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2009–2010 ICPSR Undergraduate Research Paper Competition First Place Winner

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Access and Opportunity or Exclusion and Stratification?**

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From Acting Director George Alter

We are extremely pleased to present the first-place winners of the 2010 ICPSR Research Paper Competitions in this special edition of the Bulletin. Once again this year, it was very gratifying to see the quality and depth of the contest submissions.

In the winning paper in the undergraduate competition, Evangeleen Pattison examines the rise in educational attainment in the U.S., and finds a growing stratification at the highest level of degree completion. Pattison, a magna cum laude graduate of the City University of New York who is currently enrolled in a masters/Ph.D. program at the University of Texas, uses data from the National Survey of Midlife Development in the United States, 1995-1996, among others, in her analysis.

Katie A. Farina, a master's student at the University of Delaware, used data from the National Longitudinal Survey of Youth to examine crime prevention on college campuses in her paper "The Effects of Situational Crime Prevention on Crime and Fear among College Campuses and Students," the first-place winner in the master's competition.

Congratulations to the winners, and thanks to all entrants for their hard work!



The *Expansion* of American Higher Education...

The *Expansion* of American Higher Education:
Access and Opportunity or Exclusion and Stratification?

Evangeleen F. Pattison

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Abstract

The U.S. Department of Education estimates that in the year 2018, the number of people earning masters and doctoral degrees will rise by 99.7% and 109.3%, respectively since 1998, suggesting the growing importance of advanced degrees. As such, it is no longer enough to look at higher education as the traditional dichotomy of college versus non-college graduates. This study uses MIDUS I, a nationally representative sample (N=4,718) of U.S. adults ages 27-47 and 48-68 to gauge shifts in the role of parental education since the expansion of American higher education following World War II. Did this expansion increase access and opportunity for all students or heighten methods of stratification and exclusion? Key findings include: (1) there is a significant relationship between parental education and degree completion of offspring (2) this relationship becomes stronger as the degree becomes more advanced; and (3) the relationship of paternal education is stronger among the younger cohort; however, maternal education is stronger among the older age cohort. Findings suggest that there has been an increase in processes of stratification at the highest levels of degree completion.

Keywords: educational attainment, mobility

Statistics released by the U.S. Department of Education illustrate that in the year 2018, the number of people earning masters degrees will have increased by 99.7% since 1998 and the number of people completing doctoral degrees will have increased by 109.3% ¹. Similar trends are seen in rising percentages of completion among associates and bachelors degrees, however the percent increase is not as large. These statistics illustrate higher levels of academic achievement than in previous years. It is likely that these demographic shifts are the product of the expansion of American higher education that took place following World War II, at which time American higher education enjoyed a quarter century of support marked by the “three P’s” of prosperity, prestige, and popularity (Thelin, 2004: 260). In support of this agenda, between 1945 and 1980, the U.S. federal and state governments actively built the largest higher education infrastructure in world history (Stevens, 2007). This rapid expansion led to what many social scientists refer to as “credential inflation,” which led bachelors’ degrees to hold less prestige in a labor market that was abruptly flooded with them. This piloted the necessity of an advanced degree, which is highlighted by contemporary patterns in educational attainment. As such, it is no longer enough for researchers to look at education using the traditional and simple dichotomy of college graduates versus non-college graduates (Zhang and Thomas, 2005: 242).

Access to higher education is important for social scientists to examine due to the well documented link between academic performance, educational attainment, health, mortality, income, incarceration, and labor market outcomes (Zhang and Thomas, 2005; Pettit and Western, 2004; Kao and Thompson, 2003; Walpole, 2003; Rogers, Hummer, and Nam, 2000; Williams and Collins, 1995; Spaeth, 1968). This paper will examine the relationship between post-secondary degree completion and parental education, with a focus on associates, bachelors, and advanced degrees. There remains a dearth of empirical work examining shifts in the relationship

¹ Represents middle alternative projections

between parental education and advanced degree completion since the expansion of higher education. This paper seeks to fill this gap in the literature by asking the following questions: (1) Does parental education positively relate to degree completion? (2) Is the relationship between parental education and degree completion stronger among more recent graduates? (3) Does the relationship between parental education and degree completion become stronger as the degree becomes more advanced?

Given the decreasing importance of college degrees that accompanied the expansion of higher education in the United States, this paper seeks to examine if higher education has become more accessible at all levels of achievement or more exclusive at the highest levels of educational attainment. This pattern would be suggested by stronger relationships between parental education and offspring degree completion as degrees become more advanced. The expansion of American higher education is the linchpin of this paper because it is essential to consider contextual factors when disentangling this relationship because absolute measures of growth can lead to notions of false progress. Parental education is important to examine because although education should fundamentally seek to equip individuals with the necessary knowledge and skills to achieve upward mobility and transition out of poverty, the educational system in the United States seems to play an important role in the reproduction and legitimating of inequality from generation to generation (Brint and Karabel, 1989). I begin by briefly outlining the literature on the relationship between parental education and students' *likelihood* of enrolling in post-secondary and advanced degree programs. Next, I examine the relationship between parental education and degree completion using data from the National Survey of Midlife Development in the United States (MIDUS I), followed by a discussion of the results. The remainder of the paper discusses study implications and limitations and promising directions for future research on the achievement gap in education.

ii. Existing Literature

The educational achievement gap generally refers to a disparity in academic performance or attainment between various groups of students. For the purpose of this study, the educational achievement gap is used to refer to differential degree completion as it is related to parental education. There is little consensus about the role parental education plays in reinforcing educational inequality beyond bachelors degree completion (Nettles and Millett, 2006; Mullen et al., 2003; Walpole, 2003 Smith, Altbach and Lomotey, 2002; Bowen and Rudenstine, 1992; Brint and Karabel, 1989; Useem and Miller, 1975). Some studies argue that bachelors' degrees represent the benchmark, where the importance of parental education diminishes, while other studies have suggested that parental education becomes increasingly important for determining educational continuation. Further, with few exceptions (Mullen et al., 2003; Stolzenberg, 1994), the existing literature that examines the link between parental education and educational attainment was conducted prior to the expansion of American higher education and/or fails to examine maternal and paternal education individually. More recent studies focus on the relationship between parental education and likelihood to enroll, rather than degree completion, which fails to account for latent processes of stratification and the amount of resources required to complete a degree (Mullen et al., 2003; Hossler, Schmit, and Vesper, 1999; Ethington and Smart, 1986; DiMaggio and Mohr, 1985; Mare, 1980). The role of parental education remains unclear because the existing literature lacks consensus about the importance and strength of the relationship between parental education and degree completion.

Parental Education – little to no importance

Using data from two sources, (1) the 1973 Occupational Changes in a Generation Survey and (2) the 1964 survey of U.S. military veterans, Mare (1980) concluded that father's scores on the socioeconomic index and parent's educational attainment had little impact on their son's

decisions to attend graduate institutions once they had received their bachelor's degree.

Stolzenberg (1994) expanded the work of Mare (1980) by analyzing the effects of family background on the completion of graduate entry examinations and continuation into an MBA program. He found that that social background factors and parental education did not positively influence the likelihood that a student would take any one of the three graduate entrance examinations, the Graduate Record Exam, the Graduate Management Admission Test or the Law School Admissions Test. As a result, Stolzenberg deduced that graduation from college marks a break in the link between parents' background and post collegiate educational attainment of their children. These studies would suggest that the relationship between parental education and degree completion would be stronger among bachelor degree recipients than more advanced degree recipients.

Parental Education – fundamental to academic continuation

Mullen et al. (2003) concluded that parental education does matter for graduate school attendance. This study found that students with highly educated parents are more than three times as likely to enroll in first-professional and doctoral programs as compared with students whose parents have a high school degree or less; and that for every additional year of parental education, the odds of enrolling in a doctoral program increase by over 20 percent. These findings are markedly different than previous research. Similarly to Mullen et al. (2003), Ethington and Smart (1986) found that family background factors indirectly influenced student's postgraduate educational decision making. However, this study found that variables associated with students' undergraduate experience, especially integration within the social and academic structure of the institution, are stronger predictors of enrollment in graduate education than parental education (Ethington and Smart, 1986). Contrary to Mare (1980) and Stolzenberg

(1994) the findings of Mullen et al. would suggest that as the degree becomes more advanced, the significance of parental education would become stronger.

Parental Education: Why is it Important?

Given the large amount of time and resources required to complete an advanced degree, parental education may influence degree completion in several ways. First, given the relationship between educational attainment and labor market outcomes, students whose parents are more highly educated, are often more likely to have access to financial resources, which is imperative given the mounting costs of higher education (Sirin, 2005). In addition to financial support, having more educated parents provides social and cultural capital, which may help students through the process of degree completion. Less educated parents might not be as involved in their child's education due to time or intellectual constraints. Even further, a parent with a low level of education might have competing values with education. Parental education is also important because having more educated parents might make students more aware of the payoffs of advance degree completion, having witnessed it firsthand.

By examining the relationship between parental education and degree completion, this paper investigates if parental education serves as a latent mechanism of stratification of upward mobility by regulating the availability of higher education. The lacuna among the existing literature and the limited consensus among the studies on the relationship between parental education and degree completion motivated my research questions.

Hypotheses:

Given evidence from previous research, the following hypotheses were developed:

H1: There is a positive relationship between parental education and degree completion.

