

The Effects of Cumulative Social Capital on Job Outcomes of College Graduates

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ABSTRACT

The current study drew on a large and diverse body of literature on social capital and aimed to understand its role in the process of transition from college to work. In particular, this research studied the cumulative effects of social capital formed in high school years and college years and examined its relationship with job outcomes. The study used the National Education Longitudinal Study (NELS) to examine whether early investment in the social capital of young adolescents produced better job outcomes in their adulthood. Families and schools were two primary sources of social capital considered in the current study. Parental involvement in a young person's life, extra-curricular activities and participation in volunteer organizations were some of the forms of social capital hypothesized to influence job outcomes after college. Structural equations modeling was used to trace the effects of the presence of social capital as early as the 8th grade in shaping student's later career status. The longitudinal data measured social capital beginning in the 8th grade and every 2 years thereafter, so that the cumulative effects of the social capital resources were investigated. Overall, the hypothesized model was found to fit the data and the findings have suggested a set of positive and direct effects of social capital on job outcomes.

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TABLE OF CONTENTS

ABSTRACT	ii
ACKNOWLEDGEMENTS.....	iii
LIST OF FIGURES	vi
LIST OF TABLES	vi
CHAPTER ONE.....	1
INTRODUCTION	1
Overview	1
Research Hypotheses and Goals	4
Organization of the Study.....	6
CHAPTER TWO	7
LITERATURE REVIEW.....	7
Conceptualizations of Social Capital, its Relationship with Status Attainment and its Measurement.....	7
Conceptualizations of Social Capital	7
Measurement of Social Capital	12
Parental Involvement.....	13
Socioeconomic Status (SES) and its Relationship with Parental Involvement	14
Parental Involvement as a Form of Social Capital and its Effects on Academic Proficiency and College Attendance	15
School-based Social Capital in High School.....	17
Extra-curricular activities	17
Teacher-student relationship.....	19
Peer relationship.....	20
Social Capital in College	22
Extra-curricular activity in college.....	22
Voluntary Service Work as a Form of Social Capital in college	25
Social Capital and its Relationship with Job Outcomes.....	28
CHAPTER THREE.....	33
METHODOLOGY.....	33
Introduction.....	33
Structural Equation Modeling (SEM)	34
Population and Sample	36
The Survey: National Education Longitudinal Study	38
Description of the Model.....	39
Description of Measures for Latent Factors	42
Measurement Models	49
Hypotheses.....	52
Outline of Analysis Procedures	53
CHAPTER FOUR.....	55
ANALYSIS AND RESULTS.....	55
Descriptive Statistics	55
Structural Equation Modeling Analyses.....	67
Summary of Structural Equation Modeling Results	81
CHAPTER FIVE	83
DISCUSSION AND CONCLUSIONS.....	83

Summary of Research Findings	83
Effects of SES and prior academic performance	84
Effects of home-based social capital	86
Effects of school-based social capital.....	87
Effects of social capital in college on job outcomes	89
Effect of college impact on job outcomes	90
Contribution of the study	91
Conceptual contributions	91
Methodological contributions	92
Contributions to measurement	94
Implications for practitioners.....	94
Limitation of the study	96
Directions for future research	99
Conclusions.....	99
REFERENCES	101

LIST OF FIGURES

Figure 1	Conceptual model.....	5
Figure 2	Social capital model of status attainment (Lin, 1999).....	11
Figure 3	General model.....	41
Figure 4	Percentage distributions of sample members according to their methods of finding a job by income level: 2000.....	48
Figure 5	Percentage distributions of sample members according to their overall satisfaction of their jobs by methods of finding a job.....	49
Figure 6	Measurement model of Home based social capital.....	50
Figure 7	Measurement model of school-based social capital (high school).....	51
Figure 8	Measurement model of job outcomes.....	52
Figure 9	Base structural model.....	74
Figure 10	Final structural model.....	77

LIST OF TABLES

Table 1	Percentage of sample members who used various methods to find their jobs.....	47
Table 2	Percentage of sample members who were satisfied with various aspects of their jobs.....	47
Table 3	Descriptive statistics for variables in the model.....	57
Table 4	Correlation among SES indicators.....	58
Table 5	Correlation among prior academic performance indicators.....	58
Table 6	Correlation among indicators of discussion on school activities.....	59
Table 7	Correlation among indicators of discussion on future education.....	60
Table 8	Correlation among indicators of parental involvement.....	61
Table 9	Correlation among indicators of extra-curricular activities.....	62
Table 10	Correlation among indicators of peer relationship – peers’ view on education.....	63
Table 11	Correlation among indicators of teacher-student relationship.....	63
Table 12	Correlation among academic proficiency indicators.....	64
Table 13	Correlation among college social capital indicators.....	65
Table 14	Correlation among students’ perception of college impact indicators.....	66
Table 15	Correlation among job outcome indicators.....	66
Table 16	Summary of fit statistics for final measurement model (N=2,971).....	68
Table 17	Properties of the final full measurement model.....	71
Table 18	Summary of fit statistics for tested models.....	72
Table 19	Standardized path coefficients for final model.....	80

CHAPTER ONE

INTRODUCTION

Overview

In light of the mounting evidence that social capital can facilitate desirable outcomes, many studies have suggested it is important for universities to develop better environment for promoting social capital (Driscoll and Kerchner, 1999; Smylie & Hart, 1999). This attention drawn to the relationship of social capital and educational policy is strengthened by a number of studies claiming that there's a decline in social capital in United States. Putnam (1995) suggested in his book, *Bowling Alone*, that individuals are engaging in fewer relational networks that would potentially provide productive information exchange and build trust. The whole book signals that Americans are becoming more individualistic and that social capital is declined as the participation in voluntary association decreases. Coleman has also pointed out that social capital is declining (Coleman, 1987b). These research results and claims with regards to the concern about declines in social capital have led to many debates on educational policy and how educational institutions can help build social capital. The intellectual impetus for this study then came from the popularity of these arguments on social capital, and in particular, we focused on social capital in the context of both family and school and how it is accumulated for students during their school and college years. In the early life course, families and schools represent the two primary ecological contexts for generating social capital (Bronfenbrenner & Morris, 1998). As such, some literature tended to view them in isolation from each other. One of the aims of the current study was to recognize and explore the overlap between the two, therefore to investigate the impact of each context on various outcomes. If we can bring the two major sources of social

capital together, the research in social capital can benefit from examining the transmission of social capital in families and schools and how these different conduits of social capital can interact with each other and eventually influence the job outcomes.

Although social capital has been demonstrated to successfully explain a broad range of outcomes, our interest was in examining its ability to explain the disparities in college graduates' occupational outcomes. Our interest in relating social capital to college graduates' post-school status was also stimulated by the increasingly tough job market for the new college graduates. The new work force is highly critical to the nation's economic performance both today and into the future. Given the increasingly competitive job market, diverse workforce and the consequence of the early job placement, an understanding of the transition from college to work becomes critical. Some studies have investigated the relationship between social networking and job placement of university graduates. Yet little research have been focused on the extent to which job outcomes are the result of the social capital accumulated in university or of broader social dynamics. More research is needed to understand whether graduates' job outcomes are linked to broader social dynamics as well as to what they might learn in university. Notably, there is a scarcity of research that has attempted to study the dynamics, antecedents and consequences of the social capital that aggregated in high schools as well as in universities. For universities, the increasingly competitive job markets also make the employment rates of graduates one of the most important performance indicators of college quality. Many universities are becoming more aware of the job-transition processes and post-graduate lives of their graduates. Schools are urged to provide corporate-partner networks that offer opportunities for graduates as well as programs that aim to enhance students' job-obtaining competence. Of all the career transitions the move from college into employment deserves particular attention. Graduate

transition from school to work is concerned with enhancing the capacity of a young adult to obtain employment (Harvey, 2001). The transition from academia to working life is critical and will affect many aspects of a new graduate's life, as graduates begin to put what they learn in school into practice and thus build their careers. Yet our understanding of this transition, especially its dynamic aspects, continues to be quite limited. The major goal of the study was to link accumulated effects of social capital to college graduates' job outcomes.

Large-scale panel studies have once provided educational researchers with a good number of opportunities to study student's behavior and education-related outcomes. Increased public interest in social capital has also encouraged educational researchers who have used the large-scale panel data to understand the role of social capital in education. One issue that needs particular attention is that the conceptualization of social capital in most of the previous empirical studies is restricted by the availability of information in the existing data sets. Moreover, since a consensus on the meaning of social capital has not yet been reached, the conceptual scope of social capital could have been too wide to have a number of measures that load on the same underlying construct. The current study drew on the large and diverse body of research and found the measures of social capital based on literature that had the similar scope.

Further, the study did not rely on one theory but rather incorporated an eclectic and exploratory approach to draw upon various theoretical ideas from different sources. A conceptual model was therefore proposed to integrate these ideas and reinvestigate the relationships among the various constructs. Specifically, the conceptual model captured the cumulative effects of pre-university social capital gained in high school years (such as the effects of parental involvement, extra-curricular activities participation, teacher-student relationships, and peer relationships) and college social capital attainment (such as extra-curricular activities and voluntary work

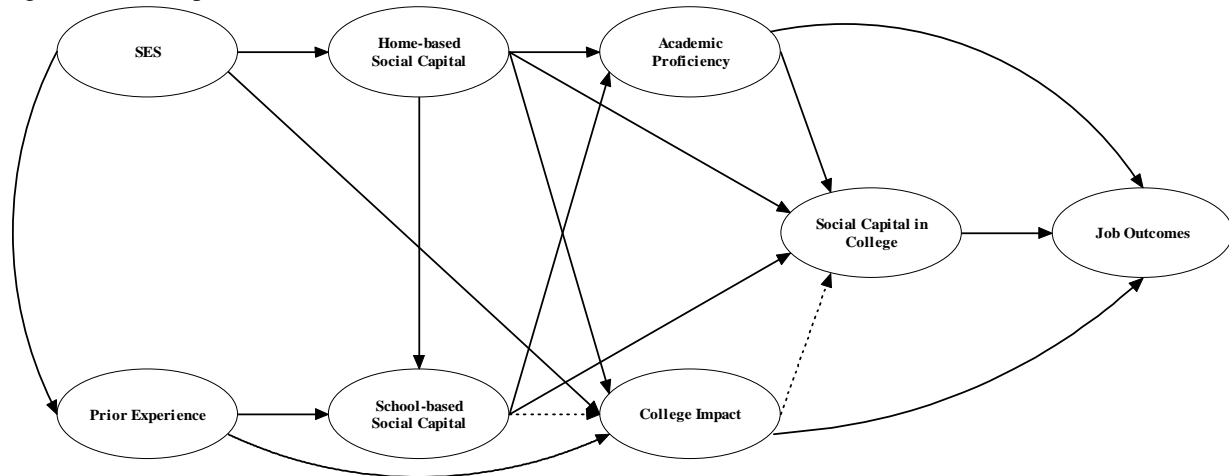
participation) on job outcomes (e.g. satisfaction with job and income). Based on earlier theoretical formulations and previous literature, the proposed model in this study aimed at finding support for each relationship. The current model was complex and was likely to present a realistic but more complex picture of how social capital is accumulated through early childhood to young adulthood.

Research Hypotheses and Goals

This study was designed to be an addition to the literature that examines the effects of social capital and the outcome variables in this study had important meanings in practice. Specifically, this study examined whether social capital was significantly and positively related to students' success in obtaining a satisfactory job outcome. This study intended to offer new evidence to educators and policymakers about the link between social capital and college graduates' job outcomes. In this study, structural equations modeling with latent variables were used to assess the nature of the relationship between social capital in one's youth and later job outcomes. For current study, SEM was the appropriate methodology because this method allowed greater flexibility in representing relationships among theoretical constructs. It was also easier with SEM to evaluate the goodness of fit of the proposed model for the data being examined and the strength of relationships among constructs (Quintana & Maxwell, 1999). As shown in Figure 1, the major latent variables involved in the proposed model were: socio-economic status (measured by parents' educational level and family income; prior experience (measured by previous academic performance); home-based social capital (measured by parental involvement); school-based social capital (measured by extra-curricular activity, teacher-student relationships and peer relationships); academic proficiency (measured by undergraduate GPA and degree obtained); college impact (measured by students' view on college impact); social

capital in college (measured by extra-curricular activity and voluntary service work); and job outcomes (measured by job satisfaction and annual income). The major relationships that the current study aimed to investigate are:

Figure 1 Conceptual model



Note Solid lines = paths tested in the proposed model. Dash lines = assumed linkages

- 1) The cumulative effects of pre-university social capital gained in high school years, i.e. the effects of parental involvement, extra-curricular activities participation, teacher-student relationships, and peer relationships on college social capital attainment.
- 2) Whether obtaining a satisfactory job is the consequence of personal investment in social capital and whether it also depends on other factors such as SES and human capital of the college graduates.
- 3) Relationships among the various types of social capital.

The results of this paper should be of interest to a variety of readerships. First, labor market scholars should be interested in this dynamic relationship which results in early career outcomes, informed as they are from the social capital and human capital perspectives employed in the analysis. Second, university policy makers and career counselors should find this study relevant to a good number of education-related issues concerning how the universities should

prepare their young students for a successful shift to the labor markets. Third, individuals who are going to go through the transition might also be interested in learning others' experiences so as to be more informed and better prepared for the transition.

Organization of the Study

In Chapter Two, according to the eclectic model proposed in the study, literature reviews on theories and earlier research were presented for each individual relationship in the model. Then the conceptual model outlined earlier in this chapter was also presented. The research that addressed relationships among the major components was reviewed to support the hypothesized model. The shortcomings in the previous research on the role of social capital in school-to-work transition were discussed. In Chapter Three, the methodology for the study was presented, followed by a description of the population and sample, an explanation of the instrumentation, model and measures, hypotheses and the procedures used to test the model. In Chapter Four, findings were discussed in details. In the first section, the descriptive statistics for each variable and the correlation among them were outlined. In the second section, model performance for the measurement models was presented. The third section presented the structural equation modeling procedure, including 3 intermediary models and the final model. In Chapter Five, the conclusions of the study were outlined. Then the contributions of the study and the implication for practitioners were discussed. Finally, the limitations of the current study and suggestions for future research were also presented.

CHAPTER TWO

LITERATURE REVIEW

In this chapter, the literature that guides and supports the current study is reviewed. This chapter is presented in 5 sections. The first section introduces the general conceptualization of social capital, its relationship with status attainment and its measurement. The following 4 sections then focus on each of the major constructs in the proposed model depicted in Chapter One: parental involvement, school-based social capital in high school, social capital in college, and job outcomes. Each section reviews the theories and empirical research linking the particular model components. Additionally, the limitation of existing literature and the scarcity of research on certain issues are also discussed.

Conceptualizations of Social Capital, its Relationship with Status Attainment and its Measurement

Conceptualizations of Social Capital

The interpretation of results of any empirical study carried out in the field of social capital must be based on the key words: conceptualizing the social capital (Sabatini, 2005). By reviewing the current conceptualizations of social capital, we want to answer these questions: How is the social capital conceptualized in education? What are its theoretical and operational definitions that drive the measurement of social capital in education? Social capital has many origins and diverse theoretical meanings. In education, the most often used definition of social

capital comes from James S. Coleman, who defined social capital by its function. Coleman (1990) described relational networks, social trust and norms as fundamental forms of social capital. He referred social capital to social relationships that can help individuals to accomplish a task or achieve a goal. Social capital can contribute to the socialization of the child by promoting the learning of cooperative behaviors and adaptation to society and its norms. What underlies this conceptualization is that individuals' behavior is embedded in a social structure or a network of social ties and relationships that can both facilitate and constrain the actors' actions (Croninger & Lee 1996; Jarrett, Sullivan & Watkins 2005). Each individual can seek help and support within this social structure, and at the same time being obligated to respond and assist others. Coleman's idea is largely applied to families and schools where this sense of trust and obligation is prominent. His empirical work on social capital included a series of longitudinal studies, which involved a substantive discussion on the relationship of social capital and academic success (Coleman, 1988).

Pierre Bourdieu (1986) defined social capital as the aggregate of actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition. In his view, social capital acts as a social marker that allows one to claim membership in a group. He also stated that social capital involves "transforming contingent relations, such as those of neighborhood, the workplace, or even kinship, into relationships that are at once necessary and elective, implying durable obligations subjectively felt (feelings of gratitude, respect, friendship, etc)" (1983, pp. 249-50). Both Coleman and Bourdieu's conceptions are partly incomplete for the present study, in the sense that Coleman is primarily concerned with how the adult-child relationship contributes to educational outcomes and Bourdieu downplays the significance of face-to-face interaction

although he believes that social capital has a direct impact on life outcomes. What's more, prevailing theories of social capital do not account for how social capital accumulates and transforms later occupational opportunities over time.

When discussing social capital, many researchers tend to compare it with other forms of capital (e.g., financial capital and human capital). Notably, the concepts of the three capitals are very different. Social capital possesses some unique properties that distinguish it from others. While wealth and knowledge can be accumulated by individuals, social capital is more of a collective property or a characteristic of a social group. Individuals within the social group have access to social capital through their participation on certain social activities and consequently obtain benefits of these relationships (Croninger & Lee, 1996). However, there are also researchers who have taken the stand on social capital being a private good – an asset that individuals possess as a result of their membership in an organization or a group (Buerkle & Guseva, 2002; Burt 1992). Therefore, in this conceptualization, individuals, not groups or places, possess a certain amount of social capital. Regarding the relationship between social capital and human capital, Coleman emphasizes the role of social capital in the creation of human capital, while in contrast, other researchers argue the causal chain should be reversed, for instance, social capital can be an unintended by-product of the constitution of the human capital (Buerkle & Guseva, 2002).

Substantive studies have given their attention to the role that human capital and credentials play in the job obtaining process. This is probably due to the fact that the majority of status attainment theories believe that the education provides people with knowledge and skills that are used in the job market to attain better jobs (Becker 1975; Featherman and Hauser 1978; Mincer 1974). More specially, the theory posits that an individual's occupational status is a

function of the education, occupation and income of parents, individual ability and educational attainment (Duncan, 1968; Featherman & Carter, 1976; Jencks et al., 1979). Other researchers also argue that education is instrumental in determining a person's life chances since the employers largely use credentials to screen job applicants (Arrow 1973; Blaug 1985). Therefore, there's not much literature that have been focused on how the social capital resources created during schooling process affect occupational success. The social component of higher education-peers, associations, extra-curricular activity, voluntary service participation and other connections one accumulates in college can be of great importance. Social capital gained in colleges can affect job outcomes in many ways: connections may help students get their first jobs, and these jobs may then set one on a successful career trajectory, etc. Students may attain their jobs through a contact that is either a direct school contact or a contact facilitated by a school network. These connections should not be overlooked since these networks always serve as a channel through which applicants acquire useful information about jobs and the employers obtain information regarding the college graduates. These connections can reduce the uncertainty that often exists in the job application process by offsetting the lack of information.

One direction of research should be to disentangle the effects of human and social capital on job outcomes, conceptualizing college experience as an important source of social capital. The reason that college-based social capital is of special interest for occupational success is that it is closely tailored to the student's career interests and aspirations. Buerkle and Guseva (2002) argued that social capital gained while in college had an independent effect on individual income, and this effect varied by individual's education and experience levels. These results highlight the necessity of examining the variation in the amount of social capital during early years of a

person's life and schooling, while "finding a satisfactory job" is embedded in this broader process of social capital accumulation over the college years.

Relationship with Status Attainment

Lin (1999) has pointed out that research should examine two processes on the relationships between social capital and status attainment. The first process looks at the access to social capital or resources available in a person's general social networks, such as a person's education background, prior experiences and parental or prior job statuses. These factors are hypothesized to affect the extent of resources the person can access through such social resources. This part of the model is identified as the accessed social capital model. The second process involves the use of social contact and resources provided by the contact in the job-search process. As shown in Figure 1, this part of the model is defined as the mobilized social capital in the status attainment process. This mobilized social capital is somewhat affected by availability of social resources specified in the first part of the model. It is hypothesized that along with the network resources, education, and initial positions, the mobilized social capital is expected to affect attained statuses such as occupational status, sectors, or earnings.

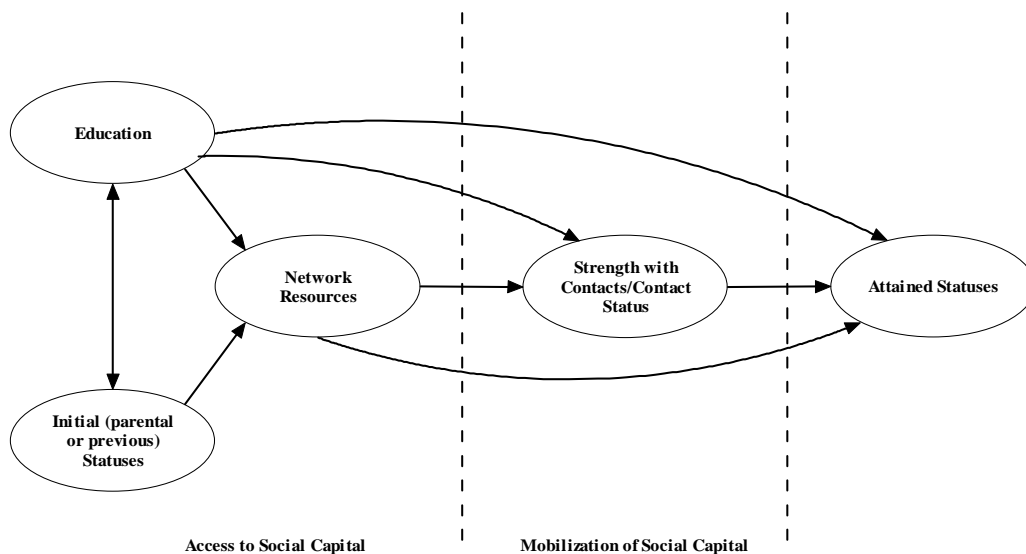


Figure 2 Social capital model of status attainment (Lin, 1999)

Measurement of Social Capital

The arguments on social capital partly stem from the inconsistencies and gaps in the conceptualization of the concept. Although there has been an exponential growth in the educational studies that relate social capital to various outcomes, how to measure social capital in the context of education has yet achieved a consensus (Dika & Singh, 2002). Obviously, studying and measuring social capital empirically is not quickly or easily done. Researchers have not reached a consensus on the meaning of social capital and thus it remains unclear how the measurement of social capital could correspond to its definition. Given the criticisms and various theoretical developments, it is evident that any empirical work studying social capital would benefit from conceptual and empirical clarity (Meier, 1999). In the past, few studies have provided rationale for how their measures of social capital connect to its theoretical definition. The lack of this link consequently led to the selection of questionable indicators of social capital. In order to lower the risk of lack of reliability and validity, many studies have used multiple indicators which were often questionable measures, in the sense that they were designed for other purposes.

Although the idea that social capital is a multidimensional concept is now commonly accepted, most research has been focused on a particular side of the concept, according to the perspective and scope of the study (Dika & Singh, 2002; Sabatini, 2006). These empirical studies often adopted different measures available in the dataset to address different dimensions. One of the major difficulties was the incomparability in sampling designs and question wording, which made any general measurement impossible: for example, choosing measures among many pieces of the data would result in lack of consistency among those items (Paxton, 1999; Wuthnow, 1997). Many studies also failed to provide sufficient support regarding the theoretical

underpinnings of the concept and did not provide evidence for validity or reliability of the measures. For instance, many studies failed to make a strong connection between their measures and theoretical definitions of social capital (Baron, Field & Schuller, 2000).

The goal of the current research was to capture how accumulated social capital aids in an overall satisfactory job outcome. It is difficult to find or collect data on a full array of items or measures that would capture social capital in its various forms and sources. Thus, one of the major challenges of this study was to provide an accurate confirmation of the very multidimensionality of the concept of social capital, showing that its various dimensions exert diverse effects on a range of relevant educational and job outcomes. One way to deal with the challenge of good and adequate measures was to use a national data set with close to three thousand variables on various aspects of students' lives from parental and family variables, and school social networks to college participation in extracurricular activities. Such a large array of items allowed us to develop the indirect measures or composite indicators - relying on a dataset of multiple variables – to describe social capital's diverse dimensions and to demonstrate the important role college plays in endowing students with additional social capital. It was also critical to find a longitudinal dataset that permitted a more extensive and comprehensive investigation of the role played by multiple social capital resources measured successively in a young adult's environment.

Parental Involvement

The process of accumulation of social capital believed to be associated with upward mobility begins early in a young child's life and typically takes place when students and parents engage in day to day educational activities, and as parents provide resources for better educational development. Parents also bring to bear extra resources for the overall development

of their children in the form of attendance at social, cultural and religious events. In this section, the literature that studied relationships among parental involvement, socioeconomic status and academic proficiency was presented.

Socioeconomic Status (SES) and its Relationship with Parental Involvement

Socioeconomic status (SES) has often been examined in relation to parental involvement and many researchers have found that SES is a variable of interest in studies of parental involvement. Many earlier studies have found a positive relationship between socioeconomic status of the family and parental involvement in education of the children. Some studies have found significant differences in involvement practices among SES groups (Griffith, 1998; Grolnick et al., 1997; Sheldon, 2002) and some researchers have argued that SES and parental involvement were positively related (Brody & Flor, 1998; Lareau, 1989; Stevenson & Baker, 1987). Some other studies have shown that positive parenting behaviors may serve as a protective factor against the negative impact associated with low SES on children's school achievement (McLoyd, 1998). On the other hand, others indicated that the results were mixed (Fan & Chen, 2001). A number of studies indicated that SES did not often directly explain the large proportion of variability found in levels and effectiveness of involvement (Bornstein, Hahn, Suwalsky, & Haynes, 2003; Delgado-Gaitan, 1992; Hoover-Dempsey & Sandler, 1997). Moreover, Hoover-Dempsey and Sandler (1997) suggested that the differences in parental involvement associated with SES were often more related to variation in resources that accompanied SES. For instance, time, energy, knowledge, and skills might be limited for parents with disadvantaged SES background.

Parental Involvement as a Form of Social Capital and its Effects on Academic Proficiency and College Attendance

To examine the relationship between parental involvement, school activities, college enrollment, and college academic proficiency, this study drew on the research of Bourdieu (1986), Coleman (1988), and Lin (2001a, 2001b) to conceptualize parental involvement as a form of social capital. This type of social capital provides young students with the resources that may have an impact on students' behavior at high school, their future college attainment and college performances. Coleman (1988) viewed social capital as the outcome of relationships between parents and children. Parents who are more involved and supportive of their children are likely to build up more social capital within the family (Coleman, 1988). Coleman (1988) used High School and Beyond (HSB) data to show that greater amount of social capital was associated with the following factors: two parents in the home, lower number of siblings, higher parental educational expectations, and intergenerational closure.

A large number of studies on social capital in the realm of education then have generally stayed close to the social capital indicators proposed by Coleman in his original work, mainly parent-child interaction variables (Dika, 2003). In fact, some studies have revealed the importance of parental involvement in the success of child's socialization (Steinberg, 1996; Verba et al., 1995). More specifically, those discussions claimed that social capital as a form of parental involvement may have a positive effect on high school performance, extra-curricular activities participation and college quality of the enrollment. Steinberg (1996) mentioned in his research that the students who had conversation with their parents about school and other co-curricular interests were more likely to have better academic performance as well as higher extra-curricular participation rate; he also stated that parental involvement in the form of school

visits had positive achievement effects. This indicated that more meaningful and more frequent parental involvement help young students develop the norms conducive to greater social capital possession. Carbonaro (1998) has used National Educational Longitudinal Study (NELS) to study the impact of parental involvement on the chances of a student dropping out of high school. He claimed that as the number of the child's friends' parents with whom a parent reported talking increased, the dropping out rate declined, controlling for background information and personal characteristics. Furstenberg and Hughes (1995) showed that social capital, measured as parents' social investment in their children and the community, increased children's odds of graduating from high school and attending college. Crosnoe (2004) has found that emotionally distant relationships with parents were associated with declining academic achievement. Some studies also examined the relationship between social capital within family and years of schooling. Research results have shown that the years of schooling was related to family discussion and parents' influence and expectations and parents' involvement in school events (De Graaf & Kraaykamp, 2000; Dyk & Wilson, 1999). Smith (1999) argued that the likelihood of enrolling in a 2-year or 4-year college depended on an individual student's parental involvement as well as on the volume of social capital that may be attained at the school. Other researchers have found similar results including that parental involvement was associated with a greater chance of aspiring for higher education and actually enrolling in a college (Cabrera & La Nasa, 2000; Hossler, Schmit & Vesper, 1999; Perna, 2000); parental involvement positively related to higher grades (Zick, Bryant, & Osterbacka, 2001); parental involvement associated with higher eighth grade mathematics and reading achievement (Sui-Chu & Willms, 1996). When included in quantitative analyses, single indicator of parental involvement was used by some researchers such as a composite of the frequency of discussions between the parent and child about school-

related activities (Horn, 1998; Perna, 2000); while others preferred a multidimensional construct (Sui-Chu & Willms, 1996). These differences in the measurement of parental involvement make the effect of the variable inconsistent from study to study.

School-based Social Capital in High School

Extra-curricular activities

Extra-curricular activities are activities performed by students that fall outside the realm of the normal curriculum of school education. Such activities are generally voluntary as opposed to mandatory, tend to be athletics, social and philanthropic as opposed to scholastic, and usually involve others of the same age (<http://en.wikipedia.org/wiki/Extracurricular>). In the current study, participation in extra-curricular activities was considered a mechanism of accruing social capital because it enhanced the possibility of new and diverse social networks and contacts. These new social networks were both embedded in schools and communities. For example, it was through playing sports that students were introduced to coaches, team mates, parents of team mates, etc. In this section, the literature that studied high school extra-curricular activities and its relationship with prior academic performance and college academic proficiency were presented.

Prior academic performance and its relationship with extra-curricular activities. While the research on the factors that related to students' participation in extra-curricular is limited, some research conducted with groups of high- and low-achieving students found that high achievement was associated with higher rates of participation in extra-curricular activities, as well as participation in a greater number of activities (Haensly, Lupkowski & Edlind, 1986; Marsh, 1992). Characteristics of non-participants included lower socioeconomic status, lower grades, and school attendance at larger schools (Feldman & Matjasko, 2007; McNeal, 1998). Some racial groups (such as Hispanic adolescents) were found to be less likely to participate in

school-based extra-curricular activities (McNeal, 1998). In the current study, extra-curricular activities should not be isolated from other developmental contexts, rather, they are embedded in schools and communities and influenced by families and peers.

The effect of extra-curricular activity on academic proficiency and college impact. There have been a large number of studies that demonstrated a linkage between students' participation in extra-curricular activities and their academic proficiency. In a study of high school students' extra-curricular involvement, Guest and Schneider (2003) found that involvement in extra-curricular activities, such as sports, arts, and journalism clubs, was related to increased levels of achievement. Rombokas et al. (1995) have examined if the degree of participation in extra-curricular activities in high school affected college academic performance and have found the positive relationship. Past research has shown that the involvement in extra-curricular activities had a positive impact on students' transition from high school to college. Woo and Bilynsky (1994) have found that involvement, as measured by time commitment to school activities, had a positive impact on the students' adjustment to various aspects of college life, including their academic performance. Other similar research has also argued that participation in extra-curricular activities was associated with a host of positive educational and developmental outcomes such as achievement and reduced likelihood of dropping out (Camp, 1990; Haensly et al., 1986; Lindsay, 1984; McNeal, 1995). It was concluded in the NELS 2000 report that the cohort members who participated in extra-curricular activities as eighth-graders reported higher postsecondary enrollment rates and bachelor's/higher degree attainment rates than did their counterparts who lacked these school experiences in eighth grade (Ingels et al., 2002). These studies point to the positive effect of participation in various activities in high school and relate early participation to more participation later as well as additional benefits to the participants.

Teacher-student relationship

Teacher-student relationship is another important form of social capital. Based on earlier research, there has been a substantial literature that looked at the teacher-student relationship and its effect on various educational outcomes. However, there are also gaps in the literature; the current literature does not provide a clear understanding of how this relationship can lead to more social capital accumulation for students. In the following section, the literature on relationships among prior academic performance, teacher-student relationship and college academic proficiency was presented.

Prior academic performance and its relationship with teacher-student relationships.

There are likely to be many factors that can potentially affect teacher-student relationship. In Murray's 2004 study, student demographic variables, academic orientations, behavioral orientations were found to account for a significant amount of variance in teacher ratings of conflict and dependency in teacher-student relationships. Other factors mentioned in previous literature included individual student characteristics, behaviors and academic performance (Birch & Ladd, 1997, 1998). In fact, some correlation analyses have reported positive associations between academic competence and teacher-student relationship quality. For instance, students with stronger academic competencies were found to have closer, less conflicted relationships with teachers (Murray & Greenberg, 2000). Academic competence among students has also been reported to be associated with peer acceptance (Good & Brophy, 1994).

The effect of teacher-student relationship on academic proficiency.

Positive relationships between teachers and students can significantly affect students' academic performance. A body of research has demonstrated that students learned more effectively when they felt bonded with teachers and felt valued in the school environment. When students had a secure relationship with

their teachers, they were more comfortable taking challenges to enhance learning, for instance, asking questions in class or persisting when they run into difficulties (National Research Council, 2004; Ryan & Deci, 2000). Students often claimed that if a teacher showed genuine concern for them, they would feel that they needed to work hard in return (Davidson, 1999). And adolescents reported that they worked harder for teachers who respected them as adults and expressed interests in their personal lives outside school (Stipek, 2006). Osterman (2000) also argued that learning required effort and the best predictors of student's effort in learning in school was their relationships with the teachers. Pianta (1999) has found that the close relationship between teachers and students led to higher level of students' achievement. More specifically, students who came to school with poor social skills would benefit more from more personal teacher-student relationships. According to a large survey of high school students, African American students were especially responsive to teachers who showed care and concern about the student's learning (Ferguson, 2002). In all, research has revealed a great deal about the types of teacher-student relationship that promoted students' learning and sense of belonging to school.

Peer relationship

Peers can also be an important source of social capital. Since adolescents spend a large amount of their time with their peers, it is not surprising that they play a highly influential role in adolescents' lives. Through peer networks, adolescents can influence each other's opinions and behavior. The influence of peers — whether positive or negative — is of critical importance in their life and the opinions of peers sometimes can even carry more weight than parents' opinions. In this section, the effect of peer-relationship on academic proficiency was presented.

There has been a long-held notion that peer relationships play an important role in the development of adolescents' social behavior and school performance. Peer relationships in

school have been studied by many researches and often have been discussed as an important factor to adolescent development (Nichols & White, 2001). Empirical evidence has shown that having a friend was positively related to academic accomplishments and positive types of behavior (Berndt & Keefe, 1995; Wentzel & Caldwell, 1997). More specifically, Wentzel et al. (2004) studied the relationship between friendship and changes in young adolescents' school adjustment (defined as classroom grades and prosocial behavior) over the course of the middle school years and have found a positive relationship. Friendship was also found to have a great impact on adolescents' general levels of involvement in school (Berndt & Keefe, 1995) and time spent on academic pursuit (Berndt, Laychak, & Park, 1990). Nichols and White (2001) also found supportive evidence for the positive influence of student peer groups on academic achievement of algebra. Other studies have shown that social competence had significant positive correlation with academic performance. For instance, Cauce (1987) has shown a positive correlation of .16 between peer judgments of popularity and GPA among a sample of secondary school students. Fork and Tisak (1983) have reported a correlation of .52 between peer judgments of social competence and GPA for high school students. What's more, empirical evidence further supported that young adolescent who had friends also tended to report high levels of emotional well-being (Berndt & Keefe, 1996). A sense of emotional well-being has been related positively to displays of appropriate classroom behavior as well as academic outcomes (Connell & Wellborn, 1991; Wentzel, 1998; Wentzel & Mc-Namara, 1999). Nichols and White (2001) pointed out, there should be a recognized need to understand peer group context as an important factor in adolescent social behavior and academic performance. The degree to which one is able to have positive peer relationships in high school might be especially important for understanding their ultimate transition from high school to college. In sum, these

various studies have supported that peer relationships can be an important social resource for adolescents. It has been widely suggested in the literature that, at its best, a good peer relationship can motivate and encourage adolescents to be more engaged in positive behaviors.

Social Capital in College

Extra-curricular activity in college

On college campuses, extra-curricular involvement is a key tool in personal development. For the majority of college and university students, involvement in extra-curricular activities plays an integral role in the collegiate experience. Students become involved in extra-curricular activities not only for entertainment, social, and enjoyment purposes, but most important, to gain and improve skills (<http://education.stateuniversity.com/pages/1855/College-Extracurricular-Activities.html>). A wide and diversified range of extra-curricular activities exists on U.S. campuses, meeting a variety of student interests. Extra-curricular activities allow students to meet and interact with peers that may not be within their close group of friends. In addition, extra-curricular activities help to enhance these social skills and teach lessons not learned in a classroom. Therefore, extra-curricular activities are often seen as an effective way to network and meet other people with whom the students can develop. It can also teach students to work in teams and work cooperatively, skills that will help students be successful in school and attain jobs in the future. Extra-curricular activities are by their nature like the “web of cooperative relationships between citizens” (Brehm & Rahn, 1997, p.999), when social capital is being discussed. In terms of the role of extra-curricular participation in shaping young adult’s behavior, many studies in the past have shown a connection between extra-curricular participation and

other outcomes. Research attention has been largely focused on the influence of extra-curricular activity on issues such as academic achievement (Gerber, 1996), personality and social behavior (Eccles et al., 2003). Terenzini et al. (1996b) postulated a model in which both classroom experiences and out-of-class experiences contribute to various learning outcomes (such as development of the generic skills and the acquisition of subject matter expertise), controlling for student pre-college traits, such as parental education and income. Others (Astin, 1993; Pascarella & Terenzini, 1991) have found similar relationships. In contrast, not much literature has looked at the impact of extra-curricular activities on the transition from school to work and the job outcomes.

