Socioeconomic Status, Psychosocial Factors and Health in Urban Guyana*

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This study seeks to understand the relationship between socioeconomic status (SES) and self-reported indicators of physical and mental health in an urban Third World context. The data come from a probability sample of 654 adult residents of Georgetown, Guyana. There is a significant inverse association between formal education and morbidity for four of the six measures of health status. In this research the extent to which self-concept, health behaviors, stress and social ties are linked to health status and SES, and can explain SES differences in health status is explored. Psychosocial factors, especially the self-concept measures (self-esteem and mastery) play a moderate role in accounting for educational differences in health status.

S ocioeconomic status (SES) is a potent predictor of rates of illness and death. Persons of high social status live longer and enjoy better physical and mental health than their less favored peers (Antonovsky 1967; Haan and Kaplan 1986; Kessler, Price and Wortman 1985; Williams 1990). Especially impressive is the persistence of SES differences in health status over time. Recent reviews indicate that SES differences in health status exist throughout Western Europe despite the ready availability of medical care, increased economic development and marked improvements in the standard of living during this century (Marmot, Kogevinas and Elston 1987; Williams 1990).

The relationship between SES and health has also been studied in the developing world in general (Grosse and Auffrey 1989), and in Latin America in particular (Behm 1980). These studies find that the inverse association between SES and health in Western industrialized countries also exists in the poorer countries of

the Third World. Moreover, although there is considerable variation between SES and health in the developing world (Pendleton and Yang 1985; Grosse and Auffrey 1989), SES is more strongly linked to health status in the developing world than in more industrialized countries (Behm 1980). The indicators of health status utilized in most of these studies have been life expectancy, adult mortality, and infant and childhood mortality. There have been few recent efforts to identify the nature and magnitude of SES variations in health for other indicators of health status in the developing world. Even less attention has been given to identifying the specific factors that are responsible for this association.

Studies of health in the developing world tend to focus on issues affecting rural populations to the neglect of urban health problems (Fosu 1989). In general, social status disparities in health are larger in rural areas than in urban ones (Behm 1980). At the same time, in the large urban centers of less developed countries, health problems associated with underdevelopment (infectious disease and malnutrition) and industrialization (chronic disease and social and psychological problems) are both present (Harpham 1986). However, we know little about the nature and magnitude of SES differences in general indicators of physical and mental health status in the urban Third World in general, and the large cities of Latin America in particular.

There is increasing recognition that since both subjective reality and the objective features of life vary according to one's location in the social stratification system, social status variations in health reflect the patterned response of social groups to the conditions imposed on them by social structures (Williams 1990). Accordingly, understanding SES differences in health status requires the identification of the "general features of lower class living environments that compromise bodily defense" (Syme and Berkman 1976, p. 6).

Social and psychological factors, hereinafter called psychosocial factors, have been suggested as potential linkages between social status position and health outcomes (House et al. 1990; Williams 1990). These psychosocial factors such as stress, health behaviors, attitudinal orientations and social relationships have recently emerged as central determinants of health (Berkman and Breslow 1983; Kessler and Wortman 1989; Pearlin et al. 1981). A United States Surgeon General's report, for example, indicates that 50 percent of U.S. mortality is due to unhealthy behavior and lifestyle; in contrast, 20 percent is attributable to environmental factors, 20 percent to genetic factors, and 10 percent to inadequate medical care (U.S. Department of Health, Education and Welfare 1979). Moreover, the available evidence from studies in the industrialized world clearly indicates that health enhancing psychosocial resources are all positively related to SES (Williams 1990; Williams and House 1991). However, few attempts have been made to assess levels of psychosocial factors in the developing world and to verify empirically the extent to which they can account for the association between SES and health status.

This paper examines the association among socioeconomic status, psychosocial factors, and health in Georgetown, Guyana. Guyana is the only English-speaking country on the South American continent. The major causes of death are cardiovascular and cerebrovascular disease; life expectancy at birth is 67.3 years for males and 72.3 years for females; and the infant mortality rate is 44 per 1,000 live

births (Britannica 1990). Specifically, we address the following questions: 1) How is socioeconomic status related to physical and mental health?; 2) how are psychosocial factors linked to SES and health status?; and 3) to what extent can psychosocial factors explain the association between SES and health status?