H2: The relationship between parental education and degree completion becomes stronger as the degree becomes more advanced.

H3: The relationship between parental education and degree completion is stronger among respondents aged 27-47 than it is among respondents aged 48-68.

iii. Data, Measures and Analytic Strategy

First, I examine patterns among degree completion, rather than the likelihood to enroll, a pattern that has been illustrated by previous studies (Mullen et al., 2003; Hossler, Schmit, and Vesper, 1999; Ethington and Smart, 1986; DiMaggio and Mohr, 1985; Mare, 1980). Second, I analyze this relationship using two age cohorts, 27-47 and 48-68. This design is useful because changes in the strength and orientation of the relationship between parental education and respondent degree completion by age cohort will help illustrate the shifting importance of parental education since the expansion of the American education system in the 1960s. This technique is employed to gauge if the expansion of higher education seems to have increased access at every level of completion or increased methods of exclusion at the top.

Data

The data for this analysis come from wave I of the National Survey of Midlife Development in the United States (MIDUS I), administered in 1994/1995 by the MacArthur Midlife Research Network. In order to investigate the role parental education plays in degree completion, I use a revised version of the MIDUS data, which consists of the aggregation of the three separate subsample datasets (Main, Sibling and Twin) into one master dataset. MIDUS respondents were drawn from a nationally representative random-digit-dial sample of non-institutionalized, English-speaking adults, aged 20-74. Given that this study seeks to examine degree recipients, the age range of 27-68 was selected. The original sample consisted of 7,108

respondents. The sample used for the analysis consisted of (N= 4,718) respondents due to list-wise deletion².

Although MIDUS I was not intended for this type of study, it was chosen because it contains respondents with various educational outcomes and contains information about the respondent's upbringing and the guardian/(s) who raised them. Furthermore, unlike the data used by Walpole (2003), MIDUS I is not limited to four-year colleges for the respondents; it contains associates degrees as well. Lastly, MIDUS was chosen for this study because I was able to control for factors such as income, neighborhood, citizenship, race/ethnicity, etc., which are important factors to hold constant to increase the robustness of the regression model.

Measures

Dependent Variable

The dependent variable is a four-category scheme: advanced degree recipients, bachelor degree recipients, associate degree recipients, and those with a high school degree or less. The reference category is respondents with a high school degree or less. This approach is consistent with techniques used in previous research (Muller et al., 2003; Stolzenberg, 1994), but, primarily due to my focus on advanced degree completion, it is expanded compared to most previous categorizations. The associate's degree category consists of respondents with an associate's degree and respondents with 1-3 years of college; the bachelor's degree category consists of those who completed bachelor's degree and respondents who reported having some graduate school, lastly, included in the advanced degree category are respondents with a masters degree, Ph.D., Ed.D., MD, DDS, LLB, LLD, JD or other advanced professional degrees.

² Of 7,108 25.44% (n=1,607) lost due to list-wise deletion, 11.02% (n=781) of the sample was dropped due missing data.

Stratifying Variable

The two age cohorts used to stratify the respondents were created by eliminating all respondents below the age of 27 and collapsing respondents aged 27-47 and 48-68. Assuming that the average person starts their bachelors at approximately 18 years of age, and given that the survey was conducted in 1994/1995, this distinction is meaningful because it allows the analysis to gauge the relationship between parental education and respondent's degree completion prior to and after the expansion of American higher education in the 1965. For example, respondents in the 27-47 age cohort would have been 18 years of age and older between 1965 and 1985, after the expansion, whereas respondents in the 48-68 age cohort would have been 18 years of age and older between 1944 and 1964, prior to the expansion.

Independent Variable

Parental education is coded into five categories: less than high school, graduated high school, associates degree/some college, bachelors degree, and advanced degree (MA, Ph.D. and other professional degrees). Separate indicators are used for mother's and father's education, respectively.

Controls

The relationship between parental education and degree completion was measured net of the following socio-demographic factors: gender, race, nativity, age, financial background, and neighborhood. *Gender* (male=1), *race* (White=1) (non-White=0) and *nativity* (1=US born) are included as dichotomous variables. *Age* is included as a continuous variable to control for the slope of age among each cohort. I also include an indicator for each *parent's nativity* (1=mother born in US; 1= father born in US). *Financial background* was created using responses to the question "When you were growing up, was your family better off or worse off financially than

the average family was at this time?” Responses varied from: (1) a lot better off, (2) somewhat better off, (3) a little better off, (4) same as average family, (5) a little worse off, (6) somewhat worse off, (7) a lot worse off. These categories were collapsed into three dichotomous variables: better off (better=1), average (average=1), worse off. *Neighborhood* is included as five dichotomous variables indicating rural (rural=1), town [includes small town and medium-sized town] (town=1), suburbs (suburbs=1), moved around (move=1), and city (omitted reference) (city=1).

Analytic Strategy and Methods

Descriptive Statistics

The analytic strategy undertaken in this paper comprises two parts. After presenting a descriptive table of all of the variables included in this analysis, cross-tabulation and chi squared analyses are presented to see if the relationship between parental education and academic achievement are present at the bi-variate data. In the second part of the analysis, I present the results of two multinomial logistic regression models which include controls. This technique allows for the analysis of multiple-category dependent variables (Mullen et al., 2003).

Multinomial logistic regression is used to assess the gross and net effects of each variable on the odds of degree completion. The multinomial logistic model (see Hanushek and Jackson, 1977; Maddala, 1983 as cited in Eberstien, Name and Hummer, 1990) is a direct extension of the dichotomous logistic model, which is commonly used for analyses in this area (Nettles and Millet, 2006; Muller et al., 2003).

Variables are entered into the models in one block consisting of eight variables including parental educational attainment for both the respondent’s mother and father and controls for demographic characteristics, nativity factors, and background indicators. This is a robust first estimate of the association between parental education and academic achievement. There are two

models, (1) for respondents aged 48-68 and (2) for respondents aged 27-47, which, as previously acknowledged, allows the trends prior to and after the expansion of American higher education to be gauged.

iv. Results

Descriptive Statistics

The distribution of degrees attained is shown in Table 1, along with descriptive statistics on the remainder of the variables. As expected, as the degree becomes more advanced, the number of respondents with completed degrees becomes less. For example, of the respondents (N=4,718), roughly 54 percent reported completing high school or less, roughly 29 percent reported an associates degree, approximately 12 percent of the respondents reported at least a bachelors degree, and about 5% reported completing an advanced degree.

Table 1		
Descriptive Statistics for Sample: Percentage/Mean and Standard Deviation		
Variable	Percentage/ Mean	Standard Deviation
Respondent's (R) Education (%)		
high school or less	54.01	0.457
associates/some college	29.20	0.315
bachelors/ some grad.	11.68	0.320
MA/Ph.D. ^a	5.11	0.253
R's Father's Education (%)		
less than high school	39.30	0.488
high school/GED	31.02	0.463
associates/some college	11.20	0.315
bachelors degree	11.59	0.320
MA/Ph.D. ^a	6.89	0.253
R's Mother's Education(%)		
less than high school	32.82	0.469
high school/GED	41.04	0.492
associates/some college	13.48	0.342
bachelors degree	9.19	0.289
MA/Ph.D. ^a	3.47	0.183
Demographics (%)		
male	48.75	0.500
(mean) age [27-68]	46.15	11.620
age [27-47]	37.70	5.860
age [48-68]	56.49	5.912
white(=1)	91.48	0.285
Nativity Factors (%)		
respondent born in U.S.	95.44	0.208
R's father born in U.S.	90.52	0.293
R's mother born in U.S.	90.52	0.293
Background Indicators (%)^b		
rural	29.74	0.427
town	19.70	0.488
suburbs	22.32	0.373
city	20.86	0.386
moved around	7.38	0.199
better off financially	30.03	0.458
average financial status	43.22	0.495
worse off financially	26.75	0.443
N	4718	
Note: a) includes bachelors, some graduate school, MA, Ph.D., or other professional degree b) neighborhood growing up/financial status relative to other people in that neighborhood		

Of the respondents, approximately 30 percent reported growing up financially better off than the average family of that time, whereas roughly 27 percent of the respondents reported being raised in a financial situation that they would consider worse off than the average family. The majority of the respondents, 43.22% reported an average financial status. The mean age of the analytical sample is 46 years old and approximately 49 percent of the sample are men. Roughly 90 percent of the analytical sample are White and a large majority of the respondents (95.44%), were born in the United States. Nevertheless, it was important to control for such factors when evaluating the equality of opportunity across varying levels of parental education (Brint and Karabel, 1989). (Descriptive statistics are also included for the stratified age cohorts in tabular form; see Tables 1a-b, pages 24-25).

