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ABSTRACT

The purpose of this study is to examine the degree to which various kinds of out-of-school activities in which adolescents are involved influence their school engagement, achievement, and perceptions of their life chances. It was assumed that, since students spend more time on average outside of school than in school, how they use this time is bound to have an impact on their school learning, school engagement, and whether their outlook toward the future is optimistic. Analysis of data from the National Education Longitudinal Study of 1988 for samples between 10,000 and 14,000 shows that student participation in structured activities and religious activities and time spent interacting with adults during 10th grade appear to have positive and significant effects on various educational outcomes by grade 12. Time spent "hanging out" with peers was consistently negatively associated with educational outcomes for the study sample, with few exceptions. The effects of time spent working for pay and time spent alone were somewhat inconsistent throughout the analysis. Analysis results have implications for after school and summer school policies and programs. An appendix describes the construction of study variables. (Contains 6 tables and 20 references.) (Author/SLD)

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# HOW STUDENTS INVEST THEIR TIME OUT OF SCHOOL

## Effects on School Engagement, Perceptions of Life Chances, and Achievement

**Will J. Jordan**

**Saundra Murray Nettles**

**Report No. 29 / January 1999**

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CENTER FOR RESEARCH ON THE EDUCATION OF STUDENTS PLACED AT RISK

Johns Hopkins University & Howard University

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**Report No. 29**

**January 1999**

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# The Center

Every child has the capacity to succeed in school and in life. Yet far too many children, especially those from poor and minority families, are placed at risk by school practices that are based on a sorting paradigm in which some students receive high-expectations instruction while the rest are relegated to lower quality education and lower quality futures. The sorting perspective must be replaced by a "talent development" model that asserts that all children are capable of succeeding in a rich and demanding curriculum with appropriate assistance and support.

The mission of the Center for Research on the Education of Students Placed At Risk (CRESPAR) is to conduct the research, development, evaluation, and dissemination needed to transform schooling for students placed at risk. The work of the Center is guided by three central themes — ensuring the success of all students at key development points, building on students' personal and cultural assets, and scaling up effective programs — and conducted through seven research and development programs and a program of institutional activities.

CRESPAR is organized as a partnership of Johns Hopkins University and Howard University, in collaboration with researchers at the University of California at Santa Barbara, University of California at Los Angeles, University of Chicago, Manpower Demonstration Research Corporation, University of Memphis, Haskell Indian Nations University, and University of Houston-Clear Lake.

CRESPAR is supported by the National Institute on the Education of At-Risk Students (At-Risk Institute), one of five institutes created by the Educational Research, Development, Dissemination and Improvement Act of 1994 and located within the Office of Educational Research and Improvement (OERI) at the U.S. Department of Education. The At-Risk Institute supports a range of research and development activities designed to improve the education of students at risk of educational failure because of limited English proficiency, poverty, race, geographic location, or economic disadvantage.

# Abstract

The purpose of this study is to examine the degree to which various kinds of out-of-school activities that adolescents get involved in influence their school engagement, achievement, and perceptions of their life chances. The underlying assumption is that within a typical week during the school year students spend far more time on average outside of school than inside of school, and how they use this time is bound to impact upon their school learning, school engagement, and whether their outlook on the future is optimistic. Our conceptual framework posits that, net of contextual factors and student background characteristics, the personal investments that students make outside of school in meaningful, structured activities and with the help and guidance of adults who may serve as role models have significant effects on various educational outcomes. Our analysis showed that student participation in structured activities and religious activities and time spent interacting with adults during tenth grade appear to have positive and significant effects on various educational outcomes by grade twelve. Conversely, time spent hanging out with peers was consistently negatively associated with educational outcomes in the study, with few exceptions. The effects of time spent working for pay and time spent alone were somewhat inconsistent throughout the analysis. The result of the analysis has implications for after-school and summer school policies and programs. We discuss these implications and suggest further study of the effects of school context, family influence, and the availability of community resources on students' personal investments.

## Acknowledgment

A special thanks to our colleague John Hollifield whose critical reading and exceptional editing always make a difference in all Center reports.

# Introduction

Educators, policymakers, and social scientist are looking beyond the constraints imposed by the limits of the typical school day trying to find creative ways of fostering student learning, school engagement, and commitment to ongoing self-improvement. Unfortunately, not much is known about the real benefits of experiences such as after-school programs or how the ways in which students make personal investments in activities outside of school influence their educational success and perception of personal fulfillment in their lives as adults.

There has been an outgrowth of concern about how children and adolescents use their time when not in school and the overall effects of nonschool experiences on their human development and educational outcomes (Carnegie Council on Youth Development, 1992; Conrad & Hedin, 1989; Mortimer, Finch, Shanahan & Ryu, 1992; Nettles, 1989; Timmons, Eccles, & O'Brien, 1985). Using the experience sampling method, where participants carry electronic pagers and report their activities when paged at random intervals, Csikszentnihalyi and Larson (1984) studied time use among 75 Chicago adolescents in grades nine through twelve. The high school students in their sample reported being engaged in studying 13% of the time, working in their jobs and doing other productive activities 4% of the time, and reading, engaging in arts and hobbies, or playing sports and games 8% of the time. In addition, the students were in classes at school 12% of the time. Timmons, Eccles, and O'Brien (1985) reported that young adolescents (9-14) spent 42% of their time in discretionary activities such as viewing television, playing and hobbies, playing sports, and attending church. About 37% percent of their time was spent in what Timmons and his colleagues call productive activities, including school, studying, and reading. Conceivably, it stands to reason that how students' use their out-of-school time can have a dramatic impact on their development, particularly on their educational growth. The purpose of the present study is to examine the effects of various out-of-school activities on school-related outcomes.

Students who spend the bulk of their after-school and weekend time involved in enrichment activities in structured community-based programs or involved in quality time with their parents and families have greater opportunities to interact with positive adult role models (Galbo, 1989). They also have a greater potential for interaction with positive peers who share similar goals and aspirations and can encourage and inspire them to do well in school and spark their interest in future educational and career pursuits. Moreover, structured school-based or community-based after-school and weekend activities, if carried out properly, can provide both rewards and challenges for adolescents that facilitate social, moral, and intellectual development (Nettles, 1991). Research evidence, for example,

suggests that service learning for adolescents contributes to their development of interpersonal skills, helps them understand and navigate various formal organizations (such as schools) and fosters a desire for public service and personal satisfaction in adult life (Conrad & Hedin, 1989).

In contrast, adolescents who spend little time engaged in meaningful activities have greater opportunities to congregate among themselves, often without adult role models or positive peer influences. The potential to develop maladaptive attitudes about schooling, or the future in general, can be greater among adolescents who have unstructured time on their hands (Dryfoos, 1990). A large body of research on social deviance among youth suggests that the disintegration of various mechanisms of socialization, along with certain emergent norms among deviant peers, are among the reasons why some adolescents reject social norms associated with school success and social mobility (MacLeod, 1987; Rivera & Short, 1967; Schwartz, 1987).

