Habitus and 'Class' and Gender Disparities in Academic Achievement:
A Structure-Disposition-Practice Model

by

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DEDICATION

To Trina, without whose patience and support this would not have been possible, and to Tate and Jordan for helping me keep it all in perspective.

ABSTRACT

This dissertation contributes to our understanding of the 'class' and gender

dimensions of educational inequality. In doing this, it uses a "structure-disposition-

practice" model that is rooted in Bourdieu's theory of cultural and social reproduction but

also draws from the theoretical formulations of subsequent sociologists to elaborate on

the core concept, *habitus,* and make it more amenable to quantitative analyses. Habitus is

a socialized set of dispositions that shapes how individuals orient to the social world,

including their perception of their life chances and corresponding styles of thought and

behaviour. The model posits that students' habitus is a formative influence on how they

react to their educational environments and affects their academic achievement.

Furthermore, students' habitus is affected by both their social 'class' and their gender,

and these 'class' and gender differences help explain 'class' and gender disparities in

educational achievement.

Working with multilevel Canadian data from the linked PISA-YITS surveys, this

study uses structural modeling to examine the relationships between family

socioeconomic status, sex, habitus, academic practices, and academic achievement. As

well, school contextual effects are included. A number of the findings were consistent

with hypotheses. Most notably, the results provide some evidence that students' family

SES significantly affects their habitus and that their habitus significantly affects their

academic achievement. For the most part gender differences in the model were modest,

but a few differences were evident: the boys outscore the girls in math and science while

the girls excel in reading, students' SES has a relatively stronger effect on the girls'

academic achievement than on the boys' achievement, while students' habitus affects the

boys' academic achievement more strongly than the girls' achievement. Finally, the

average SES of the schools students attend affects both the boys' and the girls' academic

achievement, but this effect is stronger for the boys, and the effect of the boys' habitus on

their academic achievement diminishes slightly as the average SES of the schools they

attend increases; no such contextual interaction was evident for the girls.

Overall, the results of this study give qualified support to Bourdieu's framework

and the potential of habitus and the "structure-disposition-practice" model to help us

understand 'class' and gender differences in academic achievement.

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CHAPTER 1

INTRODUCTION

The persistence of educational inequality is a central concern in sociology of education research. Canada generally fares quite well relative to other advanced western nations in terms of educational equality (Marks, 2005). For example, Canada was ranked fourth best among 24 OECD countries in the fourth *Innocenti Report Card* (UNICEF, 2002). Yet educational inequality remains a serious issue even in a comparatively well performing educational system such as Canada's. A number of recent analyses have concluded that socioeconomic background continues to play a significant role in determining the distribution of educational trajectories in Canada (Davies & Guppy, 2006; de Broucker & Noel, 2001; Guppy & Davies, 1998; Wanner, 1999). Additionally, although equality between the sexes has improved in recent decades, traditional gender socialization processes and societal preconceptions of sex-appropriate roles continue to substantially influence the educational outcomes of many boys and girls (Gaskell, 1992; Mandell & Crysdale, 1993; Moss & Attar, 1999), channeling boys toward the 'hard' sciences, technology and engineering and girls toward the arts and helping professions (Bernhard & Nyhof-Young, 1994; Forcese, 1997; Weiner, Arnot, & David, 1997, Schaeffer, 2000).

Various theories have been posited over the years to account for the persistence of educational inequality in advanced capitalist states. Each has its strengths and weaknesses, its proponents and critics, its empirical scoresheet. Is is beyond the scope of

this study to review these perspectives in detail. Suffice it here to offer a very brief

encapsualtion of several of the more influential accounts, before making the case for the

importance of testing the empirical tenability of Pierre Bourdieu's framework.

Structural-Functionalist approaches see stratification as an inevitable

('functional') feature of education as an allocative mechanism; individuals of differing

ability and motivation are necessarily sorted out according to the needs of society and/or

the economy. All children should have access to public education, but ultimately

meritocratic competition will ensure that, for the good of society, the 'cream rises to the

top' to ensure the most talented people are motivated to obtain the most important

positions (Davis & Moore, 1945). In this view the intergenerational persistence of

inequality reflects the failure of lower socioeconomic status families to embrace modern

values and practices, and to nurture in their children the cognitive and behavioural

abilities necessary for success in the meritocratic system (Hyman, 1953). Criticisms of

this perspective include; it does not establish what makes a job/position more functionally

important (and thereby more valuable) than others, it overlooks pervasive structural

inequalities in society that prevent children from entering the educational system on a

level playing field, and, it fails to acknowledge that meritocratic competition within

education is much more 'functional' for some segments of society than others.

Coming from a neo-Marxist tradition Bowles and Gintis (1976) developed the

"Correspondence Principle." The essence of this account is that public education has

evolved in accordance with the needs of capitalist economy. The organization of schools

parallels that of capitalist workplaces—hierarchical in nature, emphasizing control and

competition. Schools socialize students into the capitalist 'hidden curriculum' and

students are selected into different levels/tracks of education to supply labour to the different levels in the occupational structure of the capitalist system. Students from lower SES backgrounds tend to be selected into educational tracks that result in lower status and lower paying positions, and thus the education system contributes to reproducing the existing class structure (socially, ideologically and economically). Critics contend that Bowles and Gintis' argument is too simplistic and overstates the degree of correspondence, and that it overlooks other dimensions of inequality such as gender, age and race/ethnicity.

While structural-functionalism and the correspondence principle are macro in focus, labeling theory is more micro in its analyses. The key notion in these analyses is that of the self-fulfilling prophecy; when children are labeled (e.g. 'good' student; 'bad' student) they tend to incorporate such labels into their self-concept and to behave in ways that reinforce that image to themselves and to others (Rosenthal & Jacobsen, 1968; Rist 1970). A primary focus in this area is on better understanding how teacher expectations based on students' race, gender, class, ethnic background, religion or other characteristics affect students' self-perceptions and achievement levels (Good & Brophy, 1973; Rist, 1977). The basic hypothesis is that teacher preconceptions may bias their perceptions of students' conduct and ability, and that teachers may behave differently toward those for whom they have lower or higher expectations. The evidence for labeling effects appears to be somewhat mixed (Farkas, Grobe, Sheehan, & Shuan, 1990; Weinstein, 2002; Wineburg, 1987).

Rational choice theories focus on actors' perceptions of the costs and rewards associated with educational decisions. If anticipated rewards of a particular behaviour or

course of action outweigh anticipated costs, individuals and/or families are likely to choose (or continue with) that behaviour/action. If costs outweigh benefits then individuals/families will select other courses of action. A number of rational action based theories of educational attainment (e.g. Erikson & Jonsson 1996; Becker 2003; Breen & Goldthorpe 1997) focus on class/SES differences in the cost-benefit analyses that families undertake in making choices at various educational transition points, and how the perceived benefits of educational investment are more likely to outweigh the costs for middle class families than for working class ones (Breen, Luijkx, Müller, & Pollack 2009).

A number of theories emphasize mismatches between the dominant school culture and the culture of students from lower class backgrounds. Willis (1977) focused on how class loyalties among working class students coalesce into counter-cultural stances that denigrate schooling and dampen the educational aspirations of working class youth. Bernstein (1997) posited that styles of speaking, or linguistic codes, vary by social class and that schools reward middle and upper class linguistic codes. Thus working class students are at an educational disadvantage to begin with and have to acquire these new linguistic codes to have a fair chance at school success.

Pierre Bourdieu offers the most comprehensively developed of the cultural mismatch theories. Bourdieu (1984, 2006) goes beyond Bernstein by pointing out that the cultural mismatch between schools and working class families, and the educational disadvantage it engenders, involves, not just language, but also values, knowledge, and styles of thought and behaviour. Bourdieu's theory of social and cultural reproduction views the formal education systems as a primary mechanism in the perpetuation of

socioeconomic inequality (Bourdieu & Passeron, 1977; Bourdieu, 1997, 2006). From this perspective, educational inequality is the purposeful product of an institutionalized system of legitimation intended to preserve the prevailing stratified social order and the privileged status of the ascendant social classes. In constructing his account of social reproduction, Bourdieu deployed a number of compelling concepts. Most well known in North America are his concepts of social and cultural capital, but less known are the accompanying notions of habitus, field, and practice.

Bourdieu's framework is one of the most prominent in sociology and much of its appeal rests on its emphasis on interrelating micro and macro processes, on reconciling structure and agency. In particular, the concept of habitus, which is central to his framework and to the present study, is posited to be a mediating mechanism that links social structures and individual practices. Bourdieu's writing, while fecund, is often notoriously difficult to interpret consistently and hence many of his ideas remain highly contested. Consequently, the empirical sustainability of much of Bourdieu's thought remains yet to be adequately demonstrated. Given his framework's prominence, the breadth of its scope, and its potentially great explanatory power, subjecting his concepts to expanded empirical investigation is critical. Bourdieu is, of course, not the first social theorist to focus on the dialectic between structure and agency, and even if his larger analytical framework was to prove empirically untenable, his concept of habitus may still provide a very useful heuristic for thinking about several parallel bodies of social research. In particular, how structurally conditioned socialization within a stratified society affects the ways people from different social backgrounds perceive, organize, and

act upon their experiences, and how these differences contribute to persistent educational and socioeconomic inequalities.

The present research project addresses a critical gap in the literature by applying quantitative methods of investigation to Bourdieu's concept of habitus, or more precisely, to elaborations and adaptations by subsequent theorists of the habitus concept and its impact on enduring educational inequality. In brief, habitus is a class-contingent set of dispositions that shapes how one orients to the social world, including one's perception of one's life chances and corresponding styles of thought and behaviour. In Bourdieu's conception and in subsequent derivations by other authors, classed habitus is theorized to be a formative influence on how students from different social classes engage with the educational system and their subsequent level of achievement. It has also been suggested by some theorists that gendered patterns of socialization translate into gender differences in habitus. Thus, the basic research questions guiding this study are as follows: Does family SES affect students' habitus, academic practices, and academic achievement? What are the relationships between habitus, academic practices, and academic achievement? Are there gender differences in these relationships? Finally, are there significant school context effects in any of these relationships?

CONTRIBUTIONS TO THE LITERATURE

One of the premises supporting this study is that habitus is a useful concept for bridging two major sociological heritages in the study of social inequality. On one hand, there is the American analytical tradition, generally characterized by a more individualistic, empirical focus. The status attainment model approach (e.g. Blau &

Duncan, 1967; Featherman & Hauser, 1978; Hauser, Warren, Huang, & Carter, 2000; Hope 1985; Hout 1989; Sewell & Hauser, 1975, 1992a, 1992b) exemplifies this tradition. This model and its kin have produced a number of impressive empirical examinations of the determinants of socioeconomic attainment but are not rooted in a larger systematic theoretical framework from which to make broader and deeper sense of their findings. On the other hand, there is the European tradition, which is generally more theoretical, and places greater emphasis on structural and cultural factors in explaining the persistence of educational and social inequality. This tradition is typified by the work of Bourdieu and his associates which, although theoretically rich, is fraught with empirical difficulties.

In terms of the sociology of education and social inequality, although each tradition may ask different questions, each is, at base, concerned in some way with the role that education has in the relationship between social origins and social destinations. Moreover, both are also ultimately concerned with what is referred to as the *socioeconomic gradient*: the fact that educational inequality and socioeconomic inequality are reciprocally related and this relationship is intergenerational in its effects, parental socioeconomic status (SES) is a major determinant of a person's educational attainment and, in turn, educational attainment is a major determinant of that person's SES. Habitus holds promise for bridging these two traditions because it is a theoretical construct rooted in the structuralist/culturalist European tradition, but one that, as this study demonstrates, is amenable to the empirical techniques of the American tradition. Conceptually, habitus is the nexus between social structures and individual agency—it enables mediation of structures and individual practices (Bourdieu, 1977). Thus, it could prove a useful concept for understanding how structural and cultural forces impact upon

individual behaviour and subsequent individual educational—and ultimately

socioeconomic—success. Moreover, empirically oriented investigations of Bourdieu's

theory such as the present study stand to help flesh out its compatibility with status

attainment model research, and to contribute to the ongoing elaboration of that model.

My search of the sociological literature reveals few quantitative studies of habitus,

and those uncovered have been limited to using occupational aspirations to operationalize

habitus (Dumais, 2002; McClelland, 1990). Also, although McClelland (1990) recognizes

the potential of Bourdieu's ideas to provide a useful theoretical compliment to the status

attainment model, her study measures habitus as a stand-alone concept, rather than as part

of his larger theoretical framework, which includes cultural capital, field, and practice.

Dumais' (1990) study, conversely, while offering encouraging findings on the importance

of habitus to academic achievement, was focused primarily on measuring cultural capital

and its influence on academic achievement. Additionally, both Dumais and McClelland's

occupational aspiration measures of 'habitus' are ordinal in nature. Dumais (2002) uses a

dummy variable to distinguish occupational aspirations in terms of upper white collar or

non-upper white collar. Similarly, McClelland (1990) differentiates occupational

aspirations into three categories: high-status white collar, low-status white collar, and

non-white collar. The range of variation, and the fineness of the distinctions offered by

these operationalizations are quite limited compared to the multi-item index used in the

present study.

Uniquely, this study undertakes a fuller, more multi-dimensional

operationalization of habitus by including—in addition to educational aspirations—other

dispositions and perceptions, as well as associated practices. In doing so, this study is

developing a "structure-disposition-practice" model of inequality in educational achievement that, although rooted in Bourdieu's work, builds on his framework and the subsequent work of other theorists. Additionally, this study is the first to quantitatively examine the influence of habitus on educational achievement in the Canadian context by applying sophisticated multilevel statistical analytic techniques to two national data sets.

LIMITATIONS OF THE STUDY

All research must be understood in light of its particular limitations, and the present study cannot claim exception. This study analyzes secondary data and thus is subject to concerns related to operationalizing constructs using secondary data. Although the two surveys used in this investigation are state-of-the-art, and provide excellent quality data, the questionnaire items were not constructed with the explicit purpose of measuring habitus and hence, as is true to some degree for most secondary data analysis, the operational definitions were determined by the indicators that were available.

It must also be acknowledged that the items comprising the measures for the various independent variables are from survey data and so are subject to the same limitations and biases as all self-report questionnaire measures (Singleton, & Straits, 1999). This limitation seems particularly noteworthy in relation to the measurement of habitus, which, as conceptualized by Bourdieu, encompasses internalizations and tendencies that the individual may not be fully cognizant of and whose valid measurement via self-report is not unproblematic. The limits of self-report could be somewhat mitigated by incorporating questions from teachers and parents. Also, important aspects of habitus and academic practices are less suitable to survey methods

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and may perhaps be better captured by mixed methods that incorporate direct observation in school and in the home.

School context is operationalized in the present study by school mean SES, which is the family SES of the students aggregated to the school level. It should be acknowledged that school SES is a rather general measure of school context and probably captures more of the school composition effect than the school climate effect. As discussed in the final chapter, future research with this model would do well to employ a more multi-dimensional operationalization of school context. Additionally, the present study does not account for cross-provincial variation in school systems. K-12 education is a provincial responsibility and provincial education systems may vary in important ways that are relevant to the model studied here.

Also, although the survey data used in this investigation is a step up from earlier large-scale assessment designs, it is not, as other researchers have noted, without its shortcomings. For example, it is cross-sectional, not longitudinal, in design and is therefore more limited in its ability to establish causality (Hopmann, Brinek, & Retzl 2008; Goldstein 2004). Another potential limitation is how educational achievement is measured—achievement scores of 15 year olds on standardized reading, mathematics, and science tests. This is just one of a number of possible approaches to measuring academic achievement.

Finally, the fact that the survey data used in this study is multilevel in nature and uses plausible values methodology presents both unique opportunities as well as unique challenges. The capacity to construct full structural equation models—that is, models specifying structural relations among latent variables—with multilevel data and plausible

values is just developing. Due to software limitations, the structural models (i.e. path models) used in this study did not incorporate latent variables; each construct is measured by a single variable—usually an index—and is assumed to be measured without error. Full structural equation models hold certain advantages over the structural models used here, including the capacity to measure latent variables and greater control of error (Kline, 2007; Schumacker & Lomax, 2004). Such advanced statistical modeling techniques, along with more comprehensive measures, offer the future promise of bringing into focus an ever more detailed picture of the multiple factors constituting student habitus.

AN OVERVIEW OF THE DISSERTATION

The following is a brief overview of how this dissertation is organized. The first section of Chapter 2 is a discussion of the relationship between social and educational inequality in education, or the socieconomic gradient. The second section provides an introduction to Bourdieu's basic framework as it pertains to understanding the persistence of educational and social inequality. The third section of Chapter 2 focuses on modifications and extensions of Bourdieu's work by subsequent researchers, followed, in the fourth section, by a review of a number of parellel research findings that are theoretically consistent with this understanding of the persistence of educational inequality. Chapter 2 concludes with an outline of the "structure-disposition-practice" model used in this study, explicating the variables and their relationships in the model, as well as the research questions under study. The instruments, data, and analytical procudures used in the study are presented in Chapter 3. Results for the full sample

analyses are presented in Chapter 4, while results for the separate male and female

samples are presented in Chapter 5. Chapter 6 provides a discussion of the theoretical,

empirical, and policy implications of the findings as well suggestions for future research

using the habitus concept and the "structure-disposition-practice" model.

CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

I begin with a brief discussion of socieconomic gradients in education. Then I

provide an overview of one of the most prominent theoretical accounts of educational and

social inequality—Pierre Bourdieu's (1977, 1997, 2006) theory of cultural and social

reproduction. This overview presents some of Bourdieu's basic ideas regarding forms of

capital, cultural and social reproduction and the role of the formal education system in

this process. Ultimately my approach in this project, while indebted to Bourdieu, relies

more on the subsequent elaborations of contemporary analysts—most notably those of

Annette Lareau, Roy Nash, and Phil Hodkinson and Andrew Sparkes. In this light, I lay

out Lareau's contention that the concept of cultural capital has, in the interest of

operationalization, been taken out of its theoretical context and narrowed down to reflect

only one particular aspect—mastery of high culture. This overly-narrow definition robs

the concept of its much larger potential. She argues instead for a broader definition of

cultural capital and for the necessity of considering it in concert with Bourdieu's often

neglected (at least in North America) notions of *habitus* and *field*. Then I provide a brief

introduction to Roy Nash's (2002a, 2005a, 2005b) conceptualization of habitus which

somewhat overlaps Lareau's expanded notion of cultural capital. I attempt to partially

reconcile the two schemes but in a direction more closely aligned with Nash's

interpretation of habitus. I then discuss Hodkinson and Sparkes' (1997) model of career

decision-making, which conceptualizes the influence of habitus in terms of cognitive

"schemata" and "horizons for action." Next, I outline the "family resources framework"

developed by Nash (1999, 2002a, 2002b, 2003; Nash & Harker, 1998) which, while

substantially influenced by Bourdieu's theory of social and cultural reproduction in its

adoption of a "structure-disposition-practice explanatory scheme," seeks to move beyond

his empirically limiting anti-realist perspective to provide a more straightforward realist

perspective for studying the persistence of educational inequality. Following this I review

several parallel bodies of research findings that appear basically consistent with the

habitus concept and the "structure-disposition-practices" model adopted in this study.

After this I discuss the applicability of the habitus concept for understanding gender

inequality. Finally, I introduce the "structure-disposition-practice" model and the research

questions that are examined in this dissertation.

THE SOCIOECONOMIC GRADIENT IN EDUCATIONAL ATTAINMENT

A number of studies link family SES to educational attainment (e.g. de Boucker

& Lavalee, 1998; de Boucker &Noel, 2001; Drolet, 2005; Finnie, Laporte, & Laschelles,

2004; Knighton & Mirza, 2002; Krahn, 2004; Ryan & Adams, 1999; Walpole, 2003).

The relationship between educational outcomes and socioeconomic status is refered to as

the socieconomic gradient. Such gradients can exist within schools, across schools, or

across regions and countries (Willms, 2006). These gradients point to the fact that

educational inequality and socioeconomic inequality are reciprocally related and that this

relationship is intergenerational in its effects—parental SES is a major determinant of a

person's educational attainment and, in turn, educational attainment is a major

determinant of that person's SES. Educational achievement is strongly linked in all

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OECD countries to the occupations, education, and economic status of students' parents, although the magnitude of the relationship differs across countries (UNICEF, 2002).

There is a well-documented positive relationship between parental education and child education level and cognitive development (Wolfe & Haveman, 2000). There is a positive association between having parents with at least some post-secondary education (as compared to none) and students' high school math and science achievement, as well as their level of reading comprehension. This effect seems to be largely accounted for by the relatively learning-enriched or intellectually stimulating home environment provided by more educated parents (Feinstein et al., 2004; Pascarella & Terenzini, 2005). Educated parents are not only more likely to cultivate in their children the disposition and the capacity to learn, but are also more apt to ingrain an appreciation of the socioeconomic benefits of post-secondary education along with higher educational and occupational aspirations (Krahn, 2004). Reared in more cognitively enriching home environments from an early age, children from socioeconomically advantaged backgrounds enter formal schooling with a greater "readiness to learn." Conversely, Miech, Essex, and Goldsmith (2001) found that children from lower SES backgrounds are more likely to enter the education system with lower levels of self-regulation[1] which is associated negatively with school adjustment outcomes—even when family background is controlled for.

Furthermore, early educational advantage tends to persist at successive educational levels (Kerckhoff & Glennie, 1999). Students whose parents attended post-secondary institutions are more likely to pursue post-secondary education themselves,

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[1] "Specifically, self-regulation refers to processes, such as the tendency to maintain attention on a task and to suppress inappropriate behavior under instructions" (Miech et al., 2001, p. 103).

more likely to attain a first degree, and are more likely to continue on to graduate or

professional school. For instance, students whose parents attended a post-secondary

educational institution are twice as likely to complete a bachelor's degree as those whose

parents did not. While students whose parents hold bachelor degrees are five times as

likely as first generation post-secondary students to also earn one (Pascarella &

Terenzini, 2005).

As noted earlier, socieconomic gradients can also vary across education systems.

The degree of inequality in educational systems is influenced by the particular

institutional arrangements within a country or jurisdiction, including the linkages between

education, the job market and social security, or the extent to which school resources

reflect families' ability to pay. Within education systems, some of the more commonly

identified institutional determinants of educational inequality are related to the degree of

stratification (e.g. tracking, age at which tracking begins, permeability of tracks) within

the education system, the degree of standardization (national or centralized educational

standards, such as budgets, teacher training, curricula, qualifications for graduation) and

the vocational specificity of credentials (Allmendinger 1989; Kerckhoff, 1995; Muller &

Shavit 1998). Nevertheless, even in a relatively equitable school system such as Canada's

(Marks, 2005; UNICEF, 2002), family socieconomic status remains a significant

determinant of disparities in educational attainment (Davies & Guppy, 2006; de Broucker

& Noel, 2001; Guppy & Davies, 1998; Wanner, 1999).

As discussed in Chapter 1, Pierrre Bourdieu's theory of cultural and social reproduction is one of the most prominent explanations of the persistent connection between social inequality and educational inequality. His framework is broad in scope, linking micro and macro process, agency and structure, and could potentially offer impressive explanatory power. As well, although part of a complex theoretical system, some of his core concepts can—as this study shows—be investigated empirically. In view of this potential, the following section provides a basic overview of Bourdieu's framework.

BASIC ELEMENTS OF BOURDIEU'S APPROACH

Bourdieu (1997) delineates three fundamental forms of capital: economic capital, which is readily convertible; social capital, which is comprised of "social obligations" or "connections"; and cultural capital, which exists in three forms: (1) embodied, (2) objectified, and (3) institutionalized. *Embodied cultural capital* represents "long-lasting dispositions of the mind and body." It entails the internalization of cultural competences including literacy, numeracy, and various forms of advanced and specialized bodies of knowledge—social, technical, etc. Embodied cultural capital is an intangible possession of the individual. Its transmission is not instantaneous as with material forms; it takes time to accumulate, and this accumulation begins early in childhood and builds incrementally. The level of accumulation of embodied cultural capital is positively correlated with economic capital, not only in terms of the cultural capital available for transmission in the family, but because affluent families have more time—unencumbered from meeting economic necessities—and more money to invest in materials and services

geared toward the enrichment of their cultural capital. Moreover, families with greater

economic capital can afford to begin the process of accumulation earlier in a child's life

and can prolong this cultivation process by delaying the necessity of that individual

entering the job market. For example, these children are more able to travel and/or pursue

higher education without worrying about the cost. Due to its relationship with economic

capital, embodied cultural capital tends to be unevenly distributed in society and this

scarcity contributes to the reproduction of cultural, social, and economic advantage for

the dominant social strata. *Objectified cultural capital* consists of cultural goods—such as

books, technology, etc.—that are the material traces or realization of specialized forms of

knowledge. It is closely connected to embodied capital; that is, cultural capital in the

objective state contributes to accumulation of embodied capital, and embodied capital is

necessary to use cultural capital in the objectified state (cultural goods). *Institutionalized*

cultural capital is a form of objectification that, as with educational credentials, confers

entirely new properties on the cultural capital it certifies. Institutionalized cultural capital

in the form of credentials are a standardized or officially recognized material ('objective')

indicator of possession of a certain level of cultural competence or cultural capital. By

institutionalizing recognition of cultural capital, credentials also help set conversion rates

between cultural capital and economic capital. Certain types of credentials—depending in

part on their scarcity—usually garner certain levels of monetary compensation; although

conversion rates are not guaranteed and are subject to fluctuations in supply and demand.

For Bourdieu (1997, p. 51) social capital is "the aggregate of the actual or

potential resources which are linked to possession of a durable network of more or less

institutionalized relationships of mutual acquaintance and recognition." Such networks,

formal and informal, require ongoing cultivation; an actor must engage in an "unceasing

effort of sociability" to sustain connections and the potential to avail his or her self of

attendant forms of credit. Of course, not all networks of connections are equal; they vary

not only in breadth but also in utility and influence. "The volume of social capital

possessed by a given agent thus depends on the size of the network of connections he can

effectively mobilize and on the volume of capital (economic, cultural and symbolic[2])

possessed in his own right by each of those to whom he is connected." Thus, social

networks exert a "multiplier effect" on the capital possessed by each member in their own

right. So social capital is a relational resource, the potential value of which—in addition

to the extent of cultivation—is a function of the aggregate status and power of the actors

in the network. Hence structural inequalities will be reflected in inequalities of social

capital; the calibre of connections—and the attendant multiplier effect—available to

indioviduals derives from "positional advantages" related to their family background

(parental resources), education, and network resources. In short, the better connected one

is the greater one's potential returns.

Bourdieu (1997) argues that the forms of capital are mutually constitutive in that

financial capital affords the time and resources for investment in the development of

children's cultural capital (i.e. dispositions, knowledge, credential attainment) which is

associated with educational and occupational success and in turn contributes (via the

ability to derive greater profit per unit of labour-time) to the accumulation of financial

capital. Socioeconomic success is also associated with greater social capital (time

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[2] While Bourdieu (1997) does not explicate the concept of symbolic capital in the writings reviewed here, the value of symbolic capital rests on the power of perceived legitimacy. Symbolic capital is the capacity to give a relationship, privilege or outcome the appearance of legitimacy. Indeed when other capital forms— economic, cultural and social—are perceived as legitimate they take on additional value in the form of symbolic capital.

invested in the cultivation of mutual obligation and/or connections) in that individuals'

social networks become broader and more resourceful (advantageous) and thus more

conducive to increasing their other capital stocks (e.g. business opportunities, admission

into prestigious schools). Underlying these conversions is the fact that:

> …economic capital is at the root of all the other types of capital
>
> and that these transformed disguised forms of economic capital,
>
> never entirely reducible to that definition, produce their most
>
> specific effects only to the extent that they conceal (not least from
>
> their possessors) the fact that economic capital is at their root, in
>
> other words—but only in the last analysis—at the root of their
>
> effects" (Bourdieu, 1997, p. 54).

So, although economic capital ultimately underlies cultural and social capital, the

propagation of economic capital in turn depends partly on transmission via these indirect

forms. These transformative relationships are key to Bourdieu's contention that

intergenerational transmission of cultural capital—which he calls cultural reproduction—

constitutes the concealed transmission of privilege and power, and therefore the

perpetuation of the socioeconomic status quo—which he calls social reproduction.

Bourdieu (2006, p. 271) sees the formal education system as fundamental to this covert

process of reproducing social inequality within democratic society:

> By making social hierarchies and reproduction of these hierarchies
>
> appear to be based on the hierarchy of "gifts," merit or skills
>
> established and ratified by its sanctions, or, in a word, by
>
> converting social hierarchies into academic hierarchies, the

educational system fulfils a function of legitimation which is more
and more necessary to the perpetuation of the "social order" as the
evolution of the power relationships between classes tends more
completely to exclude the imposition of hierarchy based upon the
crude and ruthless affirmation of the power relationship.

Three more concepts integral to Bourdieu's theory of social reproduction are habitus, field, and practice. *Habitus* is the set of preferences or dispositions (values and attitudes) by which a person orients to the social world, or put another way, habitus is the internalized interpretive framework through which one perceives the social world and one's place within it. Habitus is rooted in family upbringing (socialization within the family) and conditioned by one's position in the social structure. Hence some of its orienting principles vary by social class; for example, the degree of confidence people have in the payoffs of higher education and willingness to invest in it. The term *field* refers to the formal and informal norms within a particular institutional sector in society (e.g. family, religion, education, politics, and economy). Fields are characterized by their own particular regulative principles—the "rules of the game"—and are subject to power struggles among different interests seeking to control the capital in that field. Individuals' positions within a particular field derive from the interrelation of their habitus and the capital they can mobilize in that field. People's *practices* or actions—their behavioural repertoire—in a particular field are the consequences of their habitus and cultural capital.

Bourdieu (2006) argues that people in different social classes differ in their understanding of the complexities and nuances of particular fields. For example, working class parents tend to be less familiar with the rules of the education field, its values,

norms, and preferred practices, and are therefore disadvantaged relative to middle class

parents in terms of their ability to facilitate their children's school success (i.e. the

institutionally sanctioned accumulation of cultural capital). Combined with this, the set of

dispositions (habitus) typically instilled in middle class homes is also more congruent

with the behavioural expectations, standards, and practices of the school setting—and so

more conducive to scholastic success—than are the dispositions more typical of working

class families.[3] Thus, for Bourdieu (2006) the formal education system (field) is an

institutional conduit for the values of the dominant classes; that is, those who have

succeeded in and benefited from the educational enterprise and hence are invested in

preserving its legitimacy. He sees this as the natural "tendency of structures to reproduce

themselves by producing agents endowed with the system of predispositions which is

capable of engendering practices adapted to the structures and thereby contributing to the

reproduction of the structures" (Bourdieu, 2006, p. 258).

SUBSEQUENT THEORETICAL DEVELOPMENTS

While Bourdieu's conceptualization of cultural capital is abstract and much

debated, particular elements have been brought into relief and handed down as essential.

Lareau and Weininger (2003) observe that the prevailing interpretation that has guided

the majority of cultural capital research in North America is based on two premises: (1)

cultural capital entails familiarity/competence with "highbrow" cultural tastes; and (2)

cultural capital is distinct from other knowledge or ability involving technical skills or

competence (e.g. human capital). Lareau and Weininger (2003) argue that this

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[3] Bourdieu refers to this more intuitive grasp of a particular field as "Le sens pratique" or feel for the game
(Bourdieu, 1990).

interpretation misrepresents Bourdieu's ideas and has needlessly circumscribed the scope of cultural capital related research.

Lareau and Weininger (2003) revisit Bourdieu's treatment of cultural capital and offer a broader interpretation of the concept that they argue is not only more consistent with his intentions but, most importantly, is also more analytically useful than the received interpretation. First, they contend that cultural capital entails more than being conversant with highbrow cultural preferences—which are of decreasing importance in contemporary society anyway. They argue, rather, that cultural capital includes adaptive cultural and social competencies such as familiarity with relevant institutional contexts, processes, and expectations, possession of relevant academic and social skills, and a more "strategic conception of agency." These competencies work in concert to enhance parental ability to successfully affect their children's educational outcomes both by cultivating these same skills in their children at home from an early age, and by effectively liaising with schools. Second, they argue that cultural capital cannot be divorced from academic/technical skills; the two interpenetrate. Citing a number of passages from his writings on education, they argue that Bourdieu saw the boundary dividing "technical" from "social/behavioural" skills as largely a social construction, an imposition of evaluative standards by ascendant interests invested in preserving the means of their ascendance. In Bourdieu's words, the "…dominants always tend to impose the skills they have mastered as necessary and legitimate and to include in their definition of excellence the practices at which they excel" (quoted in Lareau & Weininger, 2003, p. 582), and moreover, to define excellence in these practices as deriving wholly from individual merit—independent of social status. Accordingly, the artificial separation of

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the technical (cognitive skills) from the dispositional/behavioural (non-cognitive traits and behaviours[4]) aspects of academic performance conceals their underlying continuity; their shared origins in family background and thereby their class-contingent nature. That is, separating the technical from the dispositional bases of achievement obscures the fact that the technical competencies by which academic merit is evaluated are rooted— together with social/behavioural dispositions—in the familial transmission of habitus and cultural capital.

Lareau and Weininger's (2003) notion of cultural capital omits this bifurcation, instead viewing both cognitive and non-cognitive skills as aspects of cultural capital and as synergistic determinants of individuals' capacity to comply with prevailing evaluative standards. Their understanding of the concept focuses on "…micro-interactional processes whereby individuals' strategic use of knowledge, skills, and competence comes into contact with institutionalized standards of evaluation. These specialized skills are transmissible across generations, are subject to monopoly, and may yield advantages or 'profits'" (Lareau & Weininger, 2003, p. 569). While some scholars (Kingston, 2001) express concern over a more expansive definition of cultural capital, a broader conceptualization as posited by Lareau and others offers useful language for discussing important aspects of how socioeconomic advantage translates into academic advantage, of how "higher SES families produce more of the kinds of skills [cognitive and non-cognitive] that schools reward" (Davies & Guppy, 2006, p. 106). For example, Swidler (1986, p. 273) describes culture as a "'tool kit' of habits, skills, and styles from which

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[4] See Farkas (2003) for a useful discussion of the debate regarding the relative importance of "cognitive skills" (e.g. vocabulary, reading comprehension, computation, problem solving, critical reasoning) and "non-cognitive traits and behaviours" (e.g. industriousness, perseverance, discipline, attendance, participation, sociability, impulsiveness, self-confidence, locus of control) in the stratification process.

people construct 'strategies of action.'" The composition of this tool kit is largely

dependent on their location within the social structure which conditions how they

perceive and relate to the world (part of what Bourdieu refers to as *habitus*). This invites

a much richer conception of cultural capital, viewing culture as the situated frame

through which we meet our world rather than the more limited notion of culture as

marker of class position. Thus in this broader sense, cultural capital (conjoined with

habitus) becomes not merely an arbitrary set of elitist aesthetic and social hallmarks, but

rather an adaptive set of cognitive skills—such as verbal, reading, writing, mathematics

and analytical reasoning skills—and social/behavioural dispositions—such as

achievement motivation, self-regulation and delay of gratification—that are associated

with academic and, subsequently, occupational success (Farkas, 2003).[5] The implements

of this cultural 'toolkit'—the skills and preferences conducive to successfully negotiating

the particular "rules of the game" (which Bourdieu would term a *field*)—are not evenly

distributed across the socioeconomic spectrum, and these disparities tend to be

transmitted intergenerationally. Put another way, the behavioural repertoire (practice)

available to middle class families—via their habitus and cultural capital—has greater

currency within formal institutional settings such as the school (field) than does that of

working-class families, and the resulting differences in educational and socioeconomic

outcomes tend to perpetuate this imbalance across the next generation.

Consistent with Bourdieu's contention, there is evidence that the formal education

system plays a crucial role in this transmission. For instance, higher levels of parental

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[5] Swartz (1997, p. 75) contends that Bourdieu saw cultural capital as a general power resource encompassing a number of capacities, the value of which varies across fields, "including such things as verbal facility, general cultural awareness, aesthetic preferences, information about the school system, and educational credentials."

education and income are associated with a greater likelihood of participation in post-secondary education (Drolet, 2005; Knighton & Mirza, 2002). Parents with higher levels of educational and occupational attainment tend to pass higher levels of aspiration and achievement motivation on to their children as well as important skills sets required for academic success (de Broucker & Underwood, 1998; Lareau & Weininger, 2003). More educated parents are likely to instill within their children an appreciation of the fundamental importance of education, as well as the attitudes and the behavioural repertoire conducive to success within the predominantly middle-class school culture (Bernstein, 1997; Bourdieu, 2006; Forcese, 1997). Educated parents not only provide the enriched home learning environment—cultural and material—required from an early age to elevate educational trajectories (Hertzman, 2000; UNICEF, 2002), they are also more likely to be actively involved in their children's education through such means as helping them with their homework and effectively liaising with the school and their teachers (Lareau, 1997, 2000; Schneider & Coleman, 1993). Middle class parents are also more likely to have greater financial resources to spend on educational materials, tutors, and structured extra-curricular activities, as well as more flexible schedules conducive to volunteering at the school. They are also more likely to have connections to other higher status parents and to education-related institutions, such as music schools and sports clubs.

Lareau contends that middle class child-rearing practices are more consonant with schools than are the practices of working-class parents.[6] She (Lareau, 2001, p. 94)

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[6] The point is not that working-class child-rearing practices are necessarily deficient per se, but that they deviate from the standards sanctioned by the school—standards authorized by middle class educational and child-rearing professionals—and hence are a disadvantage (liability) within that field. The corollary of this

observed class-based differences in "the degree of continuity or distance between the habitus and field [that] appeared to carry over to the children. Working-class families felt patterns of distance and distrust, patterns of exclusion and risk, with schools. Parents conveyed their ambivalence towards the school to their children." Lareau (2002, 2003) also noted a greater "sense of entitlement" among middle-class parents in terms of greater propensity to question and intercede with institutional authorities (e.g. teachers, doctors, etc.) than among working-class parents who tended to be more constrained and deferential, although at the same time distrustful, in their approach. These different attitudes and interactional styles, which are part of what Bourdieu would term habitus, tend to be passed on to their children.

Lareau (2002, 2003) observed a more interventionist middle-class parental logic that she described as "concerted cultivation." Parents invoking this logic—an aspect of habitus—are much more actively involved in attempting to engineer appropriate life-skill promoting activities and experiences, compared to the more *laissez-faire* approach to extra-curricular activity she observed among working-class parents. This interventionist logic, premised on the belief in the necessity of actively fostering their children's skills and talents, was also evident in later adolescence as middle-class children transitioned from high school into post-secondary education and the work force. Middle-class parents were generally involved to varying degrees in the strategic mapping of their children's educational careers, while working-class parents remained comparatively hands off regarding their children's educational paths (Lareau & Weininger, 2008).

is that middle class child-rearing practices are privileged or legitimated—Bourdieu would say imposed—within the educational field.

Similarly, Brown (1997, p. 744) notes the growing importance among the middle classes of cultivating in their children the "charismatic" qualities seen increasingly as key to getting ahead. Although parental focus on raising a "well-rounded" person may not be new, Brown remarks that while in past developing:

> …a range of broader interests and hobbies which offered time-out from academic study was seen as a form of cultural *consumption* which was to be enjoyed for its own sake, it has increasingly become a form of *investment* as part of the construction of a 'value-added' *curriculum vitae*. This involves an increasing 'commodification' of the socio-emotional embodiment of culture, incorporating drive, ambition, social confidence, tastes and interpersonal skills.

Both Lareau's and Brown's characterizations underscore the increasingly strategic orientation of some parents who see proactively preparing their children for the educational and occupational marketplace as a central task of child-rearing. From this competitive outlook, which is an aspect of middle class habitus, preparation of children for success in the social mobility contest involves not just facilitating their accumulation of formal cultural capital, in the form of educational credentials, but also their accumulation of other supplementary forms of cultural capital.

The Nature of Cultural Capital

Interestingly, some critics of Bourdieu question the trans-cultural applicability of his cultural capital concept, particularly in terms of the composition of, and contemporary importance of, high-brow cultural tastes in distinguishing social classes (Erickson, 1996;

Kingston, 2000, 2001; Lamont, 1992; Lamont & Lareau, 1988). Lamont (1992, p. 178),

for example, concludes that, compared to the French context informing Bourdieu's initial

analysis, cultural boundaries (i.e. hierarchies of cultural tastes) in the US tend to be "more

blurred and less stable." Further she observes that in the US "upper-middle class men

have particularly broad cultural repertoires and often appreciate diversity" (Lamont,

1992, p. 182). In complex modern societies people may engage in a wide range of

activities in multiple spheres and hence "boundaries vary across contexts and across

groups (not only classes)" (Lamont, 1992, p. 183).

In the Canadian context, Erickson (1996) stresses the importance of 'cultural

variety' or developing familiarity with multiple cultural genres, an adaptive resource

characteristic of the well-rounded person which facilitates apt negotiation of various

social settings or circumstances. Rather than mastery of higher class culture as a means of

class distinction, Erickson suggests that increasingly it is facility with multiple cultural

genres—or possession of a diverse cultural repertoire—that provides social advantage. In

this view, highbrow culture is just one 'genre' of culture, and is, in fact, of diminished

consequence in many sectors of society (fields) including, for example, the business

sector where business culture prevails (Erickson, 1996).[7]

Similarly, using Canadian survey data, Veenstra (2005) found that level of

education is the most robust predictor of cultural versatility; that is, as education level

increases, so does the likelihood of fluency within a range of different cultural genres

(Veenstra, 2005, p. 272). Interestingly, characteristics of employment such as control

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[7] The logic imbuing business culture is substantially informed, not by high-brow culture, but, by the
competitive imperatives of the market. Furthermore as Swartz (1997) notes, in the US, and increasingly in
Canada, it can be argued that the academic field is increasingly impinged upon by the economic and
political fields.

over organizational assets (i.e. personnel or budgets), job skill, and personal autonomy in the workplace are also associated with cultural versatility. Veenstra (2005, p. 276) interprets this finding as suggesting that the "ability to speak a wide variety of cultural languages—sports and literature, magazines and wrestling, artists and movies—may facilitate the accumulation of some kinds of control in the workplace." In other words, a broad cultural repertoire, or facility with diverse cultural genres, may contribute to fostering certain types of occupational attainment such as positions in management or increased autonomy. Garnett, Guppy, and Veenstra (2008, p. 157) found that cultural versatility—including familiarity with high-brow culture—was "associated with attainment of skilled occupations above and beyond the effect of educational credentials." They contend that cultural versatility—which they term "cultural talent"—is useful in the process of impression management and the "staging of characters," which, although important in day-to-day micro-interactions, take on added weight at critical junctures related to hiring and promotion where they may enhance the ability to " . . . generate perceptions of *trustworthiness* and *social similarity* . . ." (Garnett et al., 2008, p.160).

In a similar vein, Emmison (2003, p. 227) posits that "cultural mobility"—the capacity to move between cultural realms—and the broad cultural competence on which it is contingent, "remain a restricted commodity, largely the preserve of the professional and managerial knowledge classes." Likewise, discussing the link between socioeconomic status and cultural omnivorism, van Ejick (2000, pp. 221-2) notes that the personal attributes of "[o]penness and flexibility" associated with cultural omnivorism are "important resources in a society that requires social and geographical mobility, 'employability', and 'social networking' from its highly skilled workers. As such, the

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omnivore does represent the type of person most likely to be successful in the more rewarding segments of today's society." Thus, to the degree that "cultural lifestyles somehow reflect personal qualities, [those] qualities and values that are conducive to socioeconomic success are reflected in the lifestyles of the upper-middle classes…[and those] qualities that are rewarded by status in today's society seem to be the same that underlie the omnivore consumption pattern."

Although class-distinctive cultural signals may have decreasing cachet in many sectors of contemporary North American society, in their place seems to have emerged a language of success and attainment with its own strategic logic of self-entrepreneurship rooted in the competitive ethos of the market. Middle class parents begin equipping their children for this daunting enterprise at ever-earlier ages and, hence, the class-contingent disparities begin to mount earlier as well. For Mannon (1997) the central concern animating this social mobility contest is the "performance ethic" and the associated compulsion of "measuring up" to various criteria at successive stages. He sees the ascendance of this ethic as tied to the intensifying rationalization of modern society.

Such middle and middle-upper class notions of strategically managing children's development seem consistent with evidence that "aggressiveness, competence, entrepreneurship, self-reliance, self-directedness, 'problem-solving activism,' and adaptability are desirable personal styles in the American context" (Lamont & Lareau, 1988, p. 163). Lamont (1992, p. 14) defines the upper-middle class as university-educated "professionals, managers and businessmen. This group includes professionals and semi-professionals such as social workers, librarians, elementary and secondary school teachers. The managerial group comprises executives, middle-level managers, and

administrators in the public and non-profit sectors. The businessmen include self-employed professionals and the owners of businesses of various sizes." Lamont (1992, pp. 40-43) found that American upper-middle class interviewees tended to value competence and a strong work ethic. Competence is understood as being reflected in such virtues as "ambition, competitiveness, and dynamism, and also resiliency and long-term planning." Ambition is perceived in instrumental terms as "the ability to take advantage of all opportunities that life offers, and to conceive every experience as a means to achieve this end." Ambition is furthermore associated with the virtues of self-directedness, competitiveness, and dynamism (charisma and energy). She observes that "competition permeates everything in the American upper-middle class world" including parents' strategic attempts to optimize their children's educational trajectories from an early age onward. Resiliency or persistence is seen as evidence of a strong work ethic and as fundamental to success and achievement, while the capacity for long-term planning is perceived as indicative of a rational approach to life.

Relating Cultural Capital and Habitus

While Lareau's elaboration of the cultural capital concept rescues it from an analytical corner and revives its broader explanatory potential, her inclusion of behavioural dispositions as a component of cultural capital does little to clarify the nature of habitus and its interconnections with cultural capital, field, and practice. Habitus as an internalized set of values and attitudes is, like cultural capital, conditioned by social position and familial upbringing. Part of the problem is that Bourdieu invokes the noun "disposition" at different points to describe both habitus (e.g. Bourdieu, 2006) and embodied cultural capital (e.g. Bourdieu, 1997). However, the notion of dispositions as

comprising habitus appears more widespread in his work and that of his interpreters, and so I shall adhere to this more common understanding of disposition (Swartz, 1997). The rationale for defining habitus, rather than embodied cultural capital, in terms of dispositions will be further clarified if we sketch out the nature of the relationship between habitus and cultural capital.

Reay (2004) understands habitus as underlying cultural capital, "generating its myriad manifestations." There is a mutually constitutive dynamic between cultural capital and habitus in that habitus to some degree, through its influence on practice, mediates the acquisition of cultural capital, while acquired cultural capital can, in turn, through its influence on practice, modify habitus. Put another way, if cultural capital is understood as socially valued cognitive and behavioural skills or capacities, then habitus may be understood as the underlying set of dispositions or preferences that affect, and are affected by, the acquisition and deployment of these skills and capacities. For example, self-discipline may be considered a valuable learned skill or a capacity (cultural capital) conducive to academic success but it also presupposes a willingness or inclination (habitus) to develop and exercise (practice) this capacity. Of course, in the present analysis, the relationship between habitus and cultural capital must also be understood in terms of the field of schooling and the practices conducive to success therein. Paying attention in class and working diligently on one's assignments are examples of practices in the field of schooling, so too are particular modes of reasoning as we shall discuss later. So, for present purposes, I will maintain Lareau and Weininger's (2003) argument that cultural capital is more than high brow cultural knowledge; that it is actually comprised of valuable skills and capacities—cognitive and otherwise—that are rooted in

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family background and are associated with academic success. But I will decline their elision of habitus and will reintroduce it into the equation as an important conjunct with cultural capital in determining inequality of student academic achievement.

Habitus Reconsidered

I will now turn to a more detailed consideration of the nature and influence of habitus. Habitus is a set of learned dispositions, it is the internalized interpretive framework, conditioned by one's position in the social structure, through which one perceives the social world and one's prospects within it. Bourdieu termed it "socialized subjectivity" or subjectivity conditioned by structural circumstances (class, gender, and ethnicity/race).[8] Habitus shapes the parameters of people's sense of agency and possibility; it entails perceptual schemes of which ends and means are probable given their particular position in a stratified society. As Swartz (1997, p. 103) observes, "…habitus generates perceptions, aspirations, and practices that correspond to the structuring properties of earlier socialization."

Habitus is both a "structured structure" and a "structuring structure." As the circumstances of people's social origins—and associated life chances—tend to influence their perceptual and behavioural dispositions, so too do their consequent actions (practices) tend to contribute to the perpetuation or reinforcement of like circumstances and life chances for themselves. Individuals' practices or actions—their cognitive and behavioural repertoire—in a particular field are the consequences of their habitus and cultural capital.

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[8] While his analysis focused predominantly on the class nature of habitus, following Bourdieu's (2001) later writings on the subject, several writers have pointed to the possibility that his ideas can be extended profitably to analyses of gender as well, and will be discussed later.

While Bourdieu's notion of habitus is rather broad, Swartz (1997, p. 108) provides a useful encapsulation, "[t]he dispositions of habitus represent *master patterns* of behavioural style that cut across cognitive, normative, and corporal dimensions of human action. They find expression in human language, nonverbal communication, tastes, values, perceptions, and modes of reasoning."

