest quartile	2nd quartile	3rd quartile	Highest quartile
Childhood religiosity	Not at all important	A	B		
	Not very important	C			
	Somewhat important				D
	Very important			E	F

FIGURE 2. Creation of low- and high-religiosity profiles.

Cumulative Religion/Spirituality Profiles

To examine whether levels of religiosity over the life course are associated with educational background and health-related outcomes, cumulative profiles were created in a manner similar to that for social relationship histories. Again, cross-tabulations were used to identify two distinct profiles: individuals who reported low overall levels of religion/spirituality, and those reporting generally high levels of religion/spirituality. Figure 2 presents a schema of the cross-tabulations used to identify the two contrasting groups. The rows in the grid represent scores on the childhood measure of religious importance, which consisted of one question, coded on a four-point scale. The top row represents respondents who reported that religion was not at all important during their childhood, the bottom row designates those reporting it was very important, and those in the middle rows range in between. The columns in the grid represent scores on the adulthood religion/spirituality index, which resulted from summing across the three questions on religion during adult years and dividing the summed score into quartiles. The first column represents respondents who reported low levels of religion/spirituality during adulthood, the last column designates those reporting high levels, and those reporting more moderate levels of religion/spirituality are represented in the two middle columns.

From among these cross-tabulations, we selected respondents who reported lower levels of religiosity during both their early and adult years (cells A, B, and C in the grid). The comparison group was identified as those individuals who reported higher levels of religiosity during both childhood and adulthood (cells D, E, and F in the grid).

Physical Health

Three assessments of physical health were included in these analyses. A global indicator of self-reported health asked respondents to rate their health on a scale from 1 to 5, with a score of 1 indicating poor health and a 5 representing excellent health. Individuals also completed a checklist indicating which of twenty-nine chronic conditions they had experienced over the past twelve months (i.e., asthma, arthritis, diabetes, and so forth). An additional checklist measure evaluated which of nine physical symptoms respondents had experienced over the previous thirty days (i.e., headaches, back aches, difficulty sleeping). A summary score was calculated for each of the checklist measures. These scores were then reverse-coded so that higher scores reflect better physical health (fewer conditions or symptoms).

Indicators of Psychological Well-being

Three dimensions of psychological well-being—autonomy, personal growth, and purpose in life—were selected for analysis in this study. Ryff's (1989) index of psychological well-being operationalized multiple facets of positive psychological functioning. For the national survey, this was reduced to a short-form, eighteen-item instrument that encompasses the same six dimensions: self-acceptance, purpose in life, environmental mastery, positive relations with others, personal growth, and autonomy (see Ryff and Keyes 1995). We did not use the positive relations with others scale because as a mental health outcome, it is somewhat redundant with the social relational histories. Because the aim was to restrict the analysis to three aspects of physical health and three dimensions of mental health, our analyses also did not include the scales of self-acceptance and environmental mastery. These, compared with the three scales we did use, showed less variability as a function of educational standing.

Each dimension is measured using a three-item scale in which respondents indicate their level of agreement (or disagreement) on a six-point scale (strong, moderate, or slight agreement/disagreement). The scales incorporate both positive and negative items, with negative items being reverse-coded so that higher scores reflect more positive appraisals. Although the full fourteen-item and twenty-item scales for each of the six dimensions of well-being exhibit high internal (alpha) reliability (Ryff 1989, 1991), the reduced-item scales exhibit modest reliability, stemming from the decision to select items for the larger survey that maximize

content validity rather than internal consistency (i.e., the separate scales revealed multifactorial structures; thus, rather than represent only single subdimensions for each scale, items were selected across subdimensions to maximize theoretical coverage). (For a more detailed discussion of psychometric properties and the item selection process, see Ryff and Keyes 1995.)

RESULTS

To reiterate, the central question guiding the analyses was whether positive social relational and high-engagement religious histories would predominate in the lives of those who rate themselves as healthy and well (both the high school–educated and college-educated) relative to those who see themselves as having poor health and low well-being (the high school–educated). The findings arrayed below first report the prevalence of positive versus negative relationship histories among our targeted health/education groups. These analyses are followed by the prevalence of the high versus low religion/spirituality histories among the same targeted groups. In each section, results for the three physical health outcomes are presented first, followed by results for the three dimensions of psychological well-being. All analyses are presented separately for men and women.

With regard to statistical comparisons, across each of the health outcomes we first compare the prevalence of positive versus negative social relationship histories (or high versus low religion/spirituality types) *within* the three health/education groups: college-educated individuals in the top quartile of each health outcome, high school–educated individuals also in the top quartile of health, and high school–educated individuals in the lowest quartile of health. The key prediction is that those in good health (both high school–educated and college-educated) would have significantly higher prevalence of positive versus negative relationship types and high versus low religion/spirituality types, whereas those in poor health would have the reverse profile (i.e., significantly higher prevalence of negative versus positive relationship histories and low versus high religion/spirituality types).

Assessment of the within-group (health/education) differences are followed by assessment of between-group (health/education) differences, where the focus is on two specific comparisons: the high school–educated in good health with the high school–educated in poor health, and the high school–educated in good health with the college-educated also in good

health. The key prediction is that the two former groups should differ significantly in the prevalence of the previously described types, whereas the two latter groups should not. That is, the high school–educated in good health should have relationship and religion/spirituality profiles similar to those of the college-educated also in good health, but different from the high school–educated in poor health.

The statistical analyses performed to test these hypotheses consisted of *t*-tests for differences in proportions. Comparisons of relationship categories or religiosity categories *between* education by health, or education by well-being groups, were based on mutually exclusive and independent subgroups of the total population. Thus, for example, if we consider the population (A) of men who are only high school graduates and who score low on personal growth in contrast to the population (B) of men who are only high school graduates and score high on personal growth, we have mutually exclusive populations. Furthermore, responses on relationship or religiosity measures in population A can be assumed to be statistically independent of the analogous responses in population B. If $p^A = \{\text{proportion of persons in A who have negative relationship profiles}\}$ and $p^B = \{\text{proportion of persons in B who have negative relationship profiles}\}$, then we set a confidence interval around the difference in proportions, $p^A - p^B$, by use of standard methodology for independent populations (<http://davidmlane.com/hyperstat/B9344.html>). We identify the confidence level of the widest interval that does not cover 0 (corresponding to “no difference”). Then $1 - (\text{confidence level of widest interval not covering } 0)$ is the reported *p* value for this single comparison. This calculation is performed for all between-group comparisons.

For within-group comparisons, we employ a different procedure because of the dependence among subgroups of a given group. For example, when considering the population of men who are high school graduates and low on personal growth and then letting $p^A = \{\text{proportion of this population with high relationship scores}\}$ and $p^B = \{\text{proportion of this population with low relationship scores}\}$, it is important to observe that there is a third group within this population—a proportion p^C —those who have intermediate relationship scores. Here, $p^A + p^B + p^C = 1$. Our interest is in the difference, $p^A - p^B$. Confidence limits around $p^A - p^B$ are given by

$$[m_A/n - m_B/n] \pm c[m_A(n - m_A) + m_B(n - m_B) + 2m_A m_B/n]^{1/2}/n,$$

where

m_A = number of people with high relationship scores;

m_B = number of people with low relationship scores;

n = number of males who are only high school graduates
and low on personal growth; and

c = percentage point from the standard normal distribution.

The product term $m_A m_B / n$ is a contribution as a result of the dependence between those who score high and those who score low on relationship profiles, relative to the third group, who have intermediate scores.

We identify the confidence level corresponding to the widest interval that does not cover 0, hence the largest corresponding value of c . Then, analogous to what is described in the previous paragraph, $1 -$ (confidence level of widest interval not covering 0) is the reported p value for this single comparison.

There are a total of 168 comparisons associated with figures 3–6. Thus, the p values of the individual comparisons can be used as indicators of degrees of separation of the proportions being compared. However, to take account of the multiplicity of comparisons, we would only declare that comparisons with associated p values of .001 or less are simultaneously significantly different at a level of .05 (Miller 1981).

Cumulative Social Relationships and Physical Health

Figure 3 consists of six graphs (A–F), each showing the percentage of respondents in various health/education subgroups (A–C for men and D–F for women) who experienced largely positive (hatched bars) or largely negative (open bars) relationship histories. Figure 3C, involving reports of physical health symptoms by men, indicates that the findings for this outcome clearly fit the guiding predictions. The figure illustrates the findings that within-group differences among men with a high school education or less who reported poor health (high levels of health symptoms), significantly more experienced predominantly negative (47.4 percent) social relationships during childhood and adulthood, compared with 25 percent who experienced more positive social relationships during childhood and adulthood. In contrast, among high school–educated men in good health (low levels of health symptoms), significantly more experienced predominantly positive (52.2 percent) than negative (22.5 percent) social relationships from childhood through adulthood. Similarly, among the college-educated men reporting low levels of health symptoms,

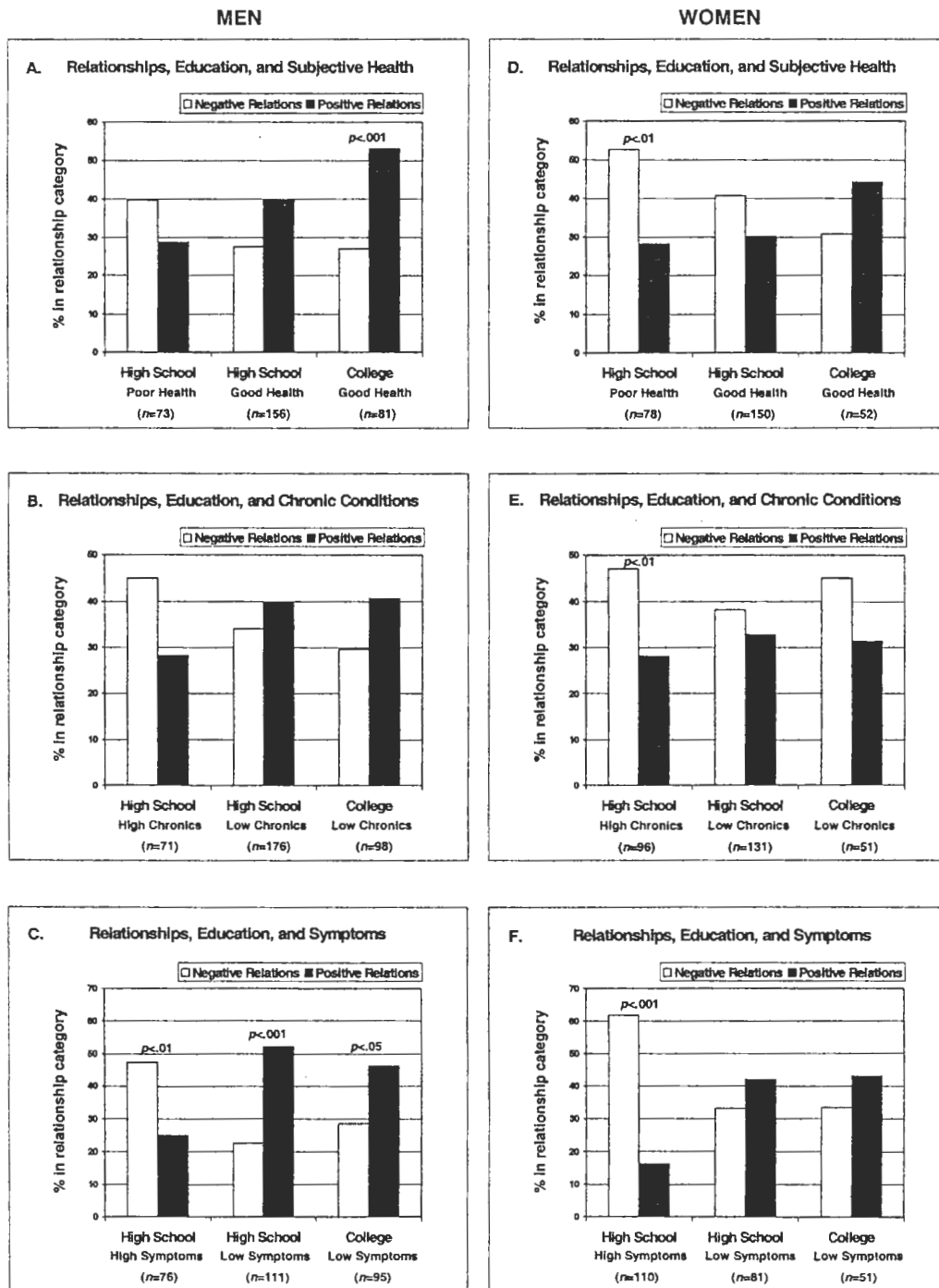


FIGURE 3. Relationships, education, and health.

significantly more experienced positive (46.9 percent) than negative (28.5 percent) social relationship histories.

Select between-group differences were also found: specifically, the high school-educated men in good health (i.e., those with low health symptoms) had a significantly higher prevalence of positive social

relationship histories than did high school–educated men in poor health (52.2 percent versus 25.0 percent, $p < .001$). Similarly, the high school–educated men in good health also had a significantly lower prevalence of negative social histories compared with high school–educated men in poor health (22.5 percent versus 47.4 percent, $p < .001$).

Findings for subjective health for men went in the appropriate direction, with those in good health (both high school–educated and college-educated) having greater prevalence of positive versus negative relationship histories, whereas those in poor health (high school–educated) having greater prevalence of negative versus positive relationship histories. However, significant differences were evident only among the college-educated, where 53.1 percent had positive relationship histories, compared with 27.1 percent who had negative relationship histories. No between-group differences were significant for subjective health. For reports of chronic conditions among men, the results were also in the predicted direction (as described earlier), although no significant differences were obtained.

The findings for women revealed fewer significant differences overall, except for those in poor health. As predicted, those with high school education and in poor health had a significantly higher prevalence of negative than positive social relationship histories. This effect was evident for all three health outcomes: among those reporting poor subjective health, significantly more had negative (52.6 percent) rather than positive (28.2 percent) relationship histories; among those reporting high levels of chronic conditions, significantly more had negative (47.0 percent) rather than positive (28.1 percent) relationship histories; and among those reporting high levels of health symptoms, significantly more had negative (61.8 percent) rather than positive (16.3 percent) relationship histories. No other significant differences were evident in the assessment of physical health outcomes for women.

Cumulative Relationships and Psychological Well-Being

Figure 4 shows the percentage of respondents in well-being/education subgroups (A–C for men and D–F for women) who experienced largely positive versus negative social relationship histories. For men, all of the within-group comparisons were significantly different, and all were in the predicted directions. Thus, whether assessing autonomy, personal growth, or purpose in life, men in the top quartile of well-being (whether high school–educated or college-educated) had significantly higher prevalence of positive versus negative social relationship histories.

