



Child Protective Services and the Achievement Gap

Kristine Piescher^{*}, Gregg Colburn, Traci LaLiberte, Saahoon Hong

University of Minnesota



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ABSTRACT

This study compared the academic performance of youth at varying levels of child protection system (CPS) involvement to understand whether a CPS achievement gap existed, and if so, whether more extensive involvement in CPS was associated with poorer academic performance. Standardized test scores of math and reading were compared for youth in the general population (who had no CPS involvement; $n = 410,491$), youth with CPS involvement but no out-of-home placement ($n = 6,875$), and youth with CPS involvement that led to an out-of-home placement ($n = 2,122$). Significant evidence of an achievement gap for youth involved in CPS existed, even after controlling for socioeconomic status and race. More extensive CPS involvement appeared to be associated with significantly poorer performance but this difference disappeared when controlling for socioeconomic status and race. Findings suggest a need for policies that support collaboration, training and information sharing between CPS and school systems as well as specific CPS assessment and intervention strategies. The troubling consequences of the achievement gap provides a dire warning to the people and institutions charged with the care and education of youth in CPS. The CPS achievement gap identified in this study is an additional barrier that these vulnerable youth must overcome as they transition to adulthood.

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1. Introduction

While scholars have conducted extensive research on disparities in academic achievement based on race and socioeconomic status, youth receiving Child Protective Services (CPS) face a myriad of challenges. In this study, the authors analyzed the academic performance of youth at varying levels of involvement in CPS, including child protection with and without out-of-home placement (hereafter OHP and CP, respectively). This study sought to identify if an achievement gap is associated with involvement in CPS and, if so, whether more extensive CPS involvement (i.e., OHP) results in increasingly poor academic outcomes.

The authors present this study within the context of three independent bodies of research literature: 1) the achievement gap, its causes, and its consequences, 2) the association between child maltreatment and academic outcomes, and 3) the academic performance of youth who experience OHP. A preponderance of the literature has suggested a strong association between child maltreatment and/or OHP and poor academic outcomes, but few studies have drawn a link between these outcomes and the achievement gap. This study sought to add to the existing literature in two respects. First, this study analyzed the achievement gap for youth in CPS and did so while controlling for racial and socioeconomic factors, a key shortcoming of many prior studies.

Second, this study analyzed the relationship between academic outcomes and the extent of CPS involvement.

2. Literature Review

2.1. Achievement Gap

In the 1950s, scholars began to analyze differences in the academic achievement of various groups based on key demographic characteristics. These studies served to identify, quantify and explain the achievement gap. Over the last half century, scholars from multiple disciplines have devoted significant time and energy to the topic of academic disparities. In the existing literature, the achievement gap has been primarily constructed and described based on two demographic characteristics: socioeconomic status and race. In addition to racial or socioeconomic achievement gaps, scholars have identified additional gaps including those based on gender, disability, or country of origin.

Research in the last decade has focused on refining our understanding of the achievement gap by: 1) identifying and quantifying achievement gaps based on different demographic factors (Aikens & Barbarin, 2008; Condrón, 2009; Evans & Rosenbaum, 2008; Kao & Thompson, 2003; Lee, 2006; Neuman & Celano, 2006; Sirin, 2005), 2) analyzing the trends in achievement gaps, including the narrowing of gaps in the 1970s and 1980s (Harris & Herrington, 2006; Ladd, 2012; Lee, 2002, 2006), 3) assessing school-specific and non-school specific factors that may contribute to achievement gaps (Aikens & Barbarin, 2008; Condrón, 2009; Evans & Rosenbaum, 2008; Neuman &

^{*} Corresponding author at: School of Social Work, University of Minnesota, 205 Peters Hall, 1404 Gortner Ave., St. Paul, MN, 55108.
E-mail address: kpiesche@umn.edu (K. Piescher).

Celano, 2006; Reardon & Galindo, 2009; Wiggan, 2007), 4) studying potential interventions to address achievement gaps (Aikens & Barbarin, 2008; Harris & Herrington, 2006; Ladd, 2012), and 5) identifying and quantifying the consequences of achievement gaps (Harris & Herrington, 2006; Rothstein & Wilder, 2005; Wolfe & Haveman, 2002).

Although there are many different opinions regarding the causes of achievement gaps, the presence of such gaps and the associated negative consequences are widely acknowledged. A broad recognition of the negative consequences of achievement gaps has driven policy and program responses that attempt to reduce these gaps. Since educational success has become a primary driver of class status, achievement gaps are not solely a marker of educational inequality, but a contributor to socioeconomic inequality (Harris & Herrington, 2006). Academic disparities have been linked to differences in economic security and different levels of productive adult participation in society (Rothstein & Wilder, 2005) as well as a contributor to significant long-term, non-market, adult outcomes such as health status, consumer choices, childbearing choices, and criminal activity (Wolfe & Haveman, 2002).

Research on the achievement gap describes youth who fall into the gap as coming from economically disadvantaged backgrounds, being disproportionately youth of color, and having experienced multiple traumatic events in their lives. These descriptors are also often used to describe youth with CPS involvement. The striking overlap of these populations - those who fall into the achievement gap and those who are involved in CPS - seem apparent, thus propelling us to gain a deeper understanding of how youth with CPS involvement perform academically.