As noted above, a central aspect of habitus concerns individuals' perceptions of their future prospects. Habitus influences how people perceive their life chances and correspondingly calibrate their aspirations and the value of certain actions/practices (Dumais, 2002, p. 46). Given my purposes, it is of particular interest to note that the influence of habitus is manifest in attitudes toward schooling. In a stratified society, individuals from different social classes do not share the same 'objective probability' of educational success; and thus, according to Bourdieu, their dispositions toward schooling will tend to bear the imprint of such structural disparities. The dominant class habitus includes a 'positive attitude' towards schooling (Sullivan, 2001), that is, it entails "…the system of dispositions towards the school, understood as a propensity to consent to the investments in time, effort, and money necessary to conserve or increase cultural capital" and subsequent returns (Bourdieu, 2006, p. 270). In light of greater anticipated socioeconomic returns down the road, middle-class families are more likely than working-class families to subscribe to, and their children better prepared to perform, the technical and behavioural practices sanctioned by the school system. Conversely, lower class students, with less cultural capital and a lower class habitus, are less likely to share this propensity, as their families are less likely to anticipate educational success and the attendant returns to schooling. Lower class students conditioned by their social position

will tend to have more "negative dispositions towards school" and hence will tend to self-select themselves out of the higher education pathway, as they perceive their prospects for higher educational success to be unlikely (Bourdieu, 2006, p. 269).

Critics charge that habitus is an overly deterministic construct, but Swartz (1997, p. 212) argues that it is a "mediating concept between practices and structures." It goes beyond simple structural determinist conceptions, in that it construes action as "generated by the interaction of the opportunities and constraints of situations with actor dispositions—the repository of past experience, tradition, and habit" (Swartz, 1997, p. 291). Although stability of habitus may be the default setting, and novel situations are first encountered in terms of past experiences, habitus is, in fact, adaptive and incrementally modifiable in the face of variant circumstances—although the degree of adaptability can differ according to location within fields and the amount and nature of relevant capital stocks (Swartz, 1997). Thus while the structurally embedded roots of habitus favour stability over change in the long run, habitus is not static, not categorically immutable; its properties can evolve by degree in response to changing experiences and circumstances. Accordingly, as pointed out by some scholars, talented students from lower class families who experience some academic success may increasingly see schooling in a positive light, may come to regard the accumulation of cultural capital via schooling as a means of social mobility, as a means to help overcome the impediments to opportunity associated with their class position. Academic success and increased cultural capital positively alter students' orientations toward school (habitus), which, in turn, feeds back into their practices and performance.

The Influence of Habitus on Educational Trajectories

Habitus at a general level is the overall perceptual and behavioural repertoire available to a person, but there are particular manifestations or subsets of habitus within different fields; that is, the habitus most befitting one field will be distinct in various ways from the habitus befitting another field. Or as Jenkins (1992, p. 84) explains "[e]ach field, by virtue of its defining content, has a [somewhat] different logic and taken-for-granted structure of necessity and relevance which is both the product and producer of the habitus which is specific and appropriate to that field." Nash (2002b) uses the term "educated habitus" to refer to the particular subset of habitus most relevant to—or conducive to success within—the field of education.

The "educated habitus" includes more than just an instrumental view of education, it includes the desire to be educated and to identify and be identified as such. The process of education, of developing an educated habitus, entails acquiring the "operative schemes and categories of the school" (Nash, 2002b, p. 31). Many of the positive effects of the educated habitus on educational attainment are associated with non-cognitive dispositions such as high aspirations, positive academic self-concept, and favourable perceptions of school and teachers (Harker, 2001; Nash, 2001). Nash (2002b) cites ethnographic evidence that high attaining secondary school students exhibit a "distinctive concept of self-discipline," one that emphasizes the value of attentiveness, diligence and self-control to academic performance (Nash, 2002b, pp. 39-41). But the concept of education and of the educated person that inform the educated habitus are not appreciated equally by students of all social backgrounds. "Many working-class students reject education regarded as superfluous to their perceived needs, which are primarily

informed by a concept of relevance tied to their projected occupation, but it is not that

they want to be 'dumb'—they simply have a different conception of what is worth

knowing than the school" (Nash, 2002b, p. 34). Further to this he suggests that,

"[s]tudents who succeed at school do so because in consequence of their ambitions,

academic self-confidence, and positive response to the processes of schooling, they reveal

a habituated willingness to be educated in accordance with a concept of the educated

person that continues, despite ambiguities and contradictions, to be transmitted by the

school" (Nash, 2002b, p. 46).

Nash (2003, p. 172) also uses the term "cognitive habitus" to refer to "capacities

and capabilities of the body to carry out the kind of abstract problem-solving exercised in

mathematics and other language-based, symbolic information processing." These

capacities, which do not develop evenly across all family environments, underlie

academic performance and are contingent on the organization of the neural system. Thus

on one hand, Lareau contends that cultural capital entails both cognitive and non-

cognitive or dispositional aspects, while on the other hand, Nash attributes cognitive and

non-cognitive elements to habitus. So are these accounts contradictory or can we

reconcile them within the reciprocal dynamic outlined earlier, in which habitus and

cultural capital affect one another through their effects on practice? Given our earlier

choice to define habitus, rather than embodied cultural capital, in terms of dispositions, it

is possible to construct a partial reconciliation of the two schemes.

If we view culture as the social system of meaning in which habitus (tendencies of

perception, reasoning, and acting) develops, then we can view cultural capital as socially

valued (adaptive, facilitative, beneficial) sense-making tools through which habitus

operates. Thus, the development of certain abstract reasoning capacities—cognitive

aspects of habitus—depends on timely, systematic exposure to and familiarity with

appropriate cognitive stimuli (objectified and embodied aspects cultural capital).

Similarly the development of non-cognitive or behavioural manifestations of habitus,

such as self-discipline, is partially contingent on accessible cultural capital. Students with

direct exposure to the practices and rewards of self-discipline via parental instruction and

parental modeling are likely to have a more developed sense of the functionality of self-

discipline. They may have more intimate knowledge of the behavioural requirements, or

practices, of self-discipline but also of its ultimate benefits in the form of accumulated

cultural capital and consequently enhanced socioeconomic returns. As well, success at

each level of schooling (institutional validation of accumulated cultural capital)

demonstrates the utility of particular practices such as attentiveness, delay of

gratification, and diligence—thereby increasing the likelihood of their effective

deployment at subsequent levels of schooling. Or put another way, successful

accumulation of cultural capital reinforces those practices—and the willingness (habitus)

to enact those practices—that promote it.[9] Additionally as Nash's notion of educated

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[9] An interesting illustration of self-discipline or self-regulation is what economists term "rate of time
preference." Basically, this construct refers to the relative value an individual places on immediate versus
future consumption or gratification, or even more pointedly, their degree of "patience" (Becker &
Mulligan, 1997). People vary in their capacity to forgo more immediate consumption, to invest time, effort,
and money with the promise of greater payoff (pleasure or 'utilities') in the future. While some argue that a
lower rate of time preference for the present (longer time horizon) increases the level of formal schooling
attainment, Becker and Mulligan (1997, p. 736) suggest that schooling enhances the ability to delay
gratification because it teaches problem solving and abstract thinking skills such as scenario simulation,
and consequently "educated people should be more productive at reducing the remoteness of future
pleasures." As well they suggest that education increases patience indirectly via its positive effect on
earnings, in that those with greater wealth are better positioned to cultivate long term returns. Others
suggest that the relationship between education and time preference is probably one of reciprocal effects:
the ability to delay gratification enhances educational attainment; greater educational attainment enhances
ability to delay gratification (Leigh, 1998). Thus more educated parents tend to cultivate a more future-
oriented time preference in their children to begin with and this preference is further reinforced by
successful educational attainment.

habitus suggests, above and beyond its anticipated market returns, for some the accumulation of cultural capital may also be its own reward; the pursuit of expanded knowledge is part of an overall orientation toward learning as personal growth and the concept of the "educated person" is perceived as integral to self-identity. Thus, the experience of accumulating cultural capital and the preferences of the educated habitus reinforce each other through their influence on practice.

Rescuing Habitus from Relativism and Deficit Theory

Many interpreters of Bourdieu hold unwaveringly to the relativist critique that the school's standards of knowledge, practice, and evaluation are arbitrary cultural impositions—the product of a particular history of class power relations, with no inherent claim to truth. As Nash (2002b) notes, acknowledging that forms of knowledge are cultural products that can be framed historically does not, in and of itself, invalidate the conceptual soundness and/or practical utility of those knowledge forms. For example, he argues for the necessity of asserting "that the modern scientific and mathematical curriculum is essentially correct in its representation of the world and therefore should be recognized as non-arbitrary in that crucial respect" (Nash, 2002b, p. 43). Formal schooling imparts practically useful conceptual and analytical tools as well as the behavioural dispositions necessary to the development of those tools (e.g. reflexivity, self-discipline, etc.). Nash (2002b, p. 46) argues from a scientific realist position that Bourdieu's emphasis on the use of symbolic power by dominant classes to impose an arbitrary discourse and preserve their legitimacy misses the more straightforward possibility that dominant classes "…are powerful in so far as they are equipped with

effective techniques of literary and scientific analysis with which the social and physical world can be understood and to that extent controlled."

Nash is not denying the existence of class based educational inequality or the impact of structural asymmetries on the life chances of students from less privileged backgrounds, but what he is contending is that there has been an over-emphasis on the political nature of knowledge and the arbitrariness of the school curriculum. "Do working-class students who fail at school lose only the exchange value of an arbitrary knowledge, but retain their class dignity and the potential for resistance, or are they denied knowledge with an inherent capacity to analyze the real nature of the world?" (Nash, 2002b, p. 41). Despite post-modernist and relativist theorizing to the contrary, there are well-established socially beneficial bodies of knowledge such as mathematics and science that cannot be simply dismissed as arbitrary, discredited simply as ideological tools of dominant group legitimation. These forms of knowledge are increasingly necessary to individual and societal adaptation and progress. Kingston (2001, p. 95) makes a similar defense of the intrinsic importance of logic, reason, and critical thinking skills to successful fulfillment of the demands of productive citizenship in modern society. He also questions the attendant criticism of the culturally 'biased' behavioural expectations in the formal school context, noting for example, that relevant research shows that "hard work pays off in more learning" and surely cannot be minimized as merely an arbitrary "teacher-pleasing 'style.'" He further suggests that "in any imaginable educational system, hard work would seem to be a necessary ingredient of genuine academic accomplishment. Can anyone sensibly imagine rewarding some other habit in its place?"

The indisputable fact that there are persistent disparities across social strata in terms of children's success at acquiring and applying these fundamental knowledge forms cannot be simply defined away as symptomatic of dominant class hegemony. Furthermore, to insist on doing so does a grave disservice to these children and the goals of reducing educational inequality. Nash sees the ideology—which he terms "possibilism"—that asserts that educational equality can be unilaterally affected by appropriate school policy as misguided or at least naïve, and unfair to both teachers and students (Nash 2003, 2005). Not that teachers should not make every effort to reach all children and to educate them to their fullest potential, but it must be acknowledged that if, as developmental literature suggests, some critical developmental periods have passed before entrance to school, then there may be a limit to what degree of learning disparity can be bridged by schooling. There is growing evidence to suggest that important aspects of neural organization fundamental to life-long learning are already well-developed by age 5, as are cognitive and socio-emotional abilities important to life-long learning (Keating & Hertzman, 1999; McCain & Mustard, 1999; UNICEF, 2002). Educational disadvantage starts early and tends to grow incrementally (Cleveland et al., 2006). Thus, to place the burden of correction on the school for what are larger systemic issues in society is unrealistic and unfair. In this light, Nash takes great care to distance the concept of habitus from the theoretical baggage of "deficit theories"—particularly IQ theory. He argues that to deny that classed socialization influences differential development of cognitive faculties associated with disparities in academic performance is to deny an important social reality. An important policy implication here is that the earlier that stimulating social and cognitive environments can be universally provided to children in

society the lesser the extent of educational inequality. In other words, universally available high quality early childhood education is essential to mitigating later educational and socioeconomic inequality (Cleveland et al, 2006; Doherty, 2007; Esping-Andersen, 2004).

Habitus, Decision-Making, and Career Paths

Hodkinson and Sparkes (1997) have incorporated habitus into their model of career decision-making or careership. Hodkinson and Sparkes (1997, p. 33) see Bourdieu's habitus concept as handily encapsulating "…the ways in which a person's beliefs, ideas and preferences are individually subjective but also influenced by the objective social networks and cultural traditions in which that person lives." In attempt to illuminate how habitus affects career decision-making they draw upon the field of cognitive science to invoke the concept of cognitive "schemata." Schemata are conceptual structures that form an interpretive framework through which people process incoming information and understand their experiences. Schemata, or interpretive frameworks, structure how we know the world "…by filtering out 'irrelevancies' and allowing sense to be made of partial information." It is these schematic frameworks that underlie the dispositions comprising habitus. Schemata are robust but not static and modify incrementally as new information and experiences are encountered (Hodkinson & Sparkes, 1997, p. 34).

Hodkinson and Sparkes (1997) postulate that individuals make career decisions within particular "horizons for action." The concept of horizons for action denotes "the arena within which actions can be taken and decisions made." In terms of career decision-making, these horizons are influenced by the interrelation of habitus and the "opportunity

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structures of the labour market" (Hodkinson & Sparkes, 1997, p. 34). Horizons for action "…both limit and enable our view of the world and the choices we can make within it."

Hodkinson and Sparkes' (1997, p. 33) research indicates that people's career decisions involve a pragmatic rationality that is shaped by their horizons for action.

> [Decisions] were based on partial information located in the familiar and the known. The decision-making was context-related, and could not be separated from the family background, culture and life histories of the pupils. The decisions were opportunistic, being based on fortuitous contacts and experiences. The decisions were made when the person felt able to do so and were reactions to opportunities as they were perceived and encountered. Decisions were only partially rational, being also influenced by feelings and emotions. Finally, decisions often involved accepting one option rather than choosing between many.

The objective availability of a certain occupation is irrelevant if a young person does not subjectively perceive it as a realistic or appropriate career option. People from different social backgrounds will have more or less broad horizons for action, that is, those with more advantages will tend to have more degrees of freedom available at respective choice points along the way. Further to this, horizons for action are segmented, in that no individual seriously considers the entire spectrum of educational or occupational opportunities. There are different explanations of such segmentation; the present study will focus (later in this chapter) on the gendered labour market segmentation theory offered by Charles and Gursky (2004).

The Family Resource Framework

Nash and Harker (1998) outline a "family resource framework" for understanding educational inequality that, while influenced by Bourdieu in its adoption of a structure-disposition-practice explanatory scheme, seeks to move beyond his idealist position and to establish its own independent scientific realist vantage that is more amenable to empirical research. Nash (2002a, pp. 284-5) sees the family resource framework as "an explanatory sketch, or a set of connected hypothesis" for guiding research and interpreting findings. The framework supposes:

> …that the economic class structure generates social classes; that families are located in the class structure; that as a result families have access to resources (financial, educational and social); that families are engaged in long-term actions with the strategic purpose (broadly known to them) of enabling their offspring to maintain their economic, cultural, and social position; that schools are involved in this process of differentiation by affording recognition to the skills acquired through a literacy-focused socialisation (a recognition that is not arbitrary but in all essential respects given by the nature of the techniques necessary to gain an adequate scientific knowledge of social and physical reality); and that the social relations and processes referred to in this sketch can be studied through a 'numbers and narratives' methodology in which the constraining and enabling aspects of the economic, cultural, and political structures that affect families, schools, and students, and

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call forth from them such a complex and creative set of responses, may be modelled. In order to construct explanatory accounts of specific educational events and processes within this framework it is, of course, necessary to recognize the effective properties of social organisations (social structures), the dispositions to act generated by them, and the practices adopted by social members.

This framework seems to concisely encapsulate some of the main dimensions along which families vary in terms of their potential to affect children's educational outcomes. Specifically, families vary in the educational, social, and cultural resources they bring to bear upon their children's educational experiences, and children's educational outcomes will reflect these disparities to some degree.

CONVERGENT RESEARCH FINDINGS ON FAMILY BACKGROUND AND CHILD OUTCOMES

Parental Education, Home Learning Environment, and Cognitive and Social/Behavioural Development

There are a number of general findings in the literature on socioeconomic status (SES) and educational outcomes that are consistent with the notion that classed *habitus*, or classed patterns of socialization, influence differential development of the dispositions and behaviours associated with the socioeconomic gradient in academic performance. The home learning environment (level of cognitive stimulation and availability of educational opportunities in the home) is strongly related to development of cognitive and non-verbal skills, a number of dimensions of social/behavioural development, and a

positive attitude (intrinsic motivation) toward academic learning (Gottfried, Fleming, & Gottfried, 1998). Higher parental education is associated with greater access to knowledge about the developmental needs of children, greater propensity to seek out and implement new childcare information, increased quality of parent child interaction and less negative and more positive parenting practices (Greenwood, 1997; Feinstein et al., 2004), greater probability of parental involvement with a child's school, of reading to a child, and of helping with homework (Pascarella & Terenzini, 2005).

As Feinstein, Duckworth, and Sabates (2004, pp. 33-34) note, education seems to "provide parents with important cognitive resources that enable them to better support and facilitate their children's learning." Maternal education is positively correlated with provision of cognitive stimulation in the home environment through such activities as "reading to children, encouraging playing with and teaching letters and numbers, teaching songs and nursery rhymes, painting and drawing and visits to the library." In particular, there is evidence to suggest that more "educated mothers may simply be more aware of what is necessary for intellectual development and school success and act on this knowledge to provide the experiences and the setting that facilitate such achievement" (Feinstein et al., 2004, p. 34). The positive effects of parental education on home learning environment also seem to carry forward into the middle childhood and adolescent years as a parent's history of educational success and familiarity with curricular material may be reflected in their ability to be effective teachers and to provide complimentary cognitive stimulation outside of school (Davis-Kean, 2005).

Effect of Parental Beliefs and Expectations

As discussed previously, educational aspirations are part of one's habitus, and "[h]abitus orients action according to anticipated consequences" (Swartz, 1997, p. 106). Thus, commitment to educational attainment will be in part contingent on one's perception of potential returns. One probable manner in which class position influences one's perception of their educational and occupational prospects is through the messages received from significant others, particularly parents. Also, early educational outcomes may contribute to shaping aspirations by affecting one's academic self-concept or sense of academic efficacy. Based on their review of the literature, Desforges and Abouchaar (2003) contend that parents' educational attitudes, aspirations, and values exert substantial influence on children's achievement and adjustment. Parental expectations appear to exert greater influence on occupational aspirations than do peer expectations (Buchman & Dalton, 2002; Looker & Thiessen, 2004). Ma (2001) found evidence of strong effects (stronger than teacher or peer effects) for parental educational expectations on student participation in advanced math, even when controlling for prior student math performance and attitude toward math.

Jodl, Malanchuk, Eccles, and Sameroff (2001) investigate the connections between parental values, beliefs and behaviours and adolescents' occupational aspirations. They found that youth's valuations of the importance of academic success were directly influenced by parent's beliefs (rather than indirectly through parenting behaviours) while parental values affected student occupational aspirations directly and indirectly. The authors interpret these results as pointing to the importance of parents as

socializers of adolescents' achievement orientation and perceptions of their occupational horizons.

Davis-Kean (2005) found that parents' level of education positively influenced their educational expectations for their children, in turn, parents' educational expectations indirectly affected children's academic achievement through its influence on parental behaviours related to provision of a stimulating home environment. She also found a direct effect for parental education expectations and child academic achievement for European American families, but not for African American ones. Parents' perceptions of their adolescent children's ability also affect the beliefs, attitudes and academic self-perceptions of adolescents. Additionally, parents may shape their children's preferences by the experiences and resources (educational and recreational) they provide and the behaviours they model during parent-child interaction. (Feinstein et al., 2004, p. 52). Further to this, there is substantial correlational evidence pointing to the positive effects of education on parental cognitions, and to the association between parental cognitions and children's outcomes. "From a developmental standpoint, cognitions are a key mediator of education effects. They are important in themselves and as a channel for inter-generational transmission of learning and achievement" although causality is yet to be firmly established (Feinstein et al., 2004, p. 57).

GENDER AND HABITUS

Although formal obstacles to female participation in various occupations have decreased dramatically over the years, and women have made notable gains in various non-traditional career paths, gender differentiated patterns of educational and

occupational attainment are still very much in evidence. While less overt than in past, distinct gender scripts with attendant behavioural, motivational, and achievement norms are still reinforced at many levels in society—in the family, the media, the school and the labour market. Differential gender socialization is still a fundamental process in society and societal conceptions of appropriate gender roles are still substantially constrained by essentialist sex-stereotypes. Consequently, traditional gender typing influences the educational careers of many boys and girls (Gaskell, 1992; Mandell & Crysdale, 1993; Moss & Attar, 1999). For example, one of the strongest patterns to emerge from such pervasive gender typing is that males tend to be disproportionately channeled toward Math and Sciences while females are geared towards the Arts and Humanities (Bernhard & Nyhoff-Young, 1994; Forcese, 1997; Weiner, Arnot, & David, 1997). As Schaeffer (2000, p. 72) concluded in her review of education in British Columbia, there is much evidence that

> …**a stunning amount of gender stereotyping remains** … [bold
> in original] from Kindergarten through graduate school and
> beyond. Males still dominate in the "hard" sciences, technology
> and engineering, while females still dominate in the arts and the
> helping professions.

Consistent with this pattern there is still evidence of gender disparities in academic performance in math and reading. For instance, results from the School Achievement Indicators Program (SAIP) show that, among 13 and 16 year old Canadian students, girls performed consistently better than boys in writing and reading achievements (Council of Education Ministers, Canada [CMEC], 2002), while boys performed slightly better than

girls in mathematics (CMEC, 2001a). Contrary to much previous research however, recent SAIP science scores—which showed no significant gender differences—suggest that the gender gap in science performance may have closed (CMEC, 2004).

At the post-secondary level, increasingly more women than men are enrolling in and graduating from university. But, even though female representation has been growing in traditionally male dominated fields, most of the growth has been in traditionally female fields such as education, nursing, arts, languages, sociology, and psychology. While, conversely, men account for about 75% of graduates in mathematics, computers and information sciences, architecture, engineering and related technologies (Canadian Association of University Teachers [CAUT], 2007).

Some of the gender socialization-contingent factors proffered to account for male-female differences in academic trajectories include: gender differences in coping strategies (Struthers, Perry, & Menec, 2000; Tamares, Janicki, & Hedgeson, 2002), in sense of academic self-efficacy (Malpass, O'Neil, & Hocevar, 1999), in attributional style (Fear-Fenn & Kapostasy, 1992), and in individual achievement-orientation (Chee, Pino, & Smith, 2005).

As noted earlier, although Bourdieu's conception of habitus was primarily in class terms, his analytical scheme is not inimical to the possibility that there may also be gendered and racialized dimensions to habitus. Several writers have contended that habitus should be expanded to the analysis of gender and/or racial disadvantage as well (e.g. Cicourel, 1993; Reay, 1995, 1997, 2004). Due to data limitations, the present study limits its scope to the consideration of gendered habitus.

Bourdieu began to address the gendered nature of habitus in his later writings, most explicitly in *Masculine Domination* (Bourdieu, 2001). He identifies the educational system, along with the family, the church, and the state, as the primary means by which gender inequality is reproduced. Education is fundamental to cultural production of symbolic domination whereby the arbitrary (e.g. socially constructed class and gender hierarchies) are rendered 'natural' or legitimate and so come to be taken-for-granted, even by occupants of the less privileged positions. Education contributes to the reproduction and legitimation of a cultural system that reinforces masculine privilege and shapes the gendered identities and perceptions of citizens accordingly. Bourdieu pointed out the "structural constancy" underlying gender relations and gender divisions in society and that while there may be some degree of change apparent on the surface, deeper, more inveterate features of traditional gender alignments retain their insidious influence in the public sphere. One of the primary structural features that Bourdieu draws attention to is the gendered division of labour, he (Bourdieu, 2001, p. 94) identifies three principles along which the labour market is gender segmented:

> The first is that the functions appropriate to women are an extension of their domestic functions—education, care, and service. The second is that a woman cannot have authority over men, and, other things being equal, therefore has every likelihood of being passed over in favour of a man for a position of authority and of being confined to subordinate and ancillary functions. The third principle gives men the monopoly of the handling of technical objects and machines.

Similarly, he draws attention to the hierarchy of occupations and professions in the labour market, noting that the degree of feminization of an occupational field is inversely related to its power and prestige (Bourdieu, 2001, p. 91). He argues that such gender segmentation, culturally reproduced and structurally embedded, is internalized by young women who tend to turn from formally open, but less traditional, educational and occupational paths.

Similarly, Charles and Gursky (2004, p. 4) argue that the occupational structure of most advanced capitalist countries is characterized by a high degree of gender segregation. They note that while the degree of segregation has decreased some in recent decades, this decrease lags far behind the rate of increase in female labour force participation and educational attainment.

Charles and Gursky (2004) identify two interacting dynamics: horizontal gender segregation between manual and nonmanual sectors, and vertical gender segregation within both manual and nonmanual sectors. Women are predominantly employed within the nonmanual sector and they are overrepresented among the lower level occupations within this sector. They argue that the hybrid nature of this segregation dynamic is primarily grounded in a two deeply entrenched "logics": gender essentialism and male primacy (a position very much consistent with Bourdeu's "principles" of gendered labour division). Gender essentialism ascribes some character traits as naturally or typically feminine, and other traits as naturally masculine, while male primacy holds that males are inherently more status worthy and authoritative.