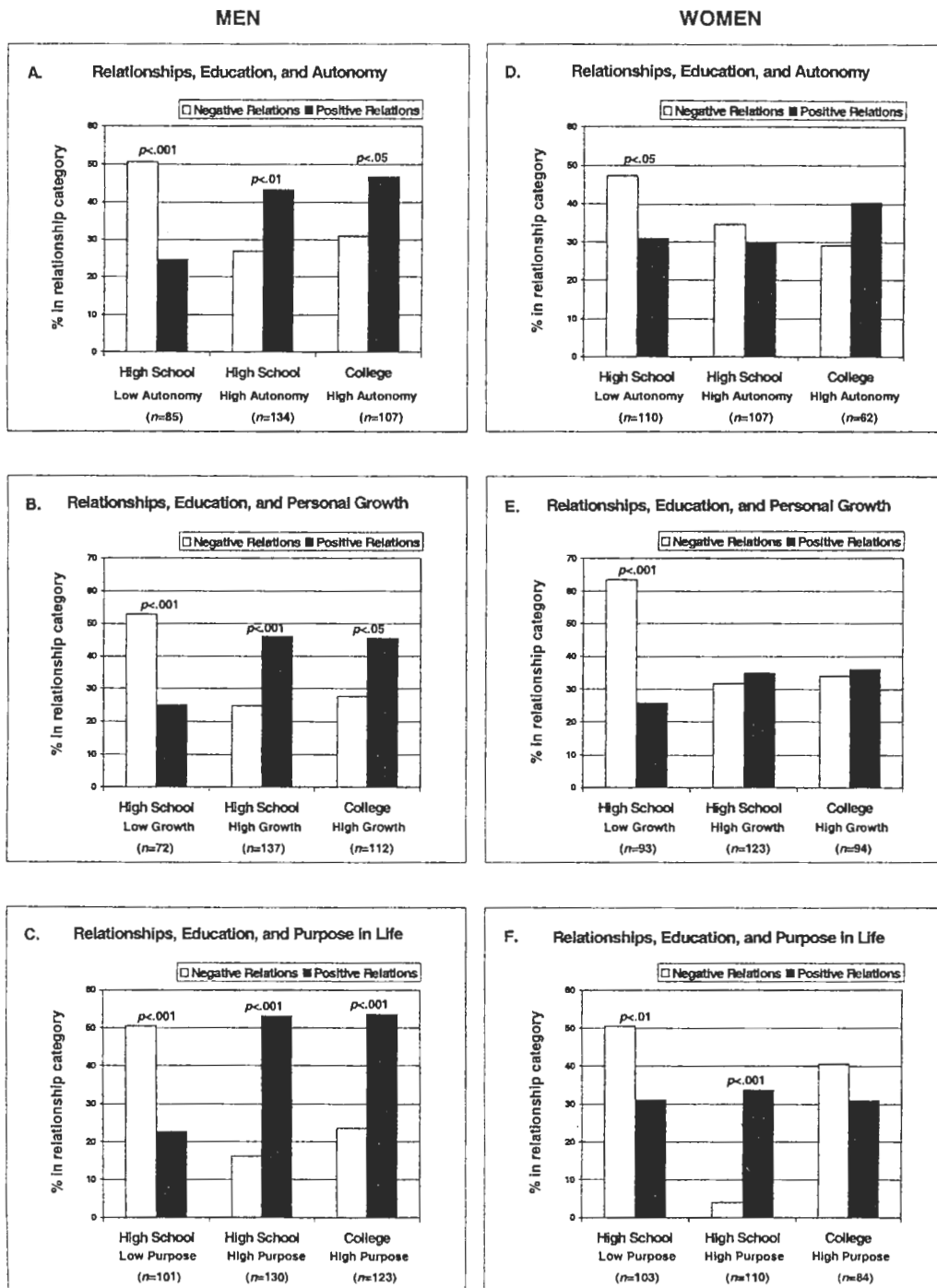


FIGURE 4. Relationships, education, and psychological well-being.

The effects were especially dramatic for purpose in life, where among the high school–educated, 53.1 percent had positive relationship histories, compared with 16.2 percent who had negative histories, and among the college-educated, 53.6 percent had positive social histories, compared with 23.6 percent who had negative relationship experiences. In

contrast, among high school–educated men with low levels of purpose in life, 50.5 percent had negative relationship histories compared with 22.7 percent who had positive relationship histories.

The between-group comparisons for men further revealed that across all three aspects of psychological well-being, high school–educated men in the top quartile were significantly different from high school–educated men in the bottom quartile in the prevalence of positive versus negative relationship types. Specifically, men with high autonomy were significantly more likely to have positive relationship histories than men with low autonomy (43.3 percent versus 24.7 percent, $p < .01$), and conversely, men with low autonomy were significantly more likely to have negative relationship histories than men with high autonomy (50.6 percent versus 26.9 percent, $p < .001$). High school–educated men with high levels of personal growth were significantly more likely to have positive relationship histories than men with low personal growth (46.0 percent versus 25.0 percent, $p < .001$), and conversely, those with low personal growth were significantly more likely to have negative relationship histories than men with high personal growth (52.8 percent versus 24.8 percent, $p < .001$). High school–educated men with high levels of purpose in life were significantly more likely to have positive relationship histories than were men with low purpose in life (53.1 percent versus 22.7 percent, $p < .001$), and conversely, those with low purpose in life were significantly more likely to have negative relationship histories than were men with high purpose in life (50.5 percent versus 16.2 percent, $p < .001$).

Finally, as predicted, none of the between-group comparisons between high school–educated and college-educated men with high well-being was significantly different. Thus, these low-education men were consistently similar to those with advanced educational attainment in having higher prevalence of positive versus negative social relationship histories, at the same time that the high school–educated men were consistently different in social relationship histories from their same-education counterparts who had low levels of well-being.

For women, the analyses of psychological well-being revealed patterns similar to those found for physical health outcomes. That is, the most consistent effects were evident among the high school–educated women with low well-being, where in all instances, the prevalence of negative relationship histories was significantly higher than the prevalence of positive relationship histories: autonomy (47.3 percent versus 30.9 percent, $p < .05$), personal growth (63.5 percent versus 25.8 percent, $p < .001$), and purpose in life (50.5 percent versus 31.1 percent,

$p < .01$). Also, for purpose in life, high school–educated women in the top quartile had significantly higher prevalence of positive versus negative social relationship histories (33.7 percent versus 4.0 percent, $p < .001$). Among college-educated women, there were no significant differences in the prevalence of positive versus negative relationship histories.