2.2. Academic Performance of Youth in the Child Welfare System

2.2.1. Maltreatment and academic outcomes

The academic achievement of youth in the child welfare system has been a topic of inquiry since the 1970s (Leiter, 2007). In the 1990s, scholars demonstrated strong associations between child maltreatment and negative academic outcomes (Eckenrode, Laird, & Doris, 1993; Kurtz, Gaudin, Wodarski, & Howing, 1993; Leiter & Johnsen, 1994; Perez & Widom, 1994). The scholarly community accepted these results and attention turned to related issues, including a) reasons for the association, b) an assessment of academic outcomes by type of maltreatment, and c) the impact of chronicity and severity of maltreatment on academic achievement.

Several theories have been used to explain the association between child maltreatment and poor academic performance, including social learning theory, developmental theory, the traumagenic approach, and behavior modification theory (Leiter & Johnsen, 1997). Leiter and Johnsen (1997) proposed that poor academic performance may stem from replication of violent behaviors, worsening cognitive abilities, weakened ties to school, and depressed learning and participation in school, all of which may interfere with academic achievement. Wilson, Ogle, and Goodman (2006) also identified potential mediators that may explain the association between maltreatment and negative academic outcomes. These mediators stem from a history of abuse and/or neglect and they include: a) emotional and behavioral disorders, b) cognitive deficits, c) social and relational difficulties, and d) low parental support and family instability.

A second area of maltreatment research has assessed academic outcomes by different types of maltreatment with mixed results. Although neglect has been highlighted by some as having a particularly negative impact on outcomes (Eckenrode et al., 1993; Egeland, 1991; Erickson & Egeland, 1996; Jonson-Reid, Drake, Kim, Porterfield, & Han, 2004; Kendall-Tackett & Eckenrode, 1996) other scholars have refuted those findings in their own research. This research found no difference in the academic achievement of youth based on type of maltreatment (Barnett, Vondra, & Shonk, 1996; Coohy, Renner, Hua, Zhang, &

Whitney, 2011; Crozier & Barth, 2005; Jaffee & Gallop, 2007; Kurtz et al., 1993; Leiter & Johnsen, 1994, 1997).

Research on the severity and chronicity of maltreatment and its impact on academic achievement has been another distinct area of study. Research has demonstrated an inverse association between severity and chronicity of maltreatment and academic performance (Coohy et al., 2011; Leiter & Johnsen, 1997). However, Boden, Horwood, and Fergusson (2007) demonstrated that when demographic factors are controlled, the association between maltreatment and educational outcomes no longer holds. Boden et al. (2007) suggested that any associations between child maltreatment and later academic achievement may reflect the psychosocial context in which the child develops, rather than the direct effects child maltreatment. This finding does not undermine the association between maltreatment and educational outcomes, but rather speaks to the complex task of determining causation.

2.2.2. OHP and academic outcomes

When child maltreatment reaches the degree at which child protective services believes that a child is in immediate danger, an OHP is required. Understanding the effect of OHP on a child's academic performance is difficult and complex. In some circumstances, the disruption of a new home, new parents and a new school can have a materially negative impact on a child's academic outcomes (Blome, 1997; Burley & Halpern, 2001). In other cases, an OHP may provide a more stable and nurturing environment that has the potential to contribute to positive academic outcomes for youth (Font & Maguire-Jack, 2013). Scholars have tried to isolate the impact of OHP on academic achievement, but many of the findings are inconclusive (Berger, Bruch, Johnson, James, & Rubin, 2009). In fact, Stone (2007) suggested that attempts to isolate the impact of a placement on academic achievement is difficult because the effects of maltreatment and placement are often confounded.

While the academic outcomes of maltreated youth have been heavily researched, the same research attention has not been devoted to understanding the academic outcomes of youth in OHP (Trout, Hagaman, Casey, Reid, & Epstein, 2008). Stone (2007) and Trout et al. (2008) conducted detailed reviews of the literature on the academic outcomes of youth in OHP. Despite the limited number of studies and significant methodological shortcomings described in their reviews, the evidence strongly suggests a negative relationship between involvement in OHP and academic outcomes (Stone, 2007; Trout et al., 2008).

While the relationship between OHP and poor academic achievement is strong (Blome, 1997; Burley & Halpern, 2001), multiple scholars have highlighted the co-occurrence of other academic risk factors such as race and poverty. A small portion of the OHP research has demonstrated a negative association between OHP and academic outcomes even after controlling for other demographic variables that may put youth at risk (Berzin, 2008; Blome, 1997; Buehler, Orme, Post, & Patterson, 2000). However, this research has not yet controlled for these co-occurring academic risk factors while comparing youth's academic achievement across the range of CPS involvement.