They make the case that the contours of horizontal gender segregation in the occupational structure reveal a strong correspondence between the supposed natural traits

of males and females and the task requirements of different occupational sectors. Thus, the requirements of manual labour are seen to encompass more prototypically male traits (e.g. strenuous physical exertion, mechanical/technical manipulation), while the requirements of nonmanual labour are seen to encompass more prototypically female traits (e.g. personal service, nurturance, interpersonal communication). Even to the degree that gender essentialist notions have subsided in the wake of an increasingly pervasive egalitarian discourse, the institutionalization of gender essentialism has abetted the reproduction of horizontal segregation and has allowed it to persist (an observation similar to Bourdieu's notion of "structural constancy"). Indeed they argue that official egalitarianism and tacit gender essentialism happily co-exist. Formal provisions for gender neutral 'equality of opportunity' have not fully negated deeply engrained sex-typed notions of difference between males and females. This congruence between egalitarianism and gender essentialism helps to explain the persistence of vertical gender segregation, in that, discriminatory assumptions of male primacy tend to hinder the upward occupational mobility of women. Furthermore, the degree of vertical segregation is most extreme in the manual labour sectors of the job market where formal credentials are often less valued and the workplace less closely monitored. Also, recent structural economic changes have served to counter egalitarian cultural forces and to reinforce horizontal segregation as more women are drawn into the nonmanual service-based sectors which are characterized increasingly by non-standard (flexible, part-time) forms of employment with little security or advancement potential.

It follows that if there are traditionally fewer well-paying jobs for women without higher levels of education, then the labour market costs of not getting higher formal

education tend to be greater for women. Jobs that offer decent paying employment for individuals without higher education are primarily in the sectors ('manual') of the labour market dominated by men (e.g. construction, resource extraction, apprenticed based trades). The well-paying jobs more typically available to women tend to be concentrated in sectors ('nonmanual') of the labour market that require higher formal education credentials (e.g. teaching, finance, government). The jobs most available to women with lesser levels of education tend to be in less secure, less-well paid occupations of the nonmanual sector (retail, personal services, childcare worker, etc.). Thus less-educated women are doubly at risk, they are not formally qualified to access the more secure, better paying, upwardly mobile jobs available to females in the preferred sectors of the nonmanual labour market, and yet are also disadvantaged in obtaining the more desirable positions in the male-dominated manual sectors. Given this reality it would make sense that females in general would express a more favourable disposition toward school and greater adherence to sanctioned academic practices as they may—justifiably—perceive the risks of insufficient educational attainment more intensely than males.

Consistent with this interpretation, there is evidence that not only have young women's occupational aspirations been rising in recent decades, while young men's have remained steady, but that more young women than men aspire to professional/managerial occupations (Andres, Anisef, Krahn, Looker, & Thiessen, 1999). Furthermore, young women have been steadily outpacing young men in terms of higher educational attainment. Canadian census data reveal that in 1981, 16.2% of employed women and 15.5% of employed men aged 25 to 29 had a university degree. By 1991, the gap had increased slightly with 19.1% of young women compared to 16.1% of young men

holding a university degree, and by 2001 the gap had grown substantially, with 31.3% of

young employed women holding a university degree compared to 21.6% of young men

(Frenette & Coulombe, 2007). Census data also indicate that despite increasing rates of

female PSE, the gender distribution across disciplines changed very little over the 1990s.

> At the university level, women are relatively more likely
>
> than men to choose education, arts, humanities, social sciences, life
>
> sciences, and health. The gaps in education, humanities, and health
>
> are particularly large. For example, 20.6% of young women with a
>
> university degree had specialized in education, compared to only
>
> 9.4% of young men (2001 employment sample). Men are more
>
> likely to choose commerce, engineering, and
>
> mathematics/computer science/physical sciences. For example,
>
> 18.4% of young men with a university degree had specialized in
>
> engineering, compared to only 4.3% of young women (2001
>
> employment sample). (Frenette and Coulombe, 2007, pp. 13-14).

While various feminist theorists have taken issue with aspects of Bourdieu's

account, a number have also pointed out that there is much in his work to build upon in

terms of our understanding the persistence of gender inequality in education (e.g.

Dillabough, 2009; Fowler, 2003; Lovell, 2000; McNay, 1999; Mottier, 2002). Dillabough

(2006, pp. 56-7) sees Bourdieu's emphasis on the 'constancy of structure' in shaping our

taken-for-granted understanding of gender and gender divisions, as well as his attention

to the role education plays in the societal process of symbolic domination which

legitimates and reproduces masculine privilege, as parallel to the central concerns of

many feminist sociologists in education. This focus on domination in educational processes serves to inform what she contends is the fundamental empirical research agenda for contemporary education feminists: "to what degree does education function as a cultural system which deploys symbolic and historically inherited forms of masculine domination and privilege and thus continues to shape the social conditions and opportunities for boys and girls in school?"

"The gendered nature of habitus is a consequence of the different possibilities that women and men perceive are available to them" (Mickelson, 2003, p. 374). Habitus develops in childhood as the individual comes to understand the availability and probability of various pathways for someone in their social position. Just as class location can influence one's perceptions of which pathways are more or less realistic, so too can gender. Enduring gender disparities in academic achievement, as well as significant gender segregation the labour market, point to the reality that "men's and women's social actions take place in differently gendered fields" (Mickelson, 2003, p. 374). According to the "structure-disposition-practice" model the structure-contingent messages (classed, gendered, and racialized) a young person internalizes about their educational and occupational prospects influence their orientation toward school both in terms of their level of aspiration, their disposition toward schooling, and their performance of practices necessary to succeed academically. Thus, to the degree that young boys and girls are internalizing differing messages about their prospects, there may be gender differences in terms of aspirations and dispositions toward schooling, particular academic practices, and academic achievement.

To date there has been modest progress made in the application of the habitus concept to the empirical study of gender difference in achievement (Dumais, 2002; McClelland, 1990). The present study aims to move further in this direction by empirically examining the possibility of gender differences in the relationships between habitus, academic practices and academic outcomes.

SCHOOL CONTEXT

The effects of class and gender variant habitus may also be conditioned by school effects. School effects are associated with between-school variation in attributes such as the composition of the student population, quality of educational resources, and the school climate (e.g. instructional organization, expectations). One approach to accounting for such school differences in academic outcomes is the 'academic press' explanation, which, focuses on the general climate of principal and teacher expectations in a school. The level of academic press is reflected in a number of aspects including teacher practices, use of time and resources in the classroom, the content and pace of curriculum, disciplinary climate, emphasis on homework, provision of useful feedback on academic and behavioural performance (Plewis, 1991; Schereens, 1992; Shouse, 1996). There is some evidence that student performance is affected by peer grouping, with students benefiting from immersion in a context of high performing peers with high expectations. In fact, a number of studies have found that both higher and lower SES students perform better when they attend schools and/or classrooms with higher average SES (Frempong & Willms, 2002; Ho & Willms, 1996; Willms, 2002, 2004a). School context effects related to between-school variation in the types of students in schools are often called

composition effects. Variation across schools in terms of these school characteristics may condition the effects of habitus on practices and academic achievement.

Some analysts conceptualize these school effects in terms of 'institutional habitus' and suggest that institutional habitus interacts with individual or familial habitus. Reay, David, and Bowe (2001, para 1.3) contend that institutional habitus constitutes "a complex amalgam of agency and structure" which can "be understood as the impact of a cultural group or social class on an individual's behaviour as it is mediated through an organization." Reay et al. (2001, para 1.3) suggest the institutional habitus of a school is a function of "processes in which schools and their catchments mutually shape and reshape each other" and is marked by the links between the organizational culture of a school— including instructional, organizational and management processes—and the broader socioeconomic culture in which it is embedded. In short, it seems reasonable to expect that the relationships between SES, sex and habitus, academic practices and academic achievement may be, to some degree, affected by variation in school context.

THE MODEL

This section explicates the "structure-disposition-practice" model used in this investigation. Both the variables comprising the model and the relationships between these variables are described. The "structure-disposition-practice" model shown in Figure 1 derives from the ideas of Bourdieu but is also influenced by subsequent theorists.

Family SES

In Figure 1, the arrows from family SES to habitus, academic practices, and academic achievement represent the effects of family SES on these variables. The

internalization of habitus is rooted in the family context, the qualities of which vary

substantially in a number of ways related to differences in the financial, cultural, and

social resources that families bring to bear upon the child rearing process. The uneven

distribution of such family resources within society translates into 'class' variant habitus

(aspirations and dispositions), which affects academic practices and academic

achievement. In the present model, family context will be operationalized by an index of

family socioeconomic status (SES)[10] that measures general family resources as outlined

by Nash and Harker's (1998) family resources framework.

Figure 1. The Conceptual Model

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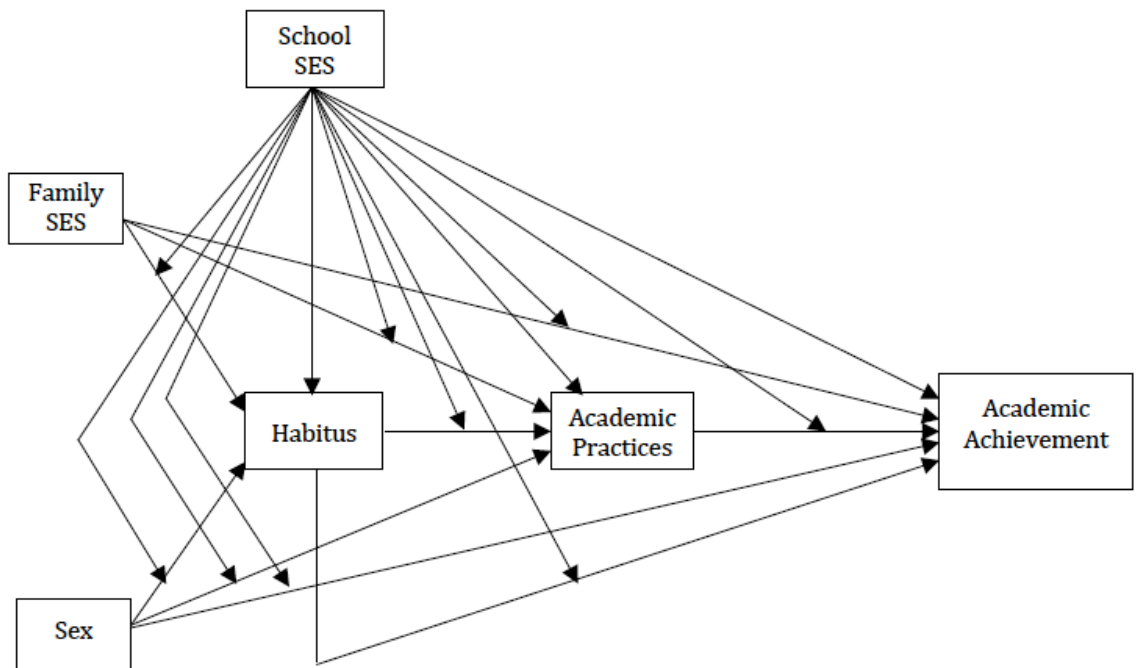
[10] While there is debate about the importance of the distinction between class as a discrete variable and SES as a continuous variable (e.g. Curtis, Grabb, & Guppy, 1999; Grabb, 2004, pp. 106-11), in this study both 'class' and 'SES' are used interchangeably as heuristic terms to refer to relative differences in family economic, cultural and social resources.

Sex

In Figure 1, the arrows from sex to habitus, sex to academic practices, and sex to academic achievement represent the effect of sex on these variables. The model posits that just as social class affects students' habitus, their academic practices and their academic achievement, so too does gender. Accordingly, gendered socialization patterns result in gender differences in habitus, academic practices, and academic achievement and in the relationships between these variables.

Habitus

The arrows from habitus to academic practices, and from habitus to academic achievement represent the effects of students' habitus on their academic practices and their academic achievement. In accordance with a family resources framework, and the structure-disposition-practice explanatory scheme discussed previously, class-contingent habitus is theorized to influence student perceptions of the schooling environment and/or processes, their own academic prospects, the importance or value of schooling to their future, as well as their level of educational aspiration. Further to this, parents are primary socialization agents and transmitters of habitus so parental experiences and perceptions of education are also formative for students.

The model presented here does not aim to directly operationalize Bourdieu's broad notion of habitus, but rather to operationalize the more circumscribed derivation offered by Nash's (2002b) concept of "educated habitus." The dimensions of this narrower notion of habitus that will be measured are: expected level of educational attainment, student perceptions of teachers (an important aspect of the formal schooling

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context), as well as student perceptions of the desirability of post-secondary education and their own potential as post-secondary students. Variations in social class and gender are associated with variation along each of these dimensions of habitus. Furthermore, the class and gender differences in habitus result in differences in academic practices and academic achievement.

Academic Practices

The arrow from academic practices to academic achievement in Figure 1 represents the effect of students' academic practices on their academic achievement. Certain academic practices (e.g. assignment completion, regular attendance, task perseverance) are associated positively with academic outcomes. Proficiency in these practices is not evenly distributed across the socioeconomic spectrum; students from higher SES families—exhibiting the dispositional tendencies of 'middle' class habitus— are more likely to subscribe to these practices and to be better equipped to successfully perform and persevere in such practices than students from lower SES families. This concept will be measured by an index of academic practices (see Methods section for more detail).

School SES

The arrows from school SES to habitus, from school SES to academic practices, and from school SES to academic achievement represent the direct effect of school SES on students' academic practices, and on their academic achievement. School effects are associated with between-school variation in the quality of educational resources and school climate as well as between-school variation in the composition of the student population.

This present study is primarily concerned with individual level relationships and so, in an effort to contain model complexity, does not attempt to measure the full range of school effect variables. Instead this study uses school mean SES, which is a measure of school composition effects, and is thought to be associated with numerous facets of school context such as level of parental support, discipline problems, general learning atmosphere, and ability to attract and retain talented and motivated teachers (Willms, 1992, 2004b).

The possible moderating effects of school SES on the various individual level effects or 'paths' (e.g. family SES on habitus, habitus on academic achievement, sex on academic practice) are represented in the conceptual model (Figure 1) by the arrows leading from school context to the midpoint (or as near as possible) of each path. This moderating effect is also known as a contextual effect or a cross-level interaction, as the school-level variable is conditioning the effects of the student-level variables.

THE RESEARCH QUESTIONS

Working from a "structure-disposition-practice" model, this study examines whether structure-contingent socialization—both classed and gendered—influences students' orientation toward school and the adoption of academic practices necessary for academic achievement. Central to this model is the concept of *habitus*—a socialized set of dispositions that shapes how one orients to the social world, including one's perception of one's life chances and corresponding styles of thought and behaviour. The properties of habitus stem from primary socialization within the family and reflect family class location. Class variant habitus is theorized to be a formative influence on how students from different social classes engage with the educational system and their subsequent

level of achievement. It has also been suggested by some theorists that gendered patterns of socialization also translate into gender differences in habitus, practices and academic achievement.

The "structure-disposition-practice" model investigated in this study, although influenced by Bourdieu's theory of social reproduction, draws greatly from the theoretical formulations of subsequent theorists and seeks to make the concept of habitus more amenable to quantitative study. This study contributes to the literature on habitus and educational inequality by employing a more multi-dimensional operationalization of habitus (including attitudes and perceptions as well as aspirations) than previous quantitative studies of the concept. It does so using a large multilevel data set and structural equation modeling techniques to model the relationships between family context (socioeconomic status), habitus, academic practices and academic achievement as well as possible school context moderating effects. Notably, it will be the first quantitative study of this sort in the Canadian context.

There are four basic questions under investigation in this study. Does family SES affect students' habitus, academic practices, and academic achievement? What are the relationships between habitus, academic practices, and academic achievement? Are there gender differences in these relationships? Finally, are there substantial school context effects in any of these relationships?

These questions are examined in the analyses reported in Chapter 4, with additional analyses of gender differences reported in Chapter 5. But first, Chapter 3 will describe the data set, the operationalization of variables, and the procedures used in these analyses.

CHAPTER 3

METHODOLOGY

THE DATA SET

The study employs two linked national data sets: the OECD's 2003 *Programme for International Student Assessment* (PISA) survey and the 2003 *Youth in Transition Survey* (YITS).[11] Close to 272,000 students in forty-one countries participated in the 2003 PISA survey, which assessed the performance of 15-year-old students in the academic domains of Mathematics, Reading, and Science as well as providing data on important student background and school characteristics. In Canada, almost 28,000 fifteen-year-old students from the 10 provinces participated in the survey. After listwise deletion the sample used for this study was 21,948 students: 10,600 males and 11,348 females in 1077 schools. (See Table 4 for the descriptive statistics.)

The 2003 *Youth in Transition Survey* (YITS) was a joint Human Resources Development Canada and Statistics Canada project that was integrated with the 2003 PISA survey and so follows the same sampling design. YITS measures a number of factors influencing students' educational outcomes and includes data on their family backgrounds, school experiences, achievement, attitudes, and aspirations.

While dozens of countries have participated in PISA studies, YITS is unique to Canada. Not only does YITS provide high quality student data on an extensive set of behavioural, attitudinal, and social variables, it is also linked to the Canadian PISA data

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[11] The author would like to acknowledge Statistics Canada and the Microdata Access Division for providing access to the data and relevant documentation for the PISA/YITS. While the research and analysis are based on data from Statistics Canada, the opinions expressed do not represent the views of Statistics Canada.

and, therefore can be used in conjunction with the PISA data to provide a wealth of sociological and educational data unavailable to researchers in most other countries. It is also worthwhile to note that, despite this unique potential, the YITS data and its link with PISA have not been used. Thus the combination of these two factors—the availability of a rich, sophisticated dataset, and the underuse of this promising resource—presented a unique research opportunity for this dissertation.

The PISA sample for Canada was obtained using a two-stage stratified sampling strategy. The first stage involved sampling schools that had 15-year olds enrolled. Schools were sampled systematically with probabilities proportionate to their size, with size measured in relation to the estimated number of eligible 15-year olds enrolled in a school. The second stage of selection involved sampling students from within the sampled schools. For each selected school, a list of that school's 15-year old students was generated, and thirty-five students were randomly selected. If a school had less than thirty-five 15-year olds, then all the eligible students were selected.

The PISA survey consisted of a student and a school component. The student PISA questionnaire was a paper-and-pencil test lasting two hours. The students also completed a 20-minute student background questionnaire and a 10-minute questionnaire on information technology and communication. The academic domains (Math, Reading, and Science) measured by PISA were defined by a team of international experts who agreed that test items should reflect the functional knowledge and skills necessary for active participation in society. The school component consisted of a 20-minute questionnaire completed by principals regarding various characteristics of their schools. (More detail on the PISA assessment framework can be found in OECD, 2003).

The YITS 20-minute self-completed student questionnaire was developed for a number of variables not included in the PISA questionnaire. These items gather information on the students' perception of their schools and school related experiences such as their school engagement, career aspirations, early formative influences, deviant behaviour, family relationships, living and learning conditions, and other background variables.

OPERATIONALIZING THE VARIABLES

The following section specifies which questionnaire items and/or indices will be used to measure the variables in the "structure-dispostion-practice" model shown in Figure 2. The variables and measures are also listed in Table 1. The actual questionnaire items and notes on index construction are provided in Appendix A.

Figure 2: The Conceptual Model with Indicators

Family SES	Habitus	School SES	Academic Practices	Academic Achievement
Family SES -Material Resources -Social Resources -Cultural Resources	-Educational Aspirations -Disposition toward teachers -Disposition toward post-secondary education	-School Mean SES	-Level of academic participation -Academic work ethic/persistence -Behaviour Problems	PISA Math Score PISA Reading Score PISA Science Score

Table 1. The Variables and Description of the Measures

Independent Variables	Description of Measures
Sex	Sex of the respondent was a single dichotomous variable recoded as 0=female, 1=male.
Family SES	SES Index constructed from the following variables and indexes. Material Resources • Home material environment index (PISA Student Questionnaire) Social Resources • Parents' highest occupational status (PISA Student Questionnaire) Cultural Resources • Parents' years of schooling (PISA Student Questionnaire) • Index of cultural possessions (PISA Student Questionnaire)
Habitus	Educational Aspirations: • Students' Expected Level of Education (PISA Student Questionnaire) recoded as continuous variable: number of years of education Disposition toward Teachers: • Perceptions of teachers and relations with (YITS Student Questionnaire) Disposition toward Post-Secondary Education: • Perceptions of its attractiveness and importance and of their academic potential (YITS Student Questionnaire)
Academic Practices	• Academic Practices Index (adapted from YITS Student Questionnaire) Composed of a number of items that measure performance of practices conducive to educational achievement (e.g. good attendance, timely completion of homework, time spent on school work, perseverance)
School SES	• Mean SES of school (aggregated from individual level family SES)
Dependent Variables	
Academic Achievement	• PISA Mathematics scores • PISA Science scores • PISA Reading scores

PISA 2003 utilized a rotating booklet design with 13 different booklets (subsets of items from the item pool), which were systematically linked by sets of common items. For reasons related to this incomplete—or rotating booklet—design, PISA employed Item Response Theory (IRT) methods to generate an estimate of student ability (see OECD, 2005b). The IRT scaling procedures used in PISA 2003 factor in both the number of correct answers given by a student as well as the difficulty of each item administered to that student. Estimates of item difficulty were determined in relation to how students of differing ability do on each item, while level of student ability is estimated in relation to a student's performance on items of varying levels of difficulty (see OECD, 2005b: 60-67). In addition to IRT procedures, PISA also employed the methodology of plausible values (see OECD, 2005b). Plausible values methodology assumes that, given uncertainty due to sampling error and the 'incomplete' design of PISA, any single estimate is just one possible value amid a distribution of possible values (plausibly accurate estimates). Thus, rather than produce a single estimate (a point estimate) of a student's ability on a given academic performance scale, the plausible values method produces several estimates. It does this by randomly selecting several values (five in the case of PISA) from the distribution (assumed to be normal) of plausible values, with each value considered representative of the range of possible values (scores).[12] Thus, rather than each student obtaining a single ability estimate (scale score) for each academic domain,

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[12] "…[P]lausible values are a representation of the range of abilities that a student might reasonably have…instead of directly estimating a student's ability θ, a probability distribution for a student's θ, is estimated. That is, instead of obtaining a point estimate for θ, (like WLE), a range of possible values for a student's θ, with an associated probability for each of these values is estimated. Plausible values are random draws from this (estimated) distribution for a student's θ" (Wu and Adams, quoted in OECD, 2005b, p. 75).

they were assigned five scores.[13] Moreover, unique parameter estimates must be

calculated for each plausible value, thus for example, if one wished to calculate a

correlation coefficient between SES and Reading performance, a separate coefficient

would be calculated for each plausible value and then the average of the five coefficients

would be reported as the parameter estimate.[14] Accordingly, the descriptive statistics

reported for math, reading and science scores (Table 4) are the mean value of the 5

plausible values for each of those variables.

The Independent Variables

Sex of the respondent was a single dichotomous variable recoded as 0=female,

1=male. 'Family SES' was operationalized by the PISA 2003 index ($\alpha = .74$) of

economic, social and cultural status. 'School context' was operationlized by mean school

SES, which was aggregated from individual level family SES. 'School context' was

operationalized by mean school SES, which was aggregated from individual level family

SES. As acknowledged previously, school mean SES is an incomplete measure of school

context, but nevertheless is one that is associated with a number of other aspects of

school context (Willms, 1992; 2004b). The present study is primarily concerned with

individual level relationships and so, in an effort to contain model complexity, does not

attempt to measure the full range of school context variables.

Although there are variables in the PISA survey intended to measure aspects of

school context, preliminary analyses revealed that the effects of these context variables

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[13] Simply calculating the mean of the plausible values at the student level and using this value to estimate population statistics results in biased estimates (see OECD, 2005b, Ch. 5).

[14] In fact, due to the utilization of Balanced Repeated Replication (see OECD, 2005b, Ch. 3) to estimate sampling variance, each statistic is calculated 405 times (80 replicates x 5 plausible values + 1 full sample x 5 plausible values).

were small and, in fact, diminished to insignificance once school mean SES was entered into the equation. Mean SES actually accounted for between 50 and 55 percent of the between school (level 2) variation in student academic achievement—much more than the other context variables. Adding more context variables at level 2 was also ruled out because more complex models tend to be less stable; that is, adding more school level variables when you are estimating random slopes and cross-level interactions greatly increases the number of parameters in the model and can affect the stability of estimates—not just for the cross-level interactions but for the other parameters as well. It was also decided that, given the purposes of the present study, combining a number of context variables together into one index would not be much more meaningful since some items or sub-indices account for very little variance. (As discussed in future research directions in Chapter 6, it would, in future, be more useful to use multilevel modeling with latent variables to accomplish a fuller operationalization of school context and school climate.)

'Habitus' was operationalized by an index ($\alpha = .80$) composed of: students' expected level of education (single item), as well indices measuring their 'Disposition toward teachers' ($\alpha = .70$) and 'Disposition toward Post-secondary Education' ($\alpha = .86$). Principal Component Analyses of the two habitus sub-indices are provided in Tables 2 and 3 and indicate that the items within each sub-index do indeed measure single factors. Academic Practices' was operationlized by an index ($\alpha = .80$) that included a number of indicators that measure performance of practices conducive to educational achievement.

Table 2. Principal Component Analysis for the Disposition toward Post-Secondary Education Index

Item	Factor Loadings
I will need to go to college or university to achieve what I want in life.	.77
I think I would enjoy going to college or university.	.85
I'm smart enough to do well in university.	.84
I'm smart enough to do well in college.	.87
Eigenvalue	2.77
% of variance explained	69.36

Table 3. Principal Component Analysis for the Disposition toward Teachers Index

Item	Factor Loadings
*Most of my teachers don't really care about me.	.80
I get along well with teachers.	.79
Most of my teachers do a good job of teaching.	.77
Eigenvalue	1.85
% of variance explained	61.75

*Note: Reverse coded for index construction.

The Dependent Variables

For the Math scale the achievement measurement was conceptualized in terms of "a wider, functional use of mathematics, engagement requires the ability to recognize and formulate mathematical problems in various situations" (OECD, 2004). Math performance was the primary domain of assessment in the PISA 2003. The test item pool for the Math scale consisted of 85 items.

For the Reading scale literacy achievement was conceptualized as "[m]uch more than decoding and literal comprehension, reading involves understanding and reflection, and the ability to use reading to fulfill one's goals in life" (OECD, 2004). The test item pool for the Reading scale consisted of 28 items.

For the Science scale, achievement was conceptualized as science literacy, an "understanding of scientific concepts, an ability to apply a scientific perspective and to think scientifically about evidence" (OECD, 2004). The test item pool for the Science scale consisted of 35 items.

Table 4 reports the descriptive statistics for the level-1 and level-2 variables, and shows that skew and kurtosis statistics for all variables were within the generally acceptable range.

Table 4. Univariate Descriptive Statistics for the Variables

	N	Mean	SD	Skew	Kurtosis
Students	21948				
Family SES		0.06	2.24	-.30	-.37
Sex		0.48	0.50	.03	-1.99
Disposition toward Teachers		9.78	1.77	-.61	1.01
Disposition toward PSE		6.83	3.12	-.74	.44
Educational Aspirations		15.52	2.59	-1.53	1.37
Habitus		42.13	6.02	-.98	1.04
Academic Practices		28.22	5.02	-.52	.09
Math		529.24	85.43	-.15	-.22
Reading		525.22	86.85	-.44	.12
Science		517.04	96.48	-.19	-.14
Schools	1077				
School Mean SES		-0.07	1.18	.09	0.00

PROCEDURES

SPSS 16.0 was used to prepare the PISA and YITS data sets for analysis. All recoding and index computations were done in SPSS. The prepared files were then imported into HLM 6.06 to run the multilevel analyses. HLM (Hierarchical Linear Modeling) is a popular multilevel modeling package commonly used with educational data and is designed to handle plausible values (Raudenbaush, Bryk, Cheong, Congdon, & du Toit, 2004). HLM converts the SPSS data file into an MDM (Multivariate Data Matrix) file; during this conversion process listwise deletion was used to handle missing values and items in varaibles

The nested nature of the PISA-YITS data (students nested within schools) complicates the calculation of sampling variance. OLS regression assumes that residuals (differences between model-predicted and observed values) are normally distributed, independent with a mean of zero and a constant variance. The independence assumption is unlikely to hold when a cluster sampling method is employed as it was in collecting the the PISA and YITS data. That is, students selected from the same school are more likely similar on relevant variables (e.g. curriculum, school resources, and community characteristics) than are students randomly selected from the population.[15] Multilevel modeling takes the dependent nature of clustered data such as PISA into account to produce more accurate standard errors (Bickel, 2007; Luke, 2004; Raudenbaush & Bryk, 2002; Hox, 2002). Another limitation of OLS regression is that slopes and intercepts are fixed and do not vary from school to school. In many situations though, coefficients do in

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[15] Thus a serious concern with employing OLS regression to estimate statistics for clustered data (such as PISA) is the underestimation of standard errors, leading to inflated probabilities of Type I errors (alpha inflation).

fact vary across schools, for example, the effect of SES on academic achievment may vary from school to school. Multilevel modeling programs such as HLM use alternative methods (in the present study—restricted maximum likelihood estimation) to estimate this between school variance (i.e. random effects). Multilevel modeling also enables the consideration of relationships between variables at different levels of analysis. Thus in the present case we can analyze relationships between variables at the individual student level as well as the influence of school level contextual variables on those relationships.

A null (or unconditional) model was first estimated for each of the three academic achievement varaibles—math, reading, and science. Then Models 1 and 2 were estimated for each academic achievement variable. The set of predictors entered into the analysis in Model 1 are: sex, SES, habitus and academic practices at level 1; and school mean SES at level 2. The set of predictors to be entered into the analysis in Model 2 are: sex, SES, disposition toward teacher, disposition toward post-secondary education, expected level of education, and academic practices at level 1; and school mean SES at level 2. In Model 1 habitus was measured using a single combined index in order to assess the relationship of habitus, in general, to the other variables in the model. In Model 2 habitus was decomposed into three sub-components to explore specific relationships between the operationalized components of habitus and other variables in the model.

Construction of the structural models occurred in several steps. First, HLM analyses were run on the two intervening variables—habitus and academic practices: (1) sex and SES regressed on habitus; and (2) sex, SES and habitus regressed on academic practices—with school SES at level 2 for each. Then three separate Model 1 HLM

analyses were run, regressing the three academic achievement variables on the independent variables in the model.

The structural model analyses used Model 1 standardized coefficients to diagram a structural model for each of the three academic outcomes. HLM does not produce standardized regression coefficients, so all variables were standardized before entry into the analyses, which resulted in the standardized parameter estimates required for comparison of the various relationships between variables in the model. Interpretation of the strength of relationships in the models analyzed follows a "rule of thumb" that has been used in some of the sociological literature: coefficients greater than .25 are considered as strong relationships, coefficients between .24 and .10 are considered as moderate, and coefficients less than .10 are considered as weak.

In Model 2 habitus was decomposed into three subcomponents to study their relative effects and relationships with other variables in the model. As with Model 1, the construction of Model 2 structural models occurred in several steps. First, HLM analyses were run on the 4 variables that are, in addition to academic achievement, endogenous in the structural model, with school SES at level 2 for each: (1) sex and SES regressed on disposition toward teachers; (2) sex and SES regressed on disposition toward PSE; (3) sex and SES regressed on educational aspirations; (4) sex, SES, disposition toward teachers, disposition toward PSE, and educational aspirations regressed on academic practices. Then three separate Model 2 HLM analyses were run, regressing each of the three academic achievement variables on the indpendent variables in the model. Constructing the structural Model 2 diagrams permits, via comparison of path coefficients, examination of differences between the three subcomponents of habitus in

terms of how they affect academic practices and achievement, as well as how they are affected by family SES, sex and school SES.

In the final analyses phase, in order to further assess gender differences, the sample was divided into male and female samples and the same analytical steps were repeated for each sex. Then tests for equality of regression coefficients between the two samples were conducted, with significant differences between coefficients in the male and female samples interpreted as indicative of significant differences in the effects of those variables in the male and female populations (Paternoster, Brame, Maserolle, & Piquero, 1998).

The first step in conducting an HLM analysis is to estimate a *null model*, that is, a one-way ANOVA with random effects (Raudenbush & Bryk, 2002). The null (or unconditional) model has no individual or group level predictors and is used to partition variance in the dependent variable (academic achievement) into its between-school and within-school components. The variance components of the null model are used to calculate the intraclass correlation (ICC). The ICC gives an indication of what proportion of the overall variance in the dependent variable is found between schools, in the present case, the ICC indicates what proportion of variance in academic scores is due to between-school differences.

Next, student level (level 1) and school level (level 2) predictors were added to the model. Both fixed coefficients (averaged across schools) and random coefficients (vary from school to school) were estimated and tested for significance. Given the theoretical objectives of the present study, the analyses conducted here were primarily

concerned with employing an "intercepts and slopes as outcomes" hierachical linear

model to examine the significance of particular fixed and random effects.

An individual's score on the dependent variable is a function of individual level

variables (e.g. sex, family SES, habitus, academic practices) plus contextual level

variables (e.g. school mean SES) and the cross-level interaction between individual and

contextual level variables (i.e. the moderating effect of school SES on the effects of

individual level variables). When we test for a same level interaction in OLS, we are

assessing whether the effect of X on Y is contingent on the value of a third variable Z,

that is, is the effect of X on Y moderated by Z? In a cross-level interaction the third

variable is a contextual variable, and in this study we were interested in whether this

school-level variable moderated the effect of student level X on student level Y. Since

school-level variables vary across schools, what we were actually testing was whether the

effect of a student-level variable differed across schools. More precisely, we were testing

whether a student-level effect strengthens or weakens with change in a school-level, or

contextual, variable. For example, is the effect of student habitus on math achievement

different for schools with different mean SES? That is, does the slope for the effect of

individual habitus on math achievement change significantly as school mean SES

changes? If so, then there is a significant cross-level interaction between school mean

SES, the school-level contextual variable, and habitus, the student-level variable. Put

another way, the student-level effect of habitus on math achievement is moderated, or

conditioned, by school mean SES—the effect on math achievement of individual student

habitus is, in part, contingent on the mean SES of the school a student attends.

The results from the full sample analyses conducted using these methods are reported in the Chapter 4.

CHAPTER 4

RESULTS FOR THE ANALYSES OF THE FULL SAMPLE

Four basic concerns are examined in this chapter: Does family SES affect students' habitus, academic practices, and academic achievement? What are the relationships between habitus, academic practices, and academic achievement? Are there gender differences in these relationships? Finally, are there significant school context effects—specifically for the schools' SES—in any of these relationships? To examine these questions two models are examined. In Model 1, habitus is measured as a single variable to assess the relationship of habitus, in general, to the other variables in the model. In Model 2, habitus is decomposed into three subcomponents to explore the specific relationships between these three dimensions of habitus and the other variables in the model.

ANALYSES OF THE VARIABLES IN MODEL 1

The Intercorrelation Matrix

In order to estimate the effects of the socioeconomic status of Canadian students on the other important variables in Model 1—habitus, academic practices, and students' academic achievement in math, reading, and science—the correlation coefficients between all the variables in Model 1 were calculated and are reported in Table 5. In this table, it is observed that students' SES has a strong positive relationship with habitus (.33) and the correlation between students' SES and the average SES of the students in their school is also strong (.48), suggesting that students generally attend schools with

other students who are from similar social class backgrounds. This finding is not surprising because public schools have catchment areas that result from residential segregation (Willms, 2004b, 2006). It is not clear, however, if the causal effect of SES results from the students, the schools, or both the students and the schools. The HLM analyses, of course, which are reported later will help clarify the causal relationships between these variables.

Table 5. Correlation Matrix for the Variables in Model 1

Variables	1.	2.	3.	4.	5.	6.	7.
Student Level Independent & Intervening Variables							
1. SES							
2. Sex	-.01						
3. Habitus	.33**	-.15**					
4. Academic Practices	.25**	-.19**	.55***				
School Level Independent Variable							
5. SES	.48**	.01	.19**	.17**			
Student Level Dependent Variables							
6. Achievement in Math	.33**	.08**	.36**	.27**	.28**		
7. Achievement in Reading	.33**	-.19**	.40**	.33**	.27**	.83**	
8. Achievement in Science	.35**	.07**	.36**	.27**	.29**	.89**	.89**

* p≤.05, **p≤.01

In addition, it is observed that the SES of students is strongly related to their academic achievement (.33 to .35), but so is the average SES of the school (.27 to .29), which is expected. Also as expected, both habitus (.36 to .40) and academic practices (.27 to .33) are strongly related to academic achievement as well as to each other (.55), and so understanding these relationships will require multivariate HLM analyses. This table also shows that the academic achievement variables are strongly correlated with each other

(.83 to .89), suggesting that the results of the HLM analyses will be quite similar for all

three academic achievement variables. Nevertheless, there are likely to be some

differences between boys and girls in their academic achievement because the correlation

coefficients suggest that boys slightly out-perform girls in both math (.08) and science

(.07), while, not unexpectedly, girls moderately outperform boys in reading (-.19). Girls

also report higher levels of pro-school habitus (-.15) and more positive academic

practices than boys (-.19). Nevertheless, we can only determine if these relationships are,

in fact, valid by controlling for the other relevant variables in HLM regression analyses.

The Results for Habitus and Academic Practices

The next step is to examine the relationships between the independent variables

and the two intervening variables in Model 1—habitus and academic practices. The

results of these analyses are presented in Table 6. This table illustrates that students' SES

has a strong effect on their habitus (.29), but only a weak effect on their academic

practices (.07). In other words, a one standard deviation change in student SES results in

a 29 percent of a standard deviation change in habitus and a 7 percent of a standard

deviation change in academic practices. It is also evident, however, that habitus has a

very strong effect on academic practices (.53). Specifically, a one standard deviation

change in habitus results in more than half a standard deviation change in the academic

practices of students. As important, when the students' SES is controlled, the average

SES of the school attended by the students has relatively little effect on students' habitus

or on their academic practices (.02 and .03 respectively), which suggests that the

dispositions and practices of the students are largely affected by their home environments

rather than their school environments. This finding is consistent with the "structure-

disposition-practices" model, which posits that habitus is rooted in the family environment.

Table 6. The Effects of the Student and School Variables on Habitus and
Academic Practices in Model 1

| | Intervening Variables | |
Variables	Habitus	Academic Practices
Student Level		
SES	.29**	.07**
Sex	-.28**	-.26**
Habitus		.53**
School Level		
SES	.02	.03
Contextual Interactions		
School SES x SES	-.02	.00
School SES x Sex	.07*	.02
School SES x Habitus	-	.04*

* p≤.05, **p≤.01, ***p≤.001

The other variable that has a strong effect on both habitus and academic practices is sex, with girls showing higher scores than boys (-.28 and -.26). Finally, the evidence in the third panel of this table shows that none of the contextual interaction coefficients have even moderate effects on students' habitus or on their academic practices. Nevertheless, the largest school contextual interaction effect is from sex on habitus (.07), where a one standard deviation change in the average SES of schools attended results in a 7 percent of a standard deviation decrease in the gender gap in habitus scores, suggesting, once again, that boys and girls respond somewhat differently to schooling. Although the amount of variance explained in these analyses were not calculated, this table also illustrates that the

independent variables obviously explain only a modest portion of the variation in the

students' habitus and practice.

Table 7. The Direct and Indirect Effects of the Student and School
Variables on Habitus and Academic Practices in Model 1

Variables	Direct	Indirect	Total Causal	Joint / Spurious	r
			HABITUS		
Student Level					
SES	.29	-	.29	.04	.33
Sex	-.28	-	-.28	.13	-.15
School Level					
Mean SES	.02	-	.02	.17	.02
			ACADEMIC PRACTICES		
Student Level					
SES	.07	.15	.22	.03	.29
Sex	-.26	-.15	-.41	.22	-.19
Habitus	.53	-	.53	.02	.55
School Level					
Mean SES	.03	.01	.04	.13	.17

Obviously, there are no indirect effects on habitus but there are indirect effects on

academic practices that are mediated by habitus. These results are presented in Table 7,

and are relatively easy to interpret. Of note, there is a moderate indirect effect of SES via

habitus on academic practices (.29 x .53 = .15). Likewise, there is a similar moderate

effect from sex via habitus on academic practices (-.28 x .53 = -.15).

The Results for the Academic Achievement Variables

The next step is to examine the relationships between the independent variables

and the academic achievement variables in Model 1. The results of these analyses are

presented in Table 8. This table illustrates that students' SES has moderate effects (.14 to .17) on the academic achievement variables. In other words, a one standard deviation change in students' SES results in a 14 percent of a standard deviation change in math and reading scores and a 17 percent of a standard deviation change in science score. Both sex and habitus have strong effects on academic achievement. Boys outperform girls in math (.27) and science (.23) while girls outperform boys in reading (-.22). That is, boys outperform girls by 27 percent of a standard deviation in math, and by 23 percent of a standard deviation in science, while girls outperform boys by 22 percent of a standard deviation in reading. These gender differences are consistent with previous Canadian findings, although the male advantage in math and science appear to be somewhat larger than in some other samples (e.g. Bussierre, et al., 2001; CMEC, 2001a; 2002). Students' habitus has moderate-to-strong effects on achievement in math (.25), reading (.23), and science (.23). In other words, a one standard deviation change in student habitus results in a 25 percent of a standard deviation change in math scores, and 23 percent of a standard deviation change in reading and science scores. This result is consistent with Dumais' (2002) finding of a positive effect for habitus on school grades.

The effects of academic practices are more modest (.08 and .09), with a standard deviation change in students' academic practices resulting in between 8 and 9 percent of a standard deviation change in students' achievement scores. Looking at the effect of school SES, even when students' SES is controlled, the average SES of the schools the students attend has a moderate effect on their academic achievement; in fact, the effect of school SES on academic achievement is almost as strong as the effect of family SES. That is, a one standard deviation change in the average SES of the schools the students

attend results in a 14 percent of a standard deviation change in students' math

achievement, a 12 percent of a standard deviation change in students' reading

achievement, and a 13 percent of a standard deviation change in students' science

achievement.

Table 8. The Effects of the Student and School Variables on the Academic Achievement
Variables in Model 1

| Variables | Academic Achievement Variables | | |
	Mathematics	Reading	Science
Intercepts	522.50	541.09	508.90
	(1.74)[a]	(1.71)	(2.46)
Student Level			
SES	.14***	.14***	.17***
Sex	.27***	-.22***	.23***
Habitus	.25***	.23***	.23***
Academic Practices	.09***	.09***	.08***
School Level			
SES	.14***	.12***	.13***
Contextual Interactions			
School SES x SES	.03*	.01	.02
School SES x Sex	.02	.02	.01
School SES x Habitus	-.03*	-.04**	-.03*
School SES x Academic Practices	-.01	.00	.00
Variances Explained			
ICC	.17	.16	.16
R_1^2	.25	.25	.23
% Student Level	90%	90%	89%
% School Level	10%	10%	10%

[a] Standard deviations are in parentheses

* p≤.05, **p≤.01, ***p≤.001 (two-tailed tests)

The evidence in the third panel of this table indicates that most of the contextual

interaction coefficients are insignificant, while those that are significant are also very

small (.03 and .04). Nonetheless, although the coefficients are modest, there is a

significant contextual interaction between school SES and the effect of students' habitus

on academic achievement. That is, a one standard deviation increase in the average SES

of the schools that students attend results in a 3 percent of a standard deviation decrease

in the effect of the students' habitus on their math and science achievement scores, and a

4 percent of a standard deviation decrease in the effect of habitus on their reading scores.

Finally, the intraclass correlation coefficients (ICC), reported in Table 8, are .17 for

mathematics, and .16 for both reading and science. Variance statistics show that all the

independent and intervening variables in Model 1 explain between 23 and 25 per cent of

the variance in these achievement variables. In addition, approximately 90 percent of the

variation in the students' academic achievement explained by Model 1 is accounted for

by the student-level variables, SES, sex, habitus, and academic practices, specifically, and

only about 10 percent is accounted for by the school-level variable, the average SES of

the students attending the schools. These statistics indicate that, in Canada, most of the

variation in academic achievement is due to differences between students, rather than to

differences between schools, suggesting that educational policies aimed at mitigating

disparities between schools may have limited potential to reduce the socioeconomic

gradient in academic achievement, compared to policies aimed at mitigating disparities

between students. As reported in Table 9, the indirect effects of the students' SES on the

academic achievement variables, as mediated by habitus and academic practices, are

noteably less than the direct effects. In fact, habitus and academic practices account for

about 40% of the total causal effect of family SES on achievement in math and reading

and about 35% in achievement in science. In math, for example, the direct effect of

student SES on math achievement is .14 and the indirect effect, through habitus and

academic practices, is .09.

Table 9. The Direct and Indirect Effects of the Student and School
Variables on the Academic Achievement Variables in Model 1

Variables	Direct	Indirect	Total Causal	Joint / Spurious	r
MATHEMATICS					
Student Level					
SES	.14	.09	.23	.10	.33
Sex	.27	-.10	.17	-.09	.08
Habitus	.25	.05	.30	.09	.36
Academic Practices	.09	-	.09	.18	.27
School Level					
SES	.14	.01	.15	.13	.28
READING					
Student Level					
SES	.14	.09	.23	.10	.33
Sex	-.22	-.09	-.31	.12	-.19
Habitus	.23	.05	.28	.12	.40
Academic Practices	.09	-	.09	.24	.33
School Level					
SES	.12	.01	.13	.14	.27
SCIENCE					
Student Level					
SES	.17	.09	.26	.09	.35
Sex	.23	-.10	.13	-.06	.07
Habitus	.23	.04	.27	.09	.36
Academic Practices	.08	-	.08	.19	.27
School Level					
SES	.13	.01	.14	.15	.29

Thus, a considerable portion of the SES gradient in academic achievement remains

unexplained by habitus and academic practices as operationalized in this model. The

indirect effects of habitus (.04 to .05) on the academic achievement variables, as

mediated by academic practices, are much smaller than the direct effects. In math, for

example, the direct effect of habitus is .25 and the indirect effect is only .05. Similar sized

direct and indirect effects are evident for reading and science. Thus, habitus exerts strong

direct effects on the academic achievement variables above and beyond those which are

mediated by academic practices.

Although the direct effects of sex on the academic achievement variables are

larger than the indirect effects, as mediated by habitus and academic practices, the

indirect effects (-.09 to -.10) and the joint/spurious effects (-.06 to .12) are large enough

to suggest that there are substantial differences between boys and girls and that to

understand these differences better separate analyses should be conducted. The indirect

effects of school SES are negligible, but the joint/spurious effects suggest that the effects

Figure 3. The Causal Relationships for Model 1
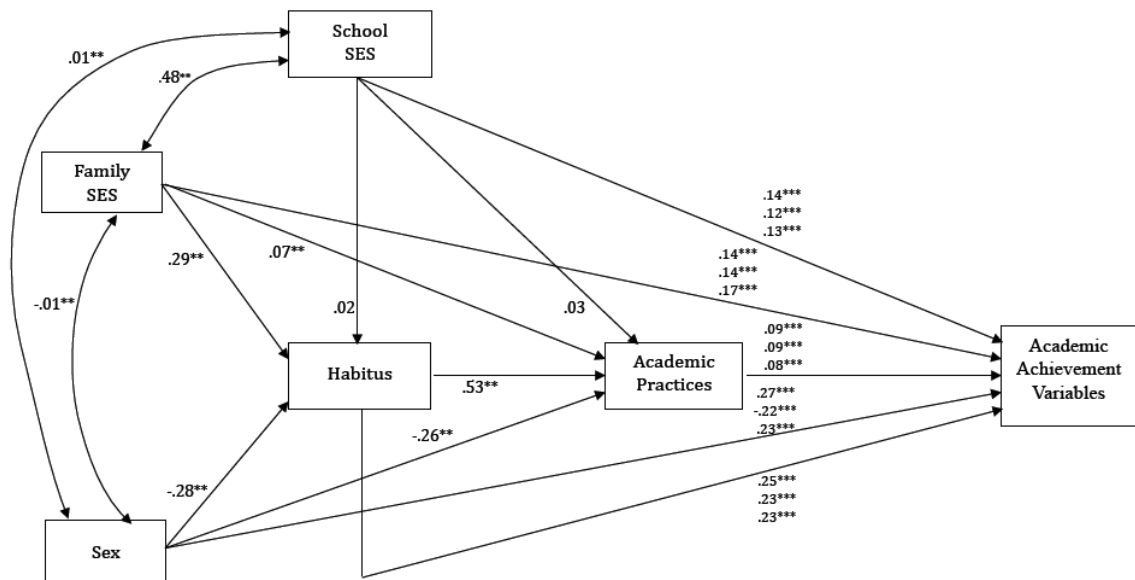
Note: The coefficients for the variables that directly affect academic achievement are reported such that the top coefficient is for Math, the middle for Reading, and the bottom for Science.
*p≤ .05,   **p≤.01,   ***p≤.01

of school SES are probably difficult to fully disentangle from the effects of student SES, and that there may be differences between boys and girls in how school SES affects their academic achievement. The causal relationships in Model 1 are presented in Figure 3.

ANALYSES OF THE VARIABLES IN MODEL 2

The Intercorrelation Array

In Model 2 habitus was decomposed into three subcomponents—disposition toward teacher, disposition toward post-secondary education (PSE), and educational aspirations—in order to examine their relative effects on the academic practices and achievement variables in the model. The correlation coefficients of the three habitus subcomponents and the other variables are reported in Table 10. As expected, each subcomponent is highly correlated with habitus (ranging from .66 to .86). Also, it is observed that students' SES has a strong positive relationship with disposition toward PSE (.33) and educational aspirations (.34), but a more modest relationship with disposition toward teachers (.10). Similarly, school SES has a moderate positive relationship with disposition toward PSE (.19) and educational aspirations (.22), and a weak relationship with disposition toward teachers (.04). The same pattern is evident in the third panel of this table, where disposition toward PSE and educational aspirations have strong relationships with math (.38 and .33), reading (.39 and .37), and science (.36 and .32) achievement, while the relationships between disposition toward teachers and academic achievement are moderate (.14, .19 and .16). On the other hand, the relationship between academic practices and disposition toward teachers (.43) is very similar in

strength to the relationship between academic practices and dispositions toward PSE (.46)

and educational aspirations (.38).