Finally, with regard to between-group comparisons, there were significant differences in the prevalence of negative relationship histories among high school–educated women having low versus high levels of personal growth and purpose in life. Those reporting low levels of personal growth were much more likely to have had negative relationship histories than were those reporting high personal growth (63.5 percent versus 31.7 percent, $p < .001$). Similarly, those reporting low levels of purpose in life were much more likely to have had negative relationship histories than were those reporting high purpose in life (50.5 percent versus 4.0 percent, $p < .0001$).

Cumulative Religion/Spirituality and Physical Health

Findings for the prevalence of high versus low religion/spirituality for the various health and education subgroups are arrayed in figure 5. For these findings, we discuss the data for women first because the patterns are more consistent across health measures. As predicted, women in good health (across all three measures—subjective health, chronic conditions, health symptoms), whether high school–educated or college-educated, were significantly more likely to have high rather than low profiles of religion/spirituality from childhood to adulthood. These differences were strong (all but one were $p < .001$), involving a three- to sixfold likelihood of high versus low religious involvement.

However, the findings for high school–educated women with poor health profiles (across all three measures), although statistically significant, revealed the *opposite pattern* to what we had predicted. That is, in all instances, women in poor health were significantly ($p < .001$) more likely to have high rather than low religious involvement from childhood through adulthood. This is a pattern to which we return in discussion of the present findings. None of the between-group comparisons in the analyses for women revealed significant differences.

The data for men were somewhat similar in pattern to those for women, but they were less clear-cut. That is, only among the college-educated men in good health was there a significant difference, in the predicted direction, between the prevalence of high versus low religion/spirituality across all three measures. For high school–educated men

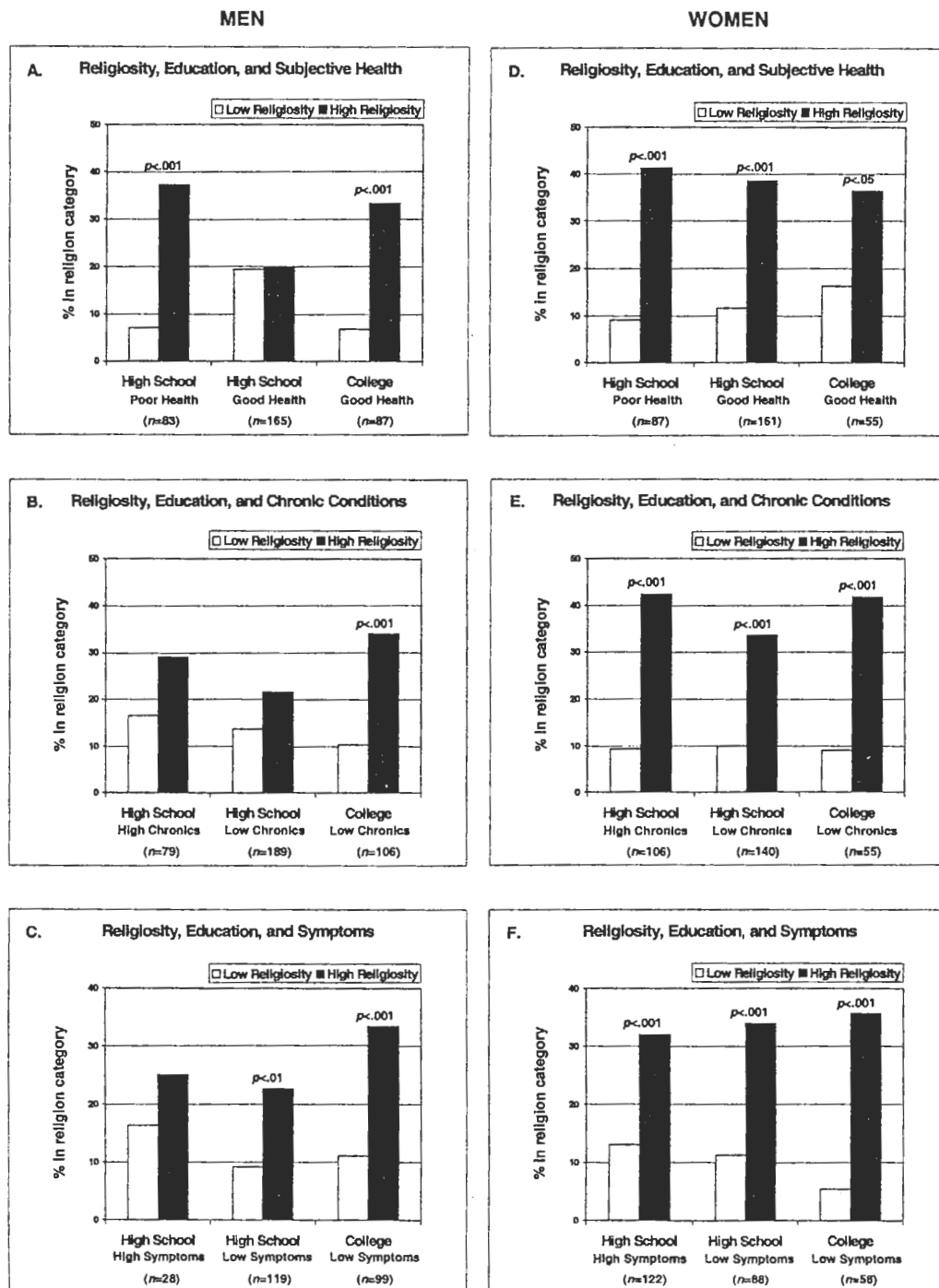


FIGURE 5. Religiosity, education, and health.

in good health, the effects were significant only for the measure of health symptoms, where significantly more men had high profiles of religiosity (22.7 percent versus 9.2 percent).