Analyzing a national, longitudinal sample of high school students, this report examines the effects of how students use their out-of-school time on their personal investment in, and commitment to, school. Six common uses of out-of-school time are investigated: (1) time spent in structured (community-based) activities; (2) time spent "hanging out" with peers; (3) time spent alone (hobbies or reading); (4) time spent with adults; (5) time spent in religious activities; and (6) time spent working for pay. The dependent variables in the study include several measures of school engagement, students' perceptions of their life chances, and academic achievement (see Appendix).

## Student Investment

This section provides a working definition of the terms "investment," "personal investment," and "student investment" as they are intended to be understood in the study. Student investment can be seen as a metaphor for the efforts that communities may take on behalf of children and adolescents, particularly those who face multiple risks to educational success. Mechanisms such as after-school initiatives, community centers, work experiences, voluntary service, and scholarships might not only motivate students to achieve in school, but also produce future social benefits in the form of lower rates of teenage pregnancy, juvenile delinquency, school failure and dropout, and substance abuse. The term "investment" has been generally defined by social psychologists as actions that individuals take to achieve personal goals that yield future returns (Krug, Schwarz, & Bhakdi, 1976; C. Murray & S. Murray, 1979; Maehr & Braskamp, 1986). Consistent with

this usage of the term, investment can be viewed as a motivational construct that refers mostly to behaviors rather than to thoughts, attitudes, and other inferences from behavior.

The research literature contains at least two pertinent definitions of investment in this regard. The first definition, developed by Maehr and Braskamp (1986) and Maehr (1990), relates broadly to what these researchers call "personal investment." Personal investment was defined in motivational terms as "the process whereby people take certain available resources — their time, talent, and energy — and distribute them as they choose" (Maehr & Braskamp, p.7). Personal investments are defined by the dimensions of choice, activity level, persistence, and performance. According to Maehr and Braskamp, a person's perception of "meaning" determines the ends toward which investments are channeled. In fact, meaning itself is said to include three main constructs: perceived options, thoughts about self, and reasons or incentives for performing a task or pursuing a goal.

The present report, along with other studies such as S. Murray and her colleagues (1980), S. Murray and C. Murray (1979), and Nettles (1989) used a second, more specific definition of "student" investment, regarding it as certain behaviors that adolescents engage in or commit their time and energy to, in pursuit of opportunities that yield potential future educational benefits and rewards in other life spheres. Here, we define student investment as exploration, skill development, and credential acquisition that makes more attainable a range of options for the future. Our definition includes participation in school-sponsored extracurricular activities as well as activities organized by parent groups, churches, and community-based organizations, along with informal activities that engage students singly and in groups. Student investment falls into five fundamental categories corresponding to the developmental tasks of early adolescence (Carnegie Council on Adolescent Development, 1992). These fundamental categories are: (1) physical health and well-being (for example, engaging in athletic competition); (2) personal and social competence (such as learning to resist peer pressure); (3) cognitive or creative competence (such as doing homework, attending school); (4) vocational awareness and readiness (such as exploring career interests, working part-time or during the summer), and (5) leadership and citizenship (such as participating in community service programs).

Research focusing on the effects of student investments in school-sponsored activities on various educational outcomes (see for example, a review by Holland & Andre, 1987; Braddock et al., 1991) suggests that participation in academically-related extracurricular activities is linked to higher academic performance and attainment. On a cautionary note, the out-of-school activities of higher-SES students have been more widely studied than those of low-SES students (Mahoney & Cairns, 1997). In a recent longitudinal study, Mahoney and

Cairns found that school dropout was reduced among at-risk students who had earlier involvement in extracurricular activities as compared to their counterparts who had little involvement.

However, until recently, relatively little systematic attention has been placed on how adolescents spend their time out-of-school and the impact of non-schooling experiences on educational outcomes. As noted previously, researchers have attempted to cast light on the issue of time use among adolescents (Csikszentnihalyi & Larson, 1984; Timmons, Eccles, & O'Brien, 1985). Yet, no attempt was made in these studies to connect actual involvement in out-of-school activities to school-specific educational outcomes or students' levels of optimism about their future lives. Reviews of research reveal that student investments can be fostered in a variety of structured settings for work and learning in communities, including service learning (Conrad & Hedin, 1989), apprenticeships (Rosenbaum et al., 1992), and mentoring (McPartland & Nettles, 1991; Flaxman et al., 1988; Freedman, 1988, 1993).

Student investment has been studied in populations of young children; however, the construct is particularly appropriate for application to adolescents who exercise increasing autonomy in their ever-widening social worlds of institutions and relationships. In contrast to children's investments, which may be constrained by adult choices in the family and the school, adolescents have a wider array of activities in which to invest, have greater resources of unmonitored time and money from part-time employment or other sources, and have a wider repertoire of strategies to use in interpersonal relations. However, as we elaborate below, while adolescents have a good amount of personal autonomy over their lives relative to children, they are still influenced greatly by their social conditions, inclusive of family-related, school-related, and community-related factors.

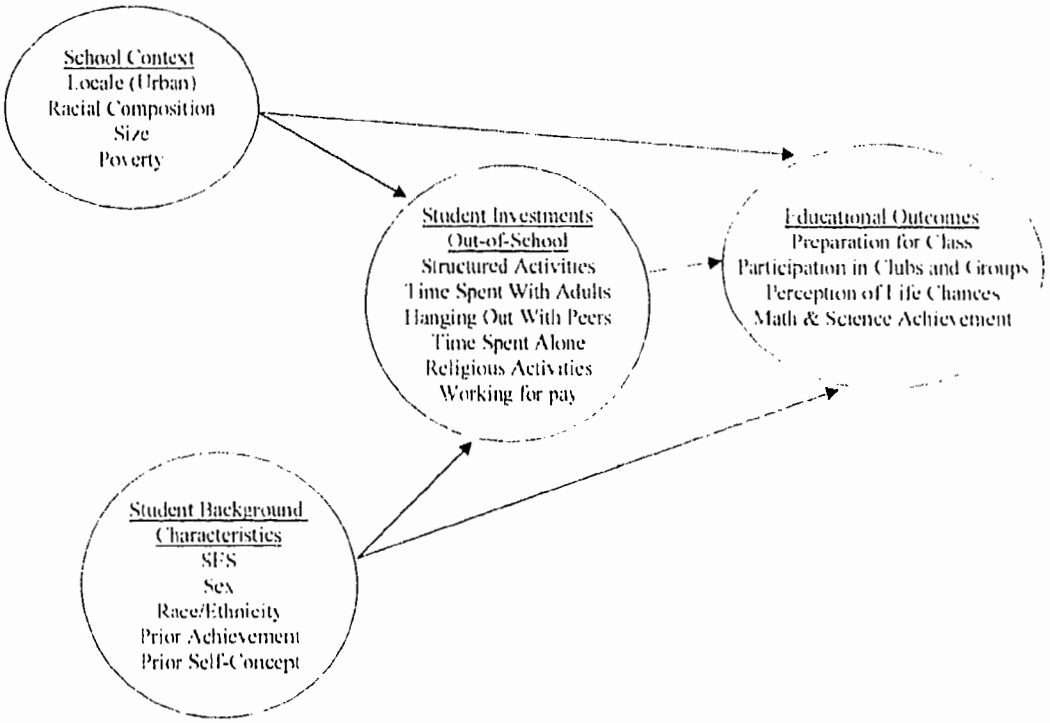
## Conceptual Framework

The theoretical underpinnings of the present study draw primarily upon the work of Nettles (1991), who elaborated a conceptual framework depicting student investments as being stimulated by various school-related and community-related involvement processes (such as teaching and learning, allocation of social support and financial resources, and mobilization of citizens into social action). According to this conceptual model, students' personal investment is hypothesized as influencing their academic achievement and engagement in school as well as their overall perception of their life chances. Here, personal