Table 10. The Array of Correlations for the Variables in Model 2

Variables	3.1 Disposition towards Teachers	3.2 Disposition towards Post-Secondary Education	3.3 Educational Aspirations
Student Level Independent and Intervening Variables			
1. SES	.10**	.33**	.34**
2. Sex	-.10**	-.11**	-.14**
3. Habitus	.66**	.86**	.80**
4. Academic Practices	.43**	.46**	.38**
School Level Independent Variables			
5. SES	.04**	.19**	.22**
Student Level Dependent Variables			
6. Achievement in Mathematics	.14**	.38**	.33**
7. Achievement in Reading	.19**	.39**	.37**
8. Achievement in Science	.16**	.36**	.32**

*$p \leq .05$, **$p \leq .01$

The evidence in Table 10 indicates that the relationships between the habitus

subcomponents and sex are generally weaker than the relationships between the habitus

subcomponents and the other variables in the model. Nevertheless, the negative

coefficients suggest that girls have higher scores than boys on all three habitus

subcomponent variables. It also appears that disposition toward teachers is the least

important of the three habitus subcomponents. Of course, in order to determine more

definite evidence we must control for other relevant variables in HLM analyses.

The Results for Habitus Subcomponents and Academic Practices

The next step is to examine the relationships between the independent variables and the three habitus subcomponents in Model 2. The results of these analyses are presented in Table 11. This table illustrates that students' SES has strong effects on the students' dispositions toward PSE (.31) and educational aspirations (.27) and a more modest effect on the students' dispositions toward teachers (.10). In other words, a one standard deviation change in the students' SES results in a 31 percent of a standard deviation change in their dispositions toward PSE and a 27 percent of a standard deviation change in their educational aspirations, but only a 10 percent of a standard deviation change in their dispositions toward teachers. Interestingly, when student SES is controlled, the average SES of the schools the students attend has no significant effect on either their dispositions toward teachers (.03) or their dispositions toward PSE (.02) and only a small significant effect on their educational aspirations (.05). A one standard deviation change in the average SES of the schools the students attend results in a 5 percent of a standard deviation change in their educational aspirations.

In terms of effects on academic practices, as in Model 1, the students' SES has only a modest effect on their academic practices (.09), but both dispositions toward teachers (.32) and dispositions toward PSE (.26) have relatively strong effects on their academic practices, while, surprisingly, the effect of their educational aspirations is more modest (.09). That is, a one standard deviation change in students' dispositions toward teachers results in a 32 percent of a standard deviation change in their academic practices and a one standard deviation change in students' dispositions toward PSE results in a 26 percent of a standard deviation change in their academic practices, while a one standard

deviation change in educational aspirations results in only a 9 percent of a standard

deviation change in academic practices.

Table 11. The Effects of the Student and School Variables on the Habitus Subcomponents and Academic Practices in Model 2

	Intervening Variables			
Variables	Dispositions Towards Teachers	Dispositions towards Post-Sec. Education	Educational Aspirations	Academic Practices
Student Level				
SES	.10***	.31***	.27***	.09***
Sex	-.18***	-.23***	-.24***	-.26***
Dispositions towards Teachers				.32***
Dispositions towards Post-Secondary Education				.26***
Educational Aspirations				.09***
School Level				
SES	.03	.02	.05**	.05**
Contextual Interactions				
School SES x SES	.01	-.01	.05**	.00
School SES x Sex	.03	.05**	.08**	.01
School SES x Teachers				.00
School SES x Post-Secondary				.01
School SES x Aspirations				.03

* p≤.05, **p≤.01, ***p≤.001

When student SES is controlled, school SES has only a small significant effect on

academic practices (.05). In other words, a one standard deviation change in the average

SES of the schools the students attend results in a 5 percent of a standard deviation

change in their academic practices. Again, as seen in Model 1, and consitent with

Bourdieu's theory—that habitus is rooted in family socialization—the results show that

the effects of the students' family SES on habitus and academic practices are much stronger than the effects of the average SES of the schools they attend.

Sex has moderate effects on all three habitus subcomponents and academic practices. Female students have higher scores than males on the dispositions towards teachers (-.18), dispositions toward PSE (-.23), and educational aspirations (-.24) subcomponents of habitus. In other words, compared to boys, girls' scores are, on average, 18 percent of a standard deviation higher on dispositions toward teachers, 23 percent of a standard deviation higher on dispositions toward PSE, and 24 percent of a standard deviation higher on educational aspirations. The evidence also shows that girls' scores on the academic practices variable are, on average, 26 percent of a standard deviation above the boys' scores.

Turning to contextual effects, the evidence in the third panel of this table indicates that none of the contextual interaction coefficients are even moderate in their effects on the subcomponents of habitus or academic practices. Relatively small significant school contextual interaction coefficients are evident for the effects of students' sex on dispositions toward PSE (.05) and educational aspirations (.08) and for the effect of students' SES on educational aspirations (.05). Put another way, as the average SES of students attending a school increases, the gender gap in dispositions toward PSE and educational aspirations decreases slightly. Offsetting this, however, the effect of students' SES on educational aspirations increases slightly as the average SES of the schools they attend increases.

The Results for the Academic Achievement Variables

The next step is to examine the relationships between the independent variables, with habitus decomposed into the three subcomponents, and the academic achievement variables. The results of these analyses are reported in Table 12. Not surprisingly, the effects of students' SES, sex, academic practices and the schools' SES on the academic achievement variables are very similar to the analyses in Model 1.

Of the three habitus subcomponents, the evidence in Table 12 shows that disposition toward PSE generally has the strongest effects (.14 to .20), followed by educational aspirations (.09 to .11), with disposition toward teachers (.00 to .04) showing the weakest effects; in fact, disposition toward teachers does not even significantly affect the students' achievement in math. A one standard deviation change in the students' dispositions toward PSE results in a 20 percent of a standard deviation change in their math scores, a 14 percent of a standard deviation change in their reading scores, and a 16 percent of a standard deviation change in their science scores. A one standard deviation change in students' educational aspirations results in a 9 percent of a standard deviation change in their math and science scores, and a 11 percent of a standard deviation change in their reading scores. As evident in the third panel of this table, only two of the contextual interaction coefficients reached statistical significance and both of these effects are small. As expected, the intraclass correlation coefficients and variance explained reported in Table 12 tell the same story as was evident for Model 1—that almost 90 percent of the explained variation in student academic achievement is due to student-level differences, and about 10 percent is explained by school-level differences in SES.

Table 12. The Effects of the Student and School Variables on the Academic
Achievement Variables in Model 2

| Variables | Academic Achievement Variables | | |
	Mathematics	Reading	Science
Intercepts	522.28	540.74	508.74
	$(1.76)^a$	(1.71)	(2.45)
Student Level			
SES	.12***	.13***	.16***
Sex	.27***	-.22***	.24***
Dispositions Towards Teachers	.00	.04**	.03*
Dispositions Towards Post-Secondary	.20***	.14***	.16***
Educational Aspirations	.09***	.11***	.09***
Academic Practices	.10***	.10***	.09***
School Level			
SES	.13***	.11***	.12***
Contextual Interactions			
School SES x SES	.03*	.00	.02
School SES x Sex	.01	.02	.00
School SES x Dispositions Towards Teachers	.01	-.02	-.01
School SES x Dispositions Towards Post-Secondary	.00	.02	.01
School SES x Educational Aspirations	.02	-.04*	-.03
School SES x Academic Practices	.01	.00	-.01
Variance Explained			
ICC	.17	.16	.16
R_1^2	.27	.27	.24
% Student Level	89%	90%	89%
% School Level	11%	10%	11%

[a] Standard deviations   * p≤.05, **p≤.01, ***p≤.001

As there are no meaningful differences relative to Model 1, reporting the indirect effects of the relevant variables on habitus, academic practices, and the academic achievement variables would be redundant. Nevertheless, causal relationships are summarized in Figure 4.

Figure 4. The Causal Relationships for Model 2
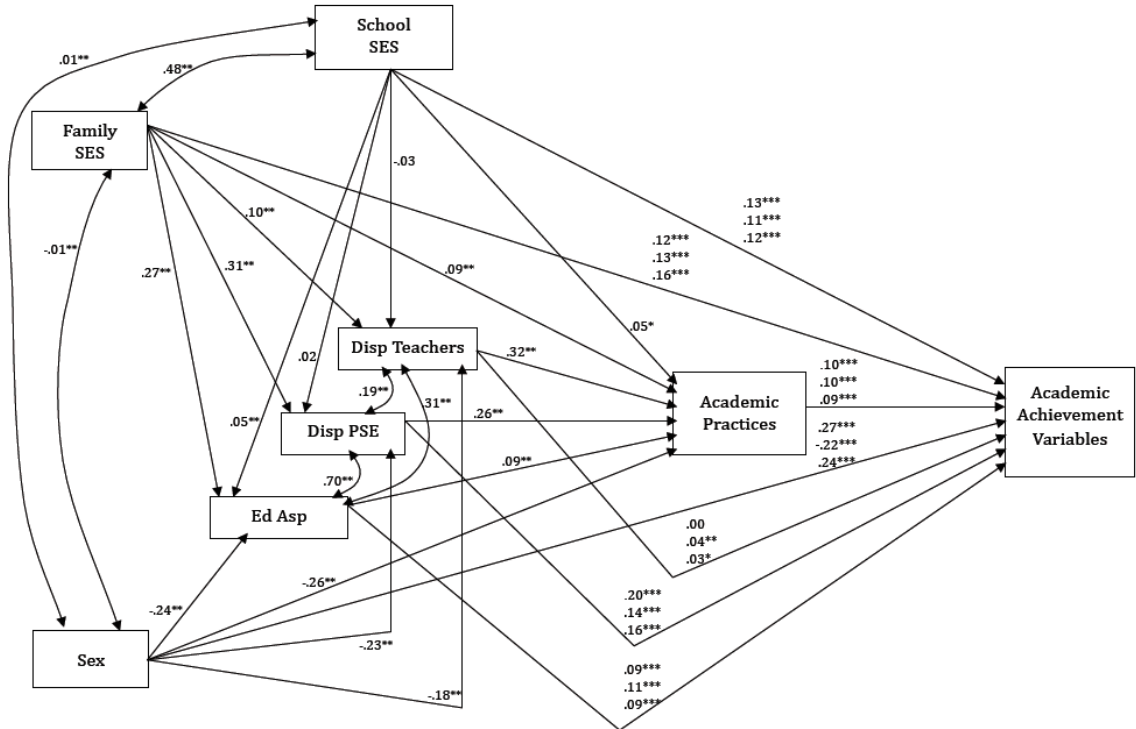
Note: The coefficients for the variables that directly affect academic achievement are reported such that the top coefficient is for Math, the middle for Reading, and the bottom for Science.
*p≤ .05, **p≤.01, ***p≤.001

SUMMARY

Four basic questions were addressed in this chapter: Does students' family SES affect their habitus, academic practices, and academic achievement? What are the relationships between habitus. academic practices, and academic achievement? Are there gender differences in these relationships? Finally, are there significant school context effects—specifically for the schools' SES—in any of these relationships?

Two models were examined. First, in Model 1, habitus was measured as a single variable to assess its relationship to the other variables in the model. Second, habitus was decomposed into three subcomponents in Model 2 to examine the specific relationships between these three dimensions of habitus and the other variables in the model.

Model 1 results indicate that students' SES had a strong effect on their habitus but not a very strong effect on their academic practices. Students' SES have moderate direct effects on their academic achievement in mathematics, reading, and science, and these effects are greater than the indirect effects as mediated by habitus and academic practices. In Model 2, students' SES also affected all three components of habitus, although the effect on dispositions toward teachers was much weaker than the effects on dispositions toward PSE and educational aspirations. Schools' SES had relatively little effect on students' habitus and academic practices but its effects on the academic achievement variables was comparable in size to the effects of the students' SES. There was a significant contextual interaction between school SES and students' habitus, that is, as the average SES of the schools that students attend increased, the effect of habitus on academic achievement decreased slightly.

Examining the relationships between habitus, academic practices, and academic achievement, the Model 1 results indicated that habitus had strong positive effects on academic practices and academic achievement in math, reading, and science, but the direct effects of habitus on the academic achievement variables was much larger than its indirect effects as mediated by academic practices. All three subcomponents also had significant effects on academic practices and the academic achievement variables. In general it was evident that, although there were some interesting differences in the effects

of the three subcomponents of habitus, Model 2 shows very little substantive differences from Model 1 in terms of understanding the relationships between SES, sex, habitus, academic practices, and the academic achievement variables.

Nevertheless, in both models sex had strong effects on the academic achievement variables; boys outperformed girls in math and science while girls outperformed boys in reading. Girls had higher scores than boys on both the habitus and academic practices variables. No substantial contextual interaction coefficients were evident; although school SES did appear to mildly moderate the effect of sex on habitus, suggesting that boys and girls respond somewhat differently to their school environments. Furthermore, the analyses showed a moderate joint effect for sex on habitus, which suggests that there may be gender differences in the effect of family SES on habitus, and a relatively strong joint/spurious effect of sex on academic practices suggesting that habitus and academic practices may differ somewhat for boys and girls. Essentially, there were several gender differences in the causal structure of relationships between variables in the models, which suggest the importance of analyzing the impact of gender in greater detail, and the results of these analyses are reported in Chapter 5.

CHAPTER 5

RESULTS FOR THE ANALYSES OF THE MALE AND FEMALE SAMPLES

To date there has been modest progress made in the application of the habitus concept to the empirical study of gender difference in achievement (e.g., Dumais, 2002; McClelland, 1990). The present study moves further in this direction by empirically examining gender differences in the relationships between SES, habitus, academic practices, and academic achievement. Results of the analyses presented in Chapter 4 suggest that boys and girls do, in fact, differ in a number of ways, such as their performances in math, reading, and science. Accordingly, this chapter examines three basic questions regarding gender differences. First, do the effects of family SES differ for males and females? Second, are there gender differences in the relationships between habitus, academic practices, and academic achievement? Third, are there gender differences in the effects of school context?

THE ANALYSES OF GENDER DIFFERENCES

Descriptive and Bivariate Relationships

It was determined in Chapter 4 that Model 2 offers little explanatory advantage over Model 1. For this reason only Model 1 is analyzed in this chapter. Table 13 presents the means and standard deviations for the 10,600 males and 11,348 females on the six student-level variables included in the analyses presented here: family SES, habitus, academic practices, and academic achievement in mathematics, reading, and science. The results of t-tests which test the differences between the means for the boys and girls are also reported in Table 13. As expected, the difference between the males and females in

their families' SES is not significant. Obviously, 15-year old boys and girls have similar family backgrounds. However, the differences between the sexes are significant on the other five variables. Specifically, the female students have significantly higher scores than the male students on habitus, academic practices, and reading, and the male students have significantly higher scores than the female students on achievement in math and science. The skewness and kurtosis of the distributions are similar for both the boys and the girls, although not reported here. Skewness and kurtosis for the variables in the full sample are reported in Table 4 in Chapter 3.

Table 13. The Means and Standard Deviations for Selected Variables by Sex

Variables	Males	Females
Family SES	0.07 (2.23)	0.06 (2.26)
Habitus	41.14 (6.46)	43.05*** (5.43)
Academic Practices	27.14 (5.12)	29.24*** (4.69)
Achievement in Math	534.31 (89.10)	524.50*** (81.58)
Achievement in Reading	507.73 (89.56)	541.56*** (80.50)
Achievement in Science	522.43 (100.01)	512.71*** (93.16)

Note: Standard deviations are in parentheses. Asterisks indicate that the female means are significantly different from the male means.
* $p \le .05$, **$p \le .01$, ***$p \le .001$

As a first step in estimating the effects of the socioeconomic status of the male and female students on the other variables in Model 1—habitus, academic practices, and students' academic achievement in math, reading, and science—the correlation

coefficients between these variables are reported in Table 14. Results from tests for significant differences between correlation coefficients for two samples (Cohen, Cohen, West, & Aiken, 2003) are also reported in thjis table, and significant gender differences are denoted by asterisks beside the coefficients for females. In this table it is observed that although students' SES has a strong positive relationship with their habitus for both sexes, the relationship is slightly stronger for males (.35 vs. .31). Similarly, the correlation between students' SES and the average SES of the students in their school is also very strong for both sexes, it is slightly stronger for females (.53) than males (.50). Also as in the full sample, it is evident that although students' SES is strongly related to academic achievement for both sexes, this relationship is slightly stronger for females than for males (.35 vs. .32, .36 vs. .32, .38 vs. .34). The average SES of students' schools is also strongly related to their academic achievement (.29 and .28). Habitus is strongly related to academic achievement for both sexes, but the strength of this relationship is slightly greater for the boys than the girls in reading (.40 vs. .36) and science (.39 vs. .36) achievement. Academic practices are also strongly related with academic achievement for males (.28 and .31) and females (.30 and .31). It is also observed that there is a strong relationship between habitus and academic practices for both genders, but that this relationship is a little stronger for males than females (.55 vs. .52). This table also shows that the academic achievement variables are strongly correlated with each other for both sexes, but slightly more so for males than females (.88 vs. .85, .90 vs. .88, .93 vs. .91).

Although the general pattern of relationships at the bivariate level appears very similar for boys and girls, there are some small significant gender differences in thr correlation coefficients. Gender differences were also evident in the means reported in

Table 13, so we must use multivariate analyses to determine if the gender differences are significant when the other variables in the model are controlled.

Table 14. Correlation Matrix for the Variables in Model 1 by Sex

Variables	1.	2.	3.	4.	5.	6.
Males						
Student Level Independent & Intervening Variables						
1. SES						
2. Habitus	.35					
3. Academic Practices	.27	.55				
School Level Independent Variable						
4. School Mean SES	.50	.24	.20			
Student Level Dependent Variables						
5. Achievement in Mathematics	.32	.39	.28	.29		
6. Achievement in Reading	.32	.40	.31	.29	.88	
7. Achievement in Science	.34	.39	.28	.29	.90	.93
Females						
Student Level Independent & Intervening Variables						
1. SES						
2. Habitus	.31**					
3. Academic Practices	.24**	.52**				
School Level Independent Variable						
4. School Mean SES	.53**	.20**	.17*			
Student Level Dependent Variables						
5. Achievement in Mathematics	.35*	.37	.30	.28		
6. Achievement in Reading	.36***	.36***	.31	.28	.85***	
7. Achievement in Science	.38***	.36**	.30	.28	.88***	.91***

Note: Asterisks denote which correlation coefficients in the female sample are significantly different from coefficients in the male sample.
* p≤.05, **p≤.01, ***p≤.01

The Results for Habitus and Academic Practices

The next step is to examine whether there are gender differences in the relationships between the independent variables and the two intervening variables—habitus and academic practices. Tests for equality of regression coefficients between the two samples were conducted, and the results are presented in Table 15, with coefficients that differ significantly between genders underlined. As in the full sample, students' SES has a strong effect on their habitus for both males (.30) and females (.28), but not a very strong effect on their academic practices (.07). In other words, a one standard deviation change in the students' SES results in a 30 percent of a standard deviation change in habitus for males, and a 28 percent of a standard deviation change in habitus for females, but only a 7 percent of a standard deviation change in academic practices for both sexes. It is also evident that habitus has a strong effect on the academic practices of both males and females (.55 and .52). Specifically, a one standard deviation change in habitus results in more than half a standard deviation change in the academic practices of both males and females. When students' SES is controlled, the average SES of the schools attended by the students has similarly small effects on habitus for boys and girls (.09 and .05), and has the same small effect on academic practices of both boys and girls (.04). Interestingly, in the full sample, neither the students' habitus nor academic practices were significantly affected by the average SES of the schools they attended. Moreover, the observed effects in both gender samples were small and suggest—as posited by the "structure-disposition-practice" model—that the dispositions, and to a lesser degree, the academic practices of both boys and girls are more substantially affected by their home environments than their school environments.

Table 15. The Effects of the Student and School Variables on Habitus and Academic
Practices in Model 1 by Sex

	Intervening Variables			
	Habitus		Academic Practices	
Variables	Male	Female	Male	Female
Student Level				
SES	.30***	.28***	.07***	.07***
Habitus			.55***	.52***
School Level				
School Mean SES	.09***	.05**	.04*	.04*
Contextual Interactions				
School SES x SES	-.01	-.03	.00	.00
School SES x Habitus			.04**	.04*

* p≤.05, **p≤.01, ***p≤.001 (two-tailed tests)

Note: underlined coefficients represent significant differences between the sexes (p≤.05, one-tailed test)

Finally, the third panel of this table shows that there is a small but significant contextual interaction effect (.04) for school SES and students' habitus on the academic practices of both boys and girls. A one standard deviation change in average school SES results in 4 percent of a standard deviation change in the effect of habitus on academic practices for both sexes. In other words, the effect of students' habitus on their academic practices increases slightly as the average SES of the schools they attend increase, and this relationship is the same for boys and girls. Overall, this table shows that there are no significant differences (no underlined coefficients) between boys and girls in the effects of their SES on their habitus or their academic practices. Likewise, there are no significant gender differences in the contextual effects of school SES, nor in the effects of students' habitus on their academic practices.

Table 16. The Direct and Indirect Effects of the Student and School
Variables on Habitus and Academic Practices in Model 1 by Sex

Variables	Direct	Indirect	Total Causal	Joint / Spurious	r
HABITUS					
Males					
Student Level					
SES	.30	-	.30	.05	.35
School Level					
School Mean SES	.09	-	.09	.15	.24
Females					
Student Level					
SES	.30	-	.30	.01	.31
School Level					
School Mean SES	.09	-	.09	.11	.20
ACADEMIC PRACTICES					
Males					
Student Level					
SES	.07	.17	.24	.03	.27
Habitus	.55	-	.55	.00	.55
School Level					
School Mean SES	.04	.05	.09	.11	.20
Females					
Student Level					
SES	.07	.15	.22	.02	.24
Habitus	.52	-	.52	.00	.52
School Level					
School Mean SES	.04	.03	.07	.10	.17

Although there are no indirect effects on habitus, there are indirect effects for

students' SES on their academic practices. These effects for males and females are

reported in Table 16**.** The indirect effect of students' SES on their academic practices via

habitus is notably larger than the direct effect of SES for both males (.17 versus .07) and females (.15 versus .07). Thus, the evidence shows that habitus mediates a sizable portion of the effect of SES on academic practices for both males and females.

The Results for the Academic Achievement Variables

The next step is to examine the gender differences in the relationships between the independent variables and the academic achievement variables. The results of these analyses are reported in Table 17. This table illustrates that students' SES has a moderate effect (.11 to .21) on their academic achievement scores and that this effect is stronger for females than males, although—due to differing standard errors for the parameter estimates—this gender difference only reaches statistical significance for achievement in science (.21 vs. .14). Thus, a one standard deviation change in students' SES results in a 21 percent of a standard deviation change in science achievement scores for females, compared to a change of only 14 percent of a standard deviation for males. The effect of students' habitus on their academic achievement scores is generally stronger than the effect of students' SES for both sexes, but the differences are slightly higher for males. Additionally, although the effect of students' habitus on their academic achievement is relatively strong for both sexes, tests for equality of regression coefficients between the two samples indicate the effects are significantly stronger for males than females (.27 vs. .23 in math, .26 vs. .21 in reading, and .25 vs. .21 in science). In math, for example, a one standard deviation change in students' habitus results in a 27 percent of a standard deviation change in mathematics achievement for males compared to 23 percent for females. Similar results are also evident for reading and science. There are no significant gender differences in the effects of students' academic practices, as the academic

practices of both boys and girls had small significant effects (ranging between .06 and

.10) on their academic achievement scores. Thus, this table indicates that students'

habitus is somewhat more important for the boys' academic achievement than for the

girls' achievement, and that students' SES is relatively more important for the girls'

achievement in science than it is for the boys' achievement.

