

EDUCATIONAL OUTCOMES OF YOUTH IN CHILD PROTECTIVE SERVICES: A META-
ANALYTIC REVIEW

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A THESIS SUBMITTED TO
THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF ARTS

GRADUATE PROGRAM IN PSYCHOLOGY
YORK UNIVERSITY
TORONTO, ONTARIO

July 2016

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Abstract

According to recent literature reviews, youth in child protective services (CPS-youth) are at risk for poor educational attainment. Yet the percentages of CPS-youth completing secondary school and enrolling in a postsecondary school vary significantly between studies. Twenty studies were reviewed and meta-analyses conducted to determine these percentages averaged across the population of studies on CPS-youth and education, and also to determine moderator-effects explaining variability in the percentages. Across studies 72.8% of CPS-youth completed secondary school and 34.3% enrolled in a postsecondary school. Gender had the largest effect on educational attainment, with samples composed more of females having higher percentages of postsecondary enrolment. Meanwhile, samples of older participants had higher percentages of secondary school diplomas. Ethnicity had a small effect on educational attainment with samples composed less of Black-CPS youth having higher educational attainment percentages. Discussion centres on this pattern of findings and their implications and applications for research and policy.

Dedication

I would first like to thank God and dedicate this thesis to Him.

Col. 3:23 Whatever you do, work at it wholeheartedly as though you were doing it for the Lord and not merely for people.

Of course, there is no one in this world I would rather dedicate this thesis to, other than to my wife Amy Mintah, baby daughter Mila Mintah, and mother Gloria Mintah. Without your support and sacrifice I would not have been able to accomplish this work.

Acknowledgements

There is no one at York University I could thank more than my supervisor Dr. Jennifer A. Connolly. Without her leadership and support, and the opportunities she provided for me to learn, study, thrive and excel, I would not have been able to grow as a graduate student. She has challenged me to perform at my best and openly values the spirit of excellence. For this I am most appreciative.

I am equally thankful to my committee member Dr. Maxine G. Wintre. She reviewed drafts of my proposal and completed thesis. She made several key suggestions that improved this project and I could not have taken it to its final level of quality without her.

Dr. Maggie Toplak and Dr. Melody Wiseheart must also be thanked profusely for contributing to my defense process as chair, and outside member, respectively. I would also like to acknowledge Dr. Dave Flora for his contribution to the results section of this thesis. He brought his expertise forward in reviewing the results section and made sure they were presented clearly and accurately.

I could not have conducted this meta-analysis without the help of several talented undergraduate students. In alphabetical order they are Katherine Benvenuto, Sarah Ciantar, and Natasha Wortzman. They helped establish an index of interrater reliability in coding. Their time in spending two months coding studies and learning about the meta-analysis process, was most appreciated.

I must thank my laboratory mates as well for their examples and guidance: Melody Asghari, Kyla Baird, Valeriya Bravo, Massimo DiDomenico, Lauren Joly, and Katherine Wincentak. Their thoughtful suggestions, guidance, and support over the last two years has made me feel like part of the team and has given me direction for completing high quality research.

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Educational Outcomes of Youth in Child Protective Services:

A Meta-Analytic Review

Educational attainment is the means through which youth achieve social and economic independence (Baum, Ma, & Payea, 2013). In addition to earning higher incomes, youth with secondary and postsecondary education are less dependent on public assistance, and are more likely to vote and volunteer than other youth (Baum et al., 2013, pp. 26-32). Unfortunately, literature reviews find poor rates of secondary school completion and postsecondary school enrolment among youth in child protective services (CPS; see Gharabaghi, 2011; Murray & Goddard, 2014; Snow, 2009). CPS-youth are by definition children who have been neglected or emotionally, physically, or sexually abused by caregivers; and placed into foster care, institutional group homes, or residential care (Gharabaghi, 2011). Authors are not only interested in researching the educational attainment rates of these youth, but also variables or moderators that can explain variability in these rates.

While U.S. census data shows that 87% of youth in the general population attain their secondary school education (U.S. Census Bureau, 2014), the latest systematic review on the educational attainment of CPS-youth reports that anywhere from 20%-72% of CPS-youth attain the same (Snow, 2009). Moreover, while the U.S. Census Bureau reports that 58% of general-population youth will enrol in a postsecondary school (U.S. Census Bureau, 2014), the enrolment percentage among CPS-youth only ranges from 30%-53% (Snow, 2009). Similarly, a study conducted across countries in Europe finds relatively low educational attainment rates among CPS-youth, with secondary school completion percentages between 13% and 32% and postsecondary enrolment percentages between 5% and 12% (Jackson & Cameron, 2012). In either setting, ranges of CPS-youths' educational attainment percentages fall below

corresponding rates of general population youth. However, the rates also vary to the extent of suggesting the presence of moderators that can explain such variability.

For CPS agencies to increase CPS youths' prospects for educational attainment, they require baseline rates of educational attainment to inform policy decisions (Dunkoh, Underhill, & Montgomery, 2006) and knowledge of moderators likely to affect those rates. Unfortunately, no review has employed quantitative meta-analysis to calculate CPS-youths' educational attainment prevalence rates, or used moderator analyses to account for their variability. The goal of this project was to extend prior reviews by conducting a meta-analysis to calculate CPS-youths' secondary school completion and postsecondary school enrolment prevalence rates, and to assess the impact of demographic, mental health, and sample/methodological moderators on those rates.

There are advantages and disadvantages to conducting a meta-analysis. Relative to primary research studies, meta-analysis can increase the generalizability of study findings and it can also reduce the impact of unwanted methodological, design, and power issues plaguing the individual studies (Card, 2012). Moreover, when sampled studies vary in demographic, methodological, and other characteristics and in the statistic of interest, moderator analyses can be used to determine the impact of those characteristics on the statistic of interest.

Notwithstanding, the main disadvantage of conducting a meta-analysis is that they require the inclusion of a minimum number of studies before any given analysis can be performed (Card, 2012). When too few studies are available for an analysis, other types of research review and synthesis techniques are needed. For example, when too few studies are available for a particular analysis, a narrