Scholars routinely use cultural capital theory in an effort to explain class differences in academic success but often overlook the key concept of habitus. Rich, longstanding debates within the literature suggest the need for a closer examination of the individual effects of cultural capital and habitus. Drawing upon the writings of Pierre Bourdieu, I use a longitudinal dataset to examine the effects of multiple operationalizations of cultural capital on academic achievement and the mediating effects of habitus. Using first difference models to control for time-invariant unobserved characteristics, I find that typical operationalizations of cultural capital (i.e. high-arts participation and reading habits) have positive effects on GPA that are completely mediated through habitus. These results stress the importance of habitus in the relationship between cultural capital and academic achievement for disadvantaged youth.
INTRODUCTION

Despite a plethora of research in the past few decades using Bourdieu's (1977a, 1984) concept of cultural capital to explain educational inequalities, researchers have shied away from the fuzzy but critically important concept of habitus. Bourdieu (1977a, p. 495) suggests that a lack of cultural capital adversely shapes the attitudes and outlooks of youth who come from disadvantaged backgrounds. This resulting negative disposition towards school, otherwise known as an individual's habitus, ultimately affects educational achievement and attainment. Although habitus plays an important mediating role in the relationship between cultural capital and academic outcomes, it has been woefully ignored in the literature.

Cultural capital research has sparked much debate among scholars: how best to operationalize and interpret Bourdieu's ideas of cultural capital (Kingston 2001; Lareau and Weininger 2003; Wildhagen 2010), whether cultural capital reproduces the social structure or leads to mobility (DiMaggio 1982; DiMaggio and Mohr 1985), and whether the effects of cultural capital have been overstated due to omitted variable bias (Jæger 2011). Unfortunately, scholars from all viewpoints have often neglected to include habitus in their research. Despite some evidence of the importance of habitus alongside cultural capital (Dumais 2002), no research has provided follow-up investigation. Recent studies on habitus absent cultural capital (Horvat and Davis 2011) and mediators of cultural capital (Wildhagen 2009) stress the need for new attempts to operationalize and analyze habitus. Such examinations of cultural capital with habitus are long overdue and may help scholars return to the basic question of cultural capital that is critical to our understanding of educational inequality: do schools reproduce the social structure or provide a pathway to upward mobility?

In the present research, I draw upon a longitudinal dataset to examine the effects of
multiple operationalizations of cultural capital on academic achievement and include habitus as a potential mediator. My primary goal is to build upon the limited work on cultural capital alongside habitus and analyze the direct and indirect effects of cultural capital as mediated through habitus. First, I evaluate the effects of cultural capital on GPA, paying close attention to the differences in the effects of multiple operationalizations of cultural capital, particularly high-arts participation, cultural lessons, and reading habits. Using first difference models to account for time-invariant unobserved characteristics, I establish a baseline of cultural capital effects absent habitus measures and provide some insight into the debate on operationization. I then include habitus measures and conduct mediation tests to more fully test the influence of habitus in the relationship between cultural capital and academic achievement. I conclude by reflecting on the importance of these findings within the broader cultural capital debate and stress the need to continue to incorporate habitus into education research.

BACKGROUND AND SIGNIFICANCE

Cultural Capital and Educational Inequality

“[T]he educational system demands of everyone alike that they have what it does not give...[and] can only be produced by family upbringing when it transmits the dominant culture.”

- Pierre Bourdieu, 1977a, p. 494

Pierre Bourdieu's writings on capital, habitus, and field often explain inequality in an extended metaphor for life as a game (1977a, 1977b, 1984, 1990, 1997, 1998a, 1998b). Capital (social, cultural, economic, etc.) represents the resources that an individual has at her disposal that are valued in the game, habitus represents an individual's disposition that stems from her standing in the game or her “feel for the game” (1998b, p. 80), and a field represents the social world within which an individual plays a particular game. In the education field, students are
one set of actors whose goal in the game is to meet the standards of teachers in order to move to the next level of the game (i.e. grade level or tier of schooling). To achieve success, students must use the capital they have received from their families, communities, and prior experiences. Proper use of capital typically results in success and positive feedback from teachers and also builds students' confidence, thus altering their habitus.

There are winners and losers in this game and Bourdieu (1977a, 1984, 1997) suggests that inequalities in capital and the resulting differences in habitus affect academic outcomes. His theory of cultural reproduction suggests that a lack of familiarity with the dominant culture (cultural capital\(^1\)) and thus the absence of the proper disposition that typically comes from such familiarity (habitus) serves as a barrier to upward mobility for youth from low socioeconomic status (SES) backgrounds. He argues that the various actors in schools value certain cultural characteristics, which are conveyed through speech, attitudes, behavior, knowledge, and other interactions in the school environment. Youth from middle- and high-SES backgrounds are exposed to this cultural capital through their home life, interactions with their parents, and the various activities encouraged or organized by their parents. Cultural capital helps these youth develop the proper habitus to navigate the education system. Conversely, youth from low-SES backgrounds are not exposed to what is necessary to build cultural capital and are placed at a disadvantage when they do not display the proper habitus in school. Thus, schools reproduce inequalities based on SES because teachers and principals reward displays of dominant culture and those rewards translate into higher levels of educational achievement and attainment.