2.2.3. Magnitude and nature of academic deficit

There is little consensus on the magnitude of the academic deficit as it pertains to the extent of CPS involvement. Although strong associations between child maltreatment/OHP and poor educational outcomes have been demonstrated (Eckenrode et al., 1993; Kurtz et al., 1993; Leiter & Johnsen, 1994; Perez & Widom, 1994; Stone, 2007; Trout et al., 2008), these studies relied on different assessment metrics and tools, control variables, and study populations. This makes aggregation of the findings across studies difficult and contributes to an inability to summarize or aggregate the findings across studies. It is important to note that the inability to aggregate findings and summarize effect sizes does not invalidate or undermine the

importance of study-specific findings. However, the true nature of the academic deficit cannot be detailed without either an aggregation of study findings or the completion of a study which compares different populations using the same control variables and assessment metrics and tools.

In the maltreatment literature, scholars found consistent, statistically significant differences in academic achievement between maltreated youth and youth in the general population. Eckenrode et al. (1993) found unadjusted differences between maltreated and non-maltreated groups of youth of about 10 percentile points on the math and reading sections of the Iowa Test of Basic Skills. After adjusting for gender, age and public assistance status, the differences were 9.7 percentile points in math and 6.4 points in reading, both statistically significant findings. This difference suggested that maltreated youth were at least one-half grade level or more behind their nonmaltreated peers. Kurtz et al. (1993), however, found a much larger academic deficit than Eckenrode et al. (1993) after adjusting for socioeconomic status. In this study youth who experienced abuse or neglect scored nearly 20 percentile points lower than did their non-maltreated peers.

Scholars have conducted similar analyses in the OHP literature. Burley and Halpern's (2001) study of youth in the state of Washington found that youth in OHP scored 15 to 20 percentile points below youth who had not experienced OHP on achievement tests. After controlling for variables related to a youth's family and school background, the gap between foster and non-foster youth fell to seven to eight percentile points. Smithgall, Gladden, Howard, Goerge, and Courtney (2004) found similar results in that OHP youth scored 15.7 percentile points lower than the general population. In the model in which demographic variables were controlled, the gap between OHP youth and the general population fell to 7.5 percentile points. Based on the standard scale, a 7.5-point deficit implied that the OHP youth were more than one-half an academic year behind their peers after controlling for demographic and school factors. This research suggests youth in OHP achieved below grade level and performed in the low to low-average range on achievement tests (Burley & Halpern, 2001; Smithgall et al., 2004; Trout et al., 2008).

2.2.4. Limitations of existing body of research

While the existing body of literature on the academic functioning of CPS-involved youth provides useful summary findings, it also suffers from a number of important limitations. The limited quantity of OHP studies and the different methods used to analyze the phenomenon limit the generalizability of the findings (Trout et al., 2008). The different methods used to quantify academic deficits also prevents researchers from calculating an average effect size from prior studies. Further statistical challenges were evident as many of the studies reviewed had very small sample sizes. Reliance on small samples did not permit more complex multivariate analyses to be conducted (Fantuzzo & Perlman, 2007).

Any study of the academic performance of youth in CP/OHP must address co-occurring academic risk factors. Fantuzzo and Perlman (2007), Stone (2007), and Trout et al. (2008) criticized much of the OHP research for failing to control for other factors, such as race and socioeconomic status, which have been associated with academic outcomes. This shortcoming, specific to research on youth in OHP, is not evident in the research focused on general child protection involvement. Analysis of the academic achievement of youth in CPS must consider other conditions that may contribute to academic struggles. Stone (2007) highlighted the issue:

In short, a non-random set of factors (e.g., race, poverty status, maltreatment type and severity) select children into the child welfare system and into particular services and/or placements within the child welfare system. These pre-existing factors alone and/or the degree to which they interact with system entry and placement

characteristics may account for observed academic performance among these youth (p. 145).

2.3. Aims of the Current Study

This study was developed based upon the presupposition that understanding any potential achievement gap for youth in CPS deserves some of the attention and focus that has typically been reserved for discussions of racial and socioeconomic achievement gaps. Identifying this phenomenon as an achievement gap is important for two reasons. First, such a designation may help draw attention to this underappreciated problem given the extensive societal focus on achievement gaps. Second, professionals from multiple disciplines understand the nature and consequences of the achievement gap. An appreciation for the near and long-term consequences of achievement gaps may create a sense of urgency among those systems that serve youth in CPS. Given the damaging consequences of the achievement gap, the authors believe that this study will be relevant to a broad audience of practitioners, advocates, educators and policymakers.

The purpose of this quantitative study was to identify and quantify the CP/OHP achievement gap while addressing several of the limitations of previous research. Using child welfare and educational data, the authors compared the academic achievement of youth in both the CP and OHP populations to the academic achievement of youth who have not experienced CPS involvement. In order to understand any academic gaps associated with involvement in CP and/or OHP, this study utilized a large sample to conduct multivariate analysis and controlled for co-occurring academic risk factors including socioeconomic status and race. The study also sought to fill a gap in the literature by testing whether a relationship existed between academic performance and extent of CPS involvement. This research builds on studies that assessed the relationship between severity of maltreatment and academic outcomes (Boden et al., 2007; Coohy et al., 2011; Leiter & Johnsen, 1997). An assumption of this study was that OHP serves as a proxy for more severe maltreatment (Berger et al., 2009; Font & Maguire-Jack, 2013). Within the OHP literature, only one study that we found compared the achievement of youth in OHP to that of the general CP population. Smithgall et al. (2004) found that the performance of the OHP group was only modestly worse than the achievement of youth in the abuse/neglect cohort after controlling for school and demographic factors. The authors of this study analyzed the academic achievement of youth in CPS involvement, but did not attempt to isolate the effect of placement or maltreatment on outcomes. Rather, the authors recognized the complex array of factors that contribute to academic achievement.