Table 2

**Crosstabulation of Respondent's Education by Parental Education
Among U.S. Adults, by age cohort**

Variable	Respondent's Education [aged 48-68]					Respondent's Education [aged 27-47]				
	high school or less	Associates ^a	Bachelors ^b	MA/Ph.D. ^c	X ² _d	high school or less	Associates ^a	Bachelors ^b	MA/Ph.D. ^c	X ² _d
Father's Education										
less than high school	51.41	27.63	11.37	9.59	172.23	51.29	30.59	13.50	4.63	265.21
graduated high school	33.47	34.30	20.37	11.85	14.28 _e	34.86	34.35	22.43	8.36	35.16
some college	20.33	29.67	29.12	20.88	40.55	16.15	37.96	34.56	11.33	44.12
bachelors degree	12.14	31.43	37.14	19.29	63.02	9.16	30.36	41.93	18.55	140.45
MA/Ph.D. ^c	3.90	14.29	35.06	46.75	111.37	4.05	19.03	38.87	38.06	250.77
Mother's Education										
less than high school	54.47	27.07	9.40	9.06	186.22	50.54	30.95	13.53	4.98	193.05
graduated high school	33.72	32.41	21.61	12.26	20.56	32.50	34.30	24.49	8.71	29.10
some college	18.26	31.96	28.31	21.46	54.96	14.60	35.77	36.01	13.63	62.93
bachelors degree	8.53	24.81	39.53	27.13	89.14	12.46	23.32	38.34	25.88	125.36
MA/Ph.D. ^c	7.14	17.86	25.00	50.00	38.00	6.02	19.55	37.59	36.84	115.01

Note:

a) includes associates degree and some college

b) includes bachelors degree and some graduate school

c) includes M.A., Ph.D., and other professional degrees

d) p < .001

e) p < .01

As seen in table 2, cross-tabulation of educational attainment by parental education and age cohort shows that the relationship between parental education and academic achievement exists in the bi-variate data. For example, in the rows where parental education is lowest, the

percentages get smaller towards the left where the respondents educational attainment is higher. Conversely, in rows where parental education is highest, the percentages of respondents with low levels of educational attainment are lower. This suggests that respondents with parents with low levels of academic achievement are less likely to have high levels of academic achievement and respondents with parents with high levels of academic achievement are less likely to have low levels of academic achievement. The distribution of the percentages in table 2 suggest that respondents are most likely to have the same level of education as their parents. These preliminary findings support my hypothesis that there is a relationship between parental education and degree completion. Furthermore, the chi square test results seen in the last column of each age cohort suggest that the significance and strength of the relationship between parental education and all levels of degree completion are stronger among the younger age cohort.

Multinomial Logistic Regression Results

Paralleling the descriptive findings, the most striking result from the multinomial logistic regression models seen in table 3 are the significant but differential impact that parent's education has on degree completion among the two age cohorts as illustrated by the strength and significance of the LR chi square values. Also seen in the multinomial logistic model is the varying strength of this relationship at different degree levels net of various demographic factors.

Table 3

**Odds Ratios From Multinomial Logistic Regression of Degree Completion,
by Parental Education and Age Cohort Among U.S. Adults**

Variable	Respondent's Education (ages 48-68) [ref. <HS]			Respondent's Education (ages 27-47) [ref. <HS]		
	Associates _a	Bachelors _b	MA/Ph.D. _c	Associates _a	Bachelors _b	MA/Ph.D. _c
Father's Education [ref. < HS]						
Graduated High School _b	1.41 *	1.53	1.31	1.50 **	1.98 ***	2.32 **
Some College	1.87 **	3.34 ***	3.34 ***	3.08 ***	5.28 ***	5.12 ***
bachelors degree	2.98 ***	5.50 ***	4.27 ***	4.07 ***	9.23 ***	12.24 ***
MA/Ph.D.	3.53 *	12.51 ***	23.94	5.51 ***	17.96 ***	47.36 ***
Mother's Education [ref. < HS]						
Graduated High School _b	1.52 **	2.44 ***	1.48 *	1.33 *	1.69 ***	1.84 **
Some College	2.86 **	6.40 ***	4.89 ***	2.37 ***	3.54 ***	3.97 ***
bachelors degree	3.82 *	12.06 ***	7.54 ***	1.43	2.99 ***	5.47 ***
MA/Ph.D.	3.42	9.58 **	17.54 *	2.73 **	6.71 ***	16.61 ***
LR chi2(63) = 507.58***			LR chi2(63) = 865.07***			

*p<.05 **p<.01 ***p<.001

Reference category [less than high school degree]

a) includes associates degree and some college

b) includes bachelors degree and some college

c) includes B.A., M.A., Ph.D. and other professional degrees

*controlling for race, age, if the respondent was born in U.S., if the respondent's parents were born in the U.S., if the respondent was raised in a rural neighborhood, a town, the suburbs, if the respondent moved around as a child, and relative financial background]

Advanced Degree Completion

As illustrated by table 3, when examining advanced degree completion among the older age cohort, a respondent whose father has a high school diploma is approximately 1.31 times more likely to complete an advanced degree relative to a respondent whose father has less than a high school diploma, whereas a respondent whose father has an advanced degree is approximately 24 times more likely to complete an advanced degree relative to a respondent whose father has less than a high school diploma. Among respondent's from the younger age cohort, a respondent whose *father* has a high school diploma is approximately 2.32 times more likely to complete an advanced degree relative to a respondent whose father has less than a high school diploma, whereas respondent whose father has an advanced degree is approximately 47 times more likely to complete an advanced degree relative to a respondent whose father has less

than a high school diploma. These results suggest that a respondent from the younger age cohort who has a father with an advanced degree is more likely to complete an advanced degree relative to a respondent from the older age cohort whose father has the same level of education.

When examining advanced degree completion among the older age cohort, a respondent whose *mother* has a high school diploma is 1.48 times more likely to complete an advanced degree relative to a respondent whose mother has less than a high school diploma, whereas a respondent whose mother has an advanced degree is only approximately 17.54 times more likely to complete an advanced degree relative to a respondent whose mother has less than a high school diploma. Among respondent's from the younger age cohort, a respondent whose mother has a high school diploma is 1.84 times more likely to complete an advanced degree relative to a respondent whose mother has less than a high school diploma, whereas respondent whose mother has an advanced degree is 16.61 times more likely to complete an advanced degree relative to a respondent whose mother has less than a high school diploma. These results suggest that a respondent from the older age cohort who has a mother with an advanced degree is slightly more likely to complete an advanced degree relative to a respondent from the younger age cohort. This suggests that the importance of maternal education might have decreased since the expansion of American higher education and requires further investigation.

Bachelors Degree Completion

When examining bachelors degree completion the strength of the relationship between father's education and respondent degree completion becomes weaker than it was among advanced degree completion. For example, among the older age cohort, a respondent whose *father* has a high school diploma is 1.53 times more likely to complete a bachelors degree relative to a respondent whose father has less than a high school degree, whereas a respondent

whose father has an advanced degree is only about 12 times more likely to complete a bachelors degree relative to a respondent whose father has less than a high school diploma. A respondent from the younger age cohort whose father has a high school diploma is 1.98 times more likely to complete a bachelors degree relative to a respondent whose father has less than a high school degree, whereas respondent whose father has an advanced degree is over 17 times more likely to complete a bachelors degree relative to a respondent whose father has less than a high school diploma. These results suggest that a respondent from the younger age cohort with a father with an advanced degree is times more likely to complete a bachelors degree than a respondent from the older age cohort whose father has the same degree.

As seen with the relationship between paternal education and respondent degree completion, when examining bachelors degree completion the strength of the relationship between mother's education and respondent degree attainment is also weaker at the bachelors degree level. For example, among the older age cohort, a respondent whose *mother* has a high school diploma is 2.44 times more likely to complete a bachelors degree relative to a respondent whose mother has less than a high school degree, whereas a respondent whose mother has an advanced degree is 9.58 times more likely to complete a bachelors degree relative to a respondent whose mother has less than a high school diploma. A respondent from the younger age cohort whose mother has a high school diploma is 1.69 times more likely to complete a bachelors degree relative to a respondent whose mother has less than a high school degree, whereas respondent whose mother has an advanced degree is 6.71 times more likely to complete a bachelors degree relative to a respondent whose mother has less than a high school diploma. These results suggest that a respondent from the older age cohort who has a mother with a high school diploma is approximately 3 times more likely to complete a bachelors degree than a respondent from the younger age cohort whose mother also has a high school diploma. These

results highlight the decreasing significance of parental education as the degree being sought becomes less advanced.

Associates Degree Completion

As expected, table 3 illustrates that the strength of the relationship between parental education and associates degree completion is weaker than that of bachelors or advanced degrees. Among the older age cohort a similar relationship is seen. For example, a respondent with a *father* who has graduated high school is 1.41 times more likely to complete an associates degree than a respondent whose father has less than a high school diploma, whereas a respondent whose father has an advanced degree is 3.53 times more likely to complete an associate's degree relative to a respondent whose father only has a high school diploma. Among the younger age cohort, a respondent with a father who has graduated high school is only 1.5 times more likely to complete an associates degree than a respondent whose father has less than a high school diploma, whereas a respondent whose father has an advanced degree is 5.51 times more likely to complete an associate's degree relative to a respondent whose father only has a high school diploma. Although variation among the two age cohorts exists at this level, it is not nearly as strong as it was among more advanced degrees which suggests that methods of stratification are higher at higher levels of degree completion.

When examining associates degree completion, a respondent from the older age cohort whose *mother* has a high school diploma is 1.52 times more likely to have completed an associates as compared to a respondent from the same age cohort whose mother has less than a high school diploma, whereas a respondent whose mother has an advanced degree is 3.42 times more likely to complete an associate's degree than a respondent whose mother has less than a high school diploma. A respondent from the younger age cohort whose mother has a high school diploma is 1.33 times more likely to have completed an associates degree as compared to a

respondent from the same age cohort whose mother has less than a high school diploma, whereas a respondent whose mother has an advanced degree is 2.73 times more likely to complete an associates degree than a respondent whose mother has less than a high school diploma.

iv. Discussion

This analysis highlights the enduring influence of parental education on children's educational attainment. Overall it seems that respondents from the younger age cohort reap greater benefits for having highly educated parents. As illustrated by my analysis, it is likely that the expansion of the system of higher education brought with it an intensification of stratification at the highest levels of degree completion.