In contrast to the cultural reproduction thesis, DiMaggio and colleagues (DiMaggio 1982; DiMaggio and Mohr 1985) posit that cultural capital has greater benefits for youth from low-SES backgrounds. Rather than block upward mobility, cultural capital benefits low-SES youth by
allowing them to better navigate the education system and interact with educational gatekeepers than they otherwise would. Cultural capital allows low-SES youth to fit into a world that values middle- and high-SES culture. Although these two theories disagree on who benefits from cultural capital there is a bounty of research throughout the literature that finds support for cultural reproduction (Aschaffenburg and Maas 1997; Bernstein 1977; Roscigno and Ainsworth-Darnell 1999), just as there is support for cultural mobility (De Graaf et al. 2000; DiMaggio 1982; DiMaggio and Mohr 1985; Dumais 2006). Thus, the first goal of the present research is to build upon these literatures by examining the effects of cultural capital and habitus for disadvantaged youth.

Measuring Cultural Capital

Previous research differs in defining and measuring cultural capital, perhaps due in part to Bourdieu's own vagueness on the topic (Lamont and Lareau 1988; Kingston 2001). Among the various operationalizations of cultural capital, two empirical measurements dominate the quantitative literature: high-arts participation (such as museum visits, play attendance, etc.) and time spent reading. Other quantitative work expands the operationalizations of cultural capital to include cultural classes or lessons (Dumais 2008; Dumais and Ward 2010; Roscigno and Ainsworth-Darnell 1999; Wildhagen 2009), extracurricular activities (Cheadle 2008; Covay and Carbonaro 2010; Jæger 2011), discussion of culture between child and parent (Jæger 2009; Tramonte and Willms 2010), teacher perceptions of habits and skills (Farkas et al. 1990; Farkas 1996), attitudes towards and knowledge about culture (Mohr and DiMaggio 1995), and expansive views of concerted cultivation (Bodovski and Farkas 2008; Cheadle 2008, 2009; Lee and Bowen 2006).

The cultural reproduction versus cultural mobility debate remains unresolved and
complicated by multiple operationalizations of cultural capital. In support of the cultural reproduction thesis, research finds positive effects of high-arts participation (Jæger 2011; Roscigno and Ainsworth-Darnell 1999), cultural classes (Aschaffenburg and Maas 1997; Dumais and Ward 2010), and reading habits (Jæger 2011) on educational outcomes for middle- and high-SES youth. However, other studies support the cultural mobility thesis by finding no differing effects of cultural capital by SES (Dumais 2008) or larger positive effects for low-SES youth (Dumais 2006). My second goal is to examine differences in the effects of four operationalizations of cultural capital that are typical in the quantitative literature: museum visits, play attendance, cultural lessons, and reading habits.

The Link Between Cultural Capital and Habitus

Although quantitative researchers have been limited in their exploration of the mechanisms of cultural capital, qualitative researchers more thoroughly address the transmission of culture from families to youth to teachers and its subsequent advantages in education. Prior research using in-depth field work provides great insight into the differences between poor, working-class, and middle-class parents in terms of parenting styles, language use in the home, and the school-related assistance they are able to offer (Lareau 2000, 2002, 2003; Lareau and Horvat 1999). This research suggests that middle-class parents instill a sense of entitlement in their children that helps them navigate social worlds such as the education system. Essentially, culture shapes an individual's habitus, which may then affect outcomes such as educational achievement and attainment. Thus, habitus may prove a useful concept to uncover more specific links between SES, cultural capital, and academic outcomes.

Unfortunately, cultural capital research often ignores or gives short shrift to Bourdieu's concept of habitus, perhaps due to the inherent difficulties in measuring such a concept. To
Bourdieu, habitus is “a system of lasting, transposable dispositions which, integrating past experiences and actions, functions at every moment as a *matrix of perceptions, appreciations, and actions.*” (1977b, p. 82-3, emphasis in original). McClelland argues that habitus “represents the past as well as the present” (1990, p. 104) and is shaped through the cumulative effects of capital and a history of feedback on success or failure. Although Bourdieu (e.g. 1984) often emphasizes the class basis of habitus and sometimes hints at the rigidity of habitus, other scholars suggest that habitus can change on the basis of an individual's ever-evolving collection of interactions and experiences (DiMaggio 1979; Horvat and Davis 2011; Reay 2004). If youths' “feel for the game” of education can change, it may be an important mediator between cultural capital and academic outcomes.

The limited number of studies that examine habitus typically operationalize it as future aspirations or expectations (Dumais 2002; McClelland 1990; Reay 1995) or general self-esteem, belief in abilities, and sense of value (Horvat and Davis 2011). These scholars recognize that although such characteristics capture a portion of Bourdieu's notion of habitus, the measures are far from perfect. Still, this research presents interesting insights on the links between cultural capital, habitus, and academic outcomes. Dumais (2002) finds that cultural capital has a positive effect on GPA for eighth graders, even with controls for prior ability. However, when the author adds habitus into her model, she finds that the effect of cultural capital shrinks and is dwarfed by the effect of habitus. Only one other study examines cultural capital alongside a measure of habitus (Wildhagen 2009). The author explores the effects of cultural capital in 8th grade on achievement in 12th grade, using educational expectations and teachers' perceptions in 10th grade as mediators. She finds that cultural capital has both a direct and indirect effects on achievement through educational expectations (habitus).
I suggest that these prior studies lay the groundwork for forging new insights on educational inequality. Better operationalization of habitus and exploration of its connection to both cultural capital and academic outcomes are the necessary next steps. In “Cultural Reproduction and Social Reproduction,” Bourdieu outlines a clear, testable path:

“...the negative predispositions towards the school which result in the self-elimination of most children from the most culturally unfavoured classes and sections of a class—such as self-deprecation, devaluation of the school and its sanctions, or a resigned attitude to failure and exclusion—must be understood as an anticipation, based upon the unconscious estimation of the objective probabilities of success possessed by the whole category, of the sanctions objectively reserved by the school for those classes or sections of a class deprived of cultural capital.”

- Bourdieu, 1977a, p. 495

I interpret this passage to indicate that cultural capital influences an individual's habitus, which I measure as an individual's attitude about her own educational success (“self-deprecation...[and] a resigned attitude to failure and exclusion”) and her belief about the value of school (“devaluation of the schools and its sanctions”). Thus, my next goal is to examine if habitus mediates the effects of cultural capital on GPA.

In summary, the literature on cultural capital is inconclusive in a number of ways. Debate continues as to how to operationalize cultural capital and whether the benefits from cultural capital differ by SES. I contribute to the former debate by examining the effects of four measures of cultural capital: museum visits, play attendance, cultural lessons, and reading habits. Furthermore, quantitative researchers have been slow to incorporate measures of habitus in their models, despite the important connections made by qualitative researchers. I build upon the work of Dumais (2002) and Wildhagen (2009) by including measures of habitus that are very similar to key components of habitus suggested by Bourdieu (1977a) and examined by Horvat
and Davis (2011). I suggest that including habitus measures in models of the effects of cultural capital on academic achievement may lend clarity to the recent scholarly debates on cultural capital.

**DATA AND METHODS**

*Sample*

I address my research questions using a longitudinal dataset collected from youth who participated in the Big Brothers/Big Sisters of America program (BBBSA) during the 1990s. There are a number of advantages in using this dataset to address my research questions. First, multiple cultural capital operationalizations are included in this dataset: museum visits, play attendance, cultural lessons, and reading habits. This dataset also includes other variables critical to my analysis, particularly attitudinal measures regarding school value and academic success, as well as GPA. Thus, I can examine both the direct and indirect effects of cultural capital on educational achievement and the mediating effects of habitus.

It is important to note the nature of disadvantage in this sample. Although the criteria differ by chapter, the BBBSA program attempts to help the most disadvantaged youth. Nearly 83% of the sample came from families making less than $25,000 per year, 44% were classified as poor, 39% working class, and 17% middle class, and most came from a single parent or guardian household (see Tierney, Grossman, and Resch 1995 for more information). This sample is heavily skewed towards the lowest SES families and not representative. Thus, tests of social mobility versus social reproduction theories might be misleading. Still, this dataset presents an excellent opportunity to examine cultural capital and habitus among disadvantaged youth.

Program staff collected data from 959 youth between the ages of 9 and 16 who were
BBBSA applicants waiting for assignment to a mentor in eight selected cities (Philadelphia, PA; Rochester, NY; Minneapolis, MN; Columbus, OH; Wichita, KS; Houston, TX; San Antonio, TX; and Phoenix, AZ). These individuals and their parent or guardian completed a baseline interview (time 1) and a follow-up interview 18 months later (time 2). Table 1 includes descriptive statistics on the sample. All of the variables, including GPA, are self-reported by each youth.

(Table 1 about here)

Operationalizing Cultural Capital

I examine four operationalizations of cultural capital suggested by the literature: the number of times an individual has visited a museum, the number of times an individual has attended a play (both in the past 12 months), weekly hours spent in cultural lessons outside of school (music, art, dance, and language), and weekly hours spent reading. The quantitative literature routinely uses these variables as operationalizations of cultural capital. The descriptive statistics in Table 1 show that on average youth decreased slightly in the number of museum visits (-0.18) and plays attended (-0.21) in the past 12 months between time 1 and time 2, but the standard deviations indicate that there are significant variations among youth. Additionally, youth increased their weekly hours spent in cultural lessons outside of school (0.07) and weekly hours spent reading (0.28) and there are significant variations among youth.

Operationalizing Habitus

In addition to the cultural capital variables, I use two attitudinal variables, the Harter Scholastic Competence score (HSC) and the Berndt and Miller School Value score (SV), to represent a youth's habitus. The HSC score is a subscale of the Self-Perception Profile for Children (Harter 1986). This six-item composite measure assesses a youth's belief that she can succeed in school by asking each individual to compare herself to general statements regarding
types of youth. For example, “Some kids feel that they are very good at their schoolwork BUT other kids worry about whether they can do the schoolwork assigned to them.” Youth compare themselves to one of the two types in each statement in one of two ways (either very similar or somewhat similar). Each item is scored from 1 (not very competent) to 4 (very competent), thus the HSC score has a potential range of 6 to 24 with $\alpha = 0.77$.

The SV score is an eighteen-item composite measure of questions that assess a youth's belief that education is valuable to her success in life (Berndt and Miller 1990). For example, “How valuable do you think your education will be in getting the job you want?” Each item is scored from 1 to 4, thus the SV score has a potential range of 18 to 72 with $\alpha = 0.86$.