Table 17. The Effects of the Student and School Variables on the Academic Achievement
Variables in Model 1 by Sex

	Academic Achievement Variables					
	Mathematics		Reading		Science	
	Male	Female	Male	Female	Male	Female
Intercepts	541.52	528.38	516.52	546.68	527.41	515.42
	$(2.02)^a$	(1.79)	(2.10)	(1.93)	(2.49)	(2.66)
Student Level						
SES	.11***	.17***	.11***	.17***	.14***	.21***
Habitus	.27***	.23***	.26***	.21***	.25***	.21***
Academic Practices	.07**	.10***	.08***	.10***	.06**	.10***
School Level						
SES	.15***	.10***	.13***	.09***	.13***	.08***
Contextual Interactions						
School SES x SES	.02	.02	.01	.00	.03	.01
School SES x Habitus	-.05*	-.01	-.06**	-.01	-.05*	-.01
School SES x Academic Practices	.01	.00	.01	.00	.01	.00
Variances Explained						
ICC	.19	.16	.16	.15	.17	.15
R_1^2	.22	.22	.21	.21	.21	.22
% Explained Student Level	87%	88%	89%	89%	88%	89%
% Explained School Level	13%	12%	11%	11%	12%	11%

[a] Standard deviations are in parentheses

* p≤.05, **p≤.01, ***p≤.001 (two-tailed tests)

Note: underlined coefficients represent significant differences between the sexes (p≤.05, one-tailed test)

Looking at school SES, even when students' SES is controlled, the average SES of the schools the students attend has small-to-moderate effects (ranging from .08 to .15) on the academic achievement of boys and girls. Interestingly, these school effects are significantly stronger for males than for females (.15 vs. .10, .13 vs. .09, and .13 vs. .08). In science, for example, a one standard deviation change in the average SES of the schools that students attend results in a 13 percent of a standard deviation change in boys' science achievement scores, compared to only 8 percent of a standard deviation change for girls. The fourth panel of this table shows that there is only one significant difference and that is for the school SES and habitus interaction where the effect for the boys is larger than the effect for the girls. Put another way, although the interaction between school SES and students' habitus is negligible for girls, this interaction effect is significant, if small, for boys, and shows that the effect of boys' habitus on their academic achievement diminishes slightly as the average SES of the schools they attend increases. Finally, as expected, the intraclass correlation coefficients (ICC) for math, reading, and science achievement, reported in Table 17, are very similar for boys and girls (.19 vs. .16, .16 vs. .15, and .17 vs. 15). Essentially the data in this table show that all the independent and intervening variables in Model 1 explain between 21 to 22 percent of the variance in these achievement variables for both sexes. Furthermore, approximately 90 percent of this explained variation in students' academic achievement is accounted for by the student-level variables—SES, habitus, and academic practices— and only about 10 percent is accounted for by the school-level variable, the average SES of the students attending the schools. This ratio varies little between the male and female samples.

Table 18. The Direct and Indirect Effects of the Student and School Variables on the Academic Achievement Variables in Model 1 by Sex

Variables	Direct	Indirect	Total Causal	Joint / Spurious	r
	MATHEMATICS				
	Males				
Student Level					
SES	.11	.10	.21	.11	.32
Habitus	.27	.04	.31	.08	.39
Academic Practices	.07	-	.07	.21	.28
School Level					
Mean SES	.15	.03	.18	.11	.29
	Females				
Student Level					
SES	.17	.08	.25	.10	.35
Habitus	.23	.05	.28	.09	.37
Academic Practices	.10	-	.10	.20	.30
School Level					
Mean SES	.10	.02	.12	.16	.28
	READING				
	Males				
Student Level					
SES	.11	.10	.21	.11	.32
Habitus	.26	.04	.30	.10	.40
Academic Practices	.08	-	.08	.23	.31
School Level					
Mean SES	.13	.03	.16	.13	.29
	Females				
Student Level					
SES	.17	.09	.26	.10	.36
Habitus	.21	.05	.26	.10	.36
Academic Practices	.10	-	.10	.21	.31
School Level					
Mean SES	.09	.02	.11	.17	.28

Table 18. Continued

Variables	Direct	Indirect	Total Causal	Joint / Spurious	r
		SCIENCE			
		Males			
Student Level					
SES	.14	.09	.23	.11	.34
Habitus	.25	.03	.28	.11	.39
Academic Practices	.06	-	.06	.22	.28
School Level					
Mean SES	.13	.03	.16	.13	.29
		Females			
Student Level					
SES	.21	.09	.30	.08	.38
Habitus	.21	.05	.26	.10	.36
Academic Practices	.10	-	.10	.20	.30
School Level					
Mean SES	.08	.02	.10	.18	.28

As reported in Table 18, there are a few small differences between the sexes in the indirect effects of their SES on their academic achievement scores. The direct effect of girls' family SES on their math, reading, and science achievement is about twice the size of the indirect effect via their habitus and their academic practices (.17 versus .08, .17 versus .09, and .21 versus .09). By contrast, the direct and indirect effects of boys' family SES are nearly equivalent for the boys' math and reading achievement (.11 and .10), and only marginally different for their science achievement (.14 and .09). So habitus and academic practices mediate slightly more of the effects of family SES on the academic achievement variables for boys than for females. These gender differences—most notable in science achievement—appear to be largely due to the relatively stronger direct effect of girls' family SES on their academic achievement. Also of note, the total causal effect

of family SES on the academic achievement variables is generally a little larger for females than for males. These results suggest that habitus and academic practices explain somewhat more of the socioeconomic gradient in academic achievement for boys than for girls. The indirect effects of the schools' SES are negligible for both sexes.

All of the gender differences in the causal relationships are displayed in Figure 5. Note that, for the sake of clarity, the contextual interaction coefficients are not included in this diagram, and that the direct effects of the independent variables on the academic achievement variables are reported in a column—math first, reading second, and science third. Female coefficients are in parentheses and coefficients that differ significantly between the sexes are underlined.

Figure 5. Gender Differences in the The Causal Relationships for Model 1
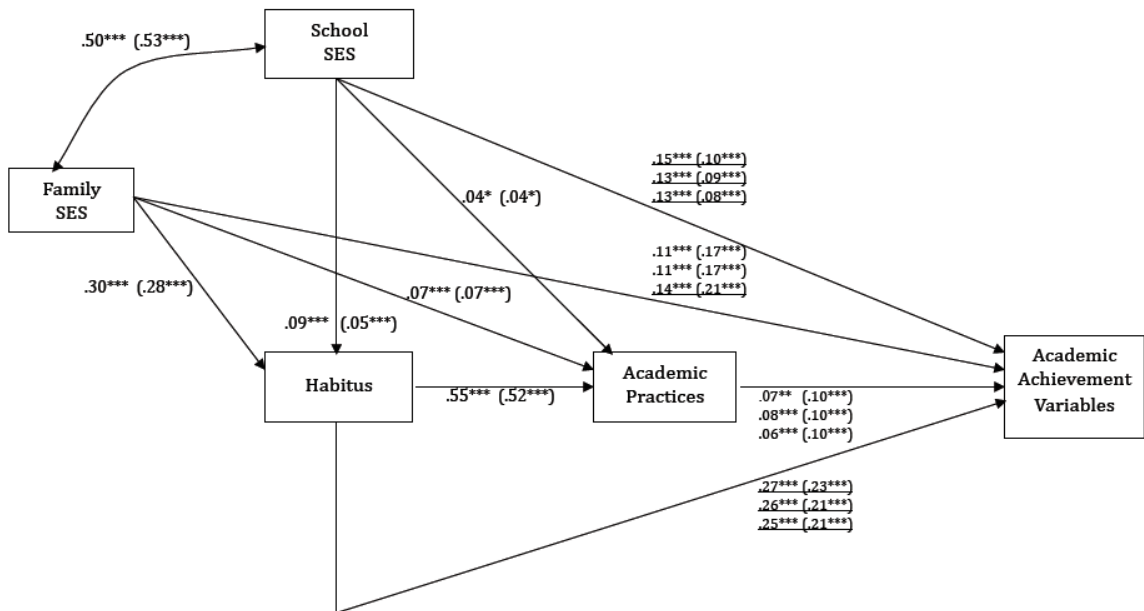
Note[1]: The coefficients for the variables that directly affect academic achievement are reported such that the top coefficient is for Math, the middle for Reading, and the bottom for Science.
Note[2]: Female coefficients are in parentheses and coefficients that differ significantly between the sexes are underlined.
*p≤ .05, **p≤.01, ***p≤.001

SUMMARY

The analyses in this chapter focused on the differences in the effect parameters for the genders in the "structure-disposition-practice" model. Three basic questions were examined. First, did the effects of their families' SES differ for males and females? Second, were there gender differences in the relationships between habitus, academic practices, and academic achievement? Third, were there gender differences in the effects of school context?

There were no significant gender differences in the effects of the students' SES on their habitus or their academic practices. Students' SES generally had larger direct effects on the academic achievement variables for the girls than for the boys, most significantly in science. The direct effect of girls' family SES on their academic achievement was also markedly larger than the indirect effect as mediated by habitus and academic practices; this difference was less evident for boys. It appears that habitus and practices, as presently operationalized, explain slightly more of the socioeconomic gradient for boys' academic achievement than for girls'. Additionally, although girls generally appeared to have higher habitus scores and more positive academic practices than boys (see Chapter 4), students' habitus exerted significantly greater effect on the academic achievement of the boys than of the girls.

Finally, school SES exerted significant direct effects on the academic achievement variables for both sexes, but significantly stronger for the males. There were also significant contextual interaction effects between school SES and student habitus on the male academic achievement variables. That is, as the average SES of the schools boys attended increased, the effect of their habitus on their academic achievement scores

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diminished slightly; no such contextual interactions were evident for girls. In sum, 15-year old boys and girls react relatively similarly to their educational environment. There were a few—but only a few—significant differences between the genders.

In Chapter 6 some potential explanations for all the findigs are discussed along with a few policy implications and suggestions for future research.

CHAPTER 6

CONCLUSION

In this chapter I summarize and discuss the main findings of the study. We attempt to make sense of the findings in relation to existing theory and research on 'class' and gender differences in educational outcomes. We then discuss implications of the study findings, first, with regard to future research that can build upon the empirical and theoretical contributions of this investigation, and, second, with regard to policy aimed at mitigating educational inequality.

SUMMARY AND DISCUSSION

The Problem

This dissertation seeks to contribute to our understanding of the 'class' and gender dimensions of educational inequality. Specifically it addresses four main research questions: Does family SES affect students' habitus, academic practices, and academic achievement? What are the relationships between students' habitus, academic practices, and academic achievement? Are there gender differences in these relationships? Finally, are there significant school context effects—specifically for the schools' SES—in any of these relationships?

A "structure-disposition-practice" model is developed to investigate these questions. This model is rooted in Bourdieu's theory of cultural and social reproduction, but draws from the theoretical formulations of subsequent theorists to render the core concept *habitus* more amenable to quantitative investigation. In doing so, this research

bridges two traditional perspectives on the study of educational and social inequality; the structuralist/culturalist European tradition and the more empirical American tradition. Previous research (e.g. Dumais, 2002; McClelland, 1990) has shown that Bourdieu's ideas have something useful to contribute to the ongoing elaboration of the general status attainment model and to furthering our understanding of persistent educational and social inequality. The present study takes further steps in that direction.

The Sample and Methods

Working with multilevel Canadian data from the PISA-YITS survey (21,948 students nested within 1077 schools), this study examined the research questions using HLM and structural modeling techniques. This investigation employed a more multi-dimensional operationalization of habitus—including dispositions and perceptions as well as aspirations—than have previous quantitative studies of the concept. In Chapter 4 two models were examined. First, in Model 1, habitus was measured as a single variable to assess its relationship to the other variables in the model. Second, habitus was decomposed into three subcomponents in Model 2 to examine the specific relationships between these three dimensions of habitus and the other variables in the "structure-disposition-practice" model. In Chapter 5 the sample was divided into male and female samples; separate analyses were conducted for each sample and then comparisons were made across samples.

The Results

Let us first consider the direct effects of students' SES on the other variables in the models. Model 1 results indicate that students' SES has a strong effect on their habitus but not a very strong effect on their academic practices. Students' SES has a

moderate direct effect on their academic achievement in mathematics, reading and science. When student SES is controlled, the average SES of school attended has relatively little effect on their habitus or on their academic practices, which—consistent with the "structure-disposition-practice" model—suggests that the habitus and practices of the students are more strongly influenced by their home environments than their school environments.

Interestingly, even when students' SES is controlled, the average SES of the schools students attend still has a moderate effect on academic achievement, in fact, the effect of school SES on academic achievement is almost as strong as the effect of family SES. Most of the contextual interaction coefficients are insignificant, however, the effect of students' habitus on academic achievement is mildly moderated by school SES. That is, as the average SES of the schools that students attend increases the effect of their habitus on their academic achievement decreases slightly.

The finding of a positive direct effect for school SES on academic achievement is consistent with a substantial body of evidence that "the average socioeconomic status of a child's class or school has an effect on his or her outcomes, even after taking account of (individual-level) ability and socioeconomic status" (Willms, 2000, p. 26). For example, Ho and Willms (1996), utilizing a large representative sample of US middle school students, found that both upper and lower class students achievement in mathematics and reading improves when they attend schools with higher average socioeconomic statuses. This finding also supports the presence of a composition effect, in that children's educational outcomes can also be influenced—above and beyond individual family background influences—by the makeup of the student population at their school.

Immersion in a context of high performing peers tends to positively influence outcomes, while streaming or ability grouping tends to exacerbate disparities (Feinstein & Symons, 1999; Robertson & Symons, 2003; Strand, 1997). The 'academic press' explanation of school effects focuses on the general climate of principal and teacher expectations (Plewis, 1991; Schereens, 1992; Shouse, 1996), and although school mean SES measure used in this study did not measure these attributes directly, school SES is associated with them (Willms, 1992, 2004b).

The present finding that the positive effect of habitus on school practices increases with school SES also seems in line with the research noted above. But the finding that the positive effect of habitus in academic outcomes diminishes with school SES is more puzzling. Why might an increase in the average SES of the school students attend diminish the importance of their habitus for their academic outcomes? Perhaps the answer lies in the fact that as the average SES of the school students' attend increases, there may be decreasing variation in students' habitus as their occupational and educational ambitions converge toward more educationally contingent occupational pathways. Interestingly, as shall become evident in the section on gender differences, when the sample is divided into males and females, the diminishing effect of rising school SES on the habitus slope disappears for females but persists among males. As the effect appears stronger for males than females, this discussion will be taken up further when we consider gender differences in the effect of school context.

Turning next to the relationships between habitus, academic practices and academic achievement, Model 1 results indicate that habitus has a strong positive effect on academic practices and academic achievement in math, reading, and science.

Academic practices also have a significant, but much smaller, effect on academic achievement. Consequently the direct effect of habitus on academic achievement is much larger than the indirect effect as mediated by academic practices. This result is somewhat unexpected, but not irreconcilable with the "structure-disposition-practice" model. From the perspective of Bourdieu's (1977, 2006) theory it would be expected empirically that academic practices would play a larger role in mediating the effects of class-contingent habitus on academic practices than it appears to in this sample. There are a number of possible explanations for this finding. Of course it could be that academic practices do not play as important a role as Bourdieu suggests. This seems unlikely though as previous studies have consistently shown a connection between student work habits and academic success (Ainsworth-Darnell & Downey, 1998; Farkas, 1996, 2003; Farkas et al., 1990; Rosenbaum, 2001). A more likely explanation would seem to have to do with how academic practices were operationalized in this study. To illustrate this point let us consider two concerns pertaining to the operationalization of academic practices. First, all the items are self-report and so are subject to the same limitations and biases as all self-report questionnaire measures (Singleton & Straits, 1999). Second, the actual practices measured by the items were rather general (e.g. one question on attendance, one on timely completion of assignments, two on task perseverance, etc) and did not cover the full spectrum of relevant practices, for example, they did not gauge specific classroom behaviours, learning styles, or study habits, nor did they account for differences across disciplines. Certainly the requisite tasks and appropriate strategies for accomplishing them differ in important ways across disciplines and might explain some of the variation in achievement. The limits of self-report could also be somewhat mitigated by

incorporating questions from teachers and parents. Also, important aspects of academic practices are less suitable to survey methods and could perhaps be better captured by direct observation in school and in the home.

Model 2 revealed some differences between the subcomponents of habitus in terms of their effects on both academic practices and academic achievement. Although all three subcomponents have significant positive effects on academic practices, disposition toward teachers and disposition toward PSE both have moderate effects, while educational aspirations exert a smaller effect. When the direct effects of these three subcomponents on academic achievement are considered, disposition toward teachers tends to have the weakest effect, indeed, the effect of disposition toward teachers is not even significant for math. Disposition toward PSE and educational aspirations both show significant direct effects on all three academic achievement variables, with disposition toward PSE exhibiting a generally stronger influence than educational aspirations.

Additionally, as noted earlier, previous attempts to operationalize habitus (e.g. Dumais, 2002; McClelland, 1990) have relied on occupational aspirations as the sole indicator. The present study has undertaken a broader operationalization with multiple indicators. The statistics for the model indicate that, in comparison to an aspirations-only model run for comparative purposes, both Model 1 and Model 2 offer significant improvement in terms of fit with the data. Thus, it appears that the "structure-disposition-practice" model used in this study, with its more multi-dimensional operationalization of habitus and inclusion of academic practices as a mediating variable, represents an advancement over previous empirical attempts to assess the influence of habitus on academic achievement. However it appears that Model 2 offers very little substantive

advantage over the more parsimonious Model 1 in terms of understanding the relationships between students' SES, sex, habitus, academic practices, and their academic achievement.

The present findings are basically consistent with the conceptual model outlined Chapter 2; the habitus of children from higher SES families is generally characterized by more favourable dispositions toward school and their educational prospects therein, and this more positive orientation translates into greater adherence to achievement-promoting academic practices and higher academic scores. The strength of these relationships appears though, in the Canadian context, to be less than would be expected from Bourdieu's formulation.

Modest effect sizes notwithstanding, these results are still basically consistent with a substantial body of evidence pointing to a persistent socioeconomic gradient in educational outcomes. These disparities begin early (Alexander, Entwisle, & Horsey, 1997; Hertzman, 2000; UNICEF, 2002) and tend to grow over the educational career (Kerckhoff, 1993; Kerckhoff & Glennie, 1999). A number of studies link family SES to educational attainment (e.g. de Boucker & Lavalee, 1998; de Boucker & Noel, 2001; Drolet, 2005; Finnie, Laporte, & Laschelles, 2004; Knighton & Mirza, 2002; Krahn, 2004; Ryan & Adams, 1999; Walpole, 2003). The finding that level of educational aspiration increases with family SES also accords with a number of previous findings (Andres, et al, 1999; Krahn 2004; McClelland, 1990).

Such differences in educational aspirations are likely due, in part, to SES-related differences in families' perceptions of the utility of investment in educational attainment. For example, Usher (2005) found that low-income Canadians are more liable to

underestimate the value of university education (factoring in tuition-costs, forgone income, interest, and potential future earnings), and so may be more likely to make rational choices based on the faulty premise that university education is not a "good investment." This sort of preconception—which can be seen as an earmark of class-variant habitus—may preclude serious consideration of higher education as a worthwhile option and may be reflected in lower educational expectations and academic commitment.

The related finding that favourable disposition toward PSE increases with family SES is also consistent with the notion of class variant habitus and aligns with earlier findings regarding class related differences in the orientation that people have to PSE. For example, Lehmann (2004) found that high school students whose parents did not have university education viewed the prospect of attending university with much more anxiety and trepidation than students whose parents were university educated. Similarly, few academic-track high school students with university educated parents gave serious consideration to alternative career paths such as apprenticeship, while few student apprentices whose parents were employed in manual labour or trades saw pursuing higher education as a serious option (Lehmann, 2007). High school students strongly committed to attending university tended to come from families with PSE educated parents who emphasized the importance of higher education and this appreciation was further reinforced by their school experiences. Whereas "many youth apprentices grew up in an environment rich in manual work traditions and marked by a distrust or indifference to higher education," some even perceived themselves as subject to "*de facto* streaming" as

they garnered greater recognition and encouragement from vocational teachers than academic ones (Lehmann, 2007, pp. 146-7).

Habitus may also influence perceptions of what constitutes 'rationality' and hence the criteria by which student decisions, or subjectively 'rational' choices, concerning post-secondary futures are made (Andres, 1993). Hodkinson and Sparkes (1997) conceptualize habitus as operating via cognitive schemata, or interpretive frameworks, which, in combination with the opportunity structures of the labour market, present individuals from different backgrounds with different "horizons for action." Within these perceived horizons for action, people exercise a "pragmatic rationality" in making career decisions, and in light of only partial information, that which is familiar and known gains further weight. Hence decision processes are highly context-related—influenced by factors such as family background, personal experiences and contacts, perceived opportunities—and not completely rational, as emotions and identifications play an important role.

Further to this, Lehmann (2009) identifies 'habitus dislocation' as a significant challenge for working class students who attempt to make the transition into university education—discomfort within a seemingly foreign milieu leads some to exit university early.[16] Of course some first generation university students do persist in their pursuit of higher education, but to some degree still "interpret their experiences and circumstances at university through the lens of their specific class habitus" (Lehmann, 2009, p. 209).

Finally, gender differences in the observed relationships were examined. Sex has a strong effect on academic achievement; boys outperform girls in math and science

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[16] Bourdieu (1990) characterizes this aspect of habitus as "a feel for the game" –students from higher class backgrounds tend to experience greater congruence between their upbringing and the formal education experience and hence are likely to have a more spontaneous or intuitive grasp of how things work.

while girls outperform boys in reading. Some argue that there is still a gendered 'hidden curriculum' in schools channeling and reinforcing traditional gender scripts (Davies & Guppy, 2006, pp.194-5). Studies abound identifying potential reasons for the underrepresentation of girls in math, sciences, engineering and technology. Compared to boys, girls are less likely to picture themselves as future scientists (Stake & Nickens, 2005), express less interest in science and math in high school, and are apt to underrate their competence in these areas relative to similarly performing boys (Correll, 2002; Xie & Shauman, 2003). There is some indication that women are turned off of studying science, math, engineering and technology by the prototypically 'masculine' climate in these disciplines which stresses individualistic competition (Fereirra, 2003; Serex & Townsend, 1999; Seymour & Hewitt, 1997) rather than the warmer more cooperative learning environment that seems to foster greater success for females (Burkam & Smerdon, 1997; McCarthy, Felmlee, & Haga 2004; Shapka & Keating, 2003).

As discussed in the literature review, it has been suggested that habitus is shaped, not only by class, but also by gender. In this view the preferences discussed above can be understood as aspects of habitus and practice, and understanding how they relate to academic performance would represent a step toward, not just verifying that gender variant habitus and practices do affect academic outcomes, but toward identifying specific processes involved. The present study takes steps in this direction by examining gender differences in the "structure-disposition-practice" model.

The results of the present study indicate no significant gender differences in the effects of students' family SES on their habitus or their academic practices. Students' family SES does generally have slightly larger direct influence on academic achievement

for girls than for boys, most significantly in science. The direct effect of girls' family SES on their academic achievement is also twice the size of the indirect effect as mediated by habitus and academic practices; this difference is less for boys. It appears that habitus and practices, as presently operationalized, explain a slightly larger portion of the socioeconomic gradient for boys' academic achievement than for girls' academic achievement. Although not large, this gender difference merits further consideration. It may be that the difference between genders in terms of the direct and indirect effects of family SES on academic achievement scores is an artifact of the particular operationalization of habitus and practices used in this study. The question that arises then is, are there effects of differing family SES that are particularly important to females and are not captured by the habitus-practices conceptualization? Or might this apparent gap be addressed by an alternative operationalization of habitus and academic practices? To address this question it is important to conduct similar studies using different sets of indicators to operationalize habitus and academic practices and compare those results with this study.

A more substantial gender difference is evident in the effect of habitus on academic achievement. Consistent with Dumais' (2002) findings, habitus significantly affects the academic performance of both sexes. But, while Dumais (2002) found gender differences in the importance of cultural capital to academic achievement, the present results provide novel evidence of gender differences in the contribution of habitus to academic achievement. The results indicate that although girls generally have more pro-school habitus and more positive academic practices than boys, students' habitus exerts

significantly greater effect on boys' academic achievement than on girls' academic achievement.

Finally, the results indicate that the average SES of the school students attend exerts a significantly stronger direct effect on boys' academic performance than on girls' academic performance. There is also a significant contextual interaction effect for school SES and students' habitus on boys' academic achievement; but not on girls' academic achievement. That is, as the average SES of the schools boys attend increases, the effect of their habitus on their academic achievement diminishes slightly. Thus, while the findings overall suggest that boys and girls seem to generally react to their school environments in relatively similar ways, there are still some potentially important gender differences evident.

Why do girls generally have more pro-school habitus and more positive academic practices than boys? Why, despite this, does students' habitus exerts significantly greater effect on boys' academic achievement? Why does school SES have greater effect on boys' academic achievement? The explanation of these differences suggested here focuses on the significance of gendered labour market segregation (Charles & Gursky, 2004). If girls generally perceive a narrower, more credential-dependent occupational horizon for themselves and this manifests as generally more favourable dispositions toward school and greater adherence to achievement-conducive academic practices, then in contrast, it could be that the perception of a broader occupational horizon for males—one that traverses both more credential-dependent nonmanual and less credential-dependent manual sectors—manifests in greater variation in aspirations for and dispositions toward schooling. That is, while few girls aspire to the manual sector

because of its perceived lack of promise for females, a substantial portion of males do aspire to the manual sector because they anticipate attractive opportunities. For this segment of male students, the awareness that many of the opportunities in that sector do not require, or are less dependent upon, formal educational credentials translates into less favourable perceptions of formal schooling—including its value and the purpose of excelling within that environment. Conversely, males who aspire to credential-dependent nonmanual sector occupations will tend to exhibit more pro-school dispositions and achievement practices, as they perceive the importance of educational attainment to their occupational success. Thus, due to this greater heterogeneity in male orientations to the opportunity structure of the economy, the influence of classed habitus on academic achievement will tend to be more evident among males. Of course these structural influences on male and female dispositions toward school must also be understood in conjunction with strongly gendered and multi-layered cultural forces which shape the perceptual tendencies comprising habitus (cognitive schemata) and which together endow arbitrary social constructions (e.g. gender types) with the apparent legitimacy of nature.