In order to investigate the relationships between extra-curricular activity and labor market entry in the current study, it would be helpful to first look at the theory of employers' preferences regarding the college activities of the students, since the theory suggests that extra-curricular activity be viewed as a predictor of productivity and therefore influences the hiring process. The statistical discrimination theory posits that employers may pay particular attention to the non-market activities of the job seekers (Arrow, 1973; Phelps, 1972; Ragan & Smith, 1982). However, there is an inconsistency in how employers view the role of participation in extra-curricular activities. On one hand, some employers endorse the non-market activities of job applicants and value the extra-curricular activity participation as an indicator of the person's responsibility, citizenship and communication skills which they think will add value to the company. On the other hand, some employers do not consider those activities as having a positive effect. This group of employers is concerned that the involvement in the extra-curricular activities may indicate low professional commitment which in turn results in future low productivity (Sattinger, 1998). Evers et al. (1998) identified four groups of skills that were

increasingly demanded by employers: skills associated with self-management, communication, managing people and tasks, and mobilizing innovation and change. These skills are often generic rather than particularly associated with a subject matter expertise.

Since more and more jobs require teamwork and collaboration with others more employers seek individuals with high interpersonal skills. In general students who are involved in various activities might be more viable in the job market. It is critical that graduates understand the potential impact of extra-curricular activity and thus appraise the role it plays in their transition from college to the job markets. Some literature indicated that the extra-curricular activities had a significant influence on the transition process. For instance, extra-curricular involvement allowed students to link academic knowledge with practical experience, thereby leading to a better understanding of their own abilities, talents, and career goals (Kuh, 1995). Specifically, participation in extra-curricular activities and leadership roles in these activities were positively linked to attainment of one's first job and to managerial potential (Moore et al., 1998). Tchibozo (2007) also mentioned that extra-curricular experience gave access to better occupational status but lengthens the period of unemployment preceding the first job. More specifically, as compared with students who were not involved in extra-curricular activities, those who did were almost three times more likely to begin their career as managers as opposed to office employees. Eide and Ronan (2001) have shown that, participation in varsity sports may have positive effects on earnings, controlling for the graduates' ethnic backgrounds.

So far, not much attention has been focused on the effects of extra-curricular activities on such conditions of labor market entry as job security and job satisfaction. Tchibozo (2007) mentioned that extra-curricular participation of some particular type, cultural and spiritual, might be negatively related to job security as those who had these extra-curricular experiences were

more likely to get open-ended contracts. It seemed like that the types of activity did play an important role as the author also pointed out that participation in sports was the less efficient extra-curricular activity as regards obtaining a position in a large organization. The previous research encourages us to rethink about what difference the nature of the extra-curricular activity can make as well as the role the extra-curricular activities should play in higher education. These questions are potentially of interest to educational administrators, guidance counselors, researchers and individual students.

Voluntary Service Work as a Form of Social Capital in college

Many early researchers of social capital theory attributed an important role to voluntary organizations in generating social capital. In Putnam's definition of social capital, voluntary organizations - the nodes of these networks - were seen as constituting the networks. Leonard and Onyx (2003) argued that voluntary organizations can even be the predominant locus for producing social capital. Literature where the participation in volunteer organizations is considered a proxy for social capital included international comparative studies. For instance, Onyx and Bullen (2000) identified "Community Connections" (people's involvement in community voluntary organizations) as the strongest factor in their factor analysis of social capital.

One perspective to look at the long-term effects of college is how post college development is affected by particular college experiences. Some studies of the this kind tended to focus on the cognitive aspect of the college experiences, for instance, whether college attendance or degree attainment made a difference in cognitive domain (Pascarella & Terenzini, 1991) while other research has found that diverse forms of college experiences were associated with a wide variety of positive student outcomes in the social arena. In recent years, a growing

number of colleges and universities in the United States have become actively engaged in encouraging their undergraduate students to participate in some form of voluntary service. This type of college experience certainly qualifies as a substantial investment of time and energy, and involves building social networks and interaction with peers (Astin, Sax, & Avalos, 1999). The question to explore is how the student's educational and occupational development is affected by this kind of service participation.

As more students see volunteer work as a way to learn new skills and to build their careers forward, volunteering is perceived as beneficial both to the individual and the society. Increasingly, colleges are offering more opportunities for volunteer work on campus. The potential social and vocational benefits of volunteering range from expanding social networks, career exploration opportunities to the chance to gain some job related experiences. While volunteering is starting to gain attention in student development research, a number of studies have investigated the long-term impact of volunteer work or community service. Among those studies, Astin and Sax in their 1998 study found that participation in volunteer service during the college years enhanced the student's academic development, civic responsibility, and life skills. What's more, the practical value of service participation was further revealed in the positive effects observed in three areas of student satisfaction: leadership opportunities, relevance of course work to everyday life, and preparation for future career. Behtoui (2007) found that access to social capital was positively associated with active membership of voluntary associations. Williams and Winston (1985) found that students who participated in organized student activities had improved skill set for their career plans than their counterparts. Students who participated in voluntary organizations while in college were more likely to have leadership skills, go to

graduate school, earn advanced degrees, earn higher income and volunteer after college (Astin & Sax, 1998; Astin, Sax, & Avalos, 1999).

Although there have been substantial research on volunteer activities, both on and off-campus, little empirical research has been focused on the pattern of the linkage between social capital as a function of volunteer involvement and early job attainment. In particular, little is known about how volunteer work during college years affects students' job attainment. Typically, voluntary organizations acted as recruiting ground of students and made it easier for them to meet people both inside and outside campus who often shared the same values or interests. These organizations not only provided opportunities for the participants to meet their personal and community obligations, but also allowed students who volunteered gain more contacts and a number of valuable skills through their participation. These contacts and skills can be turned into marketable skills that will aid student volunteers in finding more satisfactory jobs. Among the volunteers in one survey, a quarter reported that their volunteer work had helped them get their job (Hall et al., 1998). Another survey reported that 28% of students believed their volunteering would help them "get my foot in the door at a place where I would like to work" and 29% expected to "make new contacts that might help my future career" (Wuthnow 1995, p. 216, 266). In light of the beliefs about the role of volunteer work on building social networks and acquiring job-related skills as well as the voluminous research demonstrating the importance of extra-curricular activities for educational and occupational achievement, one goal of this study was to investigate the link between voluntary service work and the improvement of job outcomes. To place this study in the larger context of the higher education research literature, it was proposed that one of the social capital indicators is "participating in voluntary organization during the undergraduate years" - because such activities build social networks. The present research aimed

at investigating the meanings of networks formed by voluntary organizations in and out of school for the students and how these networks reflected social capital.

Social Capital and its Relationship with Job Outcomes

Social capital promoted by social networking has played an important role in job obtaining process. It is through social networking that the job-seekers get various sorts of connections and job-related information that eventually is used to locate a job. Compared with traditional job seeking method (for example, formally advertised positions that are listed on ads, employment agency or school career office), social networking, in job-attaining processes can be described as managing and utilizing social capital to facilitate the location of a job. This process of accruing social capital helps acquire job information that is transmitted through contacts or networks made through family members, faculty, friends or community. When looking for a job, students may mobilize their social resources by reaching out to families, friends, faculty or acquaintances in their personal networks in order to access the information which may improve the chances of obtaining a job. Therefore, access and use of social capital would lead to a possible better job-search outcome. It does seem that job information is a function of the strength of the social capital that a job seeker has. Given the key role that social capital has played in job obtaining process, the kind of job seeking behavior that promotes social capital has gained increasing attention over the past decades (Huffman & Torres, 2001).

A rich body of literature has shown that there were significant differences between the use of formal channel and informal contacts in relation to income, job satisfaction and the job/qualifications relationship. Typically, these research studies have come to the conclusion that certain job-seeking behaviors relate to the number of job offers (Saks & Ashforth, 2000) and job

satisfaction (Steffy, Shaw, & Noe, 1989). Among these studies, the first group of studies has demonstrated that individuals utilizing informal job sources had job experiences more favorable than those who relied on formal job sources; the second group of researchers have argued that using social contacts to find jobs does not seem automatically to enhance better job outcomes; the third group of researchers seemed to uphold the hypothesis that social networking did not have uniform effect on job outcomes, the impact differed according to individuals' own economic, social, and educational backgrounds (Lyn & Dumin, 1986). Clearly these studies show that there is not a consensus in the literature on the effects of social capital on job outcomes. In the next paragraphs, these perspectives of literature are further presented.

There have been a large number of studies that favored social networking in job status attainment. For instance, Granovetter (1995) found that information about jobs was not equally available to everyone. Rather, people often learned about job opportunities through personal relationships. Evidence also shows that most job leads come from informal social ties (Jones & Azrin, 1972, 1973; Lin & Dumin, 1986; Silliker, 1993). Villar, Juan, Corominas and Capell (2000) claimed that higher income and more job satisfaction were more likely to be associated with the use of informal contacts in obtaining employment status. Forse (1997) pointed out, among individuals with equal educational backgrounds, those who were able to better use their social capital were more likely to find better jobs. McKersie and Ullman (1966) found that average salaries among Harvard University alumni who attained their positions using personal connections were significantly higher than those of their counterparts who utilized formal channels. Gutteridge (1971) found that reliance on informal job sources was associated with higher levels of compensation, in comparison with formal job sources such as college career service office and private placement agencies. Mouw (2003) has tried to explain the reason that

social capital may have a key impact on job outcomes: first, people with the greater social capital were more likely to get their jobs through personal contacts; secondly, personal contact use has shown to yield higher incomes.

Inconsistent with findings of the above studies, some researchers have argued that using social contacts to find jobs does not seem automatically to enhance better job outcomes. For example, Allen and Keaveny (1980) found that for college graduates, finding job through social networks was associated with entry into lower-level occupations and jobs less related to their qualifications and training. Furthermore, informal sources or social networks did not lead to satisfaction in terms of higher incomes (Bridges & Villemez, 1986) or psychological well-being (Villar, Juan, Corominas & Capell, 2000).

The last group of studies has shown evidence that social networking did not have uniform effect on job outcomes. Rather, it seemed to have a mediating effect that differed by individual's social and economic background. Some studies have looked at the antecedents of finding a job through networks, more specifically, whether finding a job through social networks is the consequence of personal investment in social capital which depends largely on the socio-economic status of the job-seeker. When the effect of social impact on job outcomes is decomposed, the effect of family background and education is somewhat transmitted indirectly through the contacts one has obtained. Therefore, when one's social network is utilized for job seeking, the attained job status largely depends on the person's education and the social resources embedded in the network, which in turn depend largely on the family-based social capital (Lin et al., 1981). For instance, Lin et al. (2000) introduced social resources as an intermediate variable between education and occupational prestige and found out that the effect of education background on occupational status for people who made use of informal contacts to

attain their jobs was an indirect effect via status of the social network. Some research also found that the contact status significantly affected the status of obtained jobs, after accounting for father's education and occupational status, education (Hsung & Sun 1988). On one hand, people from relatively economically advantaged and educated families were more likely than others to have connections that might be of assistance in the search for jobs. A few studies gave a closer look at the demographic and socio-economic information of those who obtained their jobs through networks and found out that this kind of strategy appeared to be more effective for the upper or middle classes and for well-educated job-seekers. College graduates were usually classified in that group (Forse, 1997; Langlois, 1977). Social capital was also found to have more effect on income for people with higher levels of education (Buerkle & Guseva, 2002). On the other hand, people from less advantaged background may find that their informal contacts are less likely to yield better outcome. This is because those informal contacts often come from a tight community with limited resources and can not provide information on better job prospects. Therefore, it is not surprising that some studies have found that the resource-poor social groups tended to search their jobs through informal methods but did not produce favorable job outcome. For instance, this was found true for those who received less education (Marx & Leicht, 1992), poorer job seekers (Green et al., 1995), and the minority groups (Green et al. 1999; Lin, 2000; Marx & Leicht 1992).

In conclusion, the literature on finding a job through informal sources seemed to offer inconsistent findings. However, the last group of studies seemed to have the most extensive discussion and more researchers seemed to support the notion that social capital has a mediating effect and thus could not be investigated in isolation of the socio-economic status and other demographic characteristics of the job seeker. To relate the previous literature to the interest of

the current study, it is unclear whether there is a clear benefit from investment in social capital for college graduates entering the labor market and whether their family socio-economic status, family based social capital and school based social capital are related to benefiting from the strategy. It is our mission in this study to understand whether the accumulated social capital through extra-curricular activities and voluntary service work are related to the way graduates got their jobs. In other words, whether students who use social networking versus who adopt formal job-placing method differ in their social capital possession.

CHAPTER THREE

METHODOLOGY

Introduction

The purpose of the current study was to test a proposed eclectic model of the relationships among accumulative social capital, college experiences and job outcome developed from research literature. The analysis investigated the pattern of the relationships among the potential indicators of these variables. The most important causal links included in the proposed model were: 1) home-based social capital to academic proficiency and college impact, 2) school-based social capital to academic proficiency and college impact, 3) academic proficiency and college impact to social capital gained through college, 4) social capital gained through college to job outcomes. This chapter presents the research methodology for the study. It gives a brief overview of the structural equation modeling (SEM) methodology used to estimate the model and to test the hypotheses suggested in Chapter One. It also describes the data sources, sample and the models. The chapter starts with a description of the population and sample, and then continues to elaborate on the explanation of the instrumentation, model and measures, measurement model, hypotheses and the procedures used to test the model.

This study advanced the literature on transition from school to work and job outcomes in several ways. First, limited research has investigated the college graduates' investment in social capital during and after their academic lives and the role and impact of social capital in the initial stages of their working lives. Second, unlike many studies that only used a limited sample and have focused on specific occupational types or college majors, National Education Longitudinal

Study was used (NELS) to represent a national sample of young adults who graduated from a number of academic institutions with various majors. Third, the eclectic model has explained the dynamics underlying the relationships, and effects of social capital factors on educational and occupational outcomes.

Structural Equation Modeling (SEM)

There has been a substantial growth in the use of structural equation modeling (SEM) to examine complex questions in education and social sciences over the past decade (Kim, & Rojewski, 2002). Many studies have investigated the causal relationship between various dimensions of social capital and educational outcomes through the use of structural equations models. This technique originated in psychometrics at the beginning of the 70s and proved to be particularly suitable for the investigation of multidimensional phenomena like social capital and educational development. Compared to multiple regression, structural equation modeling is a more powerful tool which takes into account the interactions among independent variables, influences by unknown external factors, and correlations among error terms. Other relevant strengths of using of SEM are the possibility to pose more flexible assumptions, the use of confirmatory factor analysis to reduce measurement error by having multiple indicators per latent variable, to allow interpretation even in the face of multicollinearity, to test models overall rather than coefficients individually, and to model mediating variables rather than be restricted to an additive model (Sabatini, 2005). For current study, SEM was chosen for a number of reasons: First, using SEM allowed to posit latent constructs presumed to be underlying causes of observed manifest variables; second, there was a greater flexibility in representing relationships among theoretical constructs when using SEM; third, it was easier with SEM to evaluate the goodness of

fit of the proposed model for the data being examined and the strength of relationships among constructs (Quintana & Maxwell, 1999); finally, SEM was the most suitable for the current study in the way that it integrated the strengths of several analyses such as multiple regression (directional relationships between a set of predictors and a response variable), path analysis (tests for theoretical direct or indirect relationships among independent and dependent variables), and factor analysis (a dimension reduction technique to determine which variables have common variance–covariance characteristics with a latent variable of construct) (Kunnan, 1998).

The SEM model usually comprises of two parts: the measurement model and the structural model. While the first defines hypothetical latent variables in terms of observed measured variables, the later one defines relations among the latent variables (Breckler, 1990). Notably, SEM encourages confirmatory rather than exploratory modeling in the sense that it lends itself well to the analysis of data for inferential purposes by demanding that the pattern of relationships be specified a priori, therefore SEM is usually suited when it comes to the case of theory testing (Kim, & Rojewski, 2002). SEM usually starts with a hypothesis, represents it as a model, operationalises the constructs of interest with a measurement instrument, and tests the model. The causal assumptions embedded in the model often have falsifiable implications which can be tested against the data. With an accepted theory or otherwise confirmed model, SEM can also be used inductively by specifying the model and using data to estimate the values of free parameters (Joreskog & Sorbom, 1996). SEM can be quite useful in making sense of complex interrelations in longitudinal data sets. One of the strengths of SEM is the ability to model constructs as latent variables (variables which are not measured directly, but are estimated in the model from measured variables which are assumed to tap into the latent variables). This allows the researchers to explicitly capture the unreliability of measurement in the model, which in

theory allows the structural relations between latent variables to be accurately estimated (Quintana & Maxwell, 1999).

In Chapter One, a statistical model was postulated based on the combination of both the theoretical knowledge and empirical research related to the study. The next step of analysis involved testing the goodness-of-fit of the proposed model on NELS data using the computer program, LISREL (Linear Structural Relations Analysis). The LISREL program provides a good number of indices of the model fit, including χ^2 (indicating a good fit between the model and data), RMSEA (Root Mean Square Error of Approximation), SRMR (Standardized Root Mean Square Residual), ECVI (Estimated Cross-Validation Index), GFI (Goodness of Fit Index), and CFI (Comparative Fit Index). Modification indices and other coefficients can be used to alter one or more models to improve fit. Based on these goodness-of-fit statistics, we were able to conclude whether our hypothesized home and school-based social capital to college based social capital to work model fit the NELS data well.

Population and Sample

National Education Longitudinal Study (NELS: 88/00) was used in the current study. NELS was a project carried out by the U.S. Department of Education's National Center for Education Statistics (NCES) over the course of a 12-year period. The 1988 eighth-grade class was surveyed again in four follow-ups: in 1990, 1992, 1994 and 2000. Beginning in 1988, a national sample of 8th graders was surveyed to assess students' academic performance, relationships with parents, teachers and peers as well as school and community experiences. Approximately 25,000 students from 1,052 schools were selected to participate in the survey. The data were collected using two-stage stratified sampling. First, schools were randomly

selected from a larger universe of public and private schools in the United States. Secondly, a random sample of students was chosen within each school to form the final data sample. NELS: 88 is a nationally representative, longitudinal database designed for study of the educational, vocational, personal development and transition of adolescents from high school and postsecondary education into the world of work (NELS manual, 2002). The database contains information that represents several nationally representative samples, including 1988 eighth graders, 1990 tenth graders, and 1992 twelfth graders enrolled in public or private schools. By the time of the 1994 follow-up study, most NELS: 88 sample members had completed four years of high school and started college. The 2000 data of the fourth follow-up were collected at a key stage of life transition since most of the cohort members had completed their education and stepped into their early career stage. Therefore, this data allowed us to see what this cohort had accomplished 4 years after graduation from college.