investment is manifested in the kinds of experiences individuals choose to engage in that can lead to psychosocial, cognitive, physical, and spiritual growth.

However, in the case of adolescents, personal investment activities leading toward self-improvement does not necessarily involve free will or unconstrained choice. Families and communities can often dictate the kinds of activities adolescents might engage in, either by decision-making or defacto. Obviously, families and communities that have greater social capital and financial wealth can, and do, provide more opportunities for positive experiences after school for their own children, while less fortunate families and communities can only do much less.

**FIGURE 1. Conceptual Framework**




As presented in Figure 1, the conceptual framework of the present study suggests that school context and student background characteristics influence both student investments in out-of-school activities as well as student investments in school-related activities. However, some portion of the direct effects of student background and the contextual factors on educational outcomes can be explained by how students invest their time outside of school,



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suggesting that student investments are critical intervening factors. The focus of the present study, then, is upon the influence of six areas of student investments in out-of-school activities (at grade 10) on the various educational outcomes presented in Figure 1 (by grade 12).

During the months when school is in session, students typically spend about three-fourths of their non-sleeping hours outside of school as compared to within-school; thus the ways in which their out-of-school time is used should have a major impact on many variables. We hypothesize that the less out-of-school time that adolescents spend engaged in positive, developmentally challenging situations (such as experiences gained from structured activities in community-based programs) and the less exposure that they have to positive adult role models and peers, the more likely they will fail to make meaningful investments in their educational progress. Similarly, without structure and exposure to positive people, things, and ideas, adolescents' perceptions of their life chances might suffer. To this end, the primary research question is: What general effects do the common out-of-school activities under investigation have on students' levels of in-school investment, academic achievement, and overall outlook on life?

## Data and Methods

Data from the National Educational Longitudinal Study of 1988 (NELS:88), sponsored by the U.S. Department of Education, National Center for Education Statistics (NCES) were analyzed in the present study. NELS:88 is a longitudinal survey of 25,000 students, along with their teachers, parents, and principals, spread among 1,000 schools. Students participating in NELS:88 were eighth graders in 1988, which was the base year of the study. Follow-up surveys were administered at two-year intervals as students moved through high school and beyond, so that student data are currently available at grades 8, 10, 12 and two years post high school graduation. NELS:88 involved a two-stage stratified, random sampling procedure that first identified study schools within certain geographic regions and then randomly selected eighth grade student participants from within the selected schools. Specifically, this study analyzes data from the first and second follow-up samples, capturing students at grades 10 and 12. To ensure the representativeness of the sample, the appropriate panel weights created by NCES were used at each stage of our analysis. After

selecting for students that were present in both the first and second follow-up samples, the number of valid cases was between 10,000 and 14,000 in the various models that are summarized below.

OLS regression was used to analyze the effects of out-of-school activities at grade 10 on various student outcomes, net of student background characteristics and school contextual controls. The five student outcomes, modeled at grade 12, were: (1) student participation in within-school groups and clubs; (2) depth of leadership in groups and clubs; (3) preparedness for class; (4) students' perception of their life chances; and (5) average achievement in math and science at 12th grade. Detailed information about the construction of each of the dependent variables as well as all other variables in the analysis is in the Appendix.

## Results

Table 1 shows Pearson's correlations among the dependent variables and independent variables in the study (school context and student background are presented as independent variables). As mentioned, the out-of-school activities we examine fall into six general categories: structured activities, hanging out with peers, time spent alone, time spent with adults, religious activities, and time spent working for pay; and they represent the core independent variables.

The full regression models include student background controls for SES, gender, ethnicity, prior learning, and self-concept. The statistical models also contain controls for school contextual variables such as racial composition, size, sector, and school poverty level. Finally, two interaction terms were included in the models in order to examine the inter-relationships of gender, race-ethnicity and SES more closely. Both are multiplicative terms: the first is a measure of minority status (being Black or Hispanic) multiplied by being female, and the second is minority status multiplied by being below average SES. The result was two dichotomous interaction terms: Black + Hispanic females (which takes the value of "1") versus everyone else (which takes the value "0"); and Black + Hispanic students of below average SES ("1") versus everyone else ("0"). Table 1 also shows the correlations for these items with the dependent variables.

**TABLE 1. Correlations Among Core Dependent and Independent Variables in the Study (Ns in Parenthesis)**

| School Context | Variable Type | Participation in Clubs and Social Groups | Depth of Participation in Clubs and Social Groups | Prepared for Class | Perception of Life Chances | Math & Science Tests |
|---|---|---|---|---|---|---|
| Urban | Dichotomous Variable (1/0) | -.03 (13925) | -.02 (13925) | -.02 (13278) | .03 (12275) | .09 (11223) |
| % Minority | Summative Percentages (%Black + %Hispanic) | -.03 (13251) | -.05 (13251) | -.03 (12684) | -.02 (11798) | -.27 (10973) |
| Public Sector | Dichotomous Variable (1/0) | -.07 (13925) | -.09 (13925) | -.02 (13278) | -.06 (12275) | -.23 (11223) |
| School Size | Single, Continuous Variable | -.10 (13381) | -.10 (13381) | -.03 (12805) | -.02 (11909) | -.08 (11066) |
| % Free or Reduced-Price Lunch | Single, Continuous Variable | -.02 (13163) | -.05 (13163) | -.02 (12591) | -.06 (11713) | -.31 (10868) |
| **Student Background Characteristics** | | | | | | |
| SES | 5-Item Standardized Mean Scale (NCES Composite) | .12 (13558) | .17 (13558) | .03 (12971) | .15 (12033) | .49 (11060) |
| Sex (Female) | Dichotomous Variable (1/0) | .15 (13925) | .08 (13925) | .18 (13278) | .04 (12275) | -.10 (11223) |
| Black Student | Dichotomous Variable (1/0) | .01 (13925) | -.03 (13925) | -.01 (13278) | -.02 (12275) | -.27 (11223) |
| Hispanic Student | Dichotomous Variable (1/0) | -.05 (13925) | -.06 (13925) | -.03 (13278) | -.06 (12275) | -.18 (11223) |