The evidence that the relationship between parental education and academic achievement strengthens as the degree becomes more advanced does not support the assertion that college degrees equalize further academic opportunities (Stolzenberg, 1994; Brint and Karabel, 1989). This analysis has begun to uncover the differential impact of maternal and paternal attainment on that of their children. It is likely that this has been overlooked previously because much of the existing literature examining status attainment focuses on paternal factors. This analysis has illustrated that the relationship between maternal education and degree completion is stronger among the older age cohort and that among more recent graduates, it has become increasingly important to have a father with high educational attainment because the higher the respondent's fathers degree is, the higher the respondent's odds are of completing a degree of any level. Further research should investigate family structure, specifically what the relationship between maternal education and degree completion looks like for students raised in single-female-headed households. Such research might be useful in understanding why there are less minorities and low-income students in advanced degree programs.

This analysis found that the relationship between parental education and academic achievement persists despite controlling for factors such as age, gender, race, neighborhood, financial background, and nativity. The disparities between my findings and previous researchers who claim that parental education is no longer important after bachelor's degree completion could be due to several factors. One source of variation might be due to the conceptualization and measurement of the dependent variable, degree completion, and the independent variable, parental education. In addition, the data set did not contain co-variables such as undergraduate experience and academic structure of the institution which have been proven as strong predictors of enrolment (Ethington and Smart, 1986). Although I was unable to control for variables such as undergraduate university attended and grades, as illustrated by Mullen et al. (2003), "college performance is related to student's standardized test scores and these scores, in turn, are associated with parents' education, which reveals a link between parents' education and academic performance" (p.160). Additionally, the respondent's current age was used as a function of time to assess contemporary and previous effects of parental education because the exact dates of degree completion were not available. Lastly, although it would have been desirable to use race/ethnicity and SES as interaction variables along with age cohort, this was not possible due to the classification of SES in the MIDUS I data set and the under-representation of Black, non-Hispanics, American Indian/Alaska Natives, and Hispanics within the sample. Although further research is needed to fully understand the relationship between parental degree and degree completion, this analysis serves to contribute to our understanding of the gaps in educational attainment.

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Table 1a		
Descriptive Statistics for Respondents Aged 48-68: Percentage/Mean and Standard Deviation		
Variable	Percentage/ Mean	Standard Deviation
Respondent's (R) Education (%)		
high school or less	39.35	0.489
associates/some college	29.22	0.455
bachelors/ some grad.	18.05	0.385
MA/Ph.D. ^a	13.38	0.340
R's Father's Education (%)		
less than high school	54.73	0.498
high school/GED	24.74	0.432
associates/some college	9.36	0.291
bachelors degree	7.21	0.259
MA/Ph.D. ^a	3.96	0.195
R's Mother's Education(%)		
less than high school	45.41	0.498
high school/GED	35.24	0.478
associates/some college	11.27	0.316
bachelors degree	6.64	0.249
MA/Ph.D. ^a	1.44	0.119
Demographics (%)		
male	46.91	0.499
(mean) age [48-68]	56.50	5.91
white(=1)	92.18	0.269
Nativity Factors (%)		
respondent born in U.S.	96.35	0.187
R's father born in U.S.	88.22	0.322
R's mother born in U.S.	89.76	0.303
Background Indicators (%)^b		
rural	36.09	0.465
town	18.06	0.337
suburbs	15.04	0.302
city	24.23	0.403
moved around	6.58	0.181
better off financially	26.13	0.439
average financial status	43.93	0.496
worse off financially	29.94	0.458
N	1944	
Note: a) includes bachelors, some graduate school, MA, Ph.D., or other professional degree b) neighborhood growing up/financial status relative to other people in that neighborhood		

Table 1b		
Descriptive Statistics for Respondents Aged 27-47: Percentage/Mean and Standard Deviation		
Variable	Percentage/ Mean	Standard Deviation
Respondent's (R) Education (%)		
high school or less	30.50	0.460
associates/some college	31.80	0.466
bachelors/ some grad.	25.85	0.438
MA/Ph.D. ^a	11.85	0.323
R's Father's Education (%)		
less than high school	28.05	0.449
high school/GED	35.36	0.478
associates/some college	12.73	0.333
bachelors degree	14.96	0.357
MA/Ph.D. ^a	8.9	0.285
R's Mother's Education(%)		
less than high school	23.18	0.422
high school/GED	45.92	0.498
associates/some college	14.82	0.355
bachelors degree	11.28	0.316
MA/Ph.D. ^a	4.80	213.000
Demographics (%)		
male	49.96	0.500
(mean) age [27-47]	37.70	5.86
white(=1)	89.37	0.308
Nativity Factors (%)		
respondent born in U.S.	94.95	0.219
R's father born in U.S.	93.55	0.246
R's mother born in U.S.	92.14	0.269
Background Indicators (%)^b		
rural	22.53	0.388
town	20.86	0.374
suburbs	29.22	0.422
city	19.26	0.369
moved around	8.13	0.220
better off financially	33.81	0.473
average financial status	41.67	0.493
worse off financially	24.52	0.430
N	2774	
Note: a) includes bachelors, some graduate school, MA, Ph.D., or other professional degree b) neighborhood growing up/financial status relative to other people in that neighborhood		

The Effects of Situational Crime Prevention on
Crime and Fear among College Campuses and Students

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Abstract

Previous research has suggested that situational crime prevention tactics could be useful on college campuses. College campuses represent a unique environment for their students. By their very nature and population, these institutions may put students at risk for victimization. As such, it is important to examine the effects of situational crime prevention techniques at the student level. The results could prove influential for future prevention and policy endeavors. This study sets out to examine situational crime prevention tactics in relation to crime rates and fear of crime for college students. OLS regression analyses will be conducted using data from ICPSR that contain a sample of 3,472 students from 12 four-year postsecondary institutions in the United States.

Introduction

While college campuses are relatively safe compared to the general population, victimization is a concern for students. According to the *Sourcebook of Criminal Justice Statistics*, in 2002, 5.1% of college students were victims of violence and 9.6% were threatened with violence (Pastore and Maquire, 2003). In 2007, the U.S. Department of Education reported 30,204 burglaries, 2,833 aggravated assaults, and 2,698 forcible sex offenses on college campuses. There were also 4,910 reported motor vehicle thefts and 1,935 robberies (Campus Security, 2007). Campus crime has been found to be less common and severe than crime in the general population, but victimization still occurs (Henson and Stone, 1999). Crime on campus deserves attention and prevention efforts. One such method that could be successful is situational crime prevention (SCP).

SCP emerged based on research focusing on defensible space, environmental design, hot spots, routine activities, and choice structuring (Clarke, 1995, 1997). SCP involves techniques that change an environment or situation to influence a potential offender's choice to commit a crime (Clarke, 1980, 1995, 1997). Since the decision to commit a crime varies by offender and offense, situational tactics must have a crime-specific focus to alter a potential offender's decision to commit a crime in that immediate moment. The focus is on reducing crime opportunities for specific crimes in specific locations by making changes to the specific environment.

College campuses could benefit from such modifications. While campus crime is lower than the surrounding environment, rates on campuses have mirrored trends found in society at large (Pastore and Maquire, 2003; Smith and Fossey, 1995). Research devoted to SCP on campuses shows preliminary success on some basic components of situational techniques (see

Fisher, Sloan, Cullen and Lu, 1997; Henson and Stone, 1999; O’Kane, Fisher and Green, 1994; Poyner, 1991; Tseng, Duane and Hadipriono, 2004). However, these prevention tactics on college campuses should be evaluated to determine their possible effects on not only crime, but also students’ fear of crime, which may be related to SCP (Barr and Pease, 1990; Fisher and Nasar, 1992). A further point of interest is the possible interaction between school SCP measures and student SCP behaviors.

This study will conduct secondary data analysis using a dataset made available by the Inter-University Consortium for Political and Social Research (ICPSR) entitled, “Understanding Crime Victimization Among College Students in the United States”. The current study will examine relationships between student and school SCP and crime and fear of crime. This research addresses gaps in previous literature by focusing on analyses at the student level and investigating the presence of an interaction effect between school and student SCP. Also, it adds to the little research that focuses on SCP on college campuses. A new connection is examined between SCP and fear of crime components.

Literature Review

As a crime prevention model, SCP has found itself a niche among environmental criminological theories for two key reasons: (1) It has presented and expanded novel reasons for the causal nature of crime and (2) it has expanded prevention techniques from focusing on the offender to focusing on the environment where an offense takes place. Clarke (1980) believed that focusing on situational factors was important for three reasons: (1) explanation for crime is focused on the criminal event, (2) a greater need to develop separate categories of crime and (3) the individual’s current circumstances are used to explain the decision to offend. Clarke (1980)

claimed that SCP offered a more practical prevention application by its very nature and theoretical framework.