Since the primary concern of the current study was the relationships between a student's cumulative social capital of college years and his/her job outcomes, the analysis presented here included only those students who did not drop out of secondary school and attended college. Missing cases were deleted listwise, this resulted in a sample size of 2,971 out of 13,120 students who participated in all four waves of the study. The sample was slightly imbalanced by gender, with 46.2% male and 53.8% female. In terms of ethnicity, the majority of students were White (66.8%), 12.7% of students were Hispanic, 8.4% of students were African American, and 6.4% of students were Asian. In terms of postsecondary education and degrees earned, 37.4% of the sample had earned a bachelor's degree, also 37.4% of the sample had had some postsecondary education but without a degree attained, 10% of the students had gained a certificate or a license, and 9.2% of the students had held an associate's degree. Of 1988 eighth-grade cohort members

working full- or part-time for pay in 2000, many were business and management workers (29.5 Percent); administrative, legal, or clerical support employees (19.1 percent); or mechanics or laborers (17.6 percent); and the rest of the sample (33.8 percent) either contained missing values or unemployed.

The Survey: National Education Longitudinal Study

The NELS data was particularly well suited to this research for a number of reasons. First, the size and the representative structure of the data allow for comprehensive analysis and the generalization of the findings to the whole population of post-secondary graduates. Second, the data contained a wide range of variables, such as college experiences measures, social/leisure activities and a number of job satisfaction measures, therefore allowing for a multi-faceted analysis. Third, NELS was a longitudinal survey which provided the opportunity to perform a dynamic analysis of job outcomes of graduates over a period. Furthermore, the analysis was able to touch on the rich information collected in multiple time points so as to study the factors that acted as sources of assistance to members of the 1988 eighth-grade class in finding their jobs. Finally, ease of access in the use of data was also considered.

First surveyed in the spring term of the 1987-88 school years, the eighth-grade cohort provided information about its school experiences, interaction with parents, teachers and peers. The cohort members also completed achievement tests in mathematics, reading, science and social studies. The second wave student questionnaire carried out in 1990 asked students about such topics as academic achievement; their perceptions and feelings about their curriculum and school; social relations; aspirations; attitudes, and values (especially those related to occupational or postsecondary educational plans). What's more, surveys in 1990 and 1992 also collected

information about students' extra-curricular activity and voluntary service participation. The third follow-up of NELS took place in 1994, two years after most NELS sample members graduated from high school and enrolled in a postsecondary school. For those who had taken classes or enrolled in a postsecondary program, this section asked questions about each postsecondary institution the sample member attended, including the type of the institution, major/field of study, certificate/degree type, and certificate/degree completion date. The 2000 survey examined the cohort's postsecondary attainment, experiences and aspirations. This section collected the information about all postsecondary institutions attended by sample members since high school graduation, highest degrees or certificates earned, date of degree/certificate, and field of study. In addition, it also reported on the cohort's labor market experiences as of 2000, including job title, duties, salary, hours worked per week and job satisfaction.

Description of the Model

Figure 3 shows the simplified general model which was tested in this research. A general model can help us better understand the ways in which social capital affects the job outcomes. The critical link between this model and status outcomes theory was provided by the proposition that students' background characteristics, such as prior performance and high school social capital, had the potential to affect, in interaction with various aspects of the post-secondary experience, various job outcomes. An extension of this model, which included the possibilities that factors of cumulative social capital could eventually have an effect on job outcomes, is shown in Figure 3. The latent constructs for this study included prior academic performance, home-based social capital during high school years (parental involvement), school-based social capital in high school years, academic proficiency in college, college impact, social capital

gained during college years, and job outcomes. Since the intent of this study was to observe a temporal order of a person's trajectory to finding a job based on earlier educational and social factors, these concepts should be measured sequentially to better understand how these processes at one point in time may affect outcomes later in time. Given the lack of theorizing in this area, this study aimed to develop exploratory models to provide educational researchers with new ways to inquire about the cumulative social capital of youth. As discussed in the introductory chapter, the current research on the eclectic model lied between an exploratory study and a confirmatory one.

Starting on the left side of the figure, the first latent factor was student prior academic performance, which included items measuring previous levels of academic achievement (grades from sixth grade till now including English, math, science and social studies). This latent factor was then linked to school-based social capital (high school) which was represented by a series of extra-curricular activities, teacher-student relationships and peer relationships. These factors could again have effects on which college one chooses to go and his/her coursework and academic proficiency in the college, as illustrated by the arrows from school-based social capital to academic proficiency and college impact. On the other hand, family-based social capital (measured by parental involvement) was linked to one's socio-economic status and can also have effects on academic proficiency and college impact, as shown in Figure 3.

The major idea behind the general model was that a number of factors and experiences can potentially affect job outcomes either directly or indirectly. One of the most important of these factors proposed was social capital developed in university. Social capital gained through college included participation in extra-curricular activities and voluntary service work. In Figure 3, social capital was also linked to academic proficiency and school quality.

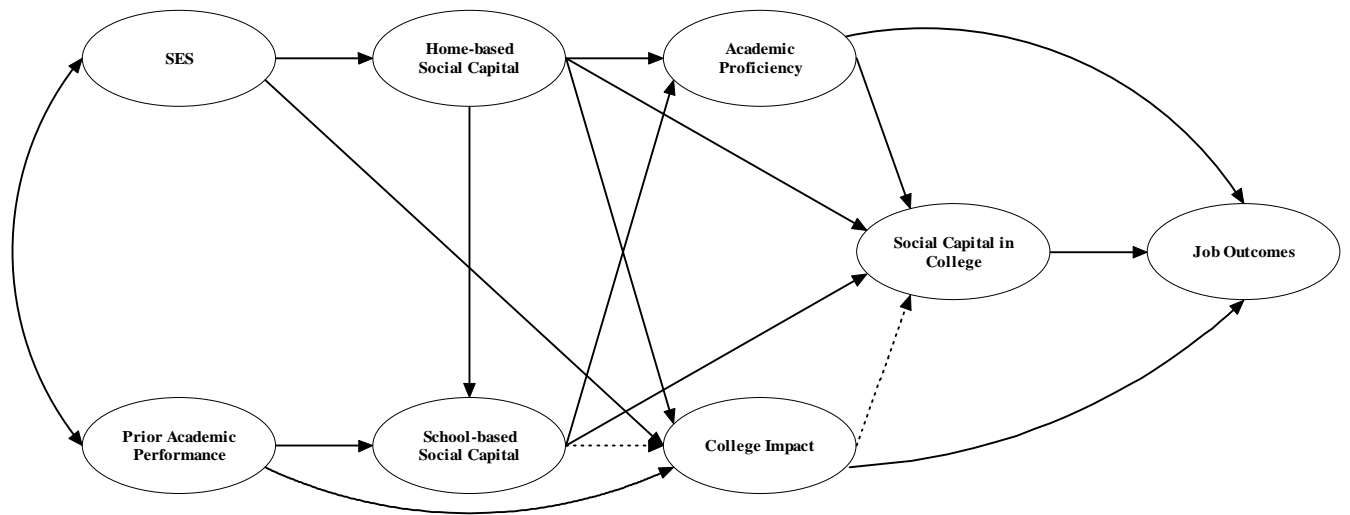


Figure 3 General model

The model in Figure 3 graphically displays the hypothesized temporal order of relationships among variables. In total, 8 different latent variables were included in the model. The model contained two types of variables- exogenous variables (SES and prior experiences), which were used as predictor or independent variables, are considered to be the starting points of the model, and endogenous variables (the rest of the factors) being predicted by exogenous variables and predicting other endogenous variables. The proposed measures for the current study were outlined in the next section according to their temporal order in the model.

Description of Measures for Latent Factors

Based on theory and reliability consideration, the following measures were chosen to be the observed variables in the NELS survey. By convention, four or more items per each latent factor are recommended in practice (Bollen & J. S. Long, 1993). However, due to the availability in the dataset, two indicators were also accepted when the measure's validity and reliability could be assured.

Socio-economic status (SES)

The base-year socioeconomic status was measured by a set of separate variables from the base-year parent questionnaire representing both parents' education levels and family income (e.g., BYP30, BYP31, and BYP37B). These variables were often considered to be a more accurate measure of the underlying concept than any of the individual variables.

Prior Academic Performance

In the base year of NELS survey, students were asked to assess their performance in English, math, science and social studies. The 4 questions used to measure their previous grades, have the following introduction: "For each of the school subjects listed below, mark the

statement that best describes your grades from sixth grade up till now.” This initial statement is followed by 5 levels: mostly As, mostly Bs, mostly Cs, mostly Ds, mostly below D. Response options ranged from 1=not graded to 6=mostly As. The sample’s average grades of the four subjects were 5.12, 5.10, 5.00 and 5.03 for English, math, science and social studies respectively. The high average grades indicate that the sample members had generally performed well from grade six to grade eight.

Home-based social capital (parental involvement)

Home-based social capital was represented by the latent variable *parental involvement*, the degree to which the parent(s) spent time with their child and were intimately involved in the life of the child. These measures were evidence of the frequency of the discussions between the parent(s) and the child on school activities and other important events in the child’s life. It was often observed that most researchers focused their analysis on parental involvement during the junior or senior year of high school. It appeared to be logical to focus on the impact of parental involvement on college outcomes during those later high school years because the next educational level for these students would be college.

The intensity of social interactions between parents and children specific to schooling was based on responses to several items from base year and second wave. The measures of parent-child interaction were based on reports from the children. The majority of the items came from the survey when the students were in 10th grade: “In the first semester or term of this school year, how often did you discuss the following with either or both of your parents or guardians?” The discussions include school courses; school activities or events; things studied in class; grades; plans and preparation for ACT or SAT test; going to college. Another set of questions also came from 10th grade survey: “How often do your parents attend school meeting?”

“How often do your parents phone teacher or counselor?” and “How often do your parents attended school event?” These 10 items together reflected 3 dimensions of parental involvement: discussions on school-related activities; discussions on future education; and parental involvement in school events.

School-based social capital

1) Extra-curricular activities and voluntary service work

A set of questions in NELS: 88 second wave survey asked 12th grade students to indicate if they had participated as a member or as an officer in various extra-curricular activities. These extra-curricular activities included varsity sports, intramural sports, cheerleading, orchestra, dance, subject matter clubs, academic honor society, student newspaper, student government, religious organization, and hobby clubs. A dichotomous variable was created to indicate if a respondent participated in each one of these activities in grade 12. Another question being asked was: “In a typical week, how much total time do you spend on all school-sponsored extra-curricular activities?” Then the question was then followed by 8 options: none, less than 1 hour per week, 1-4 hours per week, 5-9 hours per week, 10-14 hours per week, 15-19 hours per week, 20-24 hours per week and 25 hours or more per week.

Besides extra-curricular activities, NELS: 88 second wave survey also collected information on students’ participation in voluntary service work. The question being asked was: “During the past two years (from January 1, 1990 to the present), have you performed any unpaid volunteer or community service work (through such organizations as Little League, scouts, services clubs, church groups, school groups or social action groups)?” And the answer included a dichotomous option: yes or no.

2) Teacher-student relationship

Teacher-student relationship in high school years was measured by the following questions: “How much do you agree with each of the following statements about your current school and teachers?” (a) The teaching is good at school; (b) Teachers are interested in students; (c) Students are graded fairly in school; (d) There is cheating in school; (e) Some teachers ignore cheating; (f) Discipline is fair in school (4-point scale).

3) Peer relationship

Peer relationship in high school years was measured by the following questions: “Choose the answer that is best for you.” (a) Among friends, how important to study (b) Among friends, how important to get good grades; (c) Among friends, how important to continue education past high school; (d) Among friends, how important to finish high school (3-point scale).

Academic Proficiency

This latent factor was measured by two items: (a) Grades at highest undergraduate institution, followed by 7 levels: mostly As (GPA 3.75-4.0), As and Bs (3.25-3.75), mostly Bs (2.75-3.25), Bs and Cs (2.25-2.75), mostly Cs (1.75-2.25), Cs and Ds (1.25-1.75), and mostly Ds or below (less than 1.25); (b) Highest PSE level attained, followed by 6 levels: no degree but studying for certificate/license, no degree but studying for associate’s degree, no degree but studying for bachelor’s degree, some PSE, held certificate/license, held associate’s degree.

Students’ perception of college impact

This latent variable was measured by a set of questions regarding student’s view on the impact of college education. 5 items loaded on this factor and students were asked if or not they believed their college education had positive effects on various aspects of their later career: postsecondary education impact - better jobs; postsecondary education impact – higher salary;

postsecondary education impact – more responsibilities; postsecondary education impact – promotion opportunity; postsecondary education impact – job performance.

Social capital in college

Social capital during the college years was measured by students' participation in voluntary service work. NELS: 88 third wave survey collected information on this by asking the question: "Please indicate which organizations (if any) you have worked with during the past 12 months." And the options include youth organizations – little league, scouts; union, farm, trade, professional organization; political clubs or organizations; church/related (not worship); organized volunteer work (e.g. in a hospital); sports teams or sports clubs; educational organizations (e.g. an academic group). A dichotomous variable is created to indicate if a respondent participated in each one of the above activities during college years.

In the current study, while social capital was the major concept for the analysis of transition from school to work, measuring it was not straightforward. Moreover, the measures could be restricted by the questions available in NELS, for instance, there was no information about faculty-student interaction in college available in the third wave of NELS. Although we were able to measure high school social capital by parental involvement, teacher-student relationships, peer relationships and voluntary activities, these measures could be still indirect to fully elaborate the full mechanisms that may promote a transition from school to work.

Social Connections (how to get jobs)

Information on job connections, a form of social capital that may have assisted graduates in getting jobs, was presented in Table 1. The question used in determining connections was: "How did you find your job as an employee?" And the options were: networking with friends

and relatives; personal initiative (applied for, called around, etc); classified ads/job listing in paper and electronically; employment agency/office (job fair, school career center); former employer, company transfer, networking on job; volunteering, internship, or community service; approached by employer. Those who obtained their jobs by simply applying themselves may not be viewed as utilizing connections, and percentage of sample members who used various methods to find jobs were illustrated in Table 1.

Table 1 Percentage of sample members who used various methods to find their jobs

Percentage	Method used to get job						
	Friends and relatives (networking with)	Personal initiative (applied for , called)	Classified ads/job listings in paper	Employment agency school career office	Former employer, company transfer	Volunteering, internship, community service	Approached by employer
	34.8	19.0	17.7	14.0	7.8	3.1	0.6

Job Outcomes (job satisfaction and job income)

Job satisfaction was measured by a series of questions in which respondents were asked to indicate if they were satisfied with job payment, promotion opportunity, training, security and fringe benefits. The sample members who were employed in 2000 were generally satisfied with their jobs with 82.9% reported satisfied with job overall vs. 14.6% dissatisfied. In each aspect of their jobs, which include payment, fringe benefits, work importance, promotion opportunity, training, job security and further training, the majority of the sample reported satisfied, as illustrated in Table 2.

Table 2 Percentage of sample members who were satisfied with various aspects of their jobs

%	Job Satisfaction							Overall
	Payment	Fringe Benefits	Work Importance	Promotion	Training	Job Security	Further Training	
Satisfied	69.5	72.7	80.1	66.9	76.9	85.1	74.9	82.9
Dissatisfied	28.1	22.1	17.3	28.2	19.9	12.0	21.5	14.6

A measure of income was obtained by the question in the NELS: 88 fourth follow-up interviews to indicate the total earnings (including wages, salaries, and commissions) from employment before taxes and other deductions in 1999. On average, graduates reported an annual income of approximately \$25,800 (median income \$24,500). Consistent with our belief

that income tends to grow with additional education, income varied by level of education for our sample members. Additionally, when looking at percentage distribution of sample members according to their methods of finding a job by income level, we found that as income level increased, the percentage of people who used connection to find their jobs increased, as shown in Figure 4. When looking at percentage distribution of sample members according to their satisfaction with jobs, we also found that satisfaction rate was higher among people who found their jobs through connections, as portrayed in Figure 5.

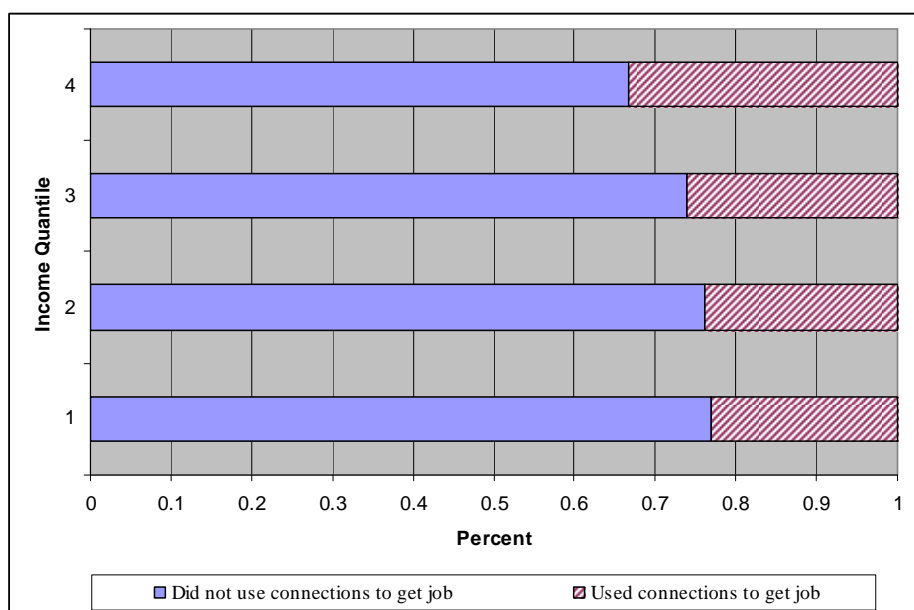


Figure 4 Percentage distributions of sample members according to their methods of finding a job by income level: 2000

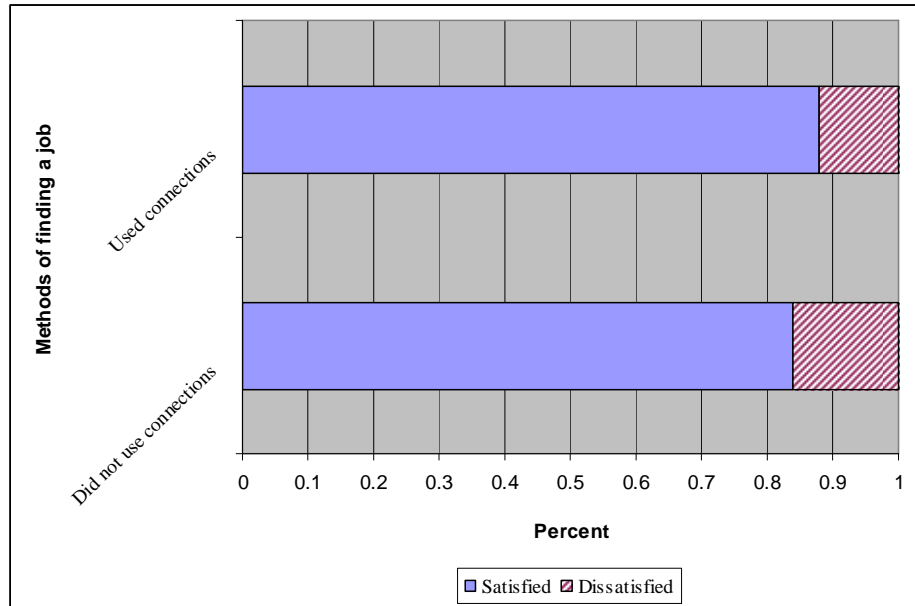


Figure 5 Percentage distributions of sample members according to their overall satisfaction of their jobs by methods of finding a job

Measurement Models

The measurement models were shown in the next following figures. The ovals indicated the latent variables of interests while rectangles indicated observed variables used as indicators of each latent variable, single-headed arrow represented the loadings.

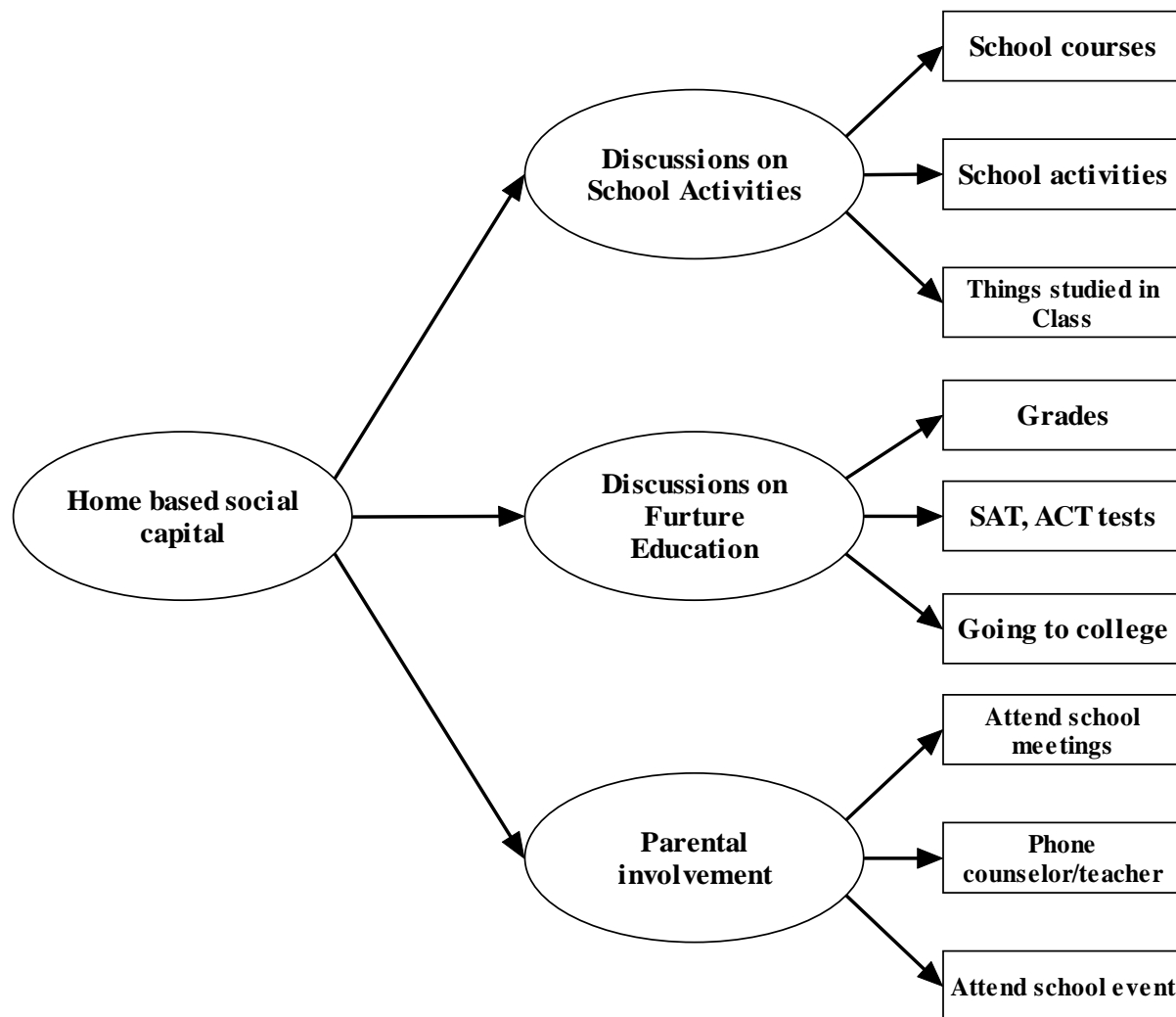


Figure 6 Measurement model of Home based social capital

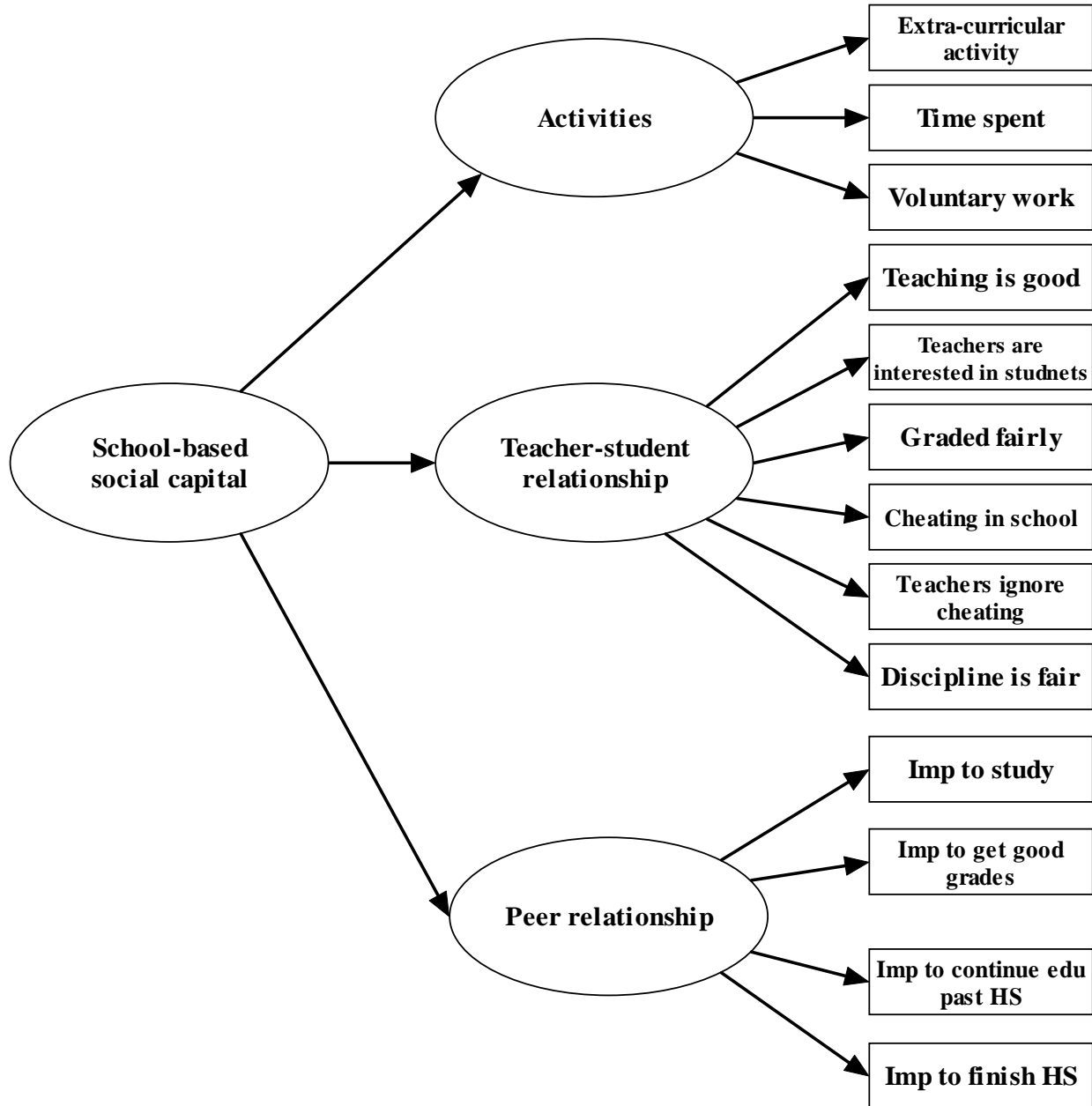


Figure 7 Measurement model of school-based social capital (high school)

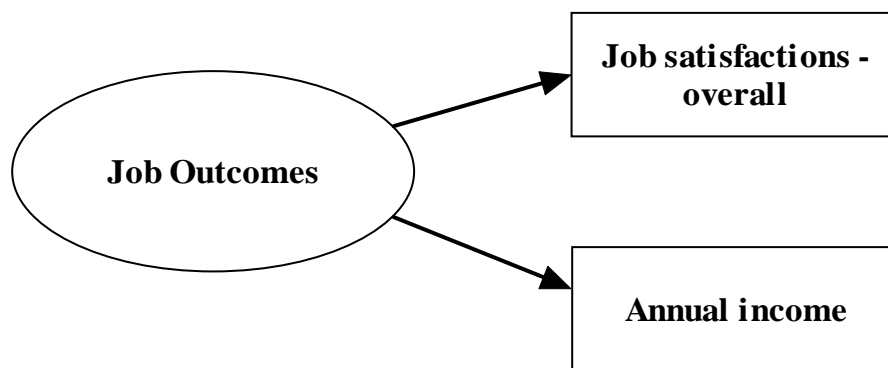


Figure 8 Measurement model of job outcomes

Hypotheses

Based on prior theory and research discussed in Chapter Two, an eclectic model was hypothesized and the hypothesized relationships were presented to reflect the temporal order of the model:

Hypothesis 1: Home-based social capital (parental involvement) was related to family socio-economic background.

Hypothesis 2: School-based social capital (extra-curricular activities, teacher-student relationship, peer relationship) was related to a student's previous experience (previous academic performance) and family-based social capital.

Hypothesis 3: The quality of the university (e.g. institution type) one attended was related to his/her possession of social capital before entering the college, which is home-based social capital and school-based social capital.

Hypothesis 4: A student's academic proficiency (e.g. undergraduate GPA and degree earned) was also related to his/her possession of social capital before entering the college, which were home-based social capital and school-based social capital.

Hypothesis 5: Social capital gained in college for a young student (e.g. participation in extra-curricular-activities and voluntary service work) was related to his/her academic proficiency, the quality of the attended university, and his/her previous social capital possession.

Hypothesis 6: Job outcomes, which consisted of satisfaction of various aspects of the job (e.g. payment, fringe benefits, work importance, promotion opportunity, training, job security and further training), were related to college social capital, controlling for academic proficiency and college impact. Furthermore, students who have gained greater social capital during college years were more likely to be better satisfied with their jobs than their counterparts.

Outline of Analysis Procedures

Measurement model validation

Exploratory factor analysis (EFA) was first used to discover the factor structure of each latent variable and to reduce the number of items in each scale and the reliability tests were applied to examine the internal consistency. The results of the scale development procedures for six latent variables will be described in Chapter Four: prior experience, parental involvement, school-based social capital, academic proficiency, college-based social capital, and job outcomes. With EFA, the number of factors was decided based on examining output from a principal components analysis (e.g. eigenvalues, factor extraction and factor rotation). Then structural equation models (a measurement model and a structural model) were studied. The measurement model was first estimated. A confirmatory factor analysis of the model was conducted to test the meaningfulness of latent variables and their indicators, and then the measurement model fit was established before the structural model was interpreted. To fulfill this, we have performed the following procedures: specified correlated measurement errors, constrained loadings and factor

correlations, performed statistical comparisons of alternative models, tested second-order factor models (with one or more latent factors whose indicators are also latent variables), and statistically compared various factor structures.

Structural model fitting

After the measurement model was validated, we proceeded with the second step-fitting the structural model. The covariance matrix between measures then served as input to estimate the structural coefficients between constructs or latent variables. Finally, both measurement and structural models were simultaneously estimated by the structural equation modeling program LISREL. In practice, modeling test started with more saturated models (less parsimonious models with number of parameter estimates close to degree of freedom) and the number of paths was reduced one at a time to generate a comparison of multiple models. When a proposed model tested using SEM procedures was found to be deficient, then a refined model was tested based on changes suggested by SEM modification indices. This development approach possibly resulted in the problem of over-fitting (may not fit new data, having been created based on the uniqueness of an initial dataset). Therefore, in this study, special attention was paid to the fit indices such as “expected cross validation index” (ECVI). It is also suggested that future researchers should confirm the model on similar samples of students to further validate the results of the study.

CHAPTER FOUR

ANALYSIS AND RESULTS

This chapter is divided into 3 sections. In the first section, the descriptive statistics for each variable and the correlation among them are outlined. In the second section, model performance for the measurement models is presented. The third section presents the structural equation modeling procedure, including 3 intermediary models and the final model.

Descriptive Statistics

Table 3 displays the descriptive statistics, including mean and standard deviation, for each variable in the proposed model. A number of composite variables were created as the average of a set of highly correlated items, and their descriptive statistics were also presented in the table. Here, we described the dependent variable as well as the key independent variables. These descriptive statistics have reflected the key characteristics of the sampled population.

SES

Socio-economic status consisted of three components: highest level of education completed for the survey responder, his/her spouse, and total family income for the previous year. The measure for parents' education ranged from 1 to 13, with 1 indicating the lowest education level "Eighth grade or less" and 13 indicating the highest "Ph.D, M.D. or other professional". For the sample, mean parental education levels were 7.91 for the survey responders and 7.96 for the spouses. These numbers indicated that, on average, the parents' education was very close to level 8 which was coded as "less than 2 year college". The measure of family income ranged

from 1 to 15, with 1 indicating the lowest rank of income “None”, 2 indicating the second lowest level “less than \$1,000” and so on till 15 indicating the highest “\$200,000 or more”. The average family income was 10.89, which fell between an annual income of \$25,000 and \$49,000.

The correlations among socio-economic status indicators are shown in Table 4. All the correlations were statistically significant at the .01 level, and the correlations were above an absolute value of .40.

Table 3 Descriptive statistics for variables in the model

Latent Variable	Variable	Mean	Std. Deviation
SES	Highest level of education completed	7.91	3.29
	Spouse's highest level of educ completed	7.96	3.50
	Total family income frm all sources 1987	10.89	2.06
Prior Experience	Grades from 6th grade till now (English)	5.36	0.74
	Grades from 6th grade till now (Math)	5.30	0.81
	Grades from 6th grade till now (Science)	5.29	0.85
	Grades from 6th grade till now (Social Studies)	5.33	0.85
Home-based Social Capital 1 (Discussion on School)	Discuss school courses w/parent	2.14	0.57
	Discuss school activities w/parent	2.21	0.63
	Discuss things studied in class w/parent	2.10	0.61
	Composite for fmly sc (discuss school)	2.15	0.49
Home-based Social Capital 2 (Discussion on College Prep)	How often discuss grades w/parents	2.48	0.56
	Discuss prep for the ACT/SAT test	1.69	0.67
	Discuss going to college w/parents	2.42	0.58
	Composite for fmly sc (discuss future)	2.20	0.46
Home-based Social Capital 3 (Parental Involvement)	How often parents attend school meetings	0.83	0.73
	How often parent phoned teacher, counselor	0.64	0.69
	How often parents attend school event	1.20	0.86
	Composite for fmly sc (parental involvement)	0.89	0.56
Extra-curricular Activity in 12th grade	F2 extra-curricular activities at school	31.44	3.83
	Time spent on extracurricular activities	2.59	1.77
	Community volunteer work past two years	0.59	0.49
	Composite for peer (edu)	2.56	0.44
Peer Impact 1 (Peer View on Education)	Among friends, how important to study	2.31	0.62
	Among friends, how imp get good grades	2.44	0.62
	Among friends, how imp continue edu past HS	2.64	0.57
	Among friends, how imp to finish HS	2.86	0.40
	Composite for peer (edu)	2.56	0.44
Peer Impact 2 (Peer Popularity)	Among friends, how imp play sports	1.89	0.77
	Important to get together w/friends	2.61	0.53
	Important to be popular w/students	2.10	0.68
	Important to have steady boy/girlfriend	1.75	0.63
	Among friends, how imp make money	2.34	0.69
Teacher-student relationship	Composite for peer (popularity)	2.14	0.43
	The teaching is good at school	3.06	0.58
	Teachers are interested in students	3.05	0.62
	Students are graded fairly in school	2.91	0.61
	There is cheating in school	2.25	0.76
	Some teachers ignore cheating	2.81	0.76
	Discipline is fair in school	2.72	0.70
Academic Proficiency	Grades at highest undergrad institution	7.45	1.11
	Highest PSE degree attained	3.32	1.34
College Social Capital	Composite extra curricular activities in college	1.82	1.70
	Number of volunteer organization	0.83	1.07
College Impact	PSE impact-better jobs	0.87	0.34
	PSE impact-higher salary	0.81	0.39
	PSE impact-more responsibility	0.86	0.35
	PSE impact-promotion opportunity	0.82	0.39
	PSE impact-job performance	0.82	0.39
Job Outcome	Job satisfaction - overall	0.87	0.33
	Income	\$25,843	\$19,762

Table 4 Correlation among SES indicators

	Highest level of educ completed	Spouse's highest level of educ completed	Total family income
Highest level of educ completed	1		
Spouse's highest level of educ completed	0.63*	1	
Total family income	0.49*	0.51*	1

*Correlation is significant at .01 level

Prior Academic Performance

Four questions were used to measure student's prior performances in English, math, science and social studies. The initial questions were then followed by 5 choices: mostly As, mostly Bs, mostly Cs, mostly Ds, mostly below D. Responses ranged from 1 = not graded to 6 = mostly As. The average grades of our sample were 5.36, 5.30, 5.29 and 5.33 for English, math, science and social studies respectively. The high average scores indicated that, on average, the students have earned between "mostly As" and "mostly Bs" from 6th grade to 8th grade. Table 5 displays the intercorrelations among the prior experience variables. All correlations were positive and statistically significant at 0.01 level.