These measures closely capture each youth's “feel for the game” in the educational field because they require each youth to report her belief of individual value and the possibility of success in school as well as her belief about the value of school. These measures follow Bourdieu's own words quite closely: “self-depreciation...[and] a resigned attitude to failure and exclusion” and “devaluation of the schools and its sanctions” (1977a, p. 495). The descriptive statistics in Table 1 show that on average individuals' SV scores (-0.89) decreased between time 1 and time 2 and HSC scores (0.75) increased between time 1 and time 2. See Appendix A for the full list of items included in the HSC and SV measures.

Other Variables of Interest

My main dependent variable of interest is self-reported GPA. Although the literature suggests internal validity may be a concern, particularly for lower-achieving youth, reliability is likely not an issue for self-reported GPA (see Kuncel, Credé and Thomas 2005 for a review). The descriptive statistics in Table 1 show that on average youth decreased slightly in GPA (-0.12) between time 1 and time 2. First difference models only account for covariates that vary over
time (more below). Thus, the only control I include is youth assignment to a mentor.⁶ However, in Table 1 I show descriptive statistics for age, sex, race, SES, location (city), urbanicity, family household structure, number of siblings, and if a youth has a learning disability.

**Missing Data**

To deal with missing data, I employ multiple imputation using the ICE command in Stata 10 (Royston 2004). Each imputation model includes the control and other independent variables listed in each of the main regression tables. I exclude cases that require imputed dependent variables from the analysis, as these cases may bias the estimates (von Hippel 2007). I impute interaction values using an approach recommended by Allison (2002) in which I first create all relevant interaction variables and then impute values for any missing variables. In total, I create five datasets for each dependent variable for combined use in the analysis. The ICE command corrects standard errors due to the resulting adjusted sample size.

**Analytic Strategy**

A portion of the existing literature on cultural capital focuses on simple cross-sectional analysis, often with no measure of prior achievement or proxy for ability (e.g. DeGraaf et al. 2000; Dumais 2002; Sullivan 2001). However, a cross-sectional analysis cannot establish a causal effect because it is threatened by omitted variable bias or unobserved heterogeneity (Halaby 2004; Schneider et al. 2007). Estimates of the effects of cultural capital may be biased if both cultural capital and outcome measures are correlated with omitted variables (Jæger 2011; Kingston 2001). One way to control for this omitted variable bias is to include a lagged dependent variable that can serve as a proxy for the unobserved variable (Wooldridge 2008).

Although this type of longitudinal model is an improvement over cross-sectional models, any remaining unmeasured time-invariant characteristics that may be correlated with both
cultural capital measures and outcomes are problematic. Thus, I focus my analysis on a series of first difference models. A first difference model is a two-period case of a fixed effects model that removes any time-invariant characteristics, both observed and unobserved, and thus uses only within-subject variation (Allison 2009). I derive the first difference equation by subtracting all variables at time 1 from all variables at time 2 to get:

\[ Y_{ijt2} - Y_{ijt1} = (\zeta_{jt2} - \zeta_{jt1}) + (\mu_{it2} - \mu_{it1}) + \beta_1(CC_{ijt2} - CC_{ijt1}) + \beta_2(X_{ijt2} - X_{ijt1}) + \beta_3(Z_{ij} - Z_{ij}) \]

or rewritten in reduced form:

\[ \Delta Y_{ij} = \Delta \zeta_{jt} + \Delta \mu_{ij} + \beta_1 \Delta CC_{ij} + \beta_2 \Delta X_{ij} + \Delta \varepsilon_{ij} \]  

Equations 1a and 1b show that the time-invariant characteristics, both the observed \((Z_i)\) and the unobserved \((\alpha_i)\), drop out of the equation (notation based on Rabe-Hesketh and Skrondal 2008 and Allison 2009).

Additionally, I explore the possibility that habitus (student attitudes) mediates any potential effects of cultural capital on GPA. First, I compare models without the habitus variables with models that include those variables. I use Baron and Kenny's (1986) four criteria to determine if a variable is a mediator: (1) the independent variable significantly accounts for variation in the mediator variable, (2) the independent variable significantly accounts for variation in the dependent variable, (3) the mediator variable significantly accounts for variation in the dependent variable while controlling for the independent variable, and (4a) controlling for the mediator variable reduces the effect (partial mediation) of the independent variable on the dependent variable or (4b) controlling for the mediator variable eliminates the effect (complete mediation) of the independent variable on the dependent variable. Figure 1 illustrates my predicted pathways of the effects of cultural capital and habitus on GPA. I calculate the indirect
effect of cultural capital on GPA by multiplying the effect of cultural capital on habitus ($\beta_a$) with the effect of habitus on GPA ($\beta_h$). If my results fit Baron and Kenny's criteria, I test the significance of the indirect effect of cultural capital on GPA through habitus by using a Sobel (1982) test for mediation. Using the notation from Figure 1, the first step of the Sobel test is to calculate the standard error of the indirect effect using the following equation:

$$SE(\beta_h \beta_a) = \sqrt{((\beta_h^2)(\beta_a/t_a)^2) + ((\beta_a^2)(\beta_h/t_h)^2)}$$

(2)

where $\beta$ is the coefficient from each path in Figure 1 and $t$ is the t-test of each associated coefficient. After obtaining the standard error of the indirect effect, the next step of the Sobel test is to calculate a Z-score using the following equation:

$$Z(\beta_h \beta_a) = \frac{\beta_h \beta_a}{SE(\beta_h \beta_a)}$$

(3)

With each Z-score, I can evaluate the significance of each indirect effect. Together, this information will provide more insight on the links between cultural capital and habitus than previous quantitative research on the subject.