3. Methods

3.1. Participants

This study relied on secondary data from the Minnesota Linking Information for Kids project (Minn-LInK) at the University of Minnesota. The Minn-LInK project uses statewide administrative data from multiple agencies, including the Minnesota Departments of Human Services (DHS) and Education (MDE), to answer questions about the impacts of policies, programs, and practice on the well-being of youth in Minnesota. For this study, the authors used data from DHS and MDE in accordance with data sharing agreements between Minn-LInK and these State agencies. Data-sharing agreements allowed for the use of identified data to conduct research on families and youth. The University of Minnesota's Institutional Review Board approved the use of this secondary data for these purposes, and researchers removed all identifiers from the data file once cross-system matching was achieved (de-identification).

The authors used the DHS Social Service Information System (SSIS) data to identify youth with a CP or OHP experience during or prior to the 2009–2010 academic year (defined as August 1, 2009 to July 1, 2010). The records for these youth were then matched to their corresponding MDE Minnesota Automated Reporting Student System (MARSS) and MDE Minnesota Comprehensive Assessment (MCA) records. The MARSS and MCA data provided demographic and academic information for all Minnesota youth in the 2009–2010 academic year (regardless of CPS involvement). The authors divided the participants into three mutually exclusive groups: General Population (GP), Child Protection without out-of-home placement (CP), and child protection with Out-of-Home Placement (OHP).

3.1.1. General population group

This group included all youth in grades K – 12 who attended public school in Minnesota during the 2009 – 2010 academic year and who did not appear in the CP or OHP groups described below (i.e., they did not have a history of CPS involvement). Because performance on standardized tests was a key outcome of interest, only those youth that took the MCA-II tests were included. The GP group included 395,967 youth who took the MCA-II math test and 410,491 who took the MCA-II reading test.

3.1.2. Child protection group

This group included youth from the 2009–2010 academic year who were involved in an accepted child protection investigation or assessment case in Minnesota during or prior to that academic year (prior CP involvement only includes cases from 2000–2009). Therefore, this group included youth with resolved and ongoing child protection cases. In the CP group, 6,562 youth took the MCA-II math test and 6,875 took the MCA-II reading test. Youth who were involved in CP that resulted in an OHP experience were excluded from this group and were included in the OHP group described below.

3.1.3. Out-of-home placement group

Any youth during the 2009–2010 academic year with a prior or current OHP was included in this group. While youth with OHP also have CP involvement, these youth were placed exclusively in the OHP group. Among youth in the OHP group, 2,009 took the MCA-II math test and 2,122 took the MCA-II reading test.

3.2. Data

Demographic information about the youth included in this study was drawn from the MDE MARSS data set and included an indicator of socioeconomic status (eligibility for free or reduced lunch) and race. Indicators of educational outcomes included proficiency on MCA-II reading and math statewide, standardized tests.

3.2.1. Socioeconomic status

The Economic Indicator is a demographic data point that resides in the MARSS student file that is used as a proxy for socioeconomic status. This variable has three status categories including those youth who are a) ineligible for free or reduced lunch, b) eligible for reduced lunch and c) eligible for free lunch. In this study, the authors reduced the MARSS categories to two groups. The "Ineligible" category included those youth that did not qualify for either a free or reduced price meal. The "Eligible" category included those youth that were eligible for either free or reduced priced meals. The "Ineligible" category served as the reference category in regression analysis.

3.2.2. Race/ethnicity

The MARSS student file provided five different race/ethnicity categories. These categories were: 1) American Indian or Alaskan Native, 2) Asian or Pacific Islander, 3) Hispanic, 4) Black, not of Hispanic Origin, and 5) White, not of Hispanic Origin. In the regression analysis, category

five (white), which included over 74% of all youth, served as the reference category.

3.2.3. Minnesota Comprehensive Assessment – II: youth proficiency levels

The Minnesota Comprehensive Assessments – Series II (MCA-II) are state tests that help school districts measure student achievement relative to state academic standards. All youth in third through eighth grades and tenth grade take the MCA-II reading test. Youth in third through eighth grades and eleventh grade take the MCA-II math test. The reading and math MCA-II assessments served as dependent variables in this study. Youth achievement on the MCA-II tests was indicated via standardized scores ranging from 0 to 99. Scores were coded as one of four categories in the data set: "Does Not Meet Standards" (0–24), "Partially Meets Standards" (25–49), "Meets Standards" (50–74), and "Exceeds Standards" (75–99). Scores of 50 and above (i.e., "Meets Standards" and "Exceeds Standards") were considered proficient and used in regression analyses.

3.3. Analysis

The authors conducted the statistical analysis using IBM SPSS Statistics, Version 22. Descriptive statistics were used to summarize the proportion of proficient youth in each demographic group and by CPS group. Binary logistic regression was used to assess the odds of a youth demonstrating proficiency on MCA-II math and reading tests based on key indicators of interest. This method allowed the authors to analyze odds ratios for youth in each group while controlling for socioeconomic status and race.