Defining Situational Crime Prevention

SCP consists of techniques that aim to block criminal opportunities (Clarke, 1995, 1997; Clarke and Homel, 1997). This perspective implies that making changes to places will prevent criminal events by affecting an offender's decision to commit crime in that specific time and location. In particular, SCP tries to diminish a criminal opportunity; it predicts that changes to the environment will alter an offender's analysis of the costs and benefits associated with committing an offense and crime will be prevented (Clarke, 1995, 1997; Clarke and Homel, 1997). Eck (2002) suggests that such place-based policies may have a greater effect upon the offender, because they target an offender's final immediate decision to commit a crime.

SCP tactics can be described within four categories of opportunity-reducing strategies (Clarke, 1997; Clarke and Homel, 1997). Such tactics aim to increase the perceived effort of a crime (target hardening, access control, deflecting offenders, and controlling facilitators), increase the perceived risks of a crime (entry/exit screening, formal surveillance, surveillance by employees, and natural surveillance), decrease the anticipated rewards of a crime (target removal, identifying property, reducing temptation, and denying benefits) or induce shame or guilt (rule strengthening, moral condemnation, controlling disinhibitors, and facilitating compliance) (Clarke, 1997; Clarke and Homel, 1997).

A small percentage of offenders and places are habitually involved in crime (Spelman and Eck, 1989). Recent evidence suggests that situations are more predictable than individuals (Weisburd, 1997). A clustering effect of crime at places, also termed "hot spots" has been found (Sherman, Gartin and Buerger, 1989). This suggests that a large amount of crime occurs

routinely in a small number of places. Research has found support for this concentration effect among convenience stores, residences, drinking establishments, fast food restaurants and perhaps most importantly such clustering is stable over time (Farrell, 1995; Sherman, et al., 1989; Spelman, 1995).

Routine activities theory, suggests that offenders and targets habitually meet in the same place with few capable guardians (Cohen and Felson, 1979). Crime and victimization continues to occur in these condensed areas. Repeat victimization in places is largely the work of offenders—who are likely to be career criminals—returning to the same victims in the same places (Farrell, 1995). SCP circumvents the problem of identifying offenders by highlighting the importance of places in relation to crime. The associated correlates of hot spots, a clustering effect of crime, and the predictability of places support the use of SCP.

Situational Crime Prevention, Schools, and Colleges

SCP techniques have produced significant results in a variety of different spheres. These tactics are widely used in schools at the elementary and high school levels; however, relatively few studies have been done on the topic. Recent reviews suggest that SCP models may have some success in schools (Cheurprakobkit and Bartsch, 2005; O'Neill and McGloin, 2007). Cheruprakobkit and Bartsch (2005) found that the use of school uniforms, intra-sport activities, criminal justice courses and rewards for attendance were effective at reducing drug crime. The use of metal detectors and closing campuses during lunch hours was also significant for interpersonal crime (Cheruprakobkit and Bartsch, 2005). O'Neill and McGloin (2007) confirmed Cheurprakobkit and Bartsch's findings (2005), with statistical support for the use of closed campuses during lunch to prevent property crimes.

Due to the size and population of campuses, colleges allow for motivated offenders, suitable targets, and the absence of capable guardians to easily converge (Henson and Stone, 1999). Research has identified the presence of hot spots on college campuses (O’Kane et al., 1994), and found that SCP tactics such as closed circuit television (CCTV) and improved lighting can reduce property crimes (O’Kane et al., 1994; Poyner, 1991; Tseng et al., 2004). Fisher et al., (1997) found that students were likely to use target hardening strategies to protect their belongings.

College campuses are unique environments that tend to consist of students who reside on the campus and faculty and staff who continually traverse the grounds. Campuses are typically composed of numerous residence halls, office buildings, classrooms, and libraries, which lead to a large degree of pedestrian activity at all times throughout the day. Many have viewed college campuses as insulated communities resistant to the larger pressures of society and crime (Smith and Fossey, 1995). As violent criminal victimization rates grew during the 1980s and early 1990s, these fears began to reach college campuses as well (Kelly and Torres, 2006; Sloan and Fisher, 1995).

Since there has been limited research at the school level, research of places with similar characteristics—open spaces and residences—deserves attention. SCP techniques have been applied to various places such as convenience stores, banks, airports, and the like with successful results. Research has found that improved street lighting has resulted in a reduction of crime among both adult and juvenile delinquency along with a decreased fear of crime after dark (Ditton and Nair, 1994; Painter, 1994; Painter and Farrington, 1997, 2001). SCP strategies have been effective at reducing burglaries in residential areas through the use of target hardening and property marking (Allatt, 1984; Laycock, 1991; Popkin et al., 1995; Tilley and Webb, 1994).

Fear of Crime

Fear of crime has been a prevalent topic in criminological research (Hale, 1996). Numerous correlates of fear of crime have been uncovered, sometimes with conflicting results. These include: vulnerability to criminal victimization, prior victimizations, the social environment, neighborhood constructs, gender, age, and race (Chadee and Ditton, 2003; Hale, 1996; Jennings, Gover, and Pudrzenska 2007; Schafer, Huebner, and Bynum, 2006; Sutton and Farrall, 2005). Traditionally, research finds that women, nonwhites, the elderly, the lower class, and prior victims are found to have higher levels of fear of crime.

Fear of crime has also been examined at the college level. Women perceived their risk of campus victimization to be higher than men and were more likely to fear becoming victims of sexual assaults (Fisher, 1995; Jennings et al., 2007). They were more fearful of campus victimization (Fisher, 1995) and perceived themselves as more likely to become victims (Ferraro, 1995). Fisher and Nasar (1992) found that fear of crime on college campuses was highest among areas that offered hiding places for potential offenders. Due to their design, Fisher and Nasar (1992) claim that these areas also have diminished chances of escape for the victim. In this vein, SCP tactics on college campuses would decrease students' fear of crime. Painter and Farrington (2001) found that increased street lighting decreased individuals' fear of crime.

Interaction between Macro- and Micro-level Situational Crime Prevention

Since the emphasis of SCP is on changing structures and the environment, few studies (Fisher, et al., 1997; Wilcox, Madensen and Tillyer, 2007) have acknowledged any effects of SCP at the individual level. Further, no studies have examined the interaction of school SCP on individual student SCP. Research does suggest a possible link between SCP measures and perceptions of crime and safety (Ditton and Nair, 1994; Robinson, 1998; Painter and Farrington,

2001; Tewksbury and Mustaine, 2003; Tseng, et al., 2004; Wilcox, et al., 2007). Particularly, according to a routine activities framework of SCP, changes in the perception of crime due to environmental measures could affect individual SCP behaviors.

Tewksbury and Mustaine (2003) found that specific lifestyles and characteristics were predictive of self-protective behaviors among college students. Such lifestyle behaviors included, but are not limited to: employment, living in a neighborhood with unsupervised youth, frequently travels by foot, and perception of residence as safe. Each of these predictors was significantly related to the use of self-protective behaviors such as the presence of a guardian or carrying mace, knives, or body alarms (Tewksbury and Mustaine, 2003). These findings suggest that changing the environment can alter individual level SCP behaviors or that they may even work in tandem with one another.

Research has uncovered that city-level changes in SCP have resulted in altered behaviors and fear of its residents. Improved lighting has been found to change women's walking routes after dark and decreased their perception of fear (Ditton and Nair, 1994; Painter and Farrington, 2001; Tseng et al., 2004). Robinson (1998) asserts that city areas with improved aesthetics resulted in a decreased perceived risk of victimization. Significant interaction effects have been found between neighborhood level SCP and individual level behaviors (Wilcox, et al., 2007). As the SCP measures at the neighborhood level increased, personal SCP behaviors decreased. Based on previous research, it is then expected that school level SCP will be significantly related to student level SCP such that student level SCP will be less influential on crime and fear among college campuses with high levels of SCP. This research sets out to further investigate the relationships between crime, fear and SCP on college campuses.

Hypotheses

This study seeks to further SCP literature by adding an analysis of its application techniques on college campuses at the student level. It will look at several key factors related to SCP measures and their effects on crime and fear among college students.

Hypothesis 1: College students and campuses that use SCP tactics will experience less victimization (less property crime, violent crime, and overall crime).

Hypothesis 2: College students and campuses that use SCP tactics will be less fearful of crime (less risk of victimization, fear of victimization, and less use of constrained behaviors).

Hypothesis 3: The interaction between school SCP and student SCP will be significant, such that the level of student SCP will have less of an impact on victimization (less property crime, violent crime, and overall crime) for students who attend schools with high levels of SCP.

Hypothesis 4: The interaction between school SCP and student SCP will be significant, such that the level of student SCP will have less of an impact on fear of crime (less risk of victimization, fear of victimization, and use of constrained behaviors) for students who attend schools with high levels of SCP.

Methods

Sample

The data for this study were extracted from surveys conducted by Bonnie S. Fisher, John J. Sloan III, and Francis T. Cullen entitled “Understanding Crime Victimization Among College Students in the United States,” which was retrieved from ICPSR. The dataset was obtained from a stratified random sample of 12 four-year postsecondary institutions with an enrollment greater than 1,000 during the 1993-1994 school year. The researchers employed a two-stage sampling design method. In the first stage, all four-year postsecondary institutions in the United States with enrollments of at least 1,000 students were stratified by location (urban, suburban, and

small town/rural) and size (1,000 to 2,499; 2,500 to 9,999; 10,000 to 19,999; and 20,000 or more). From this stratification, one institution was randomly selected from each stratum.