(Figure 1 about here)

In the following section, I examine the effects of cultural capital on both GPA and habitus. First, to examine whether cultural capital has direct effects on GPA I analyze first difference models, both with and without the habitus variables. These results help me address my first two research questions: (1) Absent measures of habitus, does cultural capital have effects for disadvantaged youth? and (2) Do different operationalizations of cultural capital vary in these effects? Then, I analyze the effect of cultural capital on students' habitus, operationalized as attitudes of scholastic competence and school value (HSC and SV scores as outcomes), to examine the combined effects of cultural capital and habitus. These results help me to address my final research question: (3) Does habitus mediate the effects of cultural capital...
on educational achievement?

RESULTS

Models Predicting GPA

In Table 2 I show the results of two first difference models assessing the direct effects of cultural capital and habitus on GPA and two first difference models assessing the effects of cultural capital on habitus. Model 1 examines cultural capital absent habitus and model 2 includes measures of habitus (HSC and SV). A summary analysis shows that anywhere from approximately 15-35% of the variation in the cultural capital and habitus variables comes from within-subject variation while heteroskedasticity tests suggest the standard errors are not underestimated in the first difference models. These results and the theoretical and methodological concerns raised earlier support the use of first difference models, which examine only within-subject variation.

(Table 2 about here)

In the first difference model without the habitus variables as covariates (model 1), I find that change in museum visits (0.034) and time spent reading (0.013) have significant effects on change in GPA, while change in play attendance and cultural lessons do not have significant effects on change in GPA. Although not a test of the social mobility versus reproduction theories, these results are in line with some prior research that suggests disadvantaged youth may benefit from some forms of cultural capital. In model 2 I include the habitus variables as covariates to examine potential mediating effects. When I include change in HSC score and change in SV score, both habitus variables have significant positive effects on change in GPA and, surprisingly, none of the cultural capital variables retain significant effects on GPA.

Overall, these results indicate strong positive effects for habitus on GPA even when
controlling for cultural capital and prior ability via first differences. However, adding habitus measures into the models erases any significant effects of cultural capital on GPA. Presumably, this change is due to a direct effect of cultural capital on habitus. I formally examine these effects and the mediation process in the final two results sections.

*Models Predicting Habitus*

The next step to examine potential mediating effects is to use measures of cultural capital to predict habitus. In Table 2, models 3 and 4, I examine how cultural capital affects student attitudes regarding their own ability to succeed academically (HSC – model 3) and the value of school (SV – model 4). In model 3, I find that change in museum visits (0.182) and change in time spent reading (0.075) have positive and significant effects on change in HSC score. Additionally, model 4 shows that change in museum visits (0.394), change in cultural lessons (0.547), and change in time spent reading (0.096) have positive and significant effects on change in SV score. Overall, these results suggest that both HSC and SV may be mediators of the effects of cultural capital on GPA.

The results from the models presented in Table 2 lead me to two important conclusions. First, I find that various measures of cultural capital have significant effects on both GPA and habitus for youth. Second, the inclusion of the habitus variables in the models predicting GPA indicates that cultural capital may have direct effects on habitus. When I examine those models I find that some measures of cultural capital have effects on habitus. Overall, these results lead me to formally test mediation effects in the following section.

*Mediation and Indirect Effects*

A few cultural capital and habitus combinations meet Baron and Kenny's (1986) criteria for mediation. Museum visits and time spent reading both have some direct effects on either
HSC or SV score and GPA. These results point to potential mediator effects, so in Table 3 I conduct Sobel tests of mediation to examine the indirect effects of cultural capital on GPA through HSC and SV. I calculate indirect effects using the appropriate habitus model from Table 2 (to get $\beta_a$ from Figure 1) combined with the appropriate GPA model from Table 2 (to get $\beta_b$ from Figure 1). The products of these coefficients ($\beta_a \times \beta_b$) are listed in Table 3. I calculate the standard errors and Z-scores as previously outlined in the Analytic Strategy section.

(Table 3 about here)

The coefficients indicate that two typical measures of cultural capital in quantitative research, museum visits and time spent reading, have consistently significant indirect effects. The first difference results provide evidence that the effects of change in museum visits (0.006) and change in time spent reading (0.003) on change in GPA are mediated through change in HSC score. Additionally, the effect of change in museum visits on change in GPA is mediated through change in SV score (0.007). Change in time spent reading only has a marginally significant ($p < 0.10$) indirect effect on change in GPA through change in SV.