For high school–educated men with poor physical health profiles, there was a higher prevalence of high versus low religiosity across all

measures, although the effects were significantly different only in the case of subjective health. Thus, like women, the low-education men in poor health revealed patterns that ran opposite to the guiding predictions: such individuals were more, not less, likely to have strong profiles of religiosity.

With regard to between-group differences, effects were evident only for subjective health. In that aspect of health, high school–educated men in poor health were significantly more likely to have high religious engagement than were high school–educated men in good health (37.3 percent versus 20.0 percent, $p < .001$), and similarly, they were significantly less likely to have low religious engagement (7.2 percent versus 19.4 percent, $p < .01$). In addition, among those reporting good health, significantly more of the high school–educated were likely to report low religious involvement than among the college-educated (19.4 percent versus 6.9 percent, $p < .001$), and concomitantly, significantly fewer among the high school–educated were likely to report high religious engagement than among the college-educated (20.0 percent versus 33.3 percent, $p < .05$).

Cumulative Religion/Spirituality and Psychological Well-Being

Figure 6 arrays the findings on the prevalence of high- versus low-religiosity types across the three dimensions of psychological well-being. Again, the findings for women revealed clear and consistent patterns. As predicted, women in the top quartile of psychological well-being (autonomy, personal growth, purpose in life), whether high school–educated or college-educated, were significantly more likely to have high rather than low profiles of religiosity. These effects were strongly significant ($p < .001$ in all cases), involving a difference in likelihood from four- to tenfold.

As with physical health outcomes, however, high school–educated women with low levels of well-being show greater, not reduced, likelihood of have high- versus low-religiosity profiles. These differences were strongly significant ($p < .001$) for all three measures of well-being.

The majority of between-group comparisons were not significant. Thus, high school–educated and college-educated women with high well-being did not differ in their likelihood of having high rather than low levels of religious engagement. With regard to differences between high school–educated respondents showing high versus low levels of well-being, only the comparisons of religiosity for personal growth were statistically significant. As predicted, high school–educated women in the top quartile of personal growth had greater likelihood of having