The demographics of 3,472 students (a 71% response rate) and data regarding victimization incidents were collected from a random sample using a structured telephone interview modeled after the National Crime Victimization Survey (NCVS). For the purposes of this study, only those students who answered questions regarding the variable of individual SCP will be used ($n = 753$). A second survey, concerning school-level data, was also collected from these 12 institutions with a 100% response rate. The researchers questioned directors of campus security or campus police using mail-back surveys to discover aspects of campus security, crime prevention programs, and crime prevention services used on campus. Also, mail-back surveys were used to garner information from directors of campus planning and facilities management regarding the type of planning and design used for crime prevention. Although the data were originally collected in 1993-1994, it was chosen for this study based upon the specific items included. These variables allowed for the inclusion of a variety of SCP factors for both students and campuses, as well as the inclusion of fear of crime constructs.

Student Demographics

Among the sample, 90.4% ($n = 680$) of the students were taking classes full-time while 9.6% ($n = 72$) were part-time. Of the respondents, 14.6% identified as freshmen ($n = 109$), 16.2% ($n = 121$) were sophomores, 20.1% ($n = 150$) were juniors, and 32.1% ($n = 240$) were seniors. Further classification identified 15.9% ($n = 119$) as graduate students and 1.2% ($n = 9$) claimed other status, which included certification programs. Of the student respondents, 66.2% ($n = 495$) lived off campus while 33.8% ($n = 253$) resided in campus facilities.

Measures

Student SCP

The operationalization of student SCP behaviors was based on a scale formed by four variables. Each of the variables was based on a four-point Likert scale and reverse coded where “1” represented low use of individual SCP behaviors and “4” indicated high use of SCP behaviors. Example questions included “Since school began, how often have you carried your keys in your hand in a defensive manner?” and “How often have you asked someone to walk you to your destination after dark?” A scale of student SCP behavior was created using factor scores. The scale ranges from -0.88 to 3.57, with a mean of 0.00 and a standard deviation of 1.00 (see Table 1 for a complete breakdown of descriptive statistics). The factor analysis produced a one-factor solution with high factor loadings from 0.609 to 0.771 and accounts for 52.13% of the variance.

Property Crime

Two variables were used to form a scale for property crime using factor scores. The variables were binary and included questions such as “Has something been stolen?” and “Has your vehicle been stolen/broken into?” The questions were coded such that “0” represented no and “1” yes. The property crime scale had a range of -0.55 to 3.39, a mean of 0.00 and a standard deviation of 1.00 (Table 1). The factor scores of the three variables produced a one-factor solution with strong loadings of 0.744. This one-factor solution accounts for 55.43% of the variance.

Violent Crime

Violent crime has been operationalized using a scale of three variables. Questions included: “Have you been assaulted?” and “Have you been robbed?” The questions were coded such that “0” represented no and “1” yes. The variables formed a scale using factor scores. The

scale had a range of -0.29 to 6.14, a mean of 0.00 and a standard deviation of 1.00 (Table 1). A factor analysis of the three variables produced a one-factor solution that accounts for 55.20% of the variance with high factor loadings of 0.743.

Overall Crime

The amount of overall crime was operationalized using the above two created scales of property and violent crime. The scales were created using factor scores with a range of -0.56 to 4.89, a mean of 0.00, and a standard deviation of 1.00 (Table 1). A factor analysis of the two scales (property and violent) produced a second order factor solution with high factor loadings of 0.757. The analysis explained 57.37% of the variance.

Fear of Crime

A main problem of fear of crime research is the operationalization of fear of crime. This study uses an operationalization schema developed by Rader (2004) wherein fear of crime falls under a larger construct called “the threat of victimization.” In this model, there are three constructs: (1) cognitive component—perceived risk of victimization, (2) emotive component—fear of victimization, and (3) behavioral component—constrained behaviors. Together, the cognitive, emotive and behavioral components represent a well-rounded measure of fear of crime and will be used to operationalize fear of crime in the following analyses.

To operationalize the student’s perceived risk of victimization, a scale was created utilizing five variables. Questions included: “How likely do you think it is that you will be raped or sexually assaulted?” and “How likely do you think it is that your vehicle will be stolen?” A scale was formed using factor scores. Each of the variables in the scale was based on a Likert ten-point scale where “1” indicated not at all likely and “10” very likely. The scale ranges from -0.76 to 7.34, with a standard deviation of 1.00, and a mean of 0.00 (Table 1). A factor analysis

of the five variables produced a one-factor solution with high loadings ranging from 0.585 to 0.885. This one-factor solution accounts for 62.30% of the variance.

Six variables were included in the scale used to operationalize the emotive component of fear of crime. All of the variables were based on a ten-point Likert scale where “1” represented not at all afraid and “10” indicated very afraid. Questions included “During the day/night while you were on campus, how afraid were you about having your property stolen?” and “During the day/night while you were on campus, how afraid were you about being raped or sexually assaulted?” An index for fear of victimization was created using the variables and their factor scores. The scale has a range of -7.44 to 6.16, a mean of 0.00 and a standard deviation of 1.00 (Table 1). A factor analysis of the six variables produced a one-factor solution with high loadings ranging from 0.670 to 0.931. This one-factor solution accounts for 68.05% of the variance.

Constrained behaviors have been defined as behaviors individuals avoid to protect themselves from the threat of victimization; the use of such behaviors is considered to be a reflection of fear of crime (Rader, 2002). Five variables have been used to operationalize constrained behaviors. Each of the variables were based on a ten-point Likert scale where “1” represented definitely not likely and “10” indicated definitely likely. Questions included “Anytime during the next year, how likely is it that you will engage in the following behaviors: Regularly drinking 3 or more alcoholic beverages?” and “How likely is it that you will engage in damaging property that does not belong to you?” Due to the nature of this study, the answers were recoded in the reverse where “1” represented not likely to avoid behaviors and “10” indicated a likelihood of avoiding behaviors and will be stated as such in all figures and tables present. The variables formed an index of constrained behaviors based on factor scores. The

scale ranges from -9.79 to 0.63, has a mean of 0.00 and a standard deviation of 1.00 (Table 1). A factor analysis of the five variables produced a one-factor solution with loadings ranging from 0.585 to 0.701. This one-factor solution accounts for 43.95% of the variance.

A two-factor solution was produced when a factor analysis was conducted on all 16 items. This two-factor solution accounts for 51.80% of the variance of the factors. The behavioral items load onto one scale; however, the cognitive (perceived risk of victimization) and emotive (fear of victimization) items load onto one scale. This should not present a problem, because research indicates that these components of fear of crime are often multi-dimensional and overlapping (Hall, 1996; Rader, 2002).

School SCP

According to Clarke's (1997) analysis, there are four categories of SCP tactics. Due to the scope of this thesis, school level SCP is operationalized using two of Clarke's (1997) constructs: perceived effort and perceived risk. The first concept, increasing the perceived effort of crime, was measured using five variables questioning security practices by the college. The variables were binary questions that included queries such as: "Were campus roads closed to limit auto access?" and "Was bicycle patrol in use?" Responses to the questions were coded so that "0" indicated no and "1" indicated yes. These items formed a scale using factor scores. The index has a range of -1.57 to 1.14, a mean of 0.357 and a standard deviation of 0.873 (see Table 1 for a complete descriptives breakdown). A factor analysis of the scale produced a one-factor solution with strong factor loadings ranging from 0.717 to 0.836. This solution accounts for 57.00% of the variance.

The second category, perceived risk, was operationalized using three variables questioning the security practices of the college. The variables consisted of binary questions

where “0” indicated no and “1” represented a yes response. These items formed an index of perceived risk using factor scores. The scale ranges from -2.64 to 0.597, has a mean of 0.139 and a standard deviation of 0.921 (Table 1). A factor analysis of the scale produced a one-factor solution with strong factor loadings ranging from 0.737 to 0.904. This solution explains 68.36% of the variance.

A two-factor solution was produced when a factor analysis was conducted on all 8 items. The solution, representing school SCP, has high factor loadings ranging from 0.691 to 0.866. The two-factor solution accounts for 69.54% of the variance of the factors. All items load onto their assigned scale.

Control Variables

Previous research suggests that certain factors can influence property, violent, and overall crime. As such, variables are included in this study to control for their possible effects. Age, gender, and race have been found to predict property and violent crime and are thus controlled in this study (Stolzenberg and D'Alessio, 2008; Simpson, 2008). Age, gender, race, and prior victimization are factors related to fear of crime and are controlled (Chadee and Ditton, 2003; Jennings, et al., 2007; Schafer et al., 2006; Sutton and Farrall, 2005). According to the student-level data, 57.2% of the sample was male ($n = 431$). Of the sample, 83.0% ($n = 614$) of the sample identified as white. The student respondents' ages ranged from 17-53 with a mean age of 23 years and a mode of 21 years. Prior victimization is measured by the question, “How many times has a victimization incident occurred [to you] since August 1993 [beginning of school year]?” The majority of victims, 72.2% ($n = 356$) only had one prior victimization.

Descriptive Statistics

The following table presents the overall information for each variable of interest. At the student level the descriptives table shows that for most of the variables, the majority of the sample responded to the question. The table shows that the majority of variables are either scale or binary in nature. While each variable of the descriptives table has already been discussed, the all-encompassing nature of the chart helps to view and compare all variables of interest at a single glance. See Table 1 for a complete descriptives breakdown of each variable of interest for this study including control variables.