(Figure 2 about here)

Figure 2 captures the importance of examining habitus alongside cultural capital. In the analyses presented here, a 1 SD change in cultural capital measures (i.e. museum visits and time spent reading, bars 1 and 2 respectively in Figure 2) only equates to a ∼0.05 SD change in GPA each, even accounting for both direct and indirect effects. However, a 1 SD change in habitus measures (i.e. HSC and SV, bars 3 and 4 respectively in Figure 2) produces a much larger change in GPA (∼0.15 SD). These results show that habitus is a more important factor in academic achievement than cultural capital for disadvantaged youth (see Figure 2, bars 5-9 for additive effects).
DISCUSSION

Prior examinations of Bourdieu's theory on cultural capital have avoided the critical mediating factor of habitus. This oversight has left researchers with an incomplete view of the mechanisms of cultural capital. Building on earlier work on cultural capital (Dumais 2002; Wildhagen 2009) and habitus (Bourdieu 1977a; Horvat and Davis 2011), I examine how habitus mediates the relationship between cultural capital and GPA. After evaluating a series of first difference models that control for time-invariant characteristics, I find that cultural capital has positive effects on GPA for disadvantaged youth. Mediation tests reveal that these effects are fully mediated by habitus: the effect of cultural capital on GPA works by positively altering what Bourdieu refers to as an individual's “feel for the game” (1998b, p. 80). Perhaps the most important general finding of this research is that all direct effects of cultural capital on GPA disappear once I include measures of habitus in the models. Traditional quantitative measures of cultural capital, particularly museum visits and time spent reading, have some small but significant indirect effects on GPA. These findings suggest that cultural capital changes a student's view of their own ability to succeed academically and the value of school in their lives. These measures of habitus also have positive effects on youths' GPA with much larger standardized effect sizes than those of cultural capital.

There are a number of potential explanations why cultural capital operates through habitus to affect academic achievement. Researchers suggest that disadvantaged youth are subjected to stereotypes that imply that intelligence is fixed and individuals like themselves are less intelligent (Croizet and Claire 1998; Good, Aronson, and Inzlicht 2003; Steele and Aronson 1995). Furthermore, belief that intelligence is malleable, rather than fixed, has a number of positive consequences for students' achievement and academic self-confidence (Blackwell,
Trzesniewski, and Dweck 2007; Dweck 2006, 2007). Exposure to cultural capital may allow disadvantaged students to better understand the workings of the education system around them. Through this exposure to high-status culture, disadvantaged students may realize that their advantaged counterparts are not necessarily more innately gifted or worthy of academic praise but simply better prepared and exposed to valued culture. Disadvantaged students may begin to see that they too can acquire valuable educational capital. Without such exposure, other students who are unlike themselves may appear to just have greater innate intelligence. For instance, both increased reading habits and museum visits may lead to more substantive knowledge about new topics introduced in class. Students may find themselves excited to know some of the things a teacher discusses (e.g. knowing the basics of electricity from a science exhibit at a museum). This reinforces that some learning occurs outside the classroom (intelligence is malleable) for some students, not that some students just naturally know more (intelligence is fixed). This pathway likely involves increased attention and positive feedback from teachers in the interim, which would serve to increase students' habitus and further alter their mindsets regarding intelligence. Unfortunately, I cannot empirically test these possibilities. Further research using qualitative or mixed methods would help address these important new questions raised by the present research.

Although I recognize that my measures of habitus are not all encompassing, this research suggests that future investigations of cultural capital should include measures of habitus to more adequately capture the process of educational inequality. I must stress that these measures were not created with habitus in mind even though they fit well in a strict interpretation of Bourdieu's writings. In effect, Bourdieu's conception of habitus within the educational field includes two parts: (1) the negative stance towards school and education that is (2) brought about by
responses from and interaction with the institution. I think the questions included in both the
HSC and SV scales, as well as the time order and modeling strategy align clearly with this
definition of habitus. However, much like existing differences within the literature on cultural
capital between strict interpretations (i.e. high-arts participation and reading as measures of
cultural capital) and more expansive alternatives (i.e. concerted cultivation and interaction
styles), I believe there is room for debate regarding the best measures of habitus. Although
additional research is necessary to fully test the finding that habitus serves as a mediator between
cultural capital and academic outcomes, this research represents a strong methodological entry
into the discourse.

The findings presented here also support recent research that suggests time-invariant
unobservables may bias estimates of cultural capital (Jæger 2011). Compared to models with a
lagged dependent variable, the first difference models consistently show smaller cultural capital
effects and sometimes a loss of significance, despite maintaining enough variation in the
measures of interest (results not shown but available from author upon request). Cultural capital
researchers must be more aware of this potential bias and carefully interpret models that cannot
fully account for unobservables. Still, the first difference models are not without their own
limitations. These models cannot make up for the lack of measures for time-varying
characteristics, such as SES, which likely influence cultural capital, habitus, and academic
outcomes.

One final point of discussion concerns the use of reading habits as a measure of cultural
capital. Although much debate exists regarding the use of any measure that has direct cognitive
value in educational outcomes (see Kingston 2001; Lamont and Lareau 1988; Lareau and
Weininger 2003), Bourdieu (1977a, 1984) himself suggests reading as a measure of cultural
capital. Others suggest that time spent reading may represent dominant culture though its impact on sociolinguistics and styles of speech and writing valued by teachers (Bernstein 1960, 1962, 1977; Orr 1987) and in general may help children become more acculturated to the educational process (Bourdieu and Passeron 1977; DeGraaf et al. 2000). Still, my choice to include reading habits stems from its influence on habitus and the focus of this research on the full process surrounding habitus. Scholars consistently note lagging reading abilities of disadvantaged youth across grade levels and at school entry (Crosnoe and Cooper 2010; Entwisle, Alexander, and Olson 2007; Kieffer 2010) and a detrimental effect of poor reading skills on educational engagement (Kelly 2008). Thus, the strong effects of reading habits on both measures of habitus may represent a cognitive effect through improved performance and the resulting positive feedback from teachers. Although I include reading habits as cultural capital in this research, I suggest that more refined measures would be more appropriate in partialling out cognitive and cultural effects of reading habits.