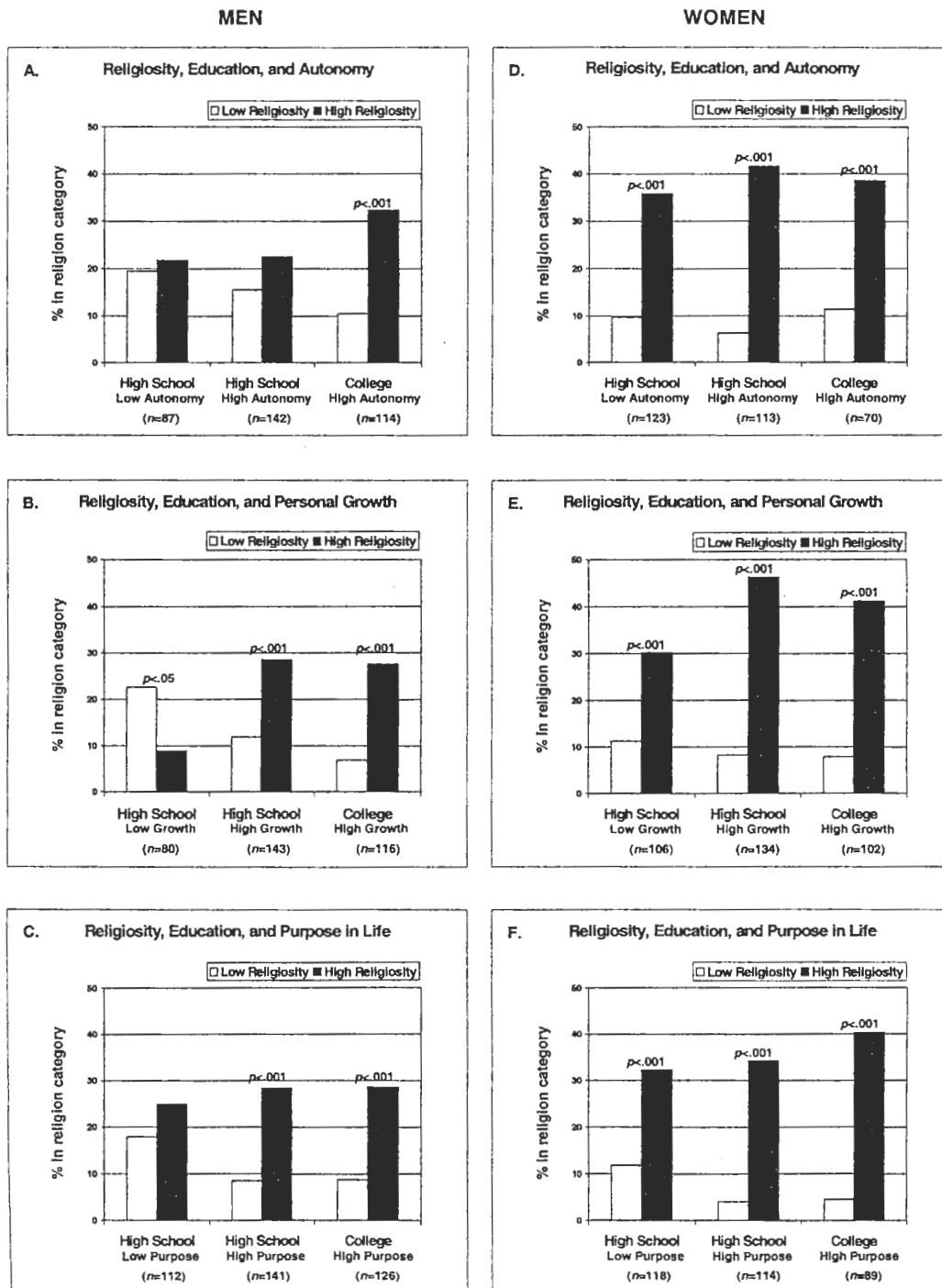


FIGURE 6. Religiosity, education, and psychological well-being.

high-religiosity profiles than did high school–educated women in the bottom quartile of personal growth (46.3 percent versus 30.2 percent, $p < .01$).

Like women, the data for men with high profiles of well-being (whether high school–educated or college–educated) were consistent and in the

predicted directions. That is, there was a greater prevalence of high versus low religiosity among these men, and the effects were strongly significant ($p < .001$ in all cases but one). Among high school–educated men with low well-being, only one significant effect was obtained (for personal growth), and it was in the predicted direction. There was a significantly higher prevalence of low versus high religiosity (22.6 percent versus 8.9 percent, $p < .05$) among these men.

With regard to between-group differences, none of the comparisons between high school–educated and college-educated men was (as predicted) significantly different. In the comparison between high school–educated men with high versus low well-being, the differences for personal growth were significant. Here, those with low levels of personal growth were, as predicted, significantly more likely to have low religiosity (22.6 percent versus 11.9 percent, $p < .05$) and significantly less likely to have high religiosity (8.9 percent versus 28.7 percent, $p < .001$). In addition, for purpose in life, there was a significant difference among the high school–educated men. Those with low levels of purpose were, as predicted, significantly more likely to have low levels of religiosity than were those with high levels of purpose (17.9 percent versus 8.5 percent, $p < .05$).

DISCUSSION

This investigation probed the life characteristics of an anomalous group in the social inequalities literature, namely, those at the low end of the socioeconomic hierarchy who are in good health and have high well-being. These individuals do not fit the generic health predictions associated with low levels of education, income, or occupational status. Our question was whether they have protective characteristics that help them avoid adverse health outcomes. We examined two such protective influences—the quality of their social relationships from childhood to adulthood, and the level of their religious engagement from childhood to adulthood.

Before reviewing and interpreting the findings, we acknowledge several issues that lie in the background of this inquiry. First, our emphasis on protective factors does not include an obvious realm of influence—namely, genetics—that may be part of the accounting for resilience (i.e., able to maintain good health and well-being) in the face of social inequalities. That we target the social environment and individuals' religious engagement is not meant to convey a view that good health at the

low end of the SES hierarchy is due exclusively to external influences. Genetic factors are undoubtedly part of the story, but we note that even among those attempting to understand such influences, a growing emphasis is on “environmentally-induced genetic expression” (Singer and Ryff 2001). From this perspective, assessment of social relational and religious environments need not be seen as antithetical to interest in potential genetic influences.

Second, from public policy, if not ideological, perspectives on social inequalities and health, it is important to clarify that interest in resilience at the low end of the SES hierarchy is not an endorsement of existing differences in access to resources and opportunities. We bring into high relief those who are healthy and well, despite low educational standing, *not* to diminish problems of social inequalities but rather to probe how, in the face of them, some individuals manage to do remarkably well. Their psychosocial strengths are potentially informative not only in understanding resilience but also in conveying that health research must ultimately include both macro-level, social structural influences and micro-level, individual factors. Neither level of analysis in itself is sufficient to explain the whole story.

That said, what has our inquiry clarified? A main message is that the data both support and challenge the prediction that social relational and religious histories distinguish those in good health (both high school-educated and college-educated) from those in poor health (high school-educated). In reviewing the results, which were notably qualified by gender differences and physical versus mental health outcomes, we first focus on the social relationship histories and then the religion/spirituality histories.

For men, the findings for mental health were strongly consistent with the guiding predictions regarding relationship histories. That is, across all measures of psychological well-being, high school-educated and college-educated men in the top quartile of well-being had a strong predominance of positive versus negative relationship histories. And for high school-educated men in poor health, the opposite was evident—that is, they had a strong predominance of negative versus positive relationship histories. Analyses also revealed the predicted differences between the two high school-educated groups (those having high versus low well-being) in the prevalence of positive versus negative relationship histories, but no differences between the high school-educated men with high well-being and the college-educated (also with high well-being).