TABLE 1 (continued)

| School Context | Variable Type | Participation in Clubs and Social Groups | Depth of Participation in Clubs and Social Groups | Prepared for Class | Perception of Life Chances | Math & Science Tests |
|---|---|---|---|---|---|---|
| **Student Background Characteristics (continued)** | | | | | | |
| Grade 10 Reading Test | Single Item: Standardized Test | .18 (13260) | .27 (13260) | .09 (12702) | .16 (11797) | .74 (10875) |
| Grade 10 Self-Concept | 7-Item Mean Scale (NCES Composite) | .05 (13273) | .08 (13273) | .08 (12718) | .29 (11836) | .15 (10845) |
| Interaction Term: Minority x Female | 2-Item Multiplicative Interaction Term | .03 (13925) | -.03 (13273) | .05 (13278) | -.03 (12275) | -.26 (11223) |
| Interaction Term: Minority x Low SES | 2-Item Multiplicative Interaction Term | -.03 (13905) | -.08 (13905) | -.03 (13259) | -.08 (12258) | -.34 (11213) |
| **Out-of-School Activities** | | | | | | |
| Structured Activities | 4-Item Standardized Mean Scale | .18 (13392) | .17 (13392) | .07 (12822) | .14 (11913) | .09 (10935) |
| Hanging Out With Peers | 4-Item Standardized Mean Scale | -.05 (13428) | -.05 (13428) | -.06 (12858) | .09 (11943) | -.09 (10958) |
| Time Spent Alone | 3-Item Standardized Mean Scale | .11 (13414) | .13 (13414) | .05 (12843) | .06 (11929) | .25 (10949) |
| Time Spent With Adults | 2-Item Standardized Mean Scale | .08 (13362) | .08 (13362) | .07 (12798) | .13 (11890) | .02 (10915) |
| Religious Activities | 4-Item Standardized Mean Scale | .15 (13611) | .12 (13611) | .07 (13015) | .13 (12070) | .04 (11044) |
| Working for Pay | Single, Categorical Variable | -.04 (12864) | .00 (12864) | -.04 (12328) | .01 (11498) | .01 (10446) |

Involvement in structured activities, time spent with adults, and involvement in religious activities are positive across each of the dependent variables. Time spent alone is also positive across the dependent variables, and has an especially strong relationship with mathematics and science achievement ($r = .25$). (Significance levels are not shown on Table 1 because the average number of cases per correlation is above 10,000, making virtually all of them, in fact, significant.) However, hanging out with friends, a composite variable that includes items such as time spent "visiting friends at a local hangout" (see Appendix) is consistently negative across five out of the six dependent variables. The negative correlation coefficients range from $r = -.05$ to $r = -.09$. The number of hours spent working is mostly unrelated to the dependent variables, but the direction of the relationship is mostly negative. Overall, these correlations tell us only about the bivariate relationships between the dependent and independent variables, taking no other potential explanatory variables into account. The analysis below further examines the effects of these out-of-school activities, taken together, on student outcomes under control conditions.

The results of the OLS regression analysis of the effects of students' use of their out-of-school time at grade 10 on participation in school clubs and groups at grade 12 is presented in Table 2. As shown in the third equation (Model III), four of the six out-of-school activities are significantly related to participation in school at grade 12. Involvement in structured activities had the strongest, positive effect ($\beta = .13/t = 13.16$), followed by time spent alone ($\beta = .08/t = 7.53$), and religious activities ($\beta = .07/t = 7.44$). The amount of time hanging out with friends had the opposite effect, however ($\beta = -.03/t = -3.59$). The number of hours students spent working and the amount of time students spent interacting with adults was not significant in this model.

In regard to the controls for student background characteristics and school contextual factors, these results are consistent with the findings of previous studies (Mahoney & Cairns, 1997; Nettles, 1989). Higher SES students appear to be more involved in school groups and clubs than their lower SES counterparts (Model III: $\beta = .07/t = 5.98$). Similarly, female students and students with higher reading test scores participate in school clubs and groups more at grade 12. The standardized regression coefficients for these variables were $\beta = .14/t = 13.17$ and $\beta = .13/t = 12.40$, respectively.

**TABLE 2. Standardized Regression Coefficients for Out-of-School Activities on Student Participation in School Clubs and Groups, Controlling on School Context and Student Background Characteristics**

| | Model I | | Model II | | Model III | |
|---|---|---|---|---|---|---|
| **Variables** | β | T | β | T | β | T |
| **School Context** | | | | | | |
| Urban | -.00 | -0.05 | -.02 | -1.79 | -.02 | -1.70 |
| % Minority | .03 | 2.75** | .03 | 2.27** | .02 | 1.69 |
| Public Sector | .00 | 0.29 | .03 | 3.00** | .04 | 3.69** |
| School Size | -.10 | -9.32 | -.11 | -10.58** | -.11 | -10.75** |
| % Free or Reduced-Price Lunch | -.01 | -1.01 | .03 | 2.34* | .02 | 1.92 |
| **Student Background Characteristics** | | | | | | |
| SES | | | .10 | 9.22** | .07 | 5.98** |
| Sex (Female) | | | .16 | 15.89** | .14 | 13.17** |
| Black Student | | | .04 | 2.70** | .03 | 2.06* |
| Hispanic Student | | | .02 | 1.16 | .02 | 1.23 |
| Grade 10 Reading Test | | | .15 | 15.28** | .13 | 12.40** |
| Grade 10 Self-Concept | | | .05 | 4.97** | .03 | 2.97** |
| Interaction Term: Minority * Female | | | -.04 | -2.67** | -.03 | -2.44* |
| Interaction Term: Minority * Low SES | | | .05 | 2.94** | .04 | 2.87** |
| **Out-of-School Activities** | | | | | | |
| Structured Activities | | | | | .13 | 13.16** |
| Hanging Out With Peers | | | | | -.03 | -3.59** |
| Time Spent Alone | | | | | .08 | 7.53** |
| Time Spent With Adults | | | | | .00 | 0.41 |
| Religious Activities | | | | | .07 | 7.44** |
| Working for Pay | | | | | -.02 | -2.18 |
| **$R^2$** | .009 | | .074 | | .110 | |
| **Standard Error of the Estimate** | 1.24 | | 1.20 | | 1.17 | |
| **Degrees of Freedom/Residual** | 11900 | | 11892 | | 11886 | |

Significant Levels of p *p<.05 **p<.01

**TABLE 3. Standardized Regression Coefficients for Out-of-School Activities on Depth of Participation in School Clubs and Groups, Controlling on School Context and Student Background Characteristics**

| | Model I | | Model II | | Model III | |
|---|---|---|---|---|---|---|
| **Variables** | β | T | β | T | β | T |
| **School Context** | | | | | | |
| Urban | -.01 | -1.33 | -.03 | -3.02** | -.03 | -2.93** |
| % Minority | .00 | -0.08 | .02 | 1.45 | .01 | 0.95 |
| Public Sector | -.03 | -2.85** | .00 | 0.36 | .01 | 0.89 |
| School Size | -.08 | -6.81** | -.09 | -8.57** | -.09 | -8.46** |
| % Free or Reduced-Price Lunch | .00 | 0.30 | .05 | 3.90** | .04 | 3.67** |
| **Student Background Characteristics** | | | | | | |
| SES | | | .11 | 9.30** | .08 | 6.79** |
| Sex (Female) | | | .08 | 7.91** | .06 | 6.06** |
| Black Student | | | .02 | 1.10 | .01 | 0.63 |
| Hispanic Student | | | .03 | 1.83 | .03 | 1.96* |
| Grade 10 Reading Test | | | .16 | 16.21** | .14 | 13.79** |
| Grade 10 Self-Concept | | | .06 | 6.46** | .05 | 5.07** |
| Interaction Term: Minority * Female | | | -.03 | -2.25* | -.03 | -2.21* |
| Interaction Term: Minority * Low SES | | | .02 | 1.07 | .02 | 1.05 |
| **Out-of-School Activities** | | | | | | |
| Structured Activities | | | | | .11 | 10.97** |
| Hanging Out With Peers | | | | | -.04 | -4.04** |
| Time Spent Alone | | | | | .05 | 5.13** |
| Time Spent With Adults | | | | | .00 | -0.05 |
| Religious Activities | | | | | .06 | 5.82** |
| Working for Pay | | | | | .01 | 1.55 |
| **$R^2$** | .008 | | .062 | | .085 | |
| **Standard Error of the Estimate** | 0.77 | | 0.75 | | 0.74 | |
| **Degrees of Freedom/Residual** | 11900 | | 11892 | | 11886 | |

Significant Levels of p *p<.05; **p<.01



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Table 3 shows the effects of the same model as above on what we refer to as students' "depth of participation" in school clubs and groups. Depth of participation is a term discerning students serving as officers or leaders from those who are simply group members or casual participators. A similar pattern to the one above emerged in the depth-of-participation analysis. Structured community-based activities, time spent alone, and religious activities at grade 10 increase the likelihood of participating more deeply in student groups and clubs as a leader, while time spent on unstructured activities with friends has the opposite effect. Model III again shows the impact of all of the variables, regressed together on depth of participation, inclusive of controls. As presented here, 10th grade reading test scores (a proxy measure of prior achievement) had the greatest impact on depth of participation ($\beta$ = .14/t = 13.79), followed by involvement in structured activities ($\beta$ = .11/ t = 10.97). Here, again, the effects of involvement in religious activities is positive and significant ($\beta$ = .06/t = 5.82). However, not surprisingly, students attending larger schools are the least likely to participate in clubs and groups as leaders ($\beta$ = -.09/t = -8.72), and again, those spending more time just hanging out with friends also participate less as leaders or officers by grade 12 ($\beta$ = -.04/t = -4.04).

Student preparation for class is measured by a composite variable capturing the degree to which students typically remember to carry their books, paper and pencil, and completed homework assignments along to class with them. Here, student preparation is viewed as a proxy measure for school engagement at the classroom level. Table 4 presents effects of out-of-school activities on preparation for class. Structured activities outside of school have a small, but positive and significant effect on class preparation net of the controls ($\beta$ = .02/t = 2.38). However, the largest effect among the independent variables, out-of-school activities, was the negative effect for hanging out with peers ($\beta$ = -.05/t = -4.78). Both time spent alone and in religious activities had a roughly similar relationship to student preparation, which was positive and significant ($\beta$ = .04/t = 4.36 and $\beta$ = .04/t = 3.68, respectively).

Among all of the variables influencing students' preparation for class, gender had the greatest impact, followed by students' self-concept at grade 10. Females were far more likely than males to report coming to class with the appropriate material and having their completed homework. In Model III, the standardized regression coefficients for females were $\beta$ = .19/ t = 17.86. The resulting coefficients for students' self-concept were $\beta$ = .08/t = 8.23.

**TABLE 4. Standardized Regression Coefficients for Out-of-School Activities on Student Preparation for Class, Controlling on School Context and Student Background Characteristics**

| | Model I | | Model II | | Model III | |
|---|---|---|---|---|---|---|
| **Variables** | β | T | β | T | β | T |
| **School Context** | | | | | | |
| Urban | -.02 | -1.42 | -.02 | -2.11* | -.02 | -2.14* |
| % Minority | -.03 | -2.04* | -.04 | -3.14** | -.05 | -3.39** |
| Public Sector | -.01 | -0.78 | .00 | -0.40 | .00 | -0.16 |
| School Size | -.02 | -1.56 | -.01 | -1.19 | -.01 | -0.91 |
| % Free or Reduced-Price Lunch | -.01 | -0.96 | .00 | -0.30 | -.01 | -0.46 |
| **Student Background Characteristics** | | | | | | |
| SES | | | .01 | 0.57 | .00 | -0.30 |
| Sex (Female) | | | .20 | 19.40** | .19 | 17.86** |
| Black Student | | | .02 | 1.12 | .01 | 0.89 |
| Hispanic Student | | | -.01 | -0.37 | .00 | 0.28 |
| Grade 10 Reading Test | | | .05 | 4.74** | .03 | 2.69** |
| Grade 10 Self-Concept | | | .08 | 8.93** | .08 | 8.23** |
| Interaction Term: Minority * Female | | | -.01 | -0.53 | -.01 | -0.95 |
| Interaction Term: Minority * Low SES | | | .03 | 1.60 | .03 | 1.69 |
| **Out-of-School Activities** | | | | | | |
| Structured Activities | | | | | .02 | 2.38* |
| Hanging Out With Peers | | | | | -.05 | 4.78** |
| Time Spent Alone | | | | | .04 | 4.36** |
| Time Spent With Adults | | | | | .01 | 0.83 |
| Religious Activities | | | | | .04 | 3.68** |
| Working for Pay | | | | | .02 | 1.62 |
| **$R^2$** | .002 | | .050 | | .056 | |
| **Standard Error of the Estimate** | 1.87 | | 1.81 | | 1.80 | |
| **Degrees of Freedom/Residual** | 11900 | | 11892 | | 11886 | |