A number of shortcomings to this research remain. First, it is circumscribed somewhat by a limited set of outcome variables. Although I examine multiple dimensions of cultural capital and mediation through habitus, the data limit my examination to effects on GPA. Additionally, the measure of GPA is self-reported, which may be subject to larger validity problems for lower-achieving students than higher-achieving students. Second, the short time frame (18 months) between initial data collection and follow-up limits the opportunity to witness large scale change during this time, particularly for cultural capital and GPA. This is perhaps reflected in the small effect sizes. Third, the age range of the sample may also downwardly bias the results, as the processes examined here were already in motion by the time data collection began. Fourth, the sample is not nationally representative and raises concerns regarding the skewed SES
distribution and the fact that these youth are classified as “at-risk” by the nature of the program. Although these issues hurt the generalizability of this research, future research should continue to explore cultural capital and habitus over a longer time frame, starting earlier in the lives of youth, with a more representative sample, examining differences by SES, and using an expanded set of outcomes. Testing the robustness of these results using test scores, dropout, graduation, college enrollment, and other important educational outcomes is crucial to our understanding of cultural capital. Nonetheless, the present research furthers the literature on cultural capital by suggesting the importance of habitus in the translation of cultural capital into academic success for disadvantaged students during early adolescence.
Table 1. Descriptive Statistics

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<td>White</td>
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<tr>
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<td>Working class</td>
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<td>0.758</td>
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<tbody>
<tr>
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<td>Δ</td>
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<tr>
<td>Museum visits (last 12 months)</td>
<td>1.17</td>
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<td>0.99</td>
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<td>Play attendance (last 12 months)</td>
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<td>1.82</td>
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<td>1.61</td>
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<tr>
<td>Cultural lessons (hours per week)</td>
<td>0.32</td>
<td>0.96</td>
<td>0.39</td>
<td>1.07</td>
<td>0.07</td>
<td>1.32</td>
</tr>
<tr>
<td>Time spent reading (hours per week)</td>
<td>2.29</td>
<td>3.80</td>
<td>2.57</td>
<td>4.31</td>
<td>0.28</td>
<td>4.73</td>
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<table>
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<tr>
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<td>Harter Scholastic Competence score</td>
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<td>4.32</td>
<td>16.79</td>
<td>4.64</td>
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<td>B&amp;M School Value score</td>
<td>56.91</td>
<td>6.86</td>
<td>56.02</td>
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<td>-0.89</td>
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<td>GPA</td>
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<td>0.85</td>
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<td>(1)</td>
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<td>(3)</td>
<td>(4)</td>
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<tr>
<td>---------------------------------------------</td>
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<td>-------</td>
<td>-------</td>
<td>-------</td>
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</tr>
<tr>
<td>Museum visits</td>
<td>0.034*</td>
<td>0.012</td>
<td>0.182*</td>
<td>0.394*</td>
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<tr>
<td></td>
<td>(0.016)</td>
<td>(0.016)</td>
<td>(0.084)</td>
<td>(0.160)</td>
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<tr>
<td>Play attendance</td>
<td>0.008</td>
<td>0.008</td>
<td>-0.042</td>
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<td></td>
<td>(0.013)</td>
<td>(0.012)</td>
<td>(0.062)</td>
<td>(0.125)</td>
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<td>Cultural lessons</td>
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<td>0.097</td>
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<td></td>
<td>(0.021)</td>
<td>(0.021)</td>
<td>(0.106)</td>
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<td>Time spent reading</td>
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<td>HSC score</td>
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<tr>
<td>School value score</td>
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<td></td>
<td>(0.004)</td>
<td></td>
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<tr>
<td>Constant</td>
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<td>-0.100*</td>
<td>0.214</td>
<td>-1.087*</td>
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<tr>
<td></td>
<td>(0.053)</td>
<td>(0.049)</td>
<td>(0.267)</td>
<td>(0.422)</td>
<td></td>
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</tr>
<tr>
<td>Observations</td>
<td>951</td>
<td>951</td>
<td>942</td>
<td>749</td>
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</tr>
</tbody>
</table>

Notes: Standard errors in parentheses. Each model also controls for mentorship status and includes a random intercept for location.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. 

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Table 3. Indirect Effects of Cultural Capital on GPA

<table>
<thead>
<tr>
<th></th>
<th>HSC</th>
<th>SV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Museum visits</td>
<td>0.006*</td>
<td>0.007*</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.003)</td>
</tr>
<tr>
<td></td>
<td>[2.016]</td>
<td>[2.131]</td>
</tr>
<tr>
<td>Play attendance</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Cultural lessons</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Time spent reading</td>
<td>0.003*</td>
<td>0.002+</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td></td>
<td>[2.215]</td>
<td>[1.779]</td>
</tr>
</tbody>
</table>

Notes: This table uses Sobel tests of mediation to test the indirect effects of cultural capital on GPA through attitudes. Coefficients are the product of their respective coefficients in Table 2. Standard errors and Z-scores are calculated using Equations 2 and 3 respectively. Coefficients for cultural capital variables not shown do not meet at least 1 of the criteria for mediation from Baron and Kenny (1986). Standard errors in parentheses, Z-scores in brackets.