METHODS

SAMPLE

Respondents were selected from a multistage probability sample of households in the Greater Georgetown area. Using a probability proportionate to size procedure (Kish 1965), 15 of 42 minor areas (tracts) were selected at the first stage. At the second stage, 97 enumeration districts (blocks), representing approximately one-third of the total, were selected. Households were selected at the final stage. At each sampled address with a conjugal pair, the male or female (spouse or partner) was randomly selected to be interviewed. In single headed households, the adult head of the household was interviewed. In other household types, the person designated as head was interviewed. For households where a head was not designated, an adult was randomly selected using the Kish table (Kish 1965).

The sampling frame used for the selection of respondents was the "Visiting Records" of the *Population Census of the Commonwealth Caribbean, Guyana 1980-1982,* which was provided by the Chief Statistical Office in Georgetown. These records contain complete listings of all dwelling units (35,392) in the Greater Georgetown area at the time of the 1980-1981 census. When the assumption that each dwelling unit contains a single family or household was violated, the "half-open interval procedure" (Kish 1965) was used to select additional households. In all, 654 interviews were completed from a total of 758 designated respondents, for a response rate of 86 percent. The respondents range in age from 18 to 89 and, as reported elsewhere, the obtained sample compares favorably with that of the 1980-1981 census (Wilson, Williams and Wilkins 1992).

INTERVIEWING AND CODING

All data analyzed here derive from face-to-face interviews conducted in respondents' homes during the Summer of 1987. Most of the 37 interviewers were students or graduates of the University of Guyana and had completed an intensive training program conducted over a two-week period. The interviews averaged 90 minutes. In preparation for computerization, responses were coded onto Fortran sheets by nine trained coders. Coder reliability was high ranging from 97 to 100 percent. The data were computerized and cleaned during the Fall of 1987 at the University of Michigan.

MEASURES AND DATA ANALYSIS

Formal education based on years of schooling is the primary measure of socioeconomic status utilized. Education is divided into four categories (less than pri-

mary school completion, primary school completion, secondary, and post-sec-
ondary) that correspond to the critical points of the available educational opportuni-
ties in Caribbean society (Fredericks, et al. 1986, pp. 43-50). The less than primary
education category consists of respondents who received no formal education up to
and including those who attended but did not complete elementary school (18 per-
cent). The primary group (24 percent) completed elementary school, and the sec-
ondary education category includes those who have attended or completed high
school (43 percent). The remaining 15 percent, with training beyond high school, fall
into the final post-secondary category. Education is treated as a set of four dummy
variables in the regression analyses with the lowest education group being the omit-
ted category.

Prior studies in both the developed (Liberatos, Link and Kelsey 1988) and the
developing world (Behm 1980; Grosse and Auffrey 1989; Pendleton and Yang 1985),
indicate that education may be the most stable measure of SES and the best single SES
predictor of health status. Differentials in health for both current income and occu-
pation are likely to be exaggerated by a reverse causal path in which serious illness
forces individuals to work at jobs below the level of their normal occupations or
causes a decrease in their income. Nevertheless, in preliminary analyses of these
data we explored health status variations by income. Income differentials were
strikingly similar to those reported for education, but we present no analysis for in-
come because eighteen percent of our sample lacked data on total household income.
Age (in years) and gender (1 = male, 0 = female) are sociodemographic control
variables employed in all analyses.

Six health outcomes are considered in the analysis. Mental health status is as-
sessed by two measures of psychological distress that utilize symptoms of depression
and somatization as measured by the Hopkins Symptom Checklist (Derogatis 1977).
The depression scale (alpha = .79) sums the frequency with which the respondent
blamed self for things, had crying spells, felt sad and blue, trapped, lonely, no inter-
est in things, no sexual interest, and hopeless about the future. The scale of somatic
symptoms (alpha = .79) assessed the recent frequency of experiencing back pains,
headaches, fainting or dizziness, pains in the heart or chest, muscle soreness, weak-
ness in parts of the body, and trouble getting one's breath. Four self-report indicators
of physical health status are typical of those used in health surveys by the National
Center for Health Statistics in the United States (NCHS 1981). Self-rated ill health is
a single item rating of the respondent's health as: (1) excellent, (2) good, (3) fair, or
(4) poor. Sick days is the number of days restricted to bed by health problems in the
last month. The third indicator of physical health status, restricted activity, is a sin-
gle item rating the extent to which health problems limited the performance of activi-
ties typical for persons in the same age group, with the lowest score of 1 indicating
none of the time and the highest score of 5 indicating all of the time. The final health
measure, chronic conditions, sums the number of chronic illnesses out of a list of 11
major diseases that the respondent's physician indicates that he or she has.