Table 5 Correlation among prior academic performance indicators

	English grades (6th to 8th grade)	Math grades (6th to 8th grade)	Science grades (6th to 8th grade)	Soc. Studies grades (6th to 8th grade)
English grades (6th to 8th grade)	1			
Math grades (6th to 8th grade)	.39*	1		
Science grades (6th to 8th grade)	.47*	.39*	1	
Soc. Studies grades (6th to 8th grade)	.46*	.35*	.51*	1

*Correlation is significant at .01 level

Home-based Social Capital – Discussion on School Activities

The first factor of home-based social capital included students' discussion with parents on school activities. On average, students talked to parents about school courses (mean = 2.14), school activities (mean = 2.21) and things learned in school (mean = 2.10) on a regular basis (with 2 represented "sometimes" and 3 represented "often"). The composite item was created as the average of the above three questions and yielded a mean of 2.15. Therefore, in general students had a moderate interaction with their parents on school related activities.

Table 6 Correlation among indicators of discussion on school activities

	Discussed school courses w/ parent	Discussed school activities w/ parent	Discuss things studied in class w/ parent
Discussed school courses w/ parent	1		
Discussed school activities w/ parent	.55*	1	
Discuss things studied in class w/ parent	.46*	.51*	1

*Correlation is significant at .01 level

The correlations among the indicators of parent-student discussion on school activities were all positive, and were statistically significant at 0.01 level (Table 6).

Home-based Social Capital – Discussion on College Preparation

The second factor of home-based social capital focused on students' discussion with parents on college preparation. Three measures, frequency of discussion on school grades, preparation for ACT/SAT tests and going to college, comprised this factor. On average, students talked to parents about school grades (mean = 2.48) and going to college (mean = 2.42) more often than preparation for ACT/SAT tests (mean = 1.69), with 2 indicated "sometimes" and 3 indicated "often". Another composite variable was created as the average of the above three questions and yielded a mean of 2.20. In general, parents and students did hold conversation on future education but this kind of conversation did not seem to happen very often. All items

measuring parent-student discussion on preparation for college were significantly correlated in the positive direction (Table 7).

Table 7 Correlation among indicators of discussion on future education

	Discussed grades w/ parent	Discussed prep for the ACT/SAT test	Discussed going to college w/ parent
Discussed grades w/ parent	1		
Discussed prep for the ACT/SAT test	.26*	1	
Discussed going to college w/ parent	.40*	.43*	1

*Correlation is significant at .01 level

Home-based Social Capital – Parental Involvement

The last component of home-based social capital was related to parental involvement in school events. Three questions were asked to the students on the frequency of their parents attending school meetings, contacting teachers/counselors and attending school events. On average, parents' involvement in school meeting and school events were minimal (mean = 0.83 and mean = 1.20 respectively) and parents made few contacts with teachers (mean = 0.64), with 0 corresponds to “never” and 1 corresponds to “once or twice”. A third composite variable was created as the average of the above three questions and yielded a mean of 0.89. This composite variable indicated that the parents were not highly involved in school activities for targeted sample.

Table 8 displays the intercorrelations among the parental involvement variables. All correlations were positive and statistically significant at 0.01 level.

Table 8 Correlation among indicators of parental involvement

	How often parents attend school meetings	How often parents phoned teacher, counselor	How often parents attended school event
How often parents attend school meetings	1		
How often parents phoned teacher, counselor	.30*	1	
How often parents attended school event	.40*	.15*	1

*Correlation is significant at .01 level

School-based Social Capital – Extra-curricular Activities

Extra-curricular activities consisted of three measures: the level of participation in extra-curricular activities in high school, weekly time spent on these activities and participation in community volunteer work during high school years. The average for participation in extra-curricular activities was 31.44 (this variable was defined as the sum of participation in 10 extra-curricular activities such as sport team, music group or school government, etc). Therefore, at item level, the average participation rate was around 3, indicating that our sample did participate in a wide variety of extra-curricular activities (with 1 indicated “school didn’t have”, 2 indicated “did not participate” and 3 indicated “participated”). The time spent on these activities was around 5 hours (mean = 2.59), with 2 corresponded to “1 - 4 hours” and 3 corresponded to “5 - 9 hours”. The question regarding the participation in community volunteer work was a yes or no question with 1 representing “yes” and 0 representing “no”. The mean for this question was 0.59,

indicating that 59% of our students have participated in community volunteer work during their high school years.

The correlations among extra-curricular activity indicators are shown in Table 9. All the correlations were statistically significant at the .01 level, however, the correlation between extra-curricular activity at school and community volunteer work was not above an absolute value of .20.

Table 9 Correlation among indicators of extra-curricular activities

	Extra-curricular activities at school	Time spent on extracurricular activities	Community volunteer work past two years
Extra-curricular activities at school	1		
Time spent on extracurricular activities	.44*	1	
Community volunteer work past two years	.17*	.21*	1

*Correlation is significant at .01 level

School-based Social Capital – Peer Relationship

The second component of school-based social capital tried to reflect peers' influence. Four items have loaded on a single factor - peers' view on education. The four questions regarding peers' opinion on education were: among friends, how important to study, how important to get good grades, how important to finish high school and how important to continue education after high school. The average answers for these four questions were 2.31, 2.44, 2.86 and 2.64 respectively. In the dataset, 2 was coded as "some importance" and 3 was coded as "very important". A composite to measure overall peers' view on education was created as the average of these four measures and had a mean of 2.56. This tells us that our sample has valued the education at a moderate level of importance.

Table 10 Correlation among indicators of peer relationship – peers' view on education

	Among friends, how imp get good grades	Among friends, how imp to study	Among friends, how imp to continue educ past high school	Among friends, how imp to finish high school
Among friends, how imp get good grades	1			
Among friends, how imp to study	.63*	1		
Among friends, how imp to continue educ past high school	.56*	.49*	1	
Among friends, how imp to finish high school	.49*	.39*	.54*	1

*Correlation is significant at .01 level

The correlations among the peers' view on education were all positive and significant at .01 level (Table 10). The absolute values of the correlations were all above 0.30.

School-based Social Capital – Teacher-student Relationship

The last factor of school-based social capital was concentrated on the relationship between teacher and the students. Six questions were asked to the students about the quality of teaching in school and their relationship with teachers. The means for the teacher-student relationship items ranged between 2.25 to 3.06, corresponding to an average of 2.8 to reflect positive attitudes on these items (the score scale was of 1 to 4, indicating strongly disagree to strongly agree).

Table 11 Correlation among indicators of teacher-student relationship

	The teaching is good at school	Teachers are interested in students	Students are graded fairly in school	Some teachers ignore cheating	Discipline is fair in school
The teaching is good at school	1				
Teachers are interested in students	.60*	1			
Students are graded fairly in school	.41*	.41*	1		
Some teachers ignore cheating	.23*	.23*	.23*	1	
Discipline is fair in school	.34*	.34*	.39*	.20*	1

*Correlation is significant at .01 level

The correlations among teacher-student relationship indicators are shown in Table 11. All the correlations were statistically significant at the .01 level.

Academic Proficiency

Two items, grades at highest undergraduate institution and highest postsecondary degree attained, comprised the measurement of academic proficiency. On average, the students had performed well at college (mean = 7.45), with 7 corresponded to “mostly Bs” and 8 corresponded to “Mostly As and Bs”. The average highest postsecondary degree attained fell between an associate degree and a bachelor degree with a mean of 3.32. These two items were positively correlated at .01 significant level (Table 12).

Table 12 Correlation among academic proficiency indicators

	Grades at highest undergrad institution	Highest PSE degree attained
Grades at highest undergrad institution	1	
Highest PSE degree attained	.23*	1

*Correlation is significant at .01 level

College Social Capital

Similarly, college social capital was measured by the frequency of participation of extra-curricular activities and voluntary work during college years. Two items were incorporated in the model and the sample had a mean of 1.82 for extra curricular activities and 0.83 for number of volunteer organization. The measure of extra curricular activities was a composite item derived as the sum of a number of yes or no questions on whether or not one has participated in activities such as varsity intercollegiate athletics, performing arts, college newspaper and student govern/politics, etc. A mean of 1.82 was reached and it indicated that on average students were involved in 1 to 2 types of extra curricular activities on campus. Another question addressed how

many volunteer organizations one has been involved outside of school. Generally speaking, students have either participated in one organization or not at all. As shown in Table 13, the frequency of participation of extra-curricular activities and voluntary work during college years was significantly correlated with each other.

Table 13 Correlation among college social capital indicators

	Extra curricular activities in college	Number of volunteer organizations
Extra curricular activities in college	1	
Number of volunteer organizations	.48*	1

*Correlation is significant at .01 level

College impact

Students' perception of college impact consisted of 5 items measuring students' view on the impact of college experiences. All 5 questions were asked to expect yes or no answers with 1 corresponding to "yes" and 0 corresponding to "no". The mean of the 5 items were 0.87 for impact on better jobs, 0.81 for impact on higher salary, 0.86 for impact on more responsibilities, 0.82 for impact promotion opportunity and 0.82 for better job performance. Overall, the surveyed students believed that the postsecondary education had a positive impact on better job opportunities and job related benefits. As shown in Table 14, the five items were significantly correlated with each other with all correlations greater than 0.50.

Table 14 Correlation among students' perception of college impact indicators

	PSE impact better jobs	PSE impact higher salary	PSE impact more responsibility	PSE impact promotion	PSE impact job performance
PSE impact better jobs	1				
PSE impact higher salary	.72*	1			
PSE impact more responsibility	.66*	.69*	1		
PSE impact promotion	.66*	.73*	.73*	1	
PSE impact job performance	.55*	.55*	.61*	.58*	1

*Correlation is significant at .01 level

Job Outcomes

Job outcomes were measured by two items: overall job satisfaction and annual income. On average, the sample were satisfied with their current job (mean = 0.87) on various aspects such as payment, job opportunities and job security. And average annual income was around \$25,800. A transformed "income" variable was created as an indicator for higher income. It was set to be 1 if one's income was above \$20,000 and 0 if it was below. This resulted in a mean of 0.59 for the new transformed income variable. As shown in Table 15, the overall job satisfaction and income were correlated at significant level .01 with a correlation of .141.

Table 15 Correlation among job outcome indicators

	Job Satisfaction overall	Income
Job Satisfaction overall	1	
Income	.14*	1

*Correlation is significant at .01 level

Overall, the sample cohort has displayed the following characteristics: middle class in terms of socioeconomic status; excellent academic performance between 6th grade and 8th grade; moderate possession of home-based social capital; actively engaged in extra-curricular activities

and volunteer work during high school years; valued education after high school; generally satisfied with teaching/teacher at high school; well-performed in college; somewhat involved in extra-curricular activities and volunteer work in college; strongly valued college's impact on better job opportunities and in general felt satisfied with their jobs.

Structural Equation Modeling Analyses

The analyses consisted of two major parts: the measurement models showing the relations between the latent variables and their indicators and the structural models showing causal relationships between endogenous and exogenous variables. The measurement models were first estimated and the covariance matrix between factors then served as input to estimate the structural coefficients between latent variables. While confirmatory factor analysis models were majorly used for the measurement part, path diagrams analyses were adopted to present and explain the structural equations. A number of proposed models based on theories and previous literature were analyzed in order to reach the best fit for the dataset. These models were tested and revised in a sequential order until a theoretically meaningful and statistically acceptable model was reached. Individual parameters of the final model were examined to see how well the proposed model fits the driving theory. All the analyses were performed using LISREL 8.3 (Jöreskog & Sörbom, 1993).

Measurement Models

The measurement models describe the nature of the relationship between the latent variables and the manifest indicator variables by mapping the measures onto theoretical constructs loadings, i.e. the effect of latent variable on the measure. There were two exogenous variables included in the model: socioeconomic status and prior academic performance. Within

SEM modeling, this means that the two variables are the variables that other variables regress on. On the other hand, there were six endogenous variables included in the model: home-based social capital, school-based social capital, academic proficiency, college impact, social capital in college and job outcomes. Endogenous variables are recognized as the receivers of other exogenous variables in the model. The measurement models were constructed in two steps. First, the measurement model for each latent variable was analyzed. Then, the full measurement model was tested for all latent variables simultaneously.

Due to the high correlations among indicators, 3 composite variables were created to avoid complicating constraints. The composite variables were introduced in the way that they captured the multiple dimensions of information whereas they eliminated the potential problem of multicollinearity. These 3 composite scores were: average score for parents-students' discussion on school activities; average score for parents-students' discussion on future education and average score for parental involvement.

In the calculation of statistical estimates, panel weights were applied to adjust for the sampling weights embedded in the complex sample design of NELS data. AM software was used to perform statistical analyses to generate correlation matrix and standard deviations. Three sampling weights were used in the calculation: sampling stratum, primary sampling unit and the panel weight (Base year, F1, F2, F3 and F4). This resulted in a weighted sample of 946,943.

Table 16 Summary of fit statistics for final measurement model (N=2,971)

Model	Chi-Square	df	P-value	CFI	GFI	RMSEA	ECVI	SRMR	ECVI for saturated model
Full Measurement Model	1360.90	446	0.00	0.98	0.97	0.03	0.54	0.03	0.38

Full measurement model. The final measurement model was constructed based on 33 variables which loaded on 8 factors. The model fit indices for the full measurement model were summarized in Table 16. As shown in Table 16, chi-square for the full measurement model was

statistically significant, ($\chi^2 = 1360.90$, $N = 2971$, $p < .05$). The significant chi-square indicated that the input covariance matrix was not equal to the reproduced covariance matrix. This was greatly due to chi-square's sensitivity to the sample size. However, when looking at the chi-square to degrees of freedom ratio, a relatively good model fit was observed. The results were then confirmed by several other indices of model fit: goodness of fit index ($GFI = .97$), comparative fit index ($CFI = .98$). The values of GFI and CFI range from 0 to 1, where the higher the values better the fit. Values above .95 for both GFI and CFI are generally considered to indicate a well-fitting model (Jöreskog & Sörbom, 1993). Root mean square error of approximation ($RMSEA = .03 < .05$) indicated that the model was a close fit in relation to the degrees of freedom. Expected cross-validation index ($ECVI = .54$) was slightly above that for the saturated model, but below ECVI for the independence model, indicating that the model will fit in a new sample and standardized root mean square residual ($SRMR = .03$) was less than .05 as desired. All of these fit indices suggested a well-fitting full measurement model.

Table 17 summarized the standardized factor loadings, t-statistics and error variance for the indicator variables in the full measurement model. From the summary statistics for standardized residuals, three correlations were suggested to be added to the model: correlation between the number of types of extra-curricular activities and the time spent on those activities; the correlation between "the teaching is good at school" and "teachers are interested in students"; and the correlation between "how important to get good grades" and "how important to study". These correlations indicated that the types of extra-curricular activities one participated were related to the time one spent on those activities; and the quality of teaching was associated with teachers' interest in students; and peers who think good grades are important also endorse the importance of studying. Correlated error terms indicated that the residual of one indicator was

related to the residual of another indicator. Although model fit would increase if a covariance arrow is added between indicator error terms, the recommendation is to do so when there are strong theoretical basis in the model for expecting such covariance. In the current case, these 3 correlations between the error terms were added for obvious related patterns. As shown in Table, the standardized loadings ranged from .28 to .85 with t-statistics ranged from 8.04 to 53.47, and error variance ranged from .28 to .93. Given the significant factor loadings, the model was retained as the final measurement model.

Table 17 Properties of the final full measurement model

Latent Variable	Variable	Standardized			
		Loading	t	Error	Reliability
SES	Highest level of education completed	0.73	38.35	0.47	0.53
	Spouse's highest level of educ completed	0.77	40.41	0.41	0.59
	Total family income frm all sources 1987	0.61	31.65	0.63	0.37
Prior Experience	Grades from 6th grade till now (Science)	0.70	37.49	0.50	0.49
	Grades from 6th grade till now (English)	0.67	35.43	0.55	0.45
	Grades from 6th grade till now (Social Studies)	0.67	35.49	0.55	0.45
	Grades from 6th grade till now (Math)	0.53	26.80	0.72	0.28
Home-based Social Capital	Composite for home sc (parental involvement)	0.68	27.31	0.54	0.46
	Composite for home sc (discuss school)	0.56	23.99	0.69	0.31
	Composite for home sc (discuss future)	0.41	17.30	0.83	0.17
Extra-curricular Activity in 12th grade	F2 extra-curricular activities at school	0.37	15.18	0.87	0.14
	Time spent on extracurricular activities	0.40	16.15	0.84	0.16
	Community volunteer work past two years	0.40	16.35	0.84	0.16
Peer Relationship	How important to continue educ past hs	0.82	44.27	0.33	0.67
	Among friends, how imp to get good grades	0.69	36.79	0.53	0.48
	Among friends, how imp to finish high school	0.68	36.56	0.54	0.46
	Among friends, how important to study	0.56	28.61	0.69	0.31
Teacher-student relationship	Students are graded fairly in school	0.66	31.00	0.57	0.44
	Teachers are interested in students	0.61	28.13	0.62	0.37
	The teaching is good at school	0.61	27.89	0.63	0.37
	Discipline is fair in school	0.54	26.02	0.70	0.29
	Some teachers ignore cheating	0.36	16.91	0.87	0.13
Academic Proficiency	Highest PSE degree attained	0.70	24.41	0.51	0.49
	Grades at highest undergrad institution	0.32	15.34	0.90	0.10
College Social Capital	Composite extra curricular activities in college	0.85	33.62	0.28	0.72
	Number of volunteer organization	0.55	25.58	0.70	0.30
College Impact	PSE impact-higher salary	0.83	53.47	0.31	0.69
	PSE impact-promotion opportunity	0.81	52.09	0.34	0.66
	PSE impact-more responsibility	0.80	50.37	0.37	0.64
	PSE impact-better jobs	0.79	50.06	0.37	0.62
	PSE impact-job performance	0.68	40.12	0.54	0.46
Job Outcome	Income	0.41	8.80	0.83	0.17
	Job satisfaction - overall	0.28	8.04	0.93	0.08

Structural Equation Models

During the structural equation model building process, a model development approach was used in such a way that a base model was first tested using SEM procedures, found to be deficient, and then a series of alternative models were tested based on changes suggested by model statistics and SEM modification indices. And the model performances for a total of 4 models were listed in Table 18.

Table 18 Summary of fit statistics for tested models

Model	Chi-Square	df	CFI	GFI	RMSEA	ECVI	ECVI for Saturated	SRMR
Base	1521.999	460	0.976	0.969	0.028	0.59	0.38	0.033
1	1578.843	464	0.976	0.969	0.028	0.59	0.38	0.034
2	1648.334	467	0.974	0.967	0.029	0.61	0.38	0.034
Final	1672.544	468	0.974	0.967	0.029	0.62	0.38	0.034

Base model. A base model was first tested and was shown in Figure 9. The directional relationships were generated from the theoretical and empirical literature reviewed for the study that was discussed in chapter 2. Goodness of fit indices, shown in Table 18, demonstrated a reasonably good fit of the base model ($\chi^2 = 1521.999$, $df = 460$, $CFI = .976$, $GFI = .969$, $RMSEA = .028$, $ECVI = .59$, $SRMR = .033$). Structural equation coefficients and t-statistics were then examined to determine which causal paths were statistically significant. The results have shown that a number of paths had low standardized coefficients and low t-scores. Given the nature of the current study was between exploratory and confirmatory, the researcher should cautiously adopt a post hoc fitting method when the initially proposed model was found to be inadequate in accounting for the relationships among the constructs (Dika, 2003). For the base model, the following paths were found to be insignificant: peer-relationship to academic

proficiency, academic proficiency to college social capital, family social capital to college impact, extra-curricular activities to college impact. These four paths were then removed for the next round calculation.