Table 1: Descriptive Statistics

Variable	N	Mean	Median	Mode	Range	Standard Deviation
Perceived Effort	753	.356	.634	1.14	-1.57-1.14	.873
Perceived Risk	753	.139	.600	.60	-2.64-.597	.921
Student SCP	753	.00	-.393	-.877	-.877-3.57	1.00
Property Crime	655	.00	-.553	-.553	-.553-3.40	1.00
Violent Crime	753	.00	-.295	-.295	-.295-6.14	1.00
Overall Crime	655	.00	-.563	-.563	-.563-4.79	1.00
Perceived Risk of Victimization	731	.00	-.340	-.757	-.757-7.34	1.00
Fear of Victimization	727	.00	-.422	-.422	-7.44-6.16	1.00
Constrained Behaviors	746	.00	.333	.633	-9.79-.633	1.00
Age	747	23	21	21	17-53	5.82
Gender	753	.428	--	Male	0-1	.495
Race	740	.170	--	White	0-1	.376
Prior Victimization	493	1.66	1	1	1-6	1.34

Interaction Term

The potential effect of school SCP with student SCP will also be investigated. To examine this possibility, school SCP was multiplied by student SCP. The dependent variables of property, violent, and overall crime as well as risk of victimization, fear of victimization, and constrained behaviors will then be regressed on this interaction term to reveal any significant effect. The variables that make up the interaction term, as well as the control variables, will be included in these equations. If any of the interaction terms are significant, the relationship will be investigated further by splitting school SCP at the 50th percentile and regressing each

dependent variable on student SCP and control variables for each school SCP subsample. T-tests ($t = (b_1 - b_2) / (SE_1^2 + SE_2^2)^{1/2}$) will then be used to check the significance of any differences between the student SCP coefficients.

Plans for Analysis

As previously outlined, this study sets out to test the relationship between SCP on college campuses and its effect upon crime and personal behaviors and attitudes. This will be done through Ordinary Least Square (OLS) regressions. For all models used, multicollinearity was assessed for using tolerance values and Variance Influence Factors (VIF). In each equation, no tolerance values were smaller than 0.1 and no VIFs were larger than 2.5. As such, multicollinearity does not appear to present a problem (Freund and Littell, 2008).

In the individual analyses, the predictors will be: student SCP, perceived effort and perceived risk (school SCP measures). The outcomes of these analyses will be: property crime, violent crime, overall crime, perceived fear of victimization, perceived risk of victimization, and constrained behaviors. Gender, race, and age will be controlled for in the crime models. Gender, race, age, and prior victimization will be controlled for in the fear of crime models. The following equations illustrate these models:

Results

Table 2 shows the results of the OLS regressions for the three measures of crime. Hypothesis 1 is partially supported. Two of the three corollaries show significant results. Student SCP is significantly related to property crime ($b = .204, p < .001$) and overall crime ($b = .186, p < .001$); however, not in the direction predicted. In both cases, as a student's use of SCP tactics increases, their likelihood of being a victim of property and overall crime also increases. In both the property and overall crime models, student SCP was the strongest predictor (Beta =

.205 and .186, respectively). Perhaps these results represent a temporal ordering problem, which will be discussed in the next chapter. Across all dependent variables, school SCP (as measured by perceived effort and perceived risk) was not significant. The violent crime model revealed no significant results in relation to SCP. The r-squared for these equations suggests that the property, violent, and overall crime models explain a slight percentage of the variance (2.9%, 1.1%, and 3.2%, respectively).

Table 2: OLS Regression Results for Property, Violent, and Overall Crime

	Property Crime ^a			Violent Crime ^a			Overall Crime ^a		
Coefficients	<i>b</i>	SE	Beta	<i>b</i>	SE	Beta	<i>b</i>	SE	Beta
Constant	.590**	.200		.656**	.194		.836***	.201	
Perceived Effort	.016	.044	.014	-.029	.042	-.025	-.009	.045	-.008
Perceived Risk	.049	.043	.045	.052	.041	.047	.067	.043	.061
Student SCP	.204***	.050	.205	.090	.048	.090	.186***	.051	.186
Age	-.012	.007	-.073	-.012	.006	-.068	-.015*	.007	-.093
Gender	-.232*	.102	-.115	-.260**	.098	-.128	-.341***	.103	-.168
Race	.086	.111	.030	-.011	.099	-.004	.067	.111	.024
Model Summary									
R-Squared		.038			.019			.041	
Adjusted R-Squared		.029			.011			.032	

* $p < .05$, ** $p < .01$, *** $p < .001$, two-tailed

^aDependent Variable

Table 3 reveals the results of the OLS regressions for the three components of fear of crime. Hypothesis 2 is partially supported. Perceived risk of victimization revealed two significant relationships. One measure of school SCP, perceived risk, was significantly and negatively related to a student's perceived risk of victimization ($b = -.104$, $p < .05$). School SCP tactics resulted in decreased levels of a student's perceived risk of victimization. Student SCP was also significantly related; however, not in the direction predicted ($b = .373$, $p < .001$). Students with a high level of SCP behaviors have a greater perceived risk of victimization.

Again these results may represent a temporal ordering problem, which will be discussed in the next chapter. One measure of school SCP, perceived risk, was significantly and negatively related to a student's fear of victimization ($b = -.176, p < .001$). Greater school SCP predicted less fear of victimization among students. As predicted, school SCP tactics resulted in a decreased fear and risk of victimization among its students. Student SCP was the highest predictor in this model (Beta = .356). Perceived effort—the second measure of school SCP—was not found to be related to fear of crime. The r-squared for the perceived risk of victimization model revealed the predictors explained 16.7% of the variance. The equations suggest that fear of victimization and constrained behavior models explain a slight percentage of the variance (3.0% and 7.9%, respectively).

Table 3: OLS Regression Results for Fear of Crime Components

Perceived Risk of Victimization ^a				Fear of Victimization ^a			Constrained Behaviors ^a		
Coefficients	<i>b</i>	SE	Beta	<i>b</i>	SE	Beta	<i>b</i>	SE	Beta
Constant	.306	.237		.565*	.258		-.739***	.203	
Perceived Effort	-.035	.057	-.026	.036	.062	.027	-.032	.048	-.030
Perceived Risk	-.102*	.044	-.099	-.178***	.048	-.171	-.005	.037	-.006
Student SCP	.373***	.057	.356	.059	.063	.056	.059	.049	.069
Age	-.019**	.008	-.107	-.015	.008	-.083	.023***	.007	.157
Gender	.058	.118	.027	-.086	.129	-.039	.171	.101	.097
Race	.336**	.117	.122	.013	.127	.005	.427***	.100	.189
Prior Victimization	.048	.033	.061	-.073*	.035	-.094	-.035	.028	-.056
Model Summary									
R-Squared		.179			.045			.093	
Adjusted R-Squared		.167			.030			.079	

* $p < .05$, ** $p < .01$, *** $p < .001$, two-tailed

^aDependent Variable

The results of the OLS regressions for both the crime and fear of crime models on the interaction term showed that hypotheses 3 and 4 are not supported. In both models, the interaction term of student SCP and school SCP is not significant in predicting crime or fear. Similar to the results previously reported, the same predictors found significant in the above equations were found significant in these regressions as well.

Discussion

This study tested the effects of college students and campuses use of SCP in relation to crime and fear of crime. This research was a test of SCP in a relatively new environment of college campuses, while also presenting a solution to the problem of crime on campus. This study took a new look at the effects of SCP on three dimensions of fear of crime among college students. The results of the OLS regression tests show mixed support for two of the four hypotheses set forth in this study.

The first hypothesis stated that college students and campuses that used SCP tactics would experience less crime. In particular, the hypothesis stated that property, violent and overall crime would be predicted by student SCP and two measures of school SCP: perceived effort and perceived risk. According to the model, property crime was significantly related to the control variable gender and student SCP. Males were more likely to be victims of property crime. The results found that increased student SCP measures were related to increased property victimization. The results also showed that only the control variable gender was significantly related to violent crime. Males were more likely to be victims of violent crime. Student and school SCP measures were not significantly related to violent crime, contradicting the hypothesis. Overall crime was significantly related to two control variables—age and gender—and student SCP. Younger, male students were more likely to be the victims of property and/or

violent crime. Increased student SCP measures were related to higher overall crime victimizations.

The second hypothesis stated that college students and campuses that used SCP tactics would be less fearful of crime. In particular, the hypothesis stated that perceived risk of victimization, fear of victimization, and constrained behaviors would be predicted by student SCP and two measures of school SCP: perceived effort and perceived risk. Perceived risk of victimization was significantly related to age and race (control variables), perceived effort, and student SCP. Younger, nonwhite students had a higher perceived risk of victimization. Increased student SCP measures were related to a higher perceived risk of victimization. School SCP tactics that increased the perceived risk of an offense to a delinquent were related to a lower perceived risk of victimization. The results showed that fear of victimization was significantly related to the control variable prior victimization and the school SCP measure, perceived risk. A higher fear of victimization was found among students who had less prior victimization incidents. The use of SCP tactics to increase the perceived risk to offenders was related to a lower fear of victimization. Constrained behaviors were only significantly related to the control variables age and race. Older, nonwhite students were more likely to use constrained behaviors.

The third and fourth hypotheses stated that the interaction between school SCP and student SCP would be significant such that students with low levels of SCP would have less of an impact on victimization and fear for college campuses with high levels of SCP. However, the OLS regressions found that this interaction term was not significant in either the crime or fear of crime models. This finding can be explained by the previous regressions for the two models. Both sets of results show that school SCP is not an overly pertinent factor when student SCP is significant.

As hypothesized, student SCP was significantly related to property crime, overall crime, and students' perceived risk of victimization. However, the relationship was not in the direction predicted. It is possible these results represent a temporal ordering issue. The student-level data for this study were collected at one time and surveyed students' experiences and feelings of crime for the previous year. The results showed increases in property and overall crime in relation to increases in student SCP use. It is possible that student SCP use increased because of past victimization occurrences and was not used as a prevention effort.

Lab (1990) found that previous victims of property crimes were more likely to use SCP tactics such as surveillance, burglar alarms and property marking. Tewksbury and Mustaine (2003) found that as a function of routine activities, typical college students are less likely to employ the use of capable guardianship and thus use self-protective behaviors. However, it is necessary to point out that lifestyles change as a function of experiences and prior victimization can affect one's self-protection measures. It is possible these results are due to the relative rarity of victimization, especially in the violent crime models (Hummer, 2004). The majority of the sample had not experienced a prior victimization and thus their perceptions for the use of protection measures may not be heightened. The concern regarding temporal ordering is important in these regards. The use of SCP techniques could be the result of past victimization and fear that resulted in a limited level of subsequent victimization and fear skewing these results.

One measure of school SCP—perceived risk—was significantly related to risk and fear of victimization as hypothesized. These results suggest that school efforts to prevent crime are successful in altering students' perceptions of their safety. Such findings are encouraging and suggest that manipulations of the campus environment by school administrators help students

feel safer on campus. For example, Painter (1994) suggests that lighting, an SCP tactic, could alter the environment and the behavior of the public to reduce fear of crime in a number of ways. Improved lighting can reduce fear of crime by physically improving the environment and increasing one's perceptions of an area (Painter, 1994; Painter and Farrington, 1997, 2001). Increased lighting also increased college students' perception of safety in parking garages (Tseng et al., 2004). Illumination leads to an increase in natural surveillance and improves community confidence. It also produces a positive image of the environment and as the actual and perceived risks of victimization decrease, so does the fear of crime (Ditton and Nair, 1994; Painter, 1994). These findings and explanations are rooted in environmental criminology research and as such, is a direct reflection of all SCP tactics. In this manner, SCP techniques that alter the environment can produce a decreased fear of crime for students.

Similarly, SCP tactics are rooted in routine activities theory and seek to alter offenders' perception of committing a successful crime (Cohen and Felson, 1979; Clarke, 1997). SCP changes the environment and routine activity patterns of individuals. SCP techniques can result in an increase in capable guardians or a decrease in suitable targets. From the offender's perspective, the potential criminal offense has become riskier and more difficult. This increase in perceived risk and effort serves as a deterrent. From the victim's perspective, perceived risk and fear of crime are decreased. This study found a positive relationship among school SCP measures that increased the perceived risk of a crime for an offender and a decrease in fear and risk of victimization among students.

Both measures of school SCP were not found to be a predictor of crime or fear of crime for students. This results in mixed support for the first two hypotheses of this study. Yet, it is possible these results represent the disjunction of testing school SCP tactics against student crime

rates. Due to limitations of data, this study measured school SCP in relation to student crime. School SCP tactics were taken from the school-level and applied to each case individually in this study. However, a second analysis testing school SCP components at the school level would present an overall picture of this prevention technique at work in a large environment.

Limitations and Future Research

One limitation of this study is the sample size of post-secondary institutions used ($n = 12$) and that due to the scope of this study, only 753 student surveys were utilized. Only using data from 12 colleges represents a shortcoming and a lack of generalizability. Research has shown that demographic variables such as age, gender, and race affect fear of crime (Chadee and Ditton, 2003; Jennings, et al., 2007; Schafer et al., 2006; Sutton and Farrall, 2005) and participation in crime prevention behaviors (Lab, 1990; Tewksbury and Mustaine, 2003). The data used in this study had a fairly normal distribution of gender, but race was skewed towards white participants.

Another shortcoming related to the dataset involves the previous mentioned problem of temporal ordering. Temporal ordering could have an effect at both the school and student level. Particularly, the Jeanne Clery Act of 1998 presents an interesting issue. This act required postsecondary institutions to report the prevalence of crime on their campuses and thus face the issue of victimization. As a result, schools turned towards prevention efforts such as SCP (Sloan et al., 1997). It is possible that the SCP methods studied had already been implemented and affected campus crime rates.

Future research could build upon the principles put forward in this study. It would be interesting to look at the effects of SCP on college campuses in relation to specific crimes rather than the broad categories presented here. The general terms of property, violent, and overall crime do not allow for a precise measure of SCP's effects on specific crimes. Studies have found

support for SCP in relation to particular crimes such as: burglary and robbery (Allatt, 1984; Ditton and Nair, 1994; Hummer, 2004; Laycock, 1991; Poyner, 1991, 1997; Tilley and Webb, 1994), drug crimes (Cheurprakobkit and Bartsch, 2005), interpersonal crimes (Cheurprakobkit and Bartsch, 2005; Ditton and Nair, 1994; Hummer, 2004; O'Neil and McGloin, 2007; Painter, 1994), and street crimes (Ditton and Nair, 1994; O'Neil and McGloin, 2007). As such, it is possible that SCP on college campuses could have varying results on different crimes.

Policy Implications

This research on SCP on college campuses presents the possibilities for numerous prevention implications. College campuses may benefit from structural changes to prevent crime. Particularly, Fisher and Nasar (1992) argue that although campus populations tend to be transient, structural surroundings such as buildings and parking garages are stationary. As such, changes made to these structural dwellings are likely to have long-term effects on crime and fear.

SCP policy provisions that reduce fear of crime among students are important for a variety of reasons. Decreasing fear of crime has been found to result in an increased awareness of victimization on college campuses, the promotion of personal safety practices, and a reduction in crime (Clarke, 1997; Ditton and Nair, 1994; Jennings et al., 2007; Painter, 1994; Painter and Farrington, 2001; Tseng et al., 2004). SCP has a unique advantage on college campuses in relation to fear of crime. The population of students on a college campus typically retains similar demographics (such as age and gender), although it is constantly shifting every few years with an influx of new students. Making changes to stationary structures can alter perceptions of crime and safety for years, making it a cost-effective procedure. Reducing fear of crime can improve quality of life and in this environment, allow college students more freedom on campus (Fisher and Nasar, 1992). These provisions can lead to a reduction in levels of victimization.

In light of the findings of this study for fear of crime and SCP, some prevention suggestions include the following provisions. Increased lighting can illuminate campuses, decrease students' fear of crime, and increase an offender's perceived effort and risk for committing a crime. Similarly, college campuses could use increased surveillance either through surveillance cameras, increased police patrol, or increased pedestrian movement (a result of increased lighting). Blue lights and emergency phones placed strategically around campus paths also lend to SCP ideals. Tidy landscaping that removes extensive shrubbery and reduces potential hiding spots for offenders also serves as a prevention technique. Increased security personnel and the use of access cards for entry would also serve as a SCP tactic.

Finally, this study suggests the use of student SCP tactics. Fisher et al., (1997) stated that students were more likely to use personal measures of SCP on campuses. Students should be made more aware of their surroundings and use their environments to their advantage by learning how to better protect themselves. Colleges can present crime prevention programs and lectures that teach students how to better protect themselves in a given situation.

Conclusion

This research did find significant results in relation to student SCP and property and overall crime as well as risk and fear of victimization. School SCP was revealed as a predictor for two fear of crime components. These findings are important as they suggest the influence of college's crime prevention techniques on their students. This study serves as one of the first to examine the effects of SCP in relation to both the student and college campus. This research was taken one step further to directly observe the effects of this prevention technique on fear of crime. Overall, the results found in these analyses are encouraging and suggest the need for further research in this subject.

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Evelyn Williams, Kent State University at Stark

Master's Students

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Katie Farina, University of Delaware

Second Place: "Is Higher Cognitive Ability Associated with a More Stable Marriage?"
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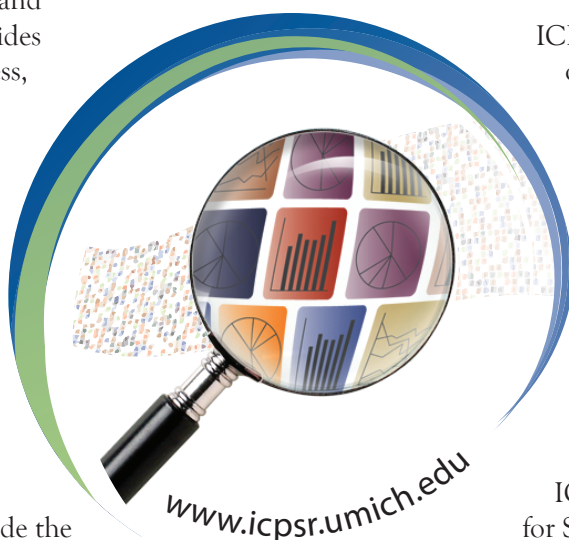
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