The analyses explore the extent to which four classes of psychosocial factors
(self-concept, health behavior, stress and social support) are linked to SES and
health. The self-concept is assessed by six items from the Rosenberg self-esteem
scale (alpha = .63; Rosenberg 1965) and an equivalent number from the Pearlin

mastery scale (alpha = .63; Pearlin and Schooler 1978). The reliability (alpha) of both of these measures is somewhat low but in an acceptable range. Five indicators of health behavior are utilized. Cigarettes is a count of the number of cigarettes smoked on an average day. The values range from zero to 24. The alcohol measure is derived by multiplying the number of days alcoholic beverages were consumed during the last month by the number of "bottles of beer or drinks of liquor" the respondent usually has. The breakfast measure assesses how often breakfast is consumed with the lowest score of 1 indicating never and the highest value 5 indicating every day. Balanced meals used the same metric to measure how often the respondent ate meals that were nutritionally balanced. Physical exercise is measured by a two item index that combines "how much walking do you do apart from what you do around the house," with "how much other forms of physical exercise do you get" in an average week. The response categories for both items ranged from 4 = a lot to 1 = none at all.

The first stress measure is a sum of general undesirable life events (such as serious illness, unemployment or marital separation) that the respondent experienced in the previous year. Financial strain, the second indicator of stress, is a six item scale (alpha = .89) based on objective evaluation about financial constraints on obtaining food, medical care, clothing, leisure activities and paying monthly bills. The final stress measure, asked only of married persons and those living with a partner, is a single item that ascertained "how much tension is there between you and your (spouse) partner?" Response options ranged from 4 = a lot to 1 = none at all.

Social relationships have been identified as central determinants of health status (House, Umberson and Landis 1988). Four summary measures were created based on respondent reports of the quantity and quality of their social ties. Social integration is measured by the frequency of contact with and expressions of interest and caring from both friends and relatives. The negative interaction measure captures the conflictive aspects of relationships that can have adverse effects on health (Rook 1984). This index is a sum of the frequency with which both friends and relatives made too many demands and criticized the respondent. The satisfaction measure provides an overall evaluation of how satisfied the respondent is with relationships with both friends and relatives. We regard the measures of support from relatives and friends as functional alternatives and therefore make no assessment of internal reliability. Finally, the marital support index (alpha = .99) sums up the perceived availability of emotional support based on responses to four questions. The four items assess trustworthiness, willingness to engage in open communication, the amount of caring, and the amount of understanding in the relationship.

The analyses in this paper use ordinary least squares regression to explore the relationship between education and health. We also assess the association between psychosocial factors and education, and the extent to which psychosocial resources can explain educational variations in health status. All items and summary indices which do not have a meaningful metric were scaled as standard scores based on the means and standard deviations of the total sample. Constants were added to all standard scores so that the lowest actual value is zero.

RESULTS

SOCIOECONOMIC DIFFERENCES IN HEALTH STATUS

Table 1 presents metric regression coefficients for the relationship between health status and educational attainment in Georgetown, adjusted for age and gender. For three of the six dependent variables (depression, somatization and self-rated ill health), there is a strong inverse relationship between socioeconomic status and illness. Persons in the three highest educational categories have lower scores on these morbidity indicators than persons in the lowest educational group. A similar pattern is evident for sick days with a marginally significant tendency for persons with six years of education to have fewer sick days than those with five years or less. There are no educational variations for either chronic conditions or restricted activity. Antonovsky (1967) has noted that, although there has been a reduction in the socioeconomic gradient in health status over time, the lowest SES group continues to have the highest rates of disease and death and there has been no reduction in the differential between it and the other SES groups. Where SES differences exist in Georgetown, they conform to this general pattern.

PSYCHOSOCIAL FACTORS AND EDUCATION

Metric regression coefficients for the association between psychosocial factors and education is presented in Table 2. Both self-esteem and mastery are positively associated with social status. Persons with a secondary education have higher scores on these two psychological factors than those with less education. This pattern of findings is consistent with other data that suggests that these individual dispositions are constrained by social structure (Pearlin et al. 1981; Williams 1990). It is likely that experiences of life linked to socioeconomic position can facilitate the development and maintenance of health enhancing conceptions of self and the world (Antonovsky 1979; Kohn 1969).

In contrast to the United States where cigarette use, alcohol abuse, physical inactivity and not eating breakfast are all inversely linked to SES (Berkman and Breslow 1983; Schoenborn 1986), these four health habits are unrelated to educational level in Guyana. Of the health behavior indicators utilized, only the consumption of balanced meals is positively related to SES. Data for the United States and Great Britain indicate that during the 1940's, good health practices were unrelated to SES; but as information became available on the link between health behavior and illness, poor health practices became increasingly concentrated among the socioeconomically disadvantaged (Williams 1990). Thus, the lack of an association between SES and health behavior in Guyana may reflect the absence of health education campaigns targeted at the health practices considered here.

Two of the three stress measures utilized are associated with SES but the relationship is not linear. Persons who completed primary school are significantly less likely to have experienced stressful life events than their peers with less education, but persons with secondary education or more do not differ from the least educated

TABLE 1

METRIC REGRESSION COEFFICIENTS FOR THE ASSOCIATION BETWEEN EDUCATION AND HEALTH STATUS

INDEPENDENT VARIABLES	HEALTH STATUS INDICATORS					
	Depression	Somatization	Self-Rated Ill Health	Sick Days	Restricted Activity	Chronic Conditions
1. Age	.003	.003	.02***	.02***	.01***	.02***
2. Gender (Male)	-.35***	-.42***	-.27***	-.43	-.12	-.26***
3. Education						
a. Some Primary (omitted)						
b. Primary	-.40***	-.27***	-.27***	-.77*	-.13	-.15
c. Secondary	-.39***	-.30***	-.28***	-.21	-.13	-.12
d. Post-Secondary	-.39***	-.41***	-.33***	-.47	-.22	-.13
N				642		

* = $p \leq .10$

** = $p \leq .05$

*** = $p \leq .001$

TABLE 2

METRIC REGRESSION COEFFICIENTS FOR THE ASSOCIATION
BETWEEN EDUCATION AND PSYCHOSOCIAL FACTORS

PSYCHOSOCIAL FACTORS	YEARS OF EDUCATION			
	Some Primary	Primary Completion	Secondary	Post-Secondary
Self Concept				
1. Self-esteem	(omitted)	.15	.27**	.53***
2. Mastery	(omitted)	.09	.23**	.70***
Health Behaviors				
3. Cigarette	(omitted)	-.45	-.06	-.81
4. Alcohol	(omitted)	-3.89	-2.85	-3.66
5. Breakfast	(omitted)	.01	.004	-.02
6. Balanced meal	(omitted)	.20	.37***	.49***
7. Physical exercise	(omitted)	-.10	.11	.12
Stress				
8. Life events	(omitted)	-.26**	.03	-.17
9. Financial strain	(omitted)	.21*	-.03	-.33**
10. Marital tension	(omitted)	-.02	.11	.05
Social Ties				
11. Social integration	(omitted)	.06	.28**	.49***
12. Satisfaction	(omitted)	.14	.27**	.28**
13. Negative integration	(omitted)	.10	.17	.05
14. Marital support	(omitted)	-.03	.15	.18

*   = p ≤ .10
**   = p ≤ .05
*** = p ≤ .01

group. As expected, persons in the highest education group report less financial strain than those in the lowest group, but there is also a marginally significant tendency for persons who completed elementary school to have higher levels of financial stress than those with less education. Marital tension is unrelated to educational level.

Two of the social relationship measures, negative interaction and marital support, are unrelated to SES. However, there is a strong linear relationship between social integration and the satisfaction with social ties and educational level. Persons with some secondary education or more have higher scores than those in the lowest education group.