+ $p < 0.10$, * $p < 0.05$
Figure 1. Pathways of Direct and Indirect Effects of Cultural Capital

\[ \beta_c \]

\[ \beta_s \]

\[ \beta_t \]
Notes: Standardized effect sizes are calculated from the appropriate coefficients (Table 2) and standard deviations (Table 1). Each bar represents a 1 standard deviation change in the variable(s) listed. Each of the effect sizes for the cultural capital variables (i.e. bars 1, 2, and 5-9) include both direct and indirect effects. Bar 9 includes the effects of both cultural capital variables and both habitus variables.
NOTES

1. Bourdieu (1997) suggests there are different types of cultural capital (embodied, institutionalized, and objectified), but I mean embodied cultural capital when I refer to cultural capital throughout this article. A majority of the literature to date examines only embodied cultural capital.

2. Although not specifically about habitus or cultural capital, a long line of prior research finds that academic attitudes and beliefs directly affect academic achievement and attainment, even when controlling for ability (e.g. Guay, Boivin, and Hodges 1999; Guay, Marsh, and Boivin 2003; Miserandino 1996; Valentine DuBois, Cooper 2004).

3. For instance, Susan Dumais (2002) suggests that her research is “really only a first attempt to operationalize the concept of habitus alongside the concept of cultural capital” (62). Also, see Reay 2004 for an extended discussion of the multiple aspects of habitus.

4. The author does not specifically mention habitus, but she recognizes concepts similar to Bourdieu’s notion and other authors’ operationalization of habitus: “Participation in high-status cultural activities, then, should affect students' educational expectations because students who participate in high-status cultural pursuits are participating in a cultural realm that is widely recognized as superior and legitimate. Just as working-class students develop a sense of 'what is not for them' partly in response to their relative lack of exposure to dominant cultural capital, so too do privileged students develop a sense of what they are entitled to, partly in response to their exposure to high-status cultural capital.” (Wildhagen, 2009:178; emphasis in original).

5. The original data collection design is a quasi-experimental design based on the random assignment of youth to mentors.

6. Although I control for whether a youth is assigned to a mentor or not, an examination of the intersection of social and cultural capital is beyond the scope of this article (see Gaddis 2012 for research on the effect of mentors on cultural capital using this dataset). Other research using these data reports mostly positive effects of mentors on various academic and behavioral outcomes (see Gaddis
forthcoming).

7. The official poverty line during the time of data collection was slightly above the lowest recorded category of less than $10,000 (U.S. Department of Health and Human Services, 2011). Moreover, the highest recorded category of greater than $25,000 is slightly below the median income during this time (U.S. Census Bureau 1995).

8. The SES variable is a composite of household income and parent's occupational status. Youth are coded as poor if their parent's occupational status is non-professional, their parent does not work full-time, and either (a) their household income is less than $10,000, or (b) their household receives welfare assistance. Youth are coded as working class if their parent's occupational status is non-professional and their parent works full-time. Youth are coded as middle class or greater if their parent's occupational status is professional. This trichotomy is similar to one adopted by Annette Lareau's qualitative work in Unequal Childhoods (2003).

9. I use the estat hettest command in Stata 10 to test for heteroskedasticity in all of the first difference models (results not shown). In every model I fail to reject the null hypothesis that all of the error variances are equal, suggesting that the standard errors are not underestimated in the first difference models (Wooldridge 2008).

10. The play attendance and cultural lessons variables do not have direct effects on GPA in the first difference models, thus failing to meet one of the four criteria. I do not conduct Sobel tests of mediation in those instances.
APPENDIX A.

HSC – 6 items

Which group sounds more like you? (Pick one and respond with either “really true for you” or “sort of true for you”).

1. (a) Some kids feel they are very good at their schoolwork
   (b) Other kids worry about whether they can do the schoolwork assigned to them

2. (a) Some kids feel like they are just as smart as other kids their age
   (b) Other kids aren't so sure and wonder if they are as smart

3. (a) Some kids are pretty slow in finishing their schoolwork
   (b) Other kids can do their schoolwork quickly

4. (a) Some kids often forget what they learn
   (b) Other kids remember things easily

5. (a) Some kids do very well at their classwork
   (b) Other kids don't do well at their classwork

6. (a) Some kids have trouble figuring out the answers in school
   (b) Other kids can almost always figure out the answers

SV – 18 items

Possible responses for 1 through 11 include: hardly ever, not very often, sometimes, and pretty often

1. Do you think your school work is boring?

2. Do you think your homework is fun to do?

3. Do you think the things you learn in school are worthless?

4. Do you care about doing your best in school?

5. Do you feel you want to know even more about something you've learned in school?

6. Do you try to just get by in school, rather than trying to do the best you can?

7. Do you think your school work this year will help you in preparing for high school?

30
8. Are you interested in the work your teachers give you?

9. Do you think the facts you learn in school are of no value?

10. Do you think you're assigned homework just to keep you busy?

11. Do you care about being as successful in school as you are in other things?

Possible responses for 12 through 18 include: not at all (useful, important, etc.), not very, somewhat, and very

12. How useful is what you learn in school for the job you want to have as an adult?

13. How important to you is getting good grades?

14. How interested are you in the things you learn in school?

15. How upset would you be if you got a low grade for one of your subjects?

16. How valuable do you think your education will be in getting the job you want?

17. How important to you is being a good student?

18. How useful is school for helping you to make good decisions in your life?
REFERENCES
1460-74.