Significant Levels of p *p<.05 **p<.01

**TABLE 5. Standardized Regression Coefficients for Out-of-School Activities on Students' Perceptions of Their Life Chances, Controlling on School Context and Student Background Characteristics**

| | Model I | | Model II | | Model III | |
|---|---|---|---|---|---|---|
| **Variables** | β | T | β | T | β | T |
| **School Context** | | | | | | |
| Urban | .01 | 0.91 | -.01 | -1.00 | .00 | -0.12 |
| % Minority | -.04 | -3.03** | -.01 | -0.81 | -.02 | -1.09 |
| Public Sector | -.04 | -3.92** | -.01 | -1.21 | -.01 | -0.59 |
| School Size | .01 | 0.71 | .00 | 0.34 | .00 | 0.21 |
| % Free or Reduced-Price Lunch | -.02 | -1.64 | .02 | 1.76 | .02 | 1.60 |
| **Student Background Characteristics** | | | | | | |
| SES | | | .07 | 6.51** | .05 | 4.64** |
| Sex (Female) | | | .08 | 7.58** | .07 | 6.54** |
| Black Student | | | -.03 | -1.99* | -.03 | -2.19* |
| Hispanic Student | | | -.03 | -2.04* | -.03 | -1.91* |
| Grade 10 Reading Test | | | .08 | 8.39** | .10 | 9.41** |
| Grade 10 Self-Concept | | | .29 | 31.66** | .26 | 28.31** |
| Interaction Term: Minority * Female | | | .00 | -0.10 | .01 | 0.82 |
| Interaction Term: Minority * Low SES | | | -.01 | -0.69 | -.02 | -0.96 |
| **Out-of-School Activities** | | | | | | |
| Structured Activities | | | | | .08 | 7.86** |
| Hanging Out With Peers | | | | | .06 | 6.35** |
| Time Spent Alone | | | | | -.02 | -2.05* |
| Time Spent With Adults | | | | | .04 | 4.26** |
| Religious Activities | | | | | .06 | 6.22** |
| Working for Pay | | | | | .02 | 2.31* |
| **$R^2$** | .005 | | .113 | | .134 | |
| **Standard Error of the Estimate** | 0.66 | | 0.62 | | 0.62 | |
| **Degrees of Freedom/Residual** | 11590 | | 11582 | | 11576 | |

Significant Levels of p *p< .05 **p< .01

**TABLE 6. Standardized Regression Coefficients for Out-of-School Activities on Composite 12th Grade Math and Science Achievement, Controlling on School Context and Student Background Characteristics**

| | Model I | | Model II | | Model III | |
|---|---|---|---|---|---|---|
| **Variables** | β | T | β | T | β | T |
| **School Context** | | | | | | |
| Urban | .02 | 1.71 | -.01 | -1.77 | -.02 | -2.41* |
| % Minority | -.21 | -17.27** | -.02 | -2.61** | -.03 | -2.82** |
| Public Sector | -.09 | -8.77 | .01 | 0.85 | .01 | 0.74 |
| School Size | .08 | 6.93** | .02 | 2.45** | .02 | 2.61** |
| % Free or Reduced-Price Lunch | -.15 | -12.09** | -.04 | -5.37** | -.04 | -5.44 |
| **Student Background Characteristics** | | | | | | |
| SES | | | .13 | 17.53** | .13 | 16.60** |
| Sex (Female) | | | -.16 | -22.63** | -.16 | -22.46** |
| Black Student | | | -.13 | -12.08** | -.13 | -12.40** |
| Hispanic Student | | | -.04 | -4.42** | -.05 | -4.53** |
| Grade 10 Reading Test | | | .66 | 98.91** | .65 | 93.25** |
| Grade 10 Self-Concept | | | .04 | 5.92** | .05 | 7.06** |
| Interaction Term: Minority * Female | | | .02 | 1.78 | .01 | 1.30 |
| Interaction Term: Minority * Low SES | | | .01 | 0.87 | .01 | 1.02 |
| **Out-of-School Activities** | | | | | | |
| Structured Activities | | | | | .03 | 4.04** |
| Hanging Out With Peers | | | | | -.05 | -7.15** |
| Time Spent Alone | | | | | .03 | 4.49** |
| Time Spent With Adults | | | | | -.03 | -4.68* |
| Religious Activities | | | | | -.01 | -0.86 |
| Working for Pay | | | | | -.01 | -1.98* |
| **R** | .103 | | .622 | | .626 | |
| **Standard Error of the Estimate** | 8.63 | | 5.61 | | 5.58 | |
| **Degrees of Freedom/Residual** | 10691 | | 10683 | | 10677 | |

Significant Levels of p *p< .05 **p< .01

The analysis of effects on students' perception of their life chances, which is a proxy measure of the degree to which students are optimistic about their futures, revealed some surprising findings. Table 5 shows a summary of the OLS regression results modeling the effects of out-of-school activities on students' perceptions of their life chances at grade 12. This outcome variable was measured by a 12-item scale which asked questions such as: "Think about your future. What are the chances that...you will go to college? ...you will be respected in your community? ...you will have a happy life?" An unsuspected finding was that each of the out-of-school activities, except time spent alone, was positively and significantly associated with perceptions of life chances. Involvement in structured activities had the heaviest positive influence among the out-of-school activities ($\beta$ = .08/t = 7.86), followed by hanging out with friends and involvement in religious activities ($\beta$ = .06/t = 6.35; $\beta$ = .06/t = 6.22, respectively). The analysis of students' perceptions of their life chances is the sole place in the study where hanging out with friends, structured activities, time spent with adults, time spent in religious activities, and working for pay all revealed positive effects. Only time spent alone had a negative impact on the outcome in this model.

Among all of the variables in Model III, self-concept at grade 10 had the largest overall predictive value of perceptions of life chances at grade 12 ($\beta$ = .26/t = 28.31). Conceivably, this could be explained by the relative stability of social environmental conditions (such as cycles of poverty in inner-cities) and individuals' own outlooks on life over time. When adolescents become invested in their own schooling, both their educational outcomes (in terms of achievement) as well as their social context are affected in a positive way. Educational outcomes are of course influenced by commitment to academic performance and the social environment is altered when students self-select into certain groups or affiliations.

Table 6 shows the effects of out-of-school activities on average standardized mathematics and science achievement at grade 12. As anticipated, the overall impact of out-of-school activities on achievement is not quite as dramatic as their effects on school engagement and perceptions of life chances -- the collective contribution made to the $R^2$ by the six out-of-school activities is lowest for math and science achievement. Their combined contribution of the equations modeling math and science achievement is .04, while the average contribution of the other dependent variables is .22 (subtract $R^2$ of Model III from Model II in Tables 2 through 6). Still, net of controls, all but time spent participating in religious activities has significant effects on achievement. The pattern of results in this model is consistent with the school engagement models above in that student involvement in structured activities here has a positive effect on achievement ($\beta$ = .03/t = 4.04), as does time spent alone ($\beta$ = .03/t = 4.49). Conversely, time spent hanging out with friends has a

significant negative relationship with achievement ($\beta$ = -.05/t = -7.15). The effect of working for pay on achievement is a weaker negative ($\beta$ = -.01/t = -1.98); however, it is statistically significant at the $p<.05$ level.