EXPLAINING EDUCATIONAL DIFFERENTIALS IN HEALTH

Table 3 shows the metric regression coefficients for the association between health status and the psychosocial risk factors and resources. Regression models 15 were estimated under two conditions. First, we assessed the bivariate relationship between each psychosocial factor and the relevant dependent variable. Second, for

TABLE 3

METRIC REGRESSION COEFFICIENTS FOR THE ASSOCIATION BETWEEN
PSYCHOSOCIAL FACTORS AND MEASURES OF HEALTH STATUS[1]

HEALTH INDICATORS

PSYCHOSOCIAL FACTORS	Depression	Somatization	Self-Rated Ill Health	Sick Days	Restricted Activity	Chronic Conditions
Self concept						
1. Self-esteem	-.31*	-.27*	-.25*	-.53**	-.10**	-.22*
2. Mastery	-.17**	-.13**	-.12**	-.46*	-.13**	-.10**
Health Behaviors						
3. Cigarettes	-.002	-.01	-.01	-.02	.003	.002
4. Alcohol	-.001	-.001	-.001	-.001	-.001	-.001
5. Breakfast	-.10*	-.10*	-.08*	-.12	-.08*	-.05
6. Balanced Meals	-.08**	-.14*	-.16*	-.11	-.13*	-.16*
7. Physical Exercise	-.09**	-.11**	-.16**	-.35**	-.20**	-.20**
Stress						
8. Life Events	.25**	.16**	.06	.20	.10*	.08*
9. Financial Strain	.15**	.13**	.11**	-.03	.08*	.16*
10. Marital Tension	.02	.02	-.08	.05	.12**	-.05
Social Ties						
11. Social Integration	-.11**	-.19*	-.21*	-.29*	-.09*	-.14*
12. Satisfaction	-.23*	-.16*	-.11**	-.20	-.04	-.12*
13. Negative Interaction	-.17*	-.07	.10**	.49**	.01	-.04
14. Marital Support	-.10**	-.09*	-.15*	-.13	-.13**	-.13*

*Significant bivariate association p ≤ .05; **significant association adjusting for all covariates p < .05
[1] Two models were estimated: a) a bivariate model and b) a model that considers all psychosocial factors simultaneously. Results from the bivariate analyses are presented, except when coefficients are significant in the model that included controls for all of the other factors.

each dependent variable we estimated a model in which all of the psychosocial factors were entered simultaneously. Table 3 presents the results from the bivariate analyses except when coefficients were significant adjusting for multiple comparisons.

Both self-esteem and mastery are inversely associated with all of the indicators of ill health; but in contrast to mastery, the association between self-esteem and health status tends to disappear when adjusted for health behaviors, stress and social ties. Across the 6 dependent variables in Table 3, there is not a single significant association between either smoking or alcohol use and health status. This is surprising in light of the familiar pattern in the developed world, of strong positive associations between these health behaviors, especially smoking, and ill health. This absence of an association may be due to the relatively low level of usage of tobacco and alcohol in Guyana. Only 20 percent of the respondents smoke and 70 percent of those who smoke use ten or less cigarettes per day. Similarly, 41 percent of Georgetown residents never consume alcohol. Among those who drink, one-third had not consumed alcohol in the last 30 days and an additional one-third drank alcoholic beverages on three days or less in the previous month.

Both of the nutrition measures, breakfast and balanced meals, are inversely associated with ill health, but in eight out of nine instances this relationship becomes zero when controlled for the other social and psychological risk factors. The health behavior most strongly linked to health status is physical exercise. Across all the measures of health status, even after adjustment for all other covariates, physical exercise is consistently inversely associated with ill health.

In terms of the measures of stress, both life events and financial strain tend to be positively associated with our indicators of morbidity, but the relationship is much stronger for the mental health measures (depression and somatization) than for the indicators of physical health. Apart from a positive association with restricted activity, marital tension is unrelated to health status. As expected, measures of the positive aspects of social ties (social integration, satisfaction and marital support), are inversely related to both the physical and mental health outcomes; more than half of these associations, however, are not significant when adjusted for the other psychosocial factors. Interestingly, the measure of the negative or conflictive aspects of social relationships is inversely associated with depression, but positively related to sick days and self-rated ill health. More generally though, our findings on social ties are not consistent with the view that the negative aspects of social relationships are more strongly linked to health status than the positive ones (Rook 1984).