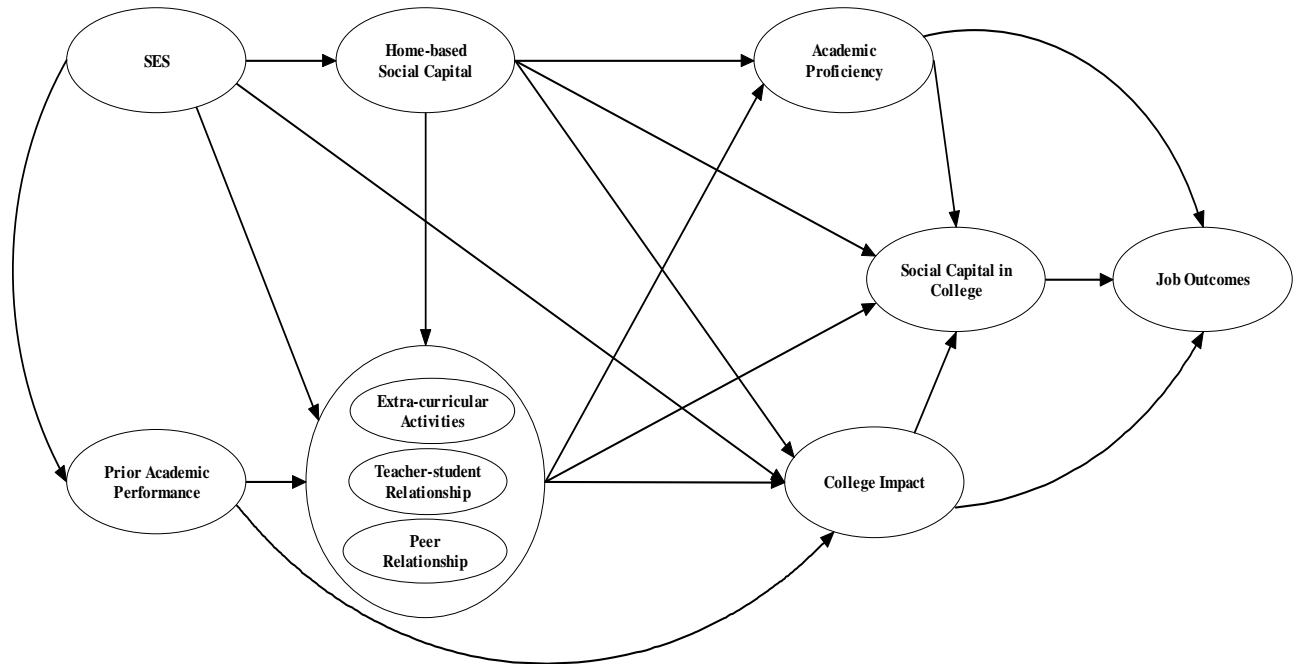


Figure 9 Base structural model

Model 1. After removing the insignificant paths, model 1 has displayed a model fit of $\chi^2 = 1578.843$, $df = 464$, $CFI = .976$, $GFI = .969$, $RMSEA = .028$, $ECVI = .59$, $SRMR = .034$. Based on Chi-square difference test, model 1 was significantly different from the base model ($\Delta\chi^2 = 56.8$, $\Delta df = 4$). Degree of freedom of model 1 slightly increased from the base model, whereas all other fit indices remained roughly the same as in base model. The estimated structural equations of model 1 have shown that there were a negative effect of family social capital on academic proficiency ($\beta = -0.380$, $t = -5.677$) and on college social capital ($\beta = -0.107$, $t = -2.014$); another negative effect of peer relationship on college social capital ($\beta = -0.064$, $t = -2.860$) was also observed. The data has simply indicated that higher volume in family social capital would result in lower academic proficiency and less college social capital; and the more peer valued education the less they would gain in college social capital. Obviously, these results contradicted with our hypothesis which projected these relationships to be positive. In the base model, these effects were included based on previous literature that theorized relationship among family social capital, academic proficiency and college social capital. However, the current research has shown a negative but weak relationship between these latent factors. No previous studies have suggested such negative effects and these results were against theories and common wisdom. The unexpected negative results might due to the potential problem of multicollinearity among these factors. Therefore, these negative effects were dropped from model 1 for the next round of calculation.

Model 2. The fit indices for Model 2 are also shown in Table 18. In this model, chi-square increased from Model 1 whereas the model fit indices have shown a slight decrease ($\chi^2 = 1648.334$, $df = 467$, $CFI = .974$, $GFI = .967$, $RMSEA = .029$, $ECVI = .61$, $SRMR = .034$). Based on Chi-square difference test, model 2 was significantly different from model 1

($\Delta\chi^2 = 69.5$ $\Delta df = 3$). While the decreases in fit indices were minimal, it reinforced the decision that the negative relationships in the model due to multicollinearity be eliminated. In the current model, academic has shown a dominating effect on job outcome ($\beta = .529$, $t = 3.954$) while our interest variable “college social capital” has shown a marginal effect ($\beta = .035$, $t = .578$). In all, 27.2% of the variances in job outcome could be explained by this model. In order to further explore the effect of “college social capital”, the dominating effect of academic was dropped to perform another round of calculation.

Model 3 (final model). Model 3 has shown the best fit compared with base model, model 1 and model 2 ($\chi^2 = 1672.544$, $df = 468$, $CFI = .974$, $GFI = .967$, $RMSEA = .029$, $ECVI = .62$, $SRMR = .034$). As shown in Figure 10, model 3 was more parsimonious than the previous 3 models yet was adequate in assessment of statistical indices to test our hypothesis based on theory. The tests of remained hypothesized paths were listed in Table 19. In all, 18 out of 20 paths in model 3 were considered to be significant, based on the recommendation of standardized coefficient greater than 0.05 and t-scores greater than 2 (Pedhazur & Schmelkin, 1991) The structural equation modeling results will be summarized in three parts: the effects of early stage variables (including SES and prior academic performance), the effects of high-school-year variables (including home based social capital and school-based social capital), and the effects of college-year variables (including academic proficiency, college impact and social capital in college).

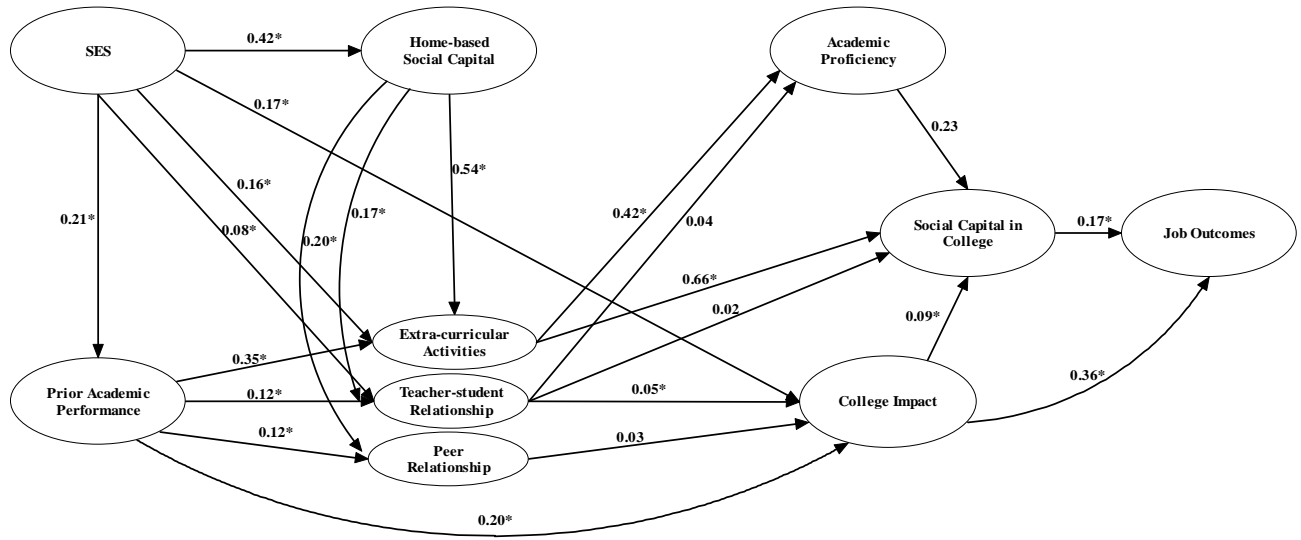


Figure 10 Final structural model

Effects of SES and prior academic performance. SES was the exogenous variable in the study. It has shown largely direct effects on the endogenous variables. It has a significant positive effect on home based social capital, school based social capital and college related variables. To be more specific, the effect on home based social capital was $\beta = .42$, the effect on extra-curricular activities was $\beta = .16$, the effect on teacher-student relationship was $\beta = .08$, and the effect on college impact was $\beta = .17$. For prior academic performance, it also displayed strong positive effects on the following endogenous variables: extra-curricular activities ($\beta = .35$), teacher-student relationship ($\beta = .12$), peer relationship ($\beta = .12$), and college impact ($\beta = .20$). These tests reinforced the hypothesis that school-based social capital (extra-curricular activities, teacher-student relationship, and peer relationship) is positively related to a student's socio-economic status and previous experience (prior academic performance). In other words, higher level of SES and better prior academic performance indicate greater home based social capital and school based social capital.

Effects of home based social capital and school based social capital. As shown in Figure 10, home based social capital has shown direct effects on school based social capital and indirect effects on college related variables; and school based social capital has shown both direct and indirect effects on college related variables. To be more specific, home based social capital has shown a positive effect on high school social capital, which includes extra-curricular activities ($\beta = .54$), teacher-student relationship ($\beta = .17$) and peer relationship ($\beta = .20$). In particular, home based social capital has shown the largest effect on the extra-curricular aspect of the school based social capital. On the other hand, school based social capital has displayed a number of direct effects on college related variables. For instance, extra-curricular activities had large positive effects on academic proficiency ($\beta = .42$) and social capital in college ($\beta = .66$),

indicating that participation in extra-curricular activities in high school is a significant predictor in predicting academic performance in college and social capital gained in college. The other two aspects of the school based social capital: teacher-student relationship and peer relationship, however, have shown insignificant direct effects on college related variables such as students' perception of college impact, academic proficiency and college social capital. To reflect on the hypothesis proposed in chapter 3, the current empirical study suggested that the relationships be slightly different: the quality of the university one attended is related to his/her possession of social capital before entering the college, which is majorly indicated by socio-economic status; a student's academic proficiency (e.g. undergraduate GPA and degree earned) is also related to his/her possession of social capital before entering the college, which is dominated by the extra-curricular activity aspect of school based social capital; social capital gained in college for a young student (e.g. participation in extra-curricular-activities and voluntary service work) is directly related to the quality of the attended university, and his/her previous social capital possession with respect to extra-curricular activities and indirectly related to his/her home based social capital.

Effects of social capital in college, academic proficiency and students' perception of college impact on job outcomes. For our target variable "job outcomes", the direct effects were observed coming from social capital in college and college impact; and the indirect effect was coming from college impact. As shown in Table 19, social capital gained in college years has shown a positive effect on job outcomes ($\beta = .17$) which consisted of income factor and job satisfaction. This result indicated that students who have invested more time and effort in extra-curricular activities and voluntary service work in college will earn more and be better satisfied with their jobs. College impact has also shown a positive impact on job satisfaction ($\beta = .36$).

Since college impact was conceptualized as students' view on the impact of college experiences, the positive relationship indicated that the more students valued college impact, the better they will be satisfied with their jobs. These two latent variables together have explained 18.8% of the variances of job outcomes.

Table 19 Standardized path coefficients for final model

Parameters	Coefficient	p-value	t-statistic
SES - Prior Academic Performance	0.21*	0.02	8.64
SES - Home Based Social Capital	0.42*	0.03	13.08
SES - Extra-curricular Activities	0.16*	0.03	4.72
SES - Teacher-student Relationship	0.08*	0.03	2.81
SES - College Impact	0.17*	0.02	7.58
Prior Academic Performance - Extra-curricular Activities	0.35*	0.03	10.67
Prior Academic Performance - Teacher-student Relationship	0.12*	0.03	4.58
Prior Academic Performance - Peer Relationship	0.12*	0.02	4.97
Prior Academic Performance - College Impact	0.20*	0.02	8.35
Home Based Social Capital - Extra-curricular Activities	0.54*	0.05	10.68
Home Based Social Capital - Teacher-Student Relationship	0.17*	0.03	4.91
Home Based Social Capital - Peer Relationship	0.20*	0.03	6.07
Extra-curricular Activities - Academic Proficiency	0.42*	0.05	8.98
Extra-curricular Activities - Social Capital in College	0.66*	0.05	14.20
Teacher-student Relationship - Academic Proficiency	0.04	0.03	1.43
Teacher-student Relationship - College Impact	0.05*	0.02	2.18
Teacher-student Relationship - Social Capital in College	0.02	0.02	0.84
Peer Relationship - College Impact	0.03	0.02	1.59
Academic Proficiency - Social Capital in College	0.23	0.26	0.80
College Impact - Social Capital in College	0.09*	0.02	4.05
Social Capital in College - Job Outcomes	0.17*	0.05	3.36
College Impact - Job Outcomes	0.36*	0.05	6.67

* *t-statistic* > 2

The problem with the current model development approach was that models confirmed in this manner were post-hoc ones which may not be stable. Once the final model has been selected, the results of the modeling need to be validated. Validation is performed to confirm that the

model developed is applicable to the subject population, and to ensure that the model has not been over fitted. It is recommended that researchers may attempt to overcome this problem by using a cross-validation strategy under which the model is developed using a calibration data sample and then confirmed using an independent validation sample (Harrell, 2001). If the model is being developed on a small sample, cross validation on several randomly selected sub-samples may be necessary. The current study adopted the latter method to examine the problem, which was to look at the estimated cross-validation index (ECVI) which assesses the likelihood that the model cross-validates across similar samples from the same population (Browne & Cudeck, 1993). What ECVI specifically measures is the discrepancy between the fitted covariance matrix in the development sample and the expected covariance matrix in a new similar sample (Byrne, 2001). The common application of ECVI is to compare a set of models whereby the index is computed for each model and are ranked in order. Typically, the model with the smallest ECVI should exhibit the greatest fit to a new sample. This index is also often compared with the saturated model to show the potential fit. The ECVI for the final model had the value of .62, which was slightly higher than the one for saturated model. This indicated that if we were to test the final model on new data, the model would fit adequately.

Summary of Structural Equation Modeling Results

In the model building procedure, the measurement model was first estimated. A confirmatory factor analysis of the model was conducted to test the meaningfulness of latent variables and their indicators, and then the measurement model fit was established before the structural model was interpreted. The final measurement model was reached followed by a series of steps of creating composite variables, correlating measurement errors, and constraining

loadings. The final measurement model has displayed a well fit of ($\chi^2 = 1360.90$, $N = 2971$, $p < .05$, $GFI = .97$, $CFI = .98$). After the measurement model was validated, the correlations matrix between measures was input to estimate the structural coefficients between latent variables. The theoretical model of interest was specified as a base model. This theoretical model was then tested and modified until a theoretically meaningful and statistically acceptable model was found. Once a proposed model was found to be deficient, then a refined model was tested based on changes suggested by SEM modification indices. A comparison of models' performance was also discussed. The final model which consisted of measurement and structural models was simultaneously estimated. The final model has also displayed a well fit of the data ($\chi^2 = 1672.544$, $df = 468$, $CFI = .974$, $GFI = .967$, $RMSEA = .029$, $ECVI = .62$, $SRMR = .034$).

CHAPTER FIVE

DISCUSSION AND CONCLUSIONS

The purpose of this study has been to examine the transmission of social capital in families and schools and how these different conduits of social capital can interact with each other and eventually influence the job outcomes. At the beginning of this chapter, a summary and discussion of the findings is presented; secondly, the contributions of the study to the conceptualization, measurement, and methodology of social capital research in education are discussed; thirdly, the implications for practitioners are outlined; finally, the limitations of the current study and suggestions for future research are presented.

Summary of Research Findings

In this section, the findings of the study are divided into 4 parts and are presented in the sequential order of the constructs in the model. The first discussion is held on the effects of the exogenous variables – socioeconomic status and prior academic performance. Then the effects of the intermediate social capital constructs – home based social capital and school based social capital are discussed. Finally, the discussion is centered on the interaction among intermediate social capital and college based social capital and their joint effects on the job outcomes.

Effects of SES and prior academic performance

Based on previous literature review, socioeconomic status (SES) has often been examined in relation to parental involvement and many researchers have found that SES is an important variable of interest in studies of parental involvement. In the current study, SES was conceptualized as an aggregate measure of parents' education and family income. It displayed a strong positive effect on home-based social capital ($\beta = .42, t = 13.08$). This relationship has shown that home-based social capital, which comprised of parent-child discussion on school activities, future education and parental involvement in school events, were strongly related to parents' educational level and the family's economic status. The higher socio-economic status a family has the more home-based social capital the child would have and would subsequently benefit from the interaction with his/her parents. This result was well expected since many studies have found significant differences in involvement practices among SES groups (Griffith, 1998; Grolnick et al., 1997; Sheldon, 2002) and have argued that SES and parental involvement were positively related (Brody & Flor, 1998; Lareau, 1989; Stevenson & Baker, 1987). However, the current study might have faced the same problem that Hoover-Dempsey and Sandler (1997) had once detected: the differences in parental involvement associated with SES were often more related to variation in resources that accompanied SES. In particular, since the time, energy, knowledge, and skills might be limited for parents with disadvantaged SES background, the students coming from these families might have less effective interaction with their parents on school related issues and the parents might also be less active in participating in school events.

Substantial research has indicated a positive relationship between academic performance and various aspects of school based social capital during high school years. The current study has demonstrated an excellent example of this positive association with three significantly positive

coefficients ($\beta = .35$, $t = 10.67$ for extra-curricular activities; $\beta = .12$, $t = 4.58$ for teacher-student relationship; $\beta = .12$, $t = 4.97$ for peer relationship). The positive effects have indicated that students who had better academic performance from 6th grade to 8th grade generally would be more active in participating in extra-curricular activities, have better relationship with teachers and peers during high school years.