## Summary and Discussion

This study adds empirical evidence to conventional wisdom about the importance of students' use of their out-of-school time by demonstrating that adolescents who involve themselves in positive, structured activities and experiences are more likely to make personal investments in their schooling than their counterparts who are less often exposed to constructive out-of-school activities. This, in turn, leads to greater benefits for students on various educational outcomes such as school engagement and academic achievement. The core research question guiding the investigation was aimed at discovering the extent to which spending time doing certain activities outside of school at grade 10 had payoffs by grade 12 in the form of increased school engagement, academic achievement, and perceptions of life chances. The findings consistently suggest positive effects of participation in structured activities, religious activities, and time spent with adults on school engagement and achievement and, conversely, significant negative effects of time spent hanging out with friends. The impact of students working for pay was inconsistent throughout the analysis, sometimes negative, positive in some equations, and not significant in others. The regression equations modeling students' perceptions of their life chances showed that all of the out-of-school activities, except for time spent alone, had a positive and significant relationship. Time spent alone had a small negative association with perception of life chances, suggesting that adolescents who socialize less often tend to be less optimistic about their future lives. However, among all of the dependent variables, perceptions of life chances was the only one to reveal simultaneous positive effects for structured activities, time spent with adults, religious activities, working for pay, and time spent hanging out with friends at the same time.

In addition, this study provides evidence that students who often participate in structured activities after school, and in religious activities in particular, are more likely than their counterparts to be also involved in various kinds of groups and clubs within schools, more engaged in their classwork, and overall more optimistic about how their lives will turn out. Thus the hypothesis that student investments out-of-school have an impact on certain educational outcomes is empirically supported by this study.

It is important to bear in mind, however, that families with economic means and social capital increase the likelihood that students will have opportunities for engagement in positive activities when they are not in school. It is likely that adolescents participating frequently in religious activities are members of families that are the primary source of their religious interests and commitment. Clearly, as individuals transition through life stages, from childhood to adolescence, for example, their autonomy and ability to exercise free will increases over time. Yet, families where religiosity is high frequently socialize their children to be committed to their faiths, so that personal investment, while it suggests effort put out by individuals, is a function of not only of individual psychological factors, but also of family, school, and community contexts. To that end, families and communities can create positive support systems for students that can foster their personal investments in school (Nettles, 1991b).

Finally, the results of this study suggest a connection between how adolescents spend their time outside of school during grade 10 and their actual school engagement, perceptions of life chances, and achievement near the end of high school, grade 12. Thus, the ways in which students use the three-fourths of their time that is not spent in school can have important implications for their educational success and the perceptions of their life chances. This major finding has implications for after-school and summer programs and educational policies aimed at increasing learning and positive experiences for students beyond the typical school day. Adolescents who have little adult supervision and guidance for large amounts of time run the risk of involving themselves in activities that negatively affect their commitment to school. Further research is needed to more fully investigate contextual factors that are related to the availability of resources for students within communities and to study the extent to which families influence their decision-making processes.

This study suggests that conventional wisdom has some merit. Adolescents respond well to structured activities and to positive adult role models. Conversely, students who are less involved in meaningful experiences outside of school run the risk of losing valuable opportunities for self-improvement, and, worse, they may become wayward adolescents. Essentially, the more students engage in meaningful activities when they are not in school, the more likely they will be to make personal investments in their schooling, and ultimately this personal investment may have multiple benefits. Personal investment in education and self-improvement can motivate students to achieve well academically, and also help them foster a positive outlook for the future.

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# Appendix

# Construction of Variables in the Study

## DEPENDENT VARIABLES

### *Participation in Clubs and School Groups*
and
### *Depth of Participation in Clubs and School Groups*
(9-Item summative scales)

**Variable names:** F2S30BA through F2S30BI

**Items:** "Please mark one for each activity in which you have participated THIS SCHOOL YEAR..."

a. Band, orchestra, chorus, choir, or other music group
b. Drama club, school play or musical
c. Student government
d. National Honor Society, other academic honor society
e. School yearbook, newspaper, or literary magazine
f. Service clubs (American Field Service [AFS], Key Club, etc.)
g. Academic clubs (Art, Computer, Engineering, Debate/Forensics, Foreign languages, Science, Math, Psychology, Philosophy Club, etc.)
h. Hobby clubs (photography, chess, etc.)
i. Future Teachers of America, Future Homemaker of America, Future Farmers of America or other vocational education or professional club

**Coding:** 1=School does not have;
2=Did not participate;
3=Participated; and
4=Participated as an officer/leader.

These items were recoded in two ways:
1) For "Participation in..." recoded, where (3=1) and (ELSE=0); and
2) For "Depth of Participation in..." recoded, where (4=1) and (ELSE=0).

**Procedure:** Both student participation measures computed as the sum of the items, "a+b+c+...+i."

### *Student Preparation for Class* (3-item scale)

**Variable names:** F2S24A, F2S24B, and F2S24C

**Items:** "How often do you come to class WITHOUT these things."

a. Pencil and paper
b. Books
c. Your homework done

## *Student Preparation for Class* (3-item scale)

**Coding**: 1=Usually; 2=Often; 3=Seldom; and 4=Never

**Procedure**: This measure was computed in a two-step process. First each of the of items were standardized: "a," "b," " and "c." Next, the variable was calculated as mean of each standardized item.

**Reliability alpha**: .74

## *Student Perception of Life Chances* (12-item scale)

**Variable names**: F2S67A through F2S67L

**Items**: "Think about how you see your future. What are the chances that..."
a. You will have graduated from high school?
b. You will go to college?
c. You will have a job that pays well?
d. You will be able to own your own home?
e. You will have a job that you enjoy doing?
f. You will have a happy family life?
g. You will stay in good health most of the time?
h. You will be able to live wherever you want in the country?
I. You will be respected in your community?
j. You will have friends you can count on?
k. Life will turn out better for you than it has for your parents?
l. Your children will have a better life than you had?

**Coding**: 1=Very low; 2=Low; 3=About fifty-fifty; 4=High; and 5=Very high.

**Procedure**: This measure was computed in a two-step process. First each of the of items were standardized (i.e., converted into Z scores): "a" through "l." Next, the variable was calculated as mean of each standardized item.