Men's physical health outcomes revealed the predicted patterns, but only for assessments of health symptoms. Here, the high school–educated men with low symptoms, like the college-educated men also with low symptoms, had a significantly greater prevalence of positive rather than negative relationship histories. Alternately, high school–educated men with high levels of health symptoms reported a greater predominance of negative rather than positive relationship histories. No effects were evident for chronic conditions, and for subjective health, it was only the college-educated in the top quartile of good health who showed the predicted predominance of positive over negative relationship histories.

For women, the predicted patterns for both physical and mental health were evident, but only for those having low levels of education and poor health. These women, who embody the essence of social inequalities in health, revealed the expected predominance of negative rather than positive social relationship histories for all health outcomes but one (subjective health). However, for women in good mental or physical health (both high school–educated and college-educated), there were no significant differences in the prevalence of positive versus negative relationship histories, with the exception of findings for purpose in life. Here, but only for high school–educated women, those in the top quartile of purpose, as predicted, showed a predominance of positive versus negative social relationship histories.

Thus, good-quality social relationships from childhood to adulthood appeared to be critical elements in understanding the salubrious health (symptoms only) and high well-being of men who had been unable to achieve educational advancement. Their relationship profiles distinguished them from other high school–educated men in poor health, while simultaneously rendering them similar to college-educated men in good health. For women, alternately, social relationship histories were informative primarily in understanding those in poor health (mental and physical) who also lacked educational advantage. Among these women, negative social relationship histories clearly predominated.

As such, these findings add to the growing literature on gender differences in how the social relational world influences health outcomes (e.g., Kiecolt-Glaser and Newton 2001; Ryff and Singer 2000; Seeman et al. 1994). They also bring such differences into the realm of socioeconomic inequalities, suggesting that the presence of social relational strengths from childhood through adulthood may be an important element in understanding the health resilience of men with low levels of education,

whereas the absence of such strengths and, indeed, the persistence of relational problems may be part of understanding the compromised health and well-being of women at the low end of the educational hierarchy. This result converges with earlier studies showing that men reap greater benefits from the social relational realm than do women, who in turn may have greater health-related vulnerability vis-à-vis the hazards of social relational difficulties (Fuhrer et al. 1999; Kiecolt-Glaser and Newton 2001; Schuster, Kessler, and Aseltine 1990; Seeman et al. 1994).

Our focus on histories of religion and spirituality revealed strong and remarkably consistent patterns for women. Across all measures, both high school-educated and college-educated women in the top quartile of health and well-being revealed the hypothesized predominance of high religious involvement from childhood to adulthood. Thus, the benefit of religious engagement, especially for women with limited education, was clearly evident. However, contrary to prediction, high school-educated women in poor health or with low well-being (again, across all measures) also revealed a predominance of high religiosity from childhood to adulthood. In short, for all combinations of health and education, women were more likely to have high rather than low levels of persistent religious engagement.

For men, the findings were more qualified. Regarding physical health, the college-educated in the top quartile (good subjective health, low chronic conditions, low health symptoms) revealed the predicted predominance of high versus low religious involvement, but among the high school-educated men in good health, this effect was evident only for health symptoms. Alternatively, among high school-educated men in poor health, the outcomes for subjective health paralleled those for low-educated women discussed earlier—that is, such men were more, not less, likely to have histories of high religious involvement. Psychological outcomes among men generally supported the predicted patterns for those with high well-being (both high school-educated and college-educated): in all instances but one (autonomy for high school-educated men), there was a significant predominance of high versus low religion and spirituality. For high school-educated men with low well-being (only for personal growth), these patterns of religious engagement were significantly different. This was the one instance in which those with low well-being showed the hypothesized predominance of low rather than high religiosity.

The overall story thus is that women revealed strong profiles of religious engagement across all levels of education, health, and well-being. Such patterns make sense as a possible protective influence among those

with good health and high well-being (regardless of educational level), but what do they mean for women in poor health and with compromised well-being? One possible interpretation might involve a reversal of the putative direction of influence between religion/spirituality and health outcomes. That is, among these individuals, high levels of religious engagement may be a response to, rather than an antecedent of, mental and physical health outcomes. Because of its cross-sectional nature, MIDUS cannot illuminate this possibility.

Like women, men with good health and well-being (both high school-educated and college-educated) showed a predominance of high rather than low religious involvement, but the effects were more strongly evident for psychological well-being than physical health outcomes. For men in poor health and having low well-being, the religion and spirituality histories were either not significantly different or contrary to prediction.

Overall, then, the realm of religion and spirituality fits our framework for understanding those with good health and high well-being, especially women, but it challenged our perspective regarding those at the low end of the educational hierarchy with compromised health and well-being. Many of these individuals, again, especially women, showed high levels of religious engagement. Although such beliefs and practices may offer important sources of comfort and support in their lives, their religiosity cannot be construed in these data as a factor that has helped keep them healthy and well.

There are many avenues for extending and refining the questions that guided this chapter. As noted earlier in the text, longitudinal tracking of social relationship and religious profiles through time, rather than constructing them retrospectively as done herein, is important to test the view that persistently positive or negative experience in these realms, and its associated neurobiology, is consequential for health. Cross-time analyses will also be necessary to disentangle the directional influences, including possible reciprocal relations between relationships and health, or religiosity and health.

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