Finally, why does school context have greater effect for boys' academic achievement than for girls' academic achievement? Perhaps with rising school SES the variation in male occupational outlooks, as discussed earlier, decreases. That is, as school SES increases the proportion of males aspiring to manual sector careers decreases while the proportion aspiring to nonmanual occupations increases. As the distribution of occupational ambitions shifts toward the more credential-dependent nonmanual side of the career spectrum, the differential influence of habitus becomes less distinctive among males as male dispositions and practices converge toward more similar goals. This

interpretation is in line with the contextual interaction evident between school SES and boys' habitus, in which the effect of boys' habitus on their academic achievement diminishes slightly as the average SES of the school they attend increases. No such contextual interaction was evident for females and any such shifting pattern in the female student population would likely be less pronounced as female ambitions are already predominantly clustered toward the credential-dependent nonmanual sector occupations.

The present findings suggest that some gender gaps, although decreasing, still persist, and that pedagogical reform alone can only go so far in unseating tendencies embedded in wider cultural and structural processes. In this light a "structure-disposition-practice" mechanism, rooted in Bourdieu's framework, provides a potentially useful conceptual frame for thinking about how individuals' perceptions and actions in the process of status attainment are both constrained and enabled by cultural, social and economic forces.

Overall, the results of this study give qualified support to Bourdieu's framework and the potential of the "structure-disposition-practice" model to help us understand class and gender differences in academic achievement. A number of the findings were consistent with expectations but even significant effect parameters were mostly modest-to-moderate in size. Most notably, the results provide evidence that students' family SES significantly affects their habitus and that their habitus significantly affects their academic achievement. Additionally, it shows that family SES has a relatively stronger effect on girls' academic achievement than on boys' achievement, while habitus affects boys' academic achievement more strongly than girls' achievement. Finally, while the average SES of the schools students attend affects both boys' and girls' academic

achievement, this effect is stronger for boys. Furthermore, there were no contextual interactions for girls, while the effect of boys' habitus on their academic achievement diminishes slightly as the average SES of the schools they attend increases.

Since preceding sections of this chapter are already dedicated to considering the theoretical implications of these results in detail, suffice it here to offer a final encapsulation of how the "structure-disposition-practice" model helps us think about the interrelationship between individual agency and structural constraints and how this impacts the status attainment process. Habitus, the individual's culturally and structurally conditioned preferences and perceptions, is not static; the cognitive schemata that comprise it evolve as the individual is exposed to various cultural and structural exigencies. Different 'horizons for action' emerge when individual habitus intersects with the opportunity structures of society—most notably, the education system and labour markets, which Bourdieu would term 'fields'. These horizons for action are both enabling and constraining in that individuals can avail themselves of greater or lesser degrees of freedom along their pathway depending upon the cultural categories and structural positions confronting them. Horizons for action are segmented in that no individual seriously considers the entire spectrum of educational or occupational opportunities. Cultural and structural forces not only differentially influence the objective probabilities confronting individuals within society's opportunity structures, these same forces also contribute to conditioning the perceptions and dispositions (habitus) of individuals and how they act (practices) in relation to these opportunity structures (i.e. educational and occupational fields). The actual accessibility of a certain occupational path is immaterial if a young person does not subjectively perceive it as a realistic or appropriate career

option to begin with. People from different backgrounds will have more or less broad horizons for action, that is, those with more advantages will tend to have—and/or perceive—greater degrees of freedom at respective choice points along the way, or, put another way, they will have more freedom in the repertoire of strategic choices and practices they can exercise, both real and perceived.

In terms of the small-to-moderate gender differences observed, Charles and Gursky's (2004) theory of gendered labour market segregation fits well with this perspective. There are gender based structural asymmetries in the labour markets of most advanced capitalist countries—horizontal gender segregation between manual and nonmanual occupation sectors; vertical gender segregation within each of these sectors. These segregation dynamics are reinforced by inveterate cultural beliefs—gender essentialism and male primacy—and translate into typically narrower 'horizons for action' for females. Thus, while SES is consequential to one's position in relation to the opportunity structure, to one's habitus, and hence to one's horizons for action, so to is gender. The conclusion that social background and gender affect life chances is hardly news, what is more important about this conclusion is that it points toward the potential of habitus, and the "structure-disposition-practice" model, to provide further insight into the processes by which social background and gender affect educational and occupational paths—how class and gender affect preferences, perceptions, strategic choices, and actions in the status attainment process.

IMPLICATIONS

Future Research Directions

A number of issues and potential research strategies for addressing these issues have already been discussed in turn. Suffice it to say here, that some of the findings of this study must be understood in light of several issues related to operationalizing constructs using secondary data. The operational definitions were necessarily determined by what indicators were available in the data set, rather than the operational definitions determining the indicators. For example, the "disposition toward teachers" index variable—a component of habitus—was comprised of only three items and so may not have fully captured all the dimensions of the construct. Related to this, disposition toward teachers is a particular aspect of habitus pertaining to student's dispositions toward the schooling environment and processes, a fuller operationalization of these dimensions of habitus would also entail items measuring student perceptions of their school, classroom and related learning experiences. As discussed earlier, similar issues apply to the operationalization of academic practices. Nonetheless, the more multidimensional operationalization of habitus and the inclusion of academic practices in the present study do appear empirically justified as they indeed offer a significant contribution to understanding the socioeconomic gradient in educational outcomes. Although the operationalization of habitus used in this study represents an improvement over previous studies, it must be acknowledged that it is still a rather narrow measure of a broad ranging construct and that further work will be required to capture the full dimensionality of the habitus concept.

Continued exploration of the empirical potential of these constructs and the "structure-disposition-practices" model could proceed in a number of ways. First, the construction of a survey with items and indicators explicitly tailored to operationalizing habitus and academic practices more comprehensively could prove invaluable. Additionally it would be useful to survey parents and teachers to get their perspectives. For example, survey questions for parents could gauge how engaged they are with their children's educational experience/career and might include: Do you volunteer at your children's school? In what capacity? Do you know your child's marks? What courses are they are in? Do you know their teachers names in particular subjects? Do you know their subject preferences? Their educational plans? Do you ever talk with teachers? How often? Who initiated? How often talk with your children about what they are learning at school? Do they ever help with their children's homework? How often? Do you monitor their homework and assignment completion? What are the parents own habits relevant to learning? How much/often do they read? What do they read? Newspapers? Newsmagazines? Novels? Nonfiction? Are they engaged in adult learning—either for upgrading or personal growth? Teachers could be asked questions about: preparation time, educational resources, teaching/disciplinary practices, their level of autonomy, their perceptions of student motivation and engagement, their number of years on job, their attitudes toward and perceptions of gender/SES differences.

Such additional questions would enhance the measurement of important classroom and home variables thereby contributing to an even fuller operationalization of the constructs under study, as well helping compensate for the limitations of self-report from student only items. Survey methods should also be complimented with direct

observation of classroom and home environments. The incorporation of measures of school or classroom processes will also be important as these may serve to explain a substantial portion of the school SES effect (Frempong & Willms, 2002). Also, although less formal or systematic than in many countries, tracking or streaming still occurs in Canada—with students from working-class backgrounds more likely to be channeled into vocational tracks and middle class children into academic tracks (Andres, et al, 1999; Andres & Krahn, 1999; Curtis, Livingstone, & Smaller, 1992; Wotherspoon, 2009). School SES may be correlated with the mix of vocational to academic track students, with the proportion of academic track students rising with school SES. Thus, it could be informative to incorporate some measure of this vocational-academic mix into future models as well to examine whether it conditions the effects of classed and gendered habitus on academic outcomes.

Another future course of research stems from the fact that each of the PISA cycles to date has incorporated extra discipline-specific questions about learning preferences and practices; PISA 2000 put extra focus on reading, PISA 2003 on math, and PISA 2006 on science. For example, in PISA 2003 there are a number of variables measuring enjoyment of math, math self-concept, math self-efficacy, and preferred learning strategies and learning environments. These extra subject-specific variables would allow more precise operationalization of habitus and academic practices and would be useful for futher clarifying class and gender differences in these variables affect performance gaps in each academic domain specifically. That is, the habitus and practice-related mechanisms underlying class and gender gaps in academic achievement may differ somewhat in each area. For example, PISA 2003 with numerous extra math-related items might be useful

for studying in greater detail how (and if) gender differences in habitus and academic practices translate into gender gaps in math achievement. The cross-national comparisons possible with PISA data might also offer further insight into the influence of cultural and institutional factors on the relationship between habitus, practices and academic achievement.[17] Also as discussed in the introduction, future research in this area will benefit from new methodological developments that will enable the use of full structural equation modeling techniques with complex survey data (Stapleton, 2006, 2008).

Policy

Although it is beyond the scope of this study at this time to make specific policy recommendations, it is hoped that by moving toward a more detailed understanding of some of the specific mechanisms underlying the persistence of the socioeconomic gradient and gender disparities in education, that this line of research will soon yield concrete policy prescriptions aimed at raising the educational trajectories, and hence life chances, of children from disadvantaged backgrounds, as well as insuring equal access to the full spectrum of educational opportunities for both boys and girls. For now the implications for policy must be kept rather general.

There is a growing consensus that the cognitive and behavioural roots of educational inequality originate in early childhood and are cumulative in nature (Cleveland et. al., 2006; Hertzman, 2008; Keating & Hertzman, 1999; McCain & Mustard, 1999; UNICEF, 2002). Accordingly, the present findings—of class and gender differences in educational aspirations, dispositions, practices and associated disparities in

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[17] Recall from chapter 3 that YITS is a Canadian-specific instrument administered in conjunction with PISA and hence corresponding data are unavailable for other countries, thereby precluding cross-national comparisons of YITS variables.

educational achievement—underscore the importance of mitigating the impact of structurally-contingent socialization patterns on children's educational potentials and opportunities. For example, this may be accomplished, in part, through provision of universal access to high quality early childhood education (i.e. stimulating cognitive and social environments) for boys and girls from all socioeconomic backgrounds. Although high quality early childhood education has benefits for all children, it is of particular importance for children from less advantaged backgrounds and is vital in improving the level of school-readiness with which these children enter the school system, both in terms of cognitive and non-cognitive behavioural preparedness (Cleveland et al., 2006; Doherty, 2007; Heckman, 2008). As Esping-Andersen (2004, p. 131) writes:

> . . . the evidence shows . . . [that] . . . quality child care has generally very positive effects on children's cognitive development. If such care is universally provided, the overall consequence must be a substantial equalization of cognitive stimulus since it helps compensate for weaker cultural and educational resources within the family of origin. As a result children will arrive at the first year of school far more homogeneously prepared. If on the other hand, the quality of child care mirrors the ability to pay, then it is likely to simply reproduce existing inequalities.

Likewise, universally available high quality ECEC may also help narrow enduring gender gaps in academic achievement by exposing boys and girls early and often to a full range of learning stimuli such that their cognitive and socioemotional capacities, and

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aspirational horizons are not prematurely narrowed along gender specific lines. Mitigating the impact of traditional gender typing on educational development would not only benefit boys and girls by increasing their range of opportunity, but ultimately society would also benefit from a more optimal allocation of talent to the division of labour as, for example, more females become engineers and more males become elementary school teachers.

While intervention in early childhood provides the greatest benefits over the life course, these advantages are best sustained by continued exposure to high quality educational environments (Heckman, 2008). The present findings underscore the importance of educational policy aimed not only at increasing lower SES students initial preparedness for school, but at continuing to nurture and sustain their sense of comfort and connectedness with the school and schooling, as well as promoting positive perceptions of its relevance. Although the earlier the intervention the better, these interventions must be augmented in later years for optimal benefit, and later intervention is better than none. Some viable policy options for interventions in the middle and later school years include after-school programs (Vandell et al., 2005; Vandell et al., 2006; Vandell & Shumow, 1999), mentoring programs (Dubois & Karcher, 2005; Rhodes & Dubois, 2008), parent engagement initiatives (Domina, 2005; Mattingly, Prislin, McKenzie, Rodriquez, & Kayzar, 2002) and flexible "pathways" programming in secondary schools (CCL, 2008; Raffe, 2003; Ferguson et al., 2005).

In general, the findings of this study offer qualified support for the potential of the "structure-disposition-practice" model to help increase our understanding of the mechanisms underlying the inter-generational persistence of educational inequality, and

ultimately, to contribute toward mitigation of these disparities. Results suggest that

habitus and the "structure-disposition-practice" model is not only theoretically

sophisticated, but also empirically sustainable and that future efforts to more precisely

measure its concepts and relationships are warranted.

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APPENDICES

PISA AND YITS QUESTIONNAIRE ITEMS USED IN THE STUDY

FAMILY CONTEXT

Family SES Index
The SES index is an additive index constructed from the sub-indexes below. Due to different scales of measurement, the three sub-indexes were converted into z-scores before being combined into the overall SES index.

Material Resources
Home Material Enviromemt Index (from PISA student questionnaire)
Additive index derived from students' responses to the 11 items listed below. These variables are binary and the scale construction is done through IRT scaling. Positive values on this index indicate higher levels of home possessions.

Q17 Which of the following do you have in your home?

ST17Q01 a) A desk for study
ST17Q02 b) A room of your own
ST17Q03 c) A quiet place to study
ST17Q04 d) A computer you can use for school work
ST17Q05 e) Educational software
ST17Q06 f) A link to the Internet
ST17Q07 g) Your own calculator
ST17Q11 k) Books to help with your school work
ST17Q12 l) A dictionary
ST17Q13 m) A dishwasher
Q19 In your home, do you have:
ST19Q01 More than 100 books (recoded 1='yes' 0='no')

Social Resources
Highest Occupational level of parents (from PISA student questionnaire)
The PISA 2003 index of the highest occupational level of parents (HISEI) corresponds to the higher ISEI (international socio-economic index of occupational status) score of either parent or to the only available parent's ISEI score. Higher values indicate higher level of occupational status.

Cultural Resources
Highest level of parental education (from PISA student questionnaire) converted into years of schooling (0-17 years).

Index of cultural possessions is (from PISA student questionnaire) derived from students' responses to the three items listed below. These variables are binary and the scale construction is done through IRT scaling. Positive values on this index indicate higher levels of cultural possessions.

Q17 Which of the following do you have in your home?

ST17Q08 h) Classic literature (*e.g.* <Shakespeare>)
ST17Q09 i) Books of poetry
ST17Q10 j) Works of art (*e.g.* paintings)

SCHOOL CONTEXT

School mean SES
    Aggregated to school mean of student family SES index scores

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HABITUS

The habitus variable used in Model A was an additive index of expected level of education, disposition toward teachers index, and disposition toward post-secondary education index. Positive values on this index indicate higher levels of pro-school Habitus. In model B each of the 3 subcomponents were entered into the model as a separate variable.

Expected educational level (from PISA student Questionairre)

In PISA 2003, for the first time, students were asked about their educational aspirations. Students' responses to the items ST23Q01-ST23Q06 measuring expected educational levels are classified according to ISCED (OECD 1999). The PISA 2003 index of expected educational level (SISCED) has the following categories: (1) None; (2) ISCED 2 (lower secondary); (3) ISCED Level 3B or 3C (vocational/pre vocational upper secondary); (4) ISCED 3A (upper secondary) or ISCED 4 (non-tertiary post-secondary); (5) ISCED 5B (vocational tertiary); and (6) ISCED 5A, 6 (theoretically oriented tertiary and post-graduate).
====== =========
Note: kept as ordinal variable for inclusion in Habitus index (Model A) but recoded as a continuous variable ranging from 0 to 17 years of education when used as Habitus sub-component (Model B).

Disposition toward teachers index

Additive index comprised of 3 Questions are from the YITS student questionnaire. Higher values on this index indicate more positive disposition toward teachers.

YSA6D
Think about all of your classes THIS school year. How often are these statements true for you? ... I get along well with teachers.

01 Never
02 Rarely
03 Sometimes
04 Often
05 Always
99 Not stated

YSA1F
Think only about THIS school year. What do you think about the following?... Most of my teachers don't really care about me.
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
9 Not stated
====== =========
Note: This item was reverse coded for inclusion in index

YSA1L
Think only about THIS school year. What do you think about the following?... Most of my teachers do a good job of teaching.
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
9 Not stated

Disposition toward Post-Secondary Education Index

Additive index comprised of the following 4 Items from YITS student questionnaire. Higher values on this index indicate more positive disposition toward post-secondary education.

YSJ1B
When you think about your future, what do you think about the following? ... I will need to go to college or university to achieve what I want in life.
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
9 Not stated

YSJ1D
When you think about your future, what do you think about the following? ... I think I would enjoy going to college or university.
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
9 Not stated

YSJ1E
When you think about your future, what do you think about the following? ... I'm smart enough to do well in university.
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
9 Not stated

YSJ1F
When you think about your future, what do you think about the following? ... I'm smart enough to do well in college.
1 Strongly disagree
2 Disagree
3 Agree
4 Strongly agree
9 Not stated

Additive index comprised of the following 8 items from the YITS student questionnaire. Higher values on this index indicate more adaptive academic practices.

YSA6B
Think about all of your classes THIS school year. How often are these statements true for you? ... When school work is very difficult, I stop trying.
01 Never
02 Rarely
03 Sometimes
04 Often
05 Always
99 Not stated
====== =========
(NOTE: this item reverse coded for index construction)

YSA6C
Think about all of your classes THIS school year. How often are these statements true for you? ... I do as little work as possible; I just want to get by.
01 Never
02 Rarely
03 Sometimes
04 Often
05 Always
99 Not stated
====== =========
(NOTE: this item reverse coded for index construction)

YSA5
Think only about THIS school year. About how often have you cut or skipped a CLASS without permission?
01 Never this year
02 1 or 2 times this year
03 3 to 8 times this year
04 About 1 to 3 times a month
05 About once a week
06 More than once a week
99 Not stated 1
====== =========
Note: This item was reverse coded for inclusion in index

YSA6A
Think about all of your classes THIS school year. How often are these statements true for you? ... I complete my assignments.
01 Never
02 Rarely
03 Sometimes
04 Often
05 Always
99 Not stated

YSA6F
Think about all of your classes THIS school year. How often are these statements true for you? ... I complete my homework on time.
01 Never
02 Rarely
03 Sometimes
04 Often
05 Always
99 Not stated

YSA3A
On average, how much time do you spend EACH WEEK on homework and study in these areas? (If you are not currently taking a course, please report for the last full week you were taking the course this school year.) When answering, include time during the weekend too ... English language and literature

1 No time
2 Less than 1 hour a week
3 Between 1 and 3 hours a week
4 3 hours or more a week
9 Not stated

YSA3B
On average, how much time do you spend EACH WEEK on homework and study in these areas? (If you are not currently taking a course, please report for the last full week you were taking the course this school year.) When answering, include time during the weekend too ... Mathematics
1 No time
2 Less than 1 hour a week
3 Between 1 and 3 hours a week
4 3 hours or more a week
9 Not stated

YSA3C
On average, how much time do you spend EACH WEEK on homework and study in these areas? (If you are not currently taking a course, please report for the last full week you were taking the course this school year.) When answering, include time during the weekend too ... Science (e.g., chemistry, physics and biology)
1 No time
2 Less than 1 hour a week
3 Between 1 and 3 hours a week
4 3 hours or more a week
9 Not stated

APPENDIX B

FORMULAS FOR CALCULATING THE VARIANCE EXPLAINED.

To calculate a psuedo R^2 statistic, or the proportional improvement provided by a fitted model in the prediction of student academic outcomes (Snijders and Bosker, 1999):

$$R_1{}^2 = [1 - (\sigma^2{}_{null} + \tau_{00\ null})/(\sigma^2{}_{comparison\ model} + \tau_{00\ comparison\ model})]$$

To calculate the proportion of the model explained variance accounted for by student and school level variables in the model:

% of $R_1{}^2$ explained by student level variables =
$$[\sigma^2{}_{comparison\ model}/(\sigma^2{}_{comparison\ model} + \tau_{00\ comparison\ model})] * 100$$

% of $R_1{}^2$ explained by school level variables =
$$[\tau_{00\ comparison\ model}/(\sigma^2{}_{comparison\ model} + \tau_{00\ comparison\ model})] * 100$$

APPENDIX C

MODEL FIT STATISTICS

χ² Difference Tests

		Improvement over Null Model			M1 vs EA	1 vs 2
		EA only	Model 1	Model 2		
Full sample	Math	3405.08	4138.35	4522.84	733.27	384.49
	Reading	3752.75	4564.09	4733.55	811.33	169.47
	Science	3265.28	4004.70	4190.27	739.41	185.57
	DFs	17	23	40	7	17
	χ² crit (p=.001)	33.409	41.638	63.691	18.475	33.409
Male sample	Math		1929.97	2089.50		159.53
	Reading		1954.95	2043.84		88.88
	Science		1874.80	1967.28		92.47
	DFs		16	31		15
	χ² crit (p=.001)		32.000	52.191		30.578
Female sample	Math		2168.88	2436.42		267.54
	Reading		2021.87	2129.25		107.38
	Science		2195.20	2312.57		117.37
	DFs		16	31		15
	χ² crit (p=.001)		32.000	52.191		30.578

Akaike Information Criterion (AIC)

		Null	Model 1	Model 2	Ed Asp only
Full Sample	Math	255069.95	250977.59	250627.10	251696.87
	Reading	255395.37	250877.28	250741.81	251674.61
	Science	260744.66	256785.96	256634.39	257511.37
Male Sample	Math	124253.20	122355.23	122225.71	
	Reading	124264.69	122341.74	122282.86	
	Science	126795.02	124952.21	124889.74	
Female Sample	Math	131023.27	128886.39	128648.84	
	Reading	130739.36	128749.49	128672.11	
	Science	134239.94	132076.74	131989.37	

Note: smaller values indicate better fit.

The Bayesian Information Criterion (BIC)

			Null	Model 1	Model 2	Ed Asp only
Full Sample	Math	L1n	255093.94	251185.50	250970.95	251848.80
		L2n	255084.89	251107.12	250841.32	251791.52
	Reading	L1n	255419.36	251085.19	251085.66	251826.55
		L2n	255410.31	251006.81	250956.04	251769.27
	Science	L1n	260768.65	256993.87	256978.24	257663.31
		L2n	260759.60	256915.49	256848.61	257606.03
Male Sample	Math	L1n	124275.01	122493.33	122472.84	
		L2n	124268.10	122449.55	122394.48	
	Reading	L1n	124286.49	122479.84	122529.99	
		L2n	124279.58	122436.06	122451.64	
	Science	L1n	126816.82	125090.32	125136.87	
		L2n	126809.91	125046.53	125058.52	
Female Sample	Math	L1n	131045.28	129025.79	128898.29	
		L2n	131038.13	128980.52	128817.30	
	Reading	L1n	130761.37	128888.89	128921.56	
		L2n	130754.22	128843.63	128840.57	
	Science	L1n	134261.95	132216.14	132238.83	
		L2n	134254.80	132170.88	132157.83	

<p align="center">**BIC Differences**</p>

			Improvement over Null			Model 1 improvement over EA only	Model 1 compared to Model 2*
			EA only	**Model 1**	**Model 2**		
Full Sample	Math	L1n	3245.14	3908.44	4122.99	663.3	-214.55
		L2n	3293.37	3977.77	4243.57	684.4	-265.8
	Reading	L1n	3592.81	4334.17	4333.7	741.36	0.47
		L2n	3641.04	4403.5	4454.27	762.46	-50.77
	Science	L1n	3105.34	3774.78	3790.41	669.44	-15.63
		L2n	3153.57	3844.11	3910.99	690.54	-66.88
Male Sample	Math	L1n		1781.68	1802.17		-20.49
		L2n		1818.55	1873.62		-55.07
	Reading	L1n		1806.65	1756.5		50.15
		L2n		1843.52	1827.94		15.58
	Science	L1n		1726.5	1679.95		46.55
		L2n		1763.38	1751.39		11.99
Female Sample	Math	L1n		2019.49	2146.99		-127.5
		L2n		2057.61	2220.83		-163.22
	Reading	L1n		1872.48	1839.81		32.67
		L2n		1910.59	1913.65		-3.06
	Science	L1n		2045.81	2023.12		22.69
		L2n		2083.92	2096.97		-13.05

*Note: a negative value indicates that the BIC for Model 2 is smaller than the BIC for Model 1; a positive value indicates that the BIC for Model 2 is larger than the BIC for Model 1. Thus a negative difference value indicates how much better a fit Model 2 is, while a positive difference value indicates how much better a fit Model 1 is.