4. Results

4.1. Descriptive Analysis

The summary statistics from this data set provided evidence of an achievement gap within CPS. As shown in Table 1, the proportion of youth that were proficient on MCA-II math and reading tests was consistently lower in the CP and OHP populations than for the general population. Proficiency on math and reading tests decreased as the extent of involvement in CPS increased. While both the average scores for math and reading were in the "Meets Standards" category of proficiency for the general population (GP), the average scores for math and reading for the CP and OHP populations were in the "Partially Meets Standards" category of proficiency – indicating that youth with CPS involvement, on average, did not demonstrate proficiency. Youth in the CP group scored approximately 10 points below their non-CPS involved peers in math and reading, and youth with OHP experience scored 11–13 points below their non-CPS involved peers. Less than half of the youth with CPS involvement demonstrated proficiency on standardized tests of math and reading.

This phenomenon was also evident when comparing across socioeconomic status. Table 2 shows proficiency rates of youth in each of the three groups by eligibility for free or reduced lunch. In each category and across assessments, proficiency rates were highest in the general population, followed by the CP population, and then the OHP population. Youth who were eligible for free/reduced lunch but not involved in CPS scored approximately 10 points less on math and

Table 1
Math and reading proficiency by group.

	Math				Reading			
	n	% Proficient	Mean Score	SD	n	% Proficient	Mean Score	SD
GP	395,967	66.5	54.5	15.7	410,491	72.9	57.7	15.5
CP	6,562	41.2	44.7	15.6	6,875	48.4	48.2	15.2
OHP	2,009	34.1	41.8	16.4	2,112	43.3	46.5	15.1

Table 2
Math and reading proficiency by socioeconomic status and group.

	Math				Reading			
	n	% Proficient	Mean Score	SD	n	% Proficient	Mean Score	SD
<i>Ineligible for Free/Reduced Lunch</i>								
GP	268,750	74.5	57.6	14.7	270,038	82.1	61.3	14.4
CP	1,460	48.8	47.1	16.0	1,496	58.4	51.8	15.0
OHP	267	39.0	41.7	18.2	276	49.3	48.5	15.5
<i>Eligible for Free/Reduced Lunch</i>								
GP	127,217	49.5	47.8	15.7	140,453	55.2	50.7	15.1
CP	5,102	39.0	44.0	15.5	5,379	45.7	47.2	15.2
OHP	1,742	33.4	41.8	16.2	1,846	42.2	46.3	15.1

reading assessments than their peers who were ineligible for free/reduced lunch. Differences in average scores on math and reading assessments across groups were larger for youth who were ineligible for free/reduced lunch than youth who were eligible for free/reduced lunch in part because of the differences in scores for the general population by socioeconomic status. When ineligible for free/reduced lunch, youth in the CP group scored 9–11 points below their non-CPS involved peers in math and reading, and youth with OHP experience scored 12–16 points below their non-CPS involved peers. However when eligible for free/reduced lunch, youth in the CP group scored four points below their non-CPS involved peers in math and reading, and youth with OHP experience scored 5–6 points below their non-CPS involved peers.

The pattern also held (with minor exceptions) when assessing achievement by race. Table 3 displays proficiency rates of youth in each of the three groups by child race. Across assessments, proficiency rates were highest in the general population, followed by the CP population, and then the OHP population. Minor exceptions were seen in the Asian/Pacific Islander and Black/African American populations where proficiency rates for the CP and OHP groups were similar. In addition, achievement scores on standardized tests of math and reading for the American Indian/Alaskan Native, Hispanic, and Black/African American populations were 10–13 points lower than achievement scores for the White population.

Table 3
Math and reading proficiency by race/ethnicity and group.

	Math				Reading			
	n	% Proficient	Mean Score	SD	n	% Proficient	Mean Score	SD
<i>American Indian/Alaskan Native</i>								
GP	7,956	43.5	45.7	15.6	8,130	53.5	49.9	14.6
CP	608	35.5	42.0	15.4	608	43.4	46.7	13.6
OHP	206	28.2	41.8	14.4	232	37.9	45.2	13.9
<i>Asian/Pacific Islander</i>								
GP	22,367	65.8	54.8	16.7	26,424	61.2	54.0	16.4
CP	112	52.7	48.7	16.4	130	53.8	50.0	14.9
OHP	43	60.5	49.6	13.0	50	48.0	47.2	14.5
<i>Hispanic</i>								
GP	20,013	46.5	46.9	15.7	26,600	48.8	48.7	15.1
CP	448	30.1	42.4	14.2	568	38.0	44.2	14.8
OHP	129	25.6	39.7	14.8	160	35.0	43.6	14.9
<i>Black/African American</i>								
GP	34,459	32.3	43.1	16.5	37,659	47.7	48.0	15.4
CP	1,057	22.7	38.4	15.0	1,125	30.7	42.7	14.1
OHP	660	23.2	36.7	16.9	703	32.4	42.5	14.5
<i>White, Not Hispanic</i>								
GP	311,172	71.6	56.4	14.8	311,678	72.9	60.1	14.5
CP	4,337	47.3	46.8	15.4	4,444	48.4	50.3	15.3
OHP	971	42.8	45.2	15.9	977	43.3	50.3	15.1

Table 4
Math and reading proficiency by CPS involvement, adjusted by socioeconomic status and race (GP reference).

	Unadjusted		Adjusted ^a		Adjusted ^b	
	OR	95% C.I.	OR	95% C.I.	OR	95% C.I.
<i>Math</i>						
GP	1.000		1.000		1.000	
CP	0.353**	[.336, .371]	0.554**	[.526, .583]	0.555**	[.527, .585]
OHP	0.261**	[.238, .287]	0.449**	[.409, .493]	0.520**	[.472, .572]
Nagelkerke R Square	0.009		0.087		0.116	
<i>Reading</i>						
GP	1.000		1.000		1.000	
CP	0.349**	[.332, .366]	0.576**	[.548, .605]	0.541**	[.515, .569]
OHP	0.284**	[.260, .309]	0.52**	[.476, .568]	0.564**	[.516, .617]
Nagelkerke R Square	0.009		0.116		0.148	

Note. OR = odds ratio; C.I. = Confidence Interval; GP = General Population; CP = Child Protection; OHP = Out-of-Home Placement.

^a Adjusted for socioeconomic status. ^b Adjusted for socioeconomic status and race.

* p value < .05; ** p value < .01

4.2. Logistic Regression Analysis

Binary logistic regression was used to further assess whether evidence of a CPS achievement gap existed after controlling for socioeconomic status and race, and whether more extensive involvement in CPS produced increasingly poor academic outcomes. To answer the first research question, three logistic regression models were tested for each standardized assessment of achievement (i.e., math and reading) – a model comparing proficiency unadjusted for socioeconomic status and race, a model comparing proficiency adjusted for socioeconomic status and race, and a model comparing proficiency adjusted for socioeconomic status and race. Results of these analyses are presented in Table 4, with the General Population (or GP) serving as the reference group in each analysis for comparative purposes.

Statistically significant unadjusted odds of proficiency for youth in CP (odds ratio of .353 for math, $p < .01$; odds ratio of .349 for reading, $p < .01$) and OHP (odds ratio of .261 for math, $p < .01$; odds ratio of .284 for reading, $p < .01$) in comparison to the GP suggest a CPS achievement gap prior to adjusting for other demographic factors. (See Table 4.) Without adjusting for socioeconomic status or race, youth with CPS involvement were 2.8 times less likely than their non-CPS involved peers to demonstrate proficiency on standardized tests of math and 2.9 times less likely to demonstrate reading proficiency. Youth with OHP were 3.8 times less likely than their non-CPS involved peers to demonstrate proficiency on standardized tests of math and 3.5 times less likely to demonstrate reading proficiency.

Although the odds of demonstrating proficiency on standardized tests of math and reading increased for both the CP and OHP groups when controlling for socioeconomic status, significant differences between the CP and OHP groups and the GP group remained. (See Table 4.) Thus evidence of a CPS achievement gap continued to exist after controlling for differences in socioeconomic status. Youth with CPS involvement were 1.8 times less likely than their non-CPS involved peers to demonstrate proficiency on standardized tests of math and reading after adjusting for socioeconomic status. Youth with OHP were 2.2 times less likely than their non-CPS involved peers to demonstrate proficiency on standardized tests of math and 1.9 times less likely to demonstrate reading proficiency after controlling for socioeconomic status.

In a finding consistent with the model that controlled only for socioeconomic status, a demonstrable achievement gap existed for youth in CP and OHP when compared to GP after controlling for socioeconomic status and race. This finding held statistically for both math and reading. Youth with CPS involvement were 1.8 times less likely than their non-CPS involved peers to demonstrate proficiency

on standardized tests of math and 1.9 times less likely to demonstrate reading proficiency after adjusting for socioeconomic status and race. Youth with OHP were 1.8 times less likely than their non-CPS involved peers to demonstrate proficiency on standardized tests of math and reading after controlling for socioeconomic status and race.

While these analyses identified an achievement gap for youth in CP and OHP relative to the GP, it did not allow the authors to assess whether more extensive involvement in CPS produced increasingly negative academic outcomes. To answer this research question, three logistic regression models were tested for each standardized assessment of achievement (i.e., math and reading) – a model comparing proficiency unadjusted for socioeconomic status and race, a model comparing proficiency adjusted for socioeconomic status, and a model comparing proficiency adjusted for socioeconomic status and race. Results of these analyses are presented in Table 5, with the OHP group serving as the reference group in each analysis for comparative purposes. As can be seen in Table 5, a statistically significant achievement gap between the CP and OHP groups was found for standardized tests of math and reading in both the unadjusted model and the model adjusted for socioeconomic status. Youth in CP were 1.3 and 1.2 times more likely than youth with OHP to demonstrate proficiency in math and reading, respectively, in the unadjusted model. When controlling for socioeconomic status, youth in CP were 1.2 and 1.1 times more likely than youth with OHP to demonstrate proficiency in math and reading, respectively. However, these statistically significant differences disappeared when both socioeconomic status and race were controlled. Taken together these findings suggest that there was no evidence to support the hypothesis that more extensive involvement in CPS produced a larger achievement gap after controlling for differences in socioeconomic status and race.