Tables 4 and 5 present the results of analyses that show how the association between SES and mental and physical health status, respectively, are altered when adjusted for psychosocial factors. Six models are presented for each of the dependent variables. The first column presents results of the relationship between education and health status adjusted for age and gender. The next four columns show how the coefficients for education are altered when controlled for the indicators of self-concept, health behaviors, stress, and social ties, respectively. A final model includes all of the covariates of the previous models. The primary interest here is in assessing change in the association between education and health status when adjusted for psychosocial factors. If differential exposure to risk factors is partly responsible for SES

TABLE 4

METRIC REGRESSION COEFFICIENTS FOR THE ASSOCIATION BETWEEN
EDUCATION AND MENTAL HEALTH STATUS

EDUCATION	DEPRESSION						SOMATIZATION					
		ADJUSTED FOR						ADJUSTED FOR				
	Age & Gender	Self Concept	Health Behavior	Stress	Social Ties	All Factors	Age & Gender	Self Concept	Health Behavior	Stress	Social Ties	All Factors
Some Primary (omitted)												
Primary	-.37***	-.32***	-.35***	-.35***	-.35***	-.30**	-.24**	.19	-.23*	-.22*	-.22*	-.20*
Secondary	-.37***	-.28***	-.31***	-.35***	-.30***	-.24**	-.28**	-.21*	-.25**	-.27***	-.24**	-.21*
Post-Secondary	-.42***	-.16	-.32**	-.26**	-.31**	-.07	-.48***	-.27**	-.43***	-.36***	-.40***	-.24*
R^2	.06	.17	.13	.24	.13	.34	.07	.13	.11	.16	.09	.21
Net R^2		.11***	.07***	.18***	.07***	.28***		.06***	.04***	.09***	.02*	.14***
N			610						610			

* = $p \leq .10$
** = $p \leq .05$
*** = $p \leq .01$

Note: The Net R^2 is the incremental contribution to explained variance from the model that includes controls for age and gender.

differences in health, there should be reductions in the magnitude of the education effect when these risk factors are entered into the regression equation.

Table 4 presents the results for depression and somatization. Each class of psychosocial factors considered produces at least some minimal reduction in the association of education with both depression and somatization. When all factors are considered, the SES differential is not eliminated but is moderately reduced. For both depression and somatization, the most substantial reduction occurs when the self-concept measures (self-esteem and mastery) are included in the model. The most dramatic reduction, for both dependent variables, occurs at the highest educational level. When adjusted for self-esteem and mastery, the coefficient for persons with post-secondary education is reduced by 62% (-.42 to -.16) and 44% (-.48 to -.27) for depression and somatization, respectively.

Analyses similar to those in Table 4 are summarized in Table 5 for self-rated health and sick days. The findings here closely mirror those in Table 4. The self-concept measures reduce the SES differential and the effect is largest for the highest education group. A comparison of Tables 4 and 5 also shows that the psychosocial factors explain more of the variance in psychological distress than in self-reported physical morbidity. Also, while stress explains the most variance in depression and somatization, the self-concept measures account for more of the variance in self-rated ill health and sick days than any of the other psychosocial factors.

In sum, there is a clear inverse association between SES and ill-health in Georgetown, Guyana. When this relationship is adjusted for self-concept, health behaviors, stress, and social ties, the highest education group no longer enjoys better health than the lowest group. However, the two intermediate education groups continue to enjoy better health than the lowest group even after adjustment for psychosocial risk factors and resources.

DISCUSSION

The results reported here reveal that years of formal education are important predictors of both physical and mental health status in Georgetown, Guyana. Due to the cross-sectional nature of our analyses, we cannot draw any firm conclusions about causal directionality. At the same time, there is very good evidence that SES indicators, especially education, are usually temporally and causally prior to health status in adulthood, and that the patterns of results here are consistent with both cross-sectional and longitudinal analyses of SES differences in self-reported health status in the United States (House et al. 1990; Williams 1990). Cross-national analyses, especially of other Third World countries, can provide further evidence of the generalizability of these findings and may also facilitate the identification of specific structural factors (such as, level of economic development, rate of unemployment) that may mitigate or intensify the relationship between SES and health.