While many studies have analyzed the effects of extra-curricular activities on academic performance, the reverse relationship was seldom the focus of the research. Related studies have been done on profiling the non-participants, some of the characteristics of the non-participant included lower socioeconomic status, lower grades, and attending larger schools (Feldman & Matjasko, 2007; McNeal, 1998). Some research have also conducted correlation analysis on groups of high- and low-achieving students, and found that high achievement was associated with higher rates of participation in extra-curricular activities, as well as participation in a greater number of activities (Haensly, Lupkowski & Edlind, 1986; Marsh, 1992). This conclusion was supported by the current study in which the measure of extra-curricular activities in high school consisted of 3 items: the number of extra-curricular activities, the time spent of those activities and community volunteer work. The current study has shown that the better academic performance in earlier stage was related to the active participation in extra-curricular activities at later stage.

Among the research that have found positive relationship between academic performance and teacher-student relationship and peer relationship, this study was one of them. In Murray's 2004 study, academic orientations were found to account for a significant amount of variance in teacher ratings of conflict and dependency in teacher-student relationships. Some correlation analyses have also reported positive associations between academic competence and teacher-

student relationship quality. The current research has reinforced and complemented previous work that academic performance was positively related to student ratings of teaching and teacher-student relationship. Students with better prior performance would generally have more positive perceptions of their teachers when they got into high school and also be more satisfied with teaching quality in high school. Not many researches have demonstrated a positive relationship between academic performance and peer relationship. Despite a dearth of literature on the relationship of academic competence and peer relationships a few researchers claim that the academic competence was associated with peer acceptance (Good & Brophy, 1994). The current research differed from historical literature in the way that the conceptualization of the peer relationship relied on the shared values among peers, especially, the values towards education. For instance, the measures of peer relationship focused on friends' views on the importance of study and future education. Reasonably, one would expect a student who performed well in studies and placed high value on his education would have friends who also behaved similarly and shared the same values and ideas.

Prior academic performance has also shown a positive effect on college impact ($\beta = .20$, $t = 8.35$). This indicated that students' ratings of the impact of post secondary education was significantly related to their prior academic performance as early as in grade 8. For instance, a student with better academic performance in grade 8 was more likely to attend a college that better benefit him/her for future job opportunities.

Effects of home-based social capital

Home-based social capital was found to have positive effects on the three dimensions of high school social capital ($\beta = .54$, $t = 10.68$ for extra-curricular activities; $\beta = .17$, $t = 4.91$ for

teacher-student relationship; $\beta = .20$, $t = 6.07$ for peer relationship). In all, home-based social capital observed in 10th grade had a significant impact on students' school social capital acquisition in 12th grade. To be more specific, students whose parents were involved in school related activities would be more likely to participate in extra-curricular activities, have better relationship with teachers and peers. Some researchers have claimed that the students who had conversation with their parents about school and interests were more likely to have better academic performance as well as higher extra-curricular participation rate; some studies also stated that parental involvement in the form of school visits had positive achievement effects (Steinberg, 1996). The current research results added to the above conclusions that more meaningful and more frequent parental involvement will help young students develop the norms conducive to greater social capital possession and achieve better academic achievement (note that home-based social capital has a positive indirect effect on academic proficiency through school-based social capital). Previous research has shown that student demographic variables and behavioral orientations accounted for a significant amount of variance in teacher-student relationships (Birch & Ladd, 1997, 1998). The current study has demonstrated that the variance in teacher-student relationship and peer relationship can also be explained by home-based social capital. For instance, students who had more frequent interactions with their parents would have better relationships with teachers and peers in schools.

Effects of school-based social capital

There is a rich body of research showing the various positive effects of extra-curricular activities. This study has also demonstrated two of them: effect on academic proficiency in college ($\beta = .42$, $t = 8.98$); and effect on college social capital ($\beta = .66$, $t = 14.20$). The first

relationship indicated that students who were more active in extra-curricular activities during high school years were more likely to perform well academically in college (higher GPAs and higher degree earned). This result was repeatedly seen in previous research. In a study of high school students' extra-curricular involvement, Guest and Schneider (2003) found that involvement in extra-curricular activities, such as sports, arts, and journalism clubs, was related to increased levels of achievement. Rombokas et al. (1995) have also looked at the degree of participation in extra-curricular activities in high school and how it affected college academic performance. They found a positive relationship between extra-curricular participation and academic performance. Other research has shown that the involvement in extra-curricular activities had a positive impact on students' transition from high school to college life. The second relationship investigated in the current study was regarding the impact of high school extra-curricular activities on college social capital acquisition. By definition, college social capital was similarly conceptualized as the extra-curricular activities and voluntary work participation during college years. Reasonably, this correlation was expected to be high since the past behavior was generally a good predictor of similar behavior at a later time. In this case, students who were highly involved in extra-curricular activities in high school were more likely to continue to be active in the similar activities when they got into college.

As for the effect of teacher-student relationship on various factors, 2 out of 3 were found to be insignificant ($\beta = .04$, $t = 1.43$ for effect on academic proficiency and $\beta = .02$, $t = .84$ for effect on social capital in college); the one found to be significant had a marginal effect on college impact ($\beta = .05$, $t = 2.18$). In all, the current study did not provide a strong support for the conclusion that teacher-student relationship had a significant effect. However, a number of previous research studies have revealed that teacher-student relationship promoted students'

learning in later years. For instance, positive relationships between teachers and students can significantly affect students' academic performance; students learned more effectively when they felt bonded with teachers and valued in the school environment. One possible explanation of the discrepancy was that the relationship and the outcomes were not observed concurrently in this study. In other words, instead of analyzing the effect of teacher-student relationship in high school on students' performance in high school, this study focused on the association of teacher-student relationship of high school and students' performance in college. Despite the weak effect of teacher-student relationship on college impact, the overall impact was marginal, indicating that this effect did not accumulate across the transition from high school to college.

Effects of social capital in college on job outcomes

Social capital in college was conceptualized as the measures of participation in extra-curricular activities and participation in voluntary organizations. The effects of college social capital have been extensively studied in previous research. A strong body of literature has found positive impact of the participation in extra-curricular activities and voluntary work in college years. Buerkle & Guseva (2002) argued that social capital gained while in college had an independent effect on individual income, and this effect varied by individual's education and experience levels. Some researchers also argued that extra-curricular involvement allowed students to link academic knowledge with practical experience, thereby leading to a better understanding of their own abilities, talents, and career goals (Kuh, 1995). Specifically, participation in extra-curricular activities and leadership roles in these activities were positively linked to attainment of one's first job and to managerial potential (Moore et al., 1998). As for the impact of voluntary work, some researchers have argued that students who volunteer for student

activities could gain more contacts and a number of valuable skills through their participation. These contacts and skills can be turned into marketable ones that will aid student volunteers in finding paying jobs (Hall et al., 1998). Since job outcomes were operationalized as a composite of job satisfaction and income in current study, the significant coefficient ($\beta = .17$, $t = 3.36$) indicated that participation in college extra-curricular activities and voluntary work played a positive role in getting students a more satisfying job and a better salary. On average, students who were once active in college volunteer activities were more likely to rate their job satisfaction higher and reported a higher annual income compared with their peers who did not seem to be involved in those extra-curricular activities and voluntary work. However, the magnitude of the effects of these activities was relatively small, compared to the other significant determinants such as college impact. Despite of this, the current study has added to the historical literature on extra-curricular/voluntary activities by building the linkage between volunteer involvement and early job attainment. In particular, volunteer work during college years affects students' obtaining a satisfying job status in a positive way.

Effect of college impact on job outcomes

Since college impact was measured by 5 items regarding students' view on the impact of college experiences on various aspects of job outcomes such as salary and promotion opportunities, the significant positive coefficient was well expected ($\beta = .36$, $t = 6.67$). Overall, the higher students rated their college on these impacts, the better satisfied they would be with their later jobs and the higher salary they would gain.

Contribution of the study

Conceptual contributions

This study did not rely on one theory but rather incorporated an eclectic and exploratory approach to draw upon various theoretical ideas from different sources. The nature of this eclectic study lied between exploratory and confirmatory to study the effects of cumulative social capital on a person's early career pursuit. Based on earlier theoretical formulations and previous literature, the proposed final model in this study has reached its goal to find support for the hypothesized relationships. This resulted in a complex model that was likely to do a better job of tracing the effects of earlier social factors to later ones and synthesizing all effects on an aggregate level.

This study was also unique in its complex conceptualization of social capital. According to earlier research, families and schools represent the two primary ecological contexts for generating social capital (Bronfenbrenner & Morris, 1998). Instead of viewing them in isolation from each other as many studies did, the current study recognized and explored the interaction between the two, therefore was able to investigate the impact of their joint effect as well as in each context on various outcomes. By doing so, this study allowed examination of the transmission of social capital in families and schools and how these different conduits of social capital interacted with each other and eventually influenced the job outcomes. To be more specific, the final model well explained the inter-relationships among home-based social capital in terms of parental involvement and school-based social capital in terms of the extra-curricular activity participation, membership of voluntary organization, teacher-student relationships and peer relationships.

The final conceptual contribution was the focus on the impact of cumulative social capital on job outcomes. Previously, researchers have studied social capital and its impact on various outcomes, however none of them has included a time window as long as from grade 8th to after college graduation. Most literature involved only college years' observations to study the relationship between social capital and career related outcomes (Astin & Sax, 1998; Astin, Sax, & Avalos, 1999; Williams & Winston, 1985). Although these studies have done a great job in analyzing the impact of extra-curricular activities and voluntary work participation, none of them was able to capture the dynamics of the social capital possession and its cumulative impact on early job attainment. In other words, previous research has more or less treated social capital acquisition as a static process. The current study, however, was in a good position to accomplish this goal of looking at the accumulation of social capital from middle school years to college because it observed social capital in multiple time points and in multiple school settings. In particular, the significant paths from early school years' constructs to college social capital variables certainly suggested that social capital did accumulate across years and the cumulative effect did play a role in promoting job outcomes.

Methodological contributions

The major methodological contribution of this research was the use of structural equation modeling (SEM) to analyze the model of this complexity. In general, SEM is a viable and valuable set of analytic tools for evaluating complex survey data. In the current study, SEM has done a good job in making sense of complex interrelations in longitudinal data sets. In particular, the use of this methodology enabled the specification and estimation of the final model with interconnections among home based social capital, school based social, college impact and job

outcomes. SEM technique was once again proved to be suitable for the investigation of multidimensional phenomena like social capital and educational development. It was also a powerful tool which took into account the interactions among independent variables, influences by unknown external factors, and correlations among error terms. These issues would have been extremely difficult to handle had we used multiple regression. For current study, SEM allowed positing latent constructs presumed to be underlying causes of observed manifest variables; it also offered a greater flexibility in representing relationships among theoretical constructs and the ease in evaluating the goodness of fit of the proposed model. In addition, via nested chi-square tests and other means, we were able to comparatively evaluate the fit of alternative models that differ in complexity. In this regard, SEM greatly supported the model comparison approach to reach the final model.

This study makes solid contributions to existing research on social capital in education, because the process of analysis, specification of various models, and inclusion of constructs measured at different time points was ideal due to the nature of the data, the sample, and the theoretical base for the model. Instead of cross-sectional data that usually creates a limitation on causal inference, the current research was based on longitudinal data. The factors in the model were measured at different points in time, although they may coexist and covariate, the relationships among them were essentially longitudinal in nature. Because of this longitudinal nature of this research we were more comfortable in inferring a causal model of this process.

Thirdly, the NELS data was particularly well suited to this research. The use of NELS data allowed the opportunity to perform a dynamic analysis of social capital accumulation by students over a longer period of time. Because of this, the analysis was able to capture the rich information collected in multiple time points. In addition, the size and the representative

structure of the data allow for complex analysis and the generalization of the findings to the population of post-secondary graduates.

Contributions to measurement

Although the idea that social capital is a multidimensional concept is now commonly accepted, most research has been focused on a particular side of the concept, according to the perspective and scope of a study. One of the major challenges of this study was to provide an accurate confirmation of the very multidimensionality of the concept of social capital, showing that its various dimensions exert diverse effects on a range of relevant educational and job outcomes. To achieve this goal, the current study developed a number of composite measures, which derived from multiple variables, to describe diverse social capital's dimensions and to demonstrate the important role of cumulative social capital. Home based social capital loaded on 3 factors, students' discussion with parents on school activities, students' discussion with parents on college preparation and parental involvement in school events, each of which was derived from a number of items. High school based social capital also loaded on 3 factors, extra-curricular activities, teacher-student relationship and peer relationship, each of which consisted of individual measures. The final measurement model was chosen to maximize the construct validity and reliability without sacrificing the interpretability of the overall model.

Implications for practitioners

In addition to adding to the literature that examines the effects of social capital, the current study also had an important policy focus. This study examined whether social capital, especially in the form of participation in extra-curricular activities and voluntary work, is

significantly and positively related to students' success in transitioning from academia to work. The importance of extra-curricular activities and voluntary organizations on college campuses was well established in this study. To a great extent, this study managed to offer new evidence to educators and policymakers about the link between these activities and college graduates' transition to the workplace. Therefore, the results of this paper should be of particular interest to university policy makers and career counselors.

In light of the mounting evidence that social capital can facilitate desirable outcomes, the results of this study further confirm that both high schools and universities should pay particular attention to social capital that can be acquired by students as they progress through school years. There is evidence that student involvement in extra-curricular activities during high school years positively impacted educational attainment in college years. Evidence from college years has shown that extra-curricular involvement appeared to be a key tool in gaining social capital. What's more, higher rate of participation in extra-curricular activities was related to a more positive view of college experience and a more satisfying job outcome. Therefore, schools are encouraged to develop better and diversified extra-curricular activities and voluntary organizations for promoting and creating social networks that would result in social capital. To better achieve this goal, extra-curricular activities and voluntary organizations should not only focus on the campus level involvement by the individual student, but also a broader community level involvement in volunteer activities.

Finally, the research offered a glimpse into the intersection of family and school contexts that can be built on in important ways. According to the significant results showing the importance of both home based and school based social capital, we need to also consider how the two institutions can work together to promote social capital formation. The presence of direct

and indirect effects of family and school provides significant support for the promotion of combination of investment at both home and school. The schools should explore and structure new and innovative ways to involve parents in the school lives of their children and help parents to become active partners in the academic and social aspects of schools.

Limitation of the study

Despite the contributions this study has made, it also has a number of limitations: first of all, our review of theoretical literature revealed some limitations of using an extant data set which may not contain variables or items that reflect various aspects of social capital. The final model generated based on NELS data may not be able to capture variables that were implicated in the causal relationship. In other words, when using an extant data base a researcher is constrained by what is available in the data to create constructs. For example, in the creation of home based social capital one can think about other variables that were not included in the data. Another example is that there were no measures of relationship with college faculty in the data. Such omissions can affect both the measurement and structural equation structure and, in addition, commonly result in biased parameter estimates and inaccurate estimates of standard errors (Kaplan, 1989; Reichardt, 2002). It is possible that alternative models might fit the data as well as or better than the target model under consideration.

Secondly, in the current study a large number of observations were dropped due to missing values in the calculation of covariance matrix. This was largely due to longitudinal nature of the study, which was greatly subject to attrition and other factors that render the data incomplete. We adopted the ad hoc approach to missing data - listwise deletion - that traditionally has been used in such cases. This results in several problems. Such approach can

produce biased and inefficient parameter estimates and inaccurate standard errors (Schafer & Graham, 2002).

Although interactions should generally be considered as part of hypotheses formulated by researchers, this was not the case for the current study. This omission was not due to the absence of theoretical interaction hypotheses from previous literature, but due to the disadvantage of using SEM approach to test interactions. Such tests are widely performed in the literature by other analytic approaches, but are not generally done using SEM. Some researchers have argued that for SEM, the interaction terms often had low reliability and resulted in bias estimates and lower power (Moosbrugger et al., 1997). Had we used other techniques such as multiple regression, the explicit specification of interaction terms would have been done in a more natural way. Having said that SEM has the limitation of handling interactions, one also has to admit that SEM is not ideal for estimating nonlinearity. In the current study, the models were tested using LISREL to be parameterized to meet the constraint that all measurement and structural equations must be linear in their parameters (Tomarken & Waller, 2005).

The ambitious nature of the study leads to the challenges of model interpretation and generalization of the findings. Generally speaking, no findings in any empirical research are free of the data. The performance of any statistical model is subject to the limitation of the data and can be just as good as the data. The current study utilized NELS data and was not an experimental study in nature. However, given the strong methodology and the longitudinal nature of the study, we can conclude that the results from this research can be generalized to a larger population with caution. The model results should be generalized only when students' characteristics, school conditions, and greater socio-economic environment are similar to that of the model development dataset - NELS. To ensure the generalizability of the study, many

researches often rely on cross-validation to provide evidence of model stability and generalizability. For a study of exploratory nature, cross-validation on other samples is often desired. Although it was discussed in the previous chapter that the model validation index ECVI showed good level of stability, the final model developed by this study should be cross-validated using other samples and should also be validated using out-of-time cohort. This is saying that it is ideal to test the model results on a more recent wave of survey data and to validate the model performances on that out-of-time sample.

There were a few questions that remained unanswered due to the omission of demographic information in the final model such as race and gender. Since the study did not assume differences in the measurement models or structural equations models for different racial group or different gender, the variance in social capital or final job outcomes cannot be explained by these important demographic variables. However, this is not the case based on literature review. While the comparisons of different racial groups or different gender groups were somewhat beyond the scope of this study, future studies should apply the findings of the generic model to the subgroup of each demographic dimension. This study offered a starting point for future research to look into the demographic effects on social capital accumulation and various educational and occupational outcomes.

Last, the data used for the current study was essentially self-reported, therefore, the information conveyed through the answers to the survey could be biased. For instance, the information on student's prior academic performance was reported by students themselves instead of being collected from official transcripts. There is evidence that self-reported data on student academic performance is likely to overstate their grades (Frucot & Cook, 1994).

Directions for future research

Given the elusive nature of the notion of social capital, this study does not claim to have found a best way to measure it, but it points out the need for future research to study a more comprehensive definition of social capital. Future research efforts should replicate and expand these findings using more comprehensive measures of home based and school based social capital and job related outcomes. Other directions for future work include a closer look at potential moderators, such as race and gender. For instance, we anticipate that cumulative impact of social capital for the selected sub-population of interest may be different, as the pattern of the effects may differ from what was observed for the whole population. Future research should further look into the different effects of various types of extra-curricular activities on social capital since this study has provided only limited information on what extra-curricular programs can better promote social capital and in what ways. Future research should also evaluate additional hypotheses regarding how home based and school based social capital jointly affect job outcomes instead of merely looking at their additive effects.

Conclusions

Our purpose in this study has been to evaluate the cumulative effects of several forms of social capital on student's educational and occupational outcomes. In spite of stated limitations, the findings of this study add to the scant literature addressing the cumulative effects of social capital in the field of education. We developed the notion of social capital both at home (discussions with parents and parental involvement) and at school (extra-curricular activities, teacher-student relationship and peer relationship for high school and extra-curricular activities/voluntary work for college) and then provided an empirical test of the cumulative

effects of these sources of social capital and have found significant positive effects that social capital has on various outcomes. At the end of the study, we have also pointed out several directions for future research.

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