5. Discussion

This study provides significant evidence of the presence of an achievement gap for youth involved in the child protection system (CPS). Youth in the CP group scored approximately 10 points below their non-CPS involved peers in math and reading, and youth with OHP experience scored 11–13 points below their non-CPS involved peers. In addition, less than half of the youth with CPS involvement demonstrated proficiency on standardized tests of math and reading. Even after controlling for socioeconomic status and race, the academic achievement of youth in CPS was significantly lower than for youth in the general population who had not experienced CPS involvement. Therefore, we can argue that independent risk factors associated with involvement in CPS create a unique and significant achievement gap. This finding is consistent with other maltreatment and OHP studies that found evidence of an achievement gap after controlling for socioeconomic status and race (Berzin, 2008; Blome, 1997; Buehler et al., 2000; Smithgall et al., 2004).

Youth involved in all levels of CPS, including OHP, demonstrate poor academic proficiency across both reading and math. An initial examination suggests that the more extensively a youth is involved in child protection (e.g., OHP) the lower the youth's academic achievement. However, in an effort to understand other contributing factors in the achievement of these youth, socioeconomic status and race were considered. Given the relatively similar socioeconomic status of youth in CP and OHP, controlling for socioeconomic status did not produce differential achievement results between groups. However, when race was included in the model, the differences in achievement at the two levels of CPS involvement (CP and OHP) disappeared. In other words, consideration of race removed the achievement differences between the CP and OHP groups. It appears that the racial disproportionality within CPS, and in OHP in particular, may be one factor accounting for the achievement gap that appeared between youth involved in CPS and those that experienced OHP in initial findings (both unadjusted and adjusted for socioeconomic status). The increasing achievement gap associated with more extensive involvement in CPS evident in analysis which does not control for race appears to be, at the least, a partial function of the racial disproportionality seen in Minnesota's child protection system, which is also evident across the United States (Drake et al., 2011; Fluke, Harden, Jenkins, & Ruehrdanz, 2011; Minnesota Department of Human Services, 2010). Differences in findings due to consideration of race may also be a function of the racial disproportionality that occurs within the school system, either as a function of disproportionality in disciplinary patterns or as a function of the fact that many of these youth attend low-performing schools with inexperienced teachers who are ill-equipped to address their unique needs (Cox, 2013; Gregory, Skiba, & Noguera, 2010; Zetlin, MacLeod, & Kimm, 2012).

While societies' problem of an academic achievement gap is often placed squarely in the laps of schools for intervention, educational institutions themselves cannot be the sole entity responsible for solving the disparities discussed throughout this paper. As previously mentioned, the aim of this study was not to determine a causal link between CPS involvement and poor academic achievement. Rather, conditions associated with CPS involvement (both school- and family-factors) are most likely at the root of the CPS achievement gap (Aikens & Barbarin, 2008; Condrón, 2009; Evans & Rosenbaum, 2008; Neuman & Celano, 2006; Reardon & Galindo, 2009; Wiggan, 2007). Prevention of child maltreatment through the establishment of informal safety nets may be the best method for addressing the achievement gap for future generations of youth.

However, for instances in which child maltreatment has already occurred, formal service systems may play a key role in intervention. A myriad of factors are involved in each of the 'gaps' identified in the literature and while there is no single system designed to address poverty or racial disparities, there is a system specifically charged with addressing maltreatment and its associated issues - CPS. Findings of

Table 5

Math and reading proficiency by CPS involvement, adjusted by socioeconomic status and race (OHP Reference).

	Unadjusted		Adjusted ^a		Adjusted ^b	
	OR	95% C.I.	OR	95% C.I.	OR	95% C.I.
Math						
OHP	1.000		1.000		1.000	
CP	1.351**	[1.217, 1.500]	1.233**	[1.108, 1.371]	1.069	[.959, 1.191]
GP	3.826**	[3.488, 4.196]	2.227**	[2.027, 2.448]	1.924**	[1.748, 2.119]
Nagelkerke R Square	0.009		0.087		0.116	
Reading						
OHP	1.000		1.000		1.000	
CP	1.229**	[1.114, 1.356]	1.108*	[1.002, 1.226]	0.959	[.866, 1.063]
GP	3.525**	[3.234, 3.842]	1.924**	[1.761, 2.102]	1.772**	[1.620, 1.939]
Nagelkerke R Square	0.009		0.116		0.148	

Note. OR = odds ratio; C.I. = Confidence Interval; OHP = Out-of-Home Placement; CP = Child Protection; GP = General Population.

^a Adjusted for socioeconomic status. ^b Adjusted for socioeconomic status and race.

* p value < .05; ** p value < .01

this study then suggest that the onset of formal CPS involvement affords professionals in both systems a critical opportunity for collaborative intervention. Such collaborative interventions and processes may unite disparate and taxed resources that together, can support reducing the achievement gap that affects these vulnerable youth.

5.1. Implications

The findings from this study have important implications for practice, policy, and research. From a practice and policy perspective, the fact that an achievement gap exists for CPS-involved youth but doesn't grow with more extensive CPS involvement (i.e., OHP) suggests a strong need for 1) policies that support collaboration, training and information sharing between CPS and school systems, and 2) assessment and intervention strategies that support academic achievement of youth involved in all stages of CPS, regardless of their OHP experience.