This paper has explored the extent to which psychosocial factors could account for SES differences in health status. The factors considered here were linked to health status and played a moderate role in accounting for the relationship. Rather than being definitive, these analyses are illustrative of what can be a fruitful strategy for understanding the persisting association between social stratification and

TABLE 5

REGRESSION MODELS FOR THE ASSOCIATION
BETWEEN EDUCATION AND PHYSICAL HEALTH STATUS

EDUCATION	SELF-RATED ILL-HEALTH						SICK DAYS					
	ADJUSTED FOR						ADJUSTED FOR					
	Age & Gender	Self Concept	Health Behavior	Stress	Social Ties	All Factors	Age & Gender	Self Concept	Health Behavior	Stress	Social Ties	All Factors
Some Primary (omitted)												
Primary	-.26**	-.23**	-.27**	-.28**	-.26**	-.25**	-.92**	-.82*	-.99**	-.81*	-.94**	-.78**
Secondary	-.27***	-.23**	-.27**	-.27**	-.27**	-.23**	-.32	-.18	-.37	-.30	-.34	-.22
Post-Secondary	-.37***	-.22*	-.35***	-.30**	-.33**	-.21	-.59	-.22	-.65	-.51	-.53	-.27
R^2	.15	.20	.19	.18	.18	.25	.03	.06	.04	.04	.04	.09
Net R^2		.05***	.04**	.03***	.03**	.10**		.03***	.01	.01	.01	.06
N	609						608					

* $= p \leq .10$
** $= p \leq .05$
*** $= p \leq .01$

Note. The Net R^2 is the incremental contribution to explained variance from the model that includes controls for age and gender.

health. Sustained research efforts are needed to identify other factors that derive from an individual's structural position that may explain SES differences in health.

Stress, social ties, health behavior, and especially the self-concept measures effectively account for the health advantage of the highest SES group compared to the lowest group. However, the lowest SES group remained disadvantaged compared to the two intermediate groups even after all of our psychosocial factors were taken into account. Other pathogenic factors such as stress in residential and occupational environments probably account for this pattern of association. Low socioeconomic environments can impose social stress (such as high rates of crime, unemployment, residential mobility and marital instability) which can have deleterious effects on health (Harburg et al. 1973). These conditions exist in Georgetown (Fredericks et al. 1986) but were not assessed in our study. Similarly, persons in lower SES groups are more likely than those of higher social status to hold jobs where they are exposed to physical, chemical and biological hazards and stresses (Williams 1990).

Another determinant of health missing from our analyses is the availability and utilization of medical care. Persons in the lower SES groups are likely to have acute needs for medical care. These individuals are more likely than higher SES persons to be recent immigrants from the smaller communities in the rural interior of Guyana where infectious diseases that have been eradicated in Georgetown are still endemic. The government of Guyana has made major efforts to equalize access to health care across socioeconomic groups. In theory, health care is available to all in Georgetown. However, as in other Third World countries, constraints on financial and human resources probably result in considerable inequities in access (Fosu 1989). Prior research in the developing world indicates that increased years of education are predictive of greater awareness of the availability of medical services, greater use of these services, higher levels of cooperation with medical advice, and an increased likelihood of demanding appropriate care from medical professionals (Grosse and Auffrey 1989).

Research efforts are also needed to increase our understanding of the processes and mechanisms by which the psychosocial factors considered here are linked to social stratification. We need to go beyond the mere demonstration of associations with social status to document the ways in which psychosocial factors are embedded in social structures and processes. For example, our analyses revealed that both self-esteem and mastery were related to SES and predictive of health status. These individual dispositions do not occur in a vacuum, but emerge within particular social contexts. The critical socialization experiences that give rise to a strong sense of self are probably more frequently encountered at the higher levels of SES, but they are also available to at least some of the poor. To date, our knowledge of the specific past and current socialization experiences that give rise to an individual's conceptions of self is limited (McLeod and Kessler 1990).

Current health education initiatives in Georgetown focus on immunization, environmental concerns and dental health (Fredericks et al. 1986). Our findings suggest that efforts directed at improving the psychosocial profile of the population could also reduce illness and disability. Nonetheless, it is unlikely that health education alone will reduce socioeconomic disparities in health. Since the health practices of low SES persons are adaptive to their living conditions, the effectiveness of

health education initiatives may depend on parallel changes in socioeconomic status. Socioeconomic position is the fundamental cause of SES differences in health, with psychosocial factors being the current intervening mechanisms (Behm 1980; Williams 1990). The intervening mechanisms for SES variations in health status have changed over the course of this century with new factors linked to socioeconomic position routinely emerging to take the place of old ones, to maintain socioeconomic differentials in health (Williams 1990). Thus, reductions of the socioeconomic gradient in health are probably contingent on reductions in socioeconomic inequality.

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