**Reliability alpha**: .89

## *Math & Science Achievement* (2-item scale)

**Variable names**: F22XMSTD and F22XSSTD

**Items**: Mathematics standardized score and Science standardized score (2nd Follow-up)

**Coding**: Continuous variables

**Procedure**: Measure computed as the mean of math and science scores.

**Reliability alpha**: .88

## INDEPENDENT VARIABLES

### *Structured Activities* (4-item scale)

| | |
|---|---|
| **Variable names:** | F1S44G, F1S44H, F1S44M, and F1S44N |
| **Items:** | "How often do you spend time on the following activities outside of school?"<br>g. Attending youth groups or recreational programs<br>h. Volunteering or performing community service<br>m. Taking classes: Music, art, language, dance<br>n. Taking sports lessons: Karate, tennis, etc. |
| **Coding:** | 1=Rarely or never; 2=Less than once a week; 3=Once or twice a week; and 4=Every day or almost every day. |
| **Procedure:** | This measure was computed in a two-step process. First each of the of items were standardized: "g," "h," "m," and "n." Next, the variable was calculated as mean of each standardized item. |
| **Reliability alpha:** | .49 |

### *Hanging Out With Friends* (4-item scale)

| | |
|---|---|
| **Variable names:** | F1S44A, F1S44E, F1S44F, and F1S44I |
| **Items:** | "How often do you spend time on the following activities outside of school?"<br>a. Visiting with friends at a local hangout<br>e. Going to the park, gym, beach, or pool<br>f. Playing ball or other sports with friends<br>i. Driving or riding around (alone or with friends) |
| **Coding:** | 1=Rarely or never; 2=Less than once a week; 3=Once or twice a week; and 4=Every day or almost every day. |
| **Procedure:** | This measure was computed in a two-step process. Each of the of items were standardized: "a," "e," "f," and "i." Next, the variable was calculated as mean of each standardized item. |
| **Reliability alpha:** | .65 |

### *Time Spent Alone* (3-item scale)

| | |
|---|---|
| **Variable names:** | F1S44B, F1S44C, and F1S44D |
| **Items:** | "How often do you spend time on the following activities outside of school?"<br>b. Using personal computers<br>c. Working on hobbies, arts, or crafts on my own<br>d. Reading for pleasure |

## *Time Spent Alone* (3-item scale)

**Coding:** 1=Rarely or never; 2=Less than once a week; 3=Once or twice a week; and 4=Every day or almost every day.

**Procedure:** This measure was computed in a two-step pro ss. First each of the of items were standardized: "b," "c," and d." Next, the variable was calculated as mean of each standardized item.

**Reliability alpha:** .40

## *Time Spent With Adults* (2-item scale)

**Variable names:** F1S44K and F1S44L

**Items:** "How often do you spend time on the following activities outside of school?"
k. Talking or doing things with your mother or father
l. Talking or doing things with other adults

**Procedure:** This measure was computed in a two-step process. First each of the of items "k" and "l" were standardized. Next, the variable was calculated as mean of each standardized item.

**Coding:** 1=Rarely or never; 2=Less than once a week; 3=Once or twice a week; and 4=Every day or almost every day.

**Reliability alpha:** .63

## *Religious Activities* (4-item scale)

**Variable names:** F1S44O, F1S70J, F1S82, and F1S83

**Items:**

44o. How often do you spend time on the following activities?... Attending religious activities

70j. Among friends you hang out with, how important is it to... participate in religious activities?

82. In the past year, about how often have you attended religious services?

83. Do you think of yourself as a religious person?

### *Religious Activities* (4-item scale)

**Coding:** (44o) 1=Rarely or never; 2=Less than once a week; 3=Once or twice a week; and 4=Every day or almost every day

(70j) 1=Not at all important; 2=Somewhat important; and 3=Very important

(82) 6=More than once a week; 5=About once a week; 4=Two or three times a month; 3=About once a month; 2=Several times a year or less; and 1=Not at all

(83) 1=No, not at all; 2=Yes, somewhat; and 3=Yes, very

**Procedure:** This measure was computed in a two-step process. First each of the of items were standardized: "44o," "70j," "82," and "83." Next, the variable was calculated as mean of each standardized item.

**Reliability alpha:** .78

### *Working for Pay* (single item)

**Variable name:** F1S85

**Item:** How many hours do/did you usually work a week on your current or most recent job?

**Coding:** 1=0-10 hours a week; 2=11-20 hours a week; 3=21-30 hours a week; 4; 31-40 hours a week; and 5=Over 40 hours a week

## BACKGROUND VARIABLES

### *Socioeconomic Status (SES)*

**Variable name:** F1SES (NCES composite)

**Description:** The base year parent survey was the primary source used to construct this composite, averaging the values of five components: father's and mother's education levels; father's and mother's occupations; and family income. In cases were parent data was missing, base year or first follow-up student data was used as a substitute.

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## *Female Student*

**Variable name**: F1SEX (NCES composite)

**Description**: Dichotomous variable where female students are contrasted with males.

## *Black Student and Hispanic Student*

**Variable name**: F1RACE (NCES composite)

**Description**: These are 2 dichotomous variables. The former contrasts black students with Hispanic and white students. In the latter, Hispanics are contrasted with black and white students.

## *Grade 10 Reading Score*

**Variable name**: F12XRSTD (single item)

**Description**: Reading standardized score (1st Follow-up)

## *Grade 10 Self-Concept*

**Variable name**: F1CNCPT2 (NCES composite)

**Description**: This is a composite measure of student's self-concept. It was constructed from 7 items, each asking the respondent to state whether she or he disagree or agree (using a 4-point likert scale) with the questions: "How do you feel about each of the following statements?... 1) I feel good about myself; 2) I feel I am a person of worth, the equal of other people; 3) I am able to do things as well as most other people; 4) On the whole I am satisfied with myself; 5) I feel useless at times; 6) At times I think I am no good at all; and 7) I feel I do not have much to be proud of."

## SCHOOL CONTEXT VARIABLES

### *Metro Status Area*

**Variable name:** G12URBN3 (NCES composite)

**Description:** This is a dichotomous measure of the location of the student's high school which compared urban and suburban against rural. The metropolitan status is defined by Quality Education Data (QED) codes for public school districts, catholic dioceses, or the county in which the school is located.

### *Percent Minority (Black + Hispanic Students)*

**Variable names:** F2C22B & F2C22C (2-item summative measure)

**Description:** This variable represents the sum of the percentages of Black and Hispanics students in the school as reported by the principal.

### *Public School*

**Variable name:** G12CTRL2 (NCES composite)

**Description:** This is a dichotomous measure of school sector which compares regular public high schools against private and parochial schools.

### *School Size*

**Variable name:** F2C1 (single item)

**Description:** This is a continuous variable measuring the total student enrollment of the school as reported by the school's principal.

### *Percent Students Free/Reduced Lunch*

**Variable name:** F2C25A (single item)

**Description:** This is a continuous variable measuring the percentage of students in the school who are eligible to receive free or reduced price lunch.

## INTERACTION VARIABLES

### *Minority Status x Female*

**Variable names:** F1RACE & F1SEX

**Description:** This interaction term measures the compounded effect of race and gender. It was constructed by giving both black and Hispanic students the value of one, and using white students as the reference group, i.e. setting their value to zero. Also, a female students were given the value of one and males a value of zero. The variable was computed as the sum of black and Hispanic (which can only be 0 or 1), multiplied by the dichotomous variable for female.

### *Minority Status x Low SES*

**Variable names:** F1RACE & F1SES

**Description:** This interaction term measures the compounded effect of minority status and poverty. It was constructed by first converting F1SES into a dichotomous variable where values below the mean were set to one and above the mean were set to zero, zero. The variable was computed as the sum of black and Hispanic, multiplied by the dichotomous variable for low socioeconomic status.

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