While federal legislation and other guidance (e.g., Fostering Connections Act of 2008, the 2010 reauthorization of CAPTA, Child and Family Service Reviews, Uninterrupted Scholars Act, etc.) provide CPS with direction for meeting the educational needs of youth in its care, individual jurisdictions have the responsibility for interpreting and carrying out practices which results in broad variation of the integration of youth's educational needs into child protection practices. Because of this, CPS cannot be leveraged in its current form to reduce academic achievement disparities; legislation which provides greater detail about the inclusion of education as a core component of assessment/investigation and service delivery protocols as well as allocation of funding resources is necessary. Although Fostering Connections legislation highlighted the need for school stability and connection, the legislation does not go far enough. The educational aspects of this legislation, like those in the accountability-oriented Child and Family Service Review (CFSR), is rooted in a child's experience of OHP. The findings of this study refute this timing; waiting for an OHP to occur is too late.

Likewise, federal education policies provide broad guidance for supporting the academic achievement of all youth, with some specificity for certain populations of youth (e.g., Title I, The Individuals with Disabilities Education Act [IDEA], Uninterrupted Scholars Act, etc.). Education systems have increased their capacity over time for including families and providing youth with fair, equitable and significant educational opportunities in order to obtain a high-quality education. These practices can be leveraged in a collaborative effort to provide an academic safety net for youth who are involved in both the education and child protection systems. Collaborative practices such as these have been promoted by researchers who seek to maximize the academic achievement of youth in OHP (Lawler, Sayfan, Goodman, Narr, & Cordon, 2014; Pecora, 2012; Villegas, Rosenthal, O'Brien, & Pecora, 2014). Child protection social workers (and foster parents, when appropriate) may be seen as partners and additional resource by education professionals in the engagement of parents in activities such as the planning for and provision of special education services (Individualized Education Plan [IEP] development), tutoring or additional support programs (21st Century grants for before and after school programming), as well as district-level parent engagement plans. In order for these collaborations to be successful, professionals in both the education and child protection systems need opportunities for cross-training and guidance for information sharing from their organizations.

This study also has implications for future research efforts. First, future studies should consider the relationship between academic performance and the timing of CP and OHP. This study suggests that the achievement gap exists early in the process of involvement in CPS. However, research has shown that CPS involvement is often not restricted to a one-time event (Fluke, Shusterman, Hollinshead, & Yuan, 2005). Future research should seek to understand how the timing and extent of CPS involvement factor into the achievement gap. Furthermore, future research should consider the relationship between

chronicity and severity of maltreatment, co-occurring family issues (e.g., parental substance abuse, mental health challenges, etc.), and academic achievement. Finally, scholars are all too often criticized for admiring the problem. Research that evaluates the effectiveness of interventions that are targeted toward youth in CPS are warranted if progress is to be made on ameliorating the achievement on a national scale.

5.2. Limitations

Though this study has many strengths, the authors acknowledge several methodological limitations of the study. First, this research relied exclusively on administrative data (from multiple state sources) which limits the types of information available for study. Administrative data can include incomplete information and have variation in data entry, however the indicators used in this study were relatively free from missing data and have been used in numerous other studies across disciplines. Additionally, many of these indicators are used by the Minnesota Departments of Education and Human Services for mandated reporting, thus assuring more confidence in data. For example, the study relied on two measures of academic achievement: the MCA-II math and reading standardized tests. While the authors have confidence in the validity of the MCA-II tests, other markers of academic achievement were not captured in this analysis.

Second, the CP and OHP groups included youth with current and/or previous CPS involvement. The study did not include a temporal variable to account for the time between a maltreatment event and the academic measurement. Nor did it account for other factors which may have an effect on youth's academic performance, such as the severity or chronicity of maltreatment, or co-occurring family issues. One important caveat to the sample was that the historical information on CPS involvement was limited to a nine year timeframe; thus, it is possible that some older youth in the GP group could have had a history of CPS involvement that went undetected. While this is a distinct possibility, the number of youth for whom this may have been an issue was an extremely small proportion of the overall sample.

Third, the study relied on free and reduced lunch as a proxy for socioeconomic status. Although the data used for this study preceded federal guidelines which direct the provision of free/reduced lunch to all youth in OHP, other comparable studies included multiple measures of socioeconomic status (a technique not employed in this study). Finally, the overall predictive ability of the models used in this analysis, as typical in social science research, was relatively low. This model incorporated three variables in order to predict academic outcomes: CPS involvement, socioeconomic status, and race. A more robust model with additional variables would be needed to predict academic achievement with greater precision.

In light of these limitations, the research evidence still stands that youth with CPS involvement are significantly less likely to demonstrate proficiency on standardized tests of reading and math. The troubling consequences of the achievement gap provides a dire warning to the people and institutions charged with the care and education of youth in CPS. The CPS achievement gap identified in this study is an additional barrier that these vulnerable youth must overcome as they transition to adulthood. Failure to address this gap will ensure that many of the youth in the child welfare system will not possess the basic skills needed to succeed in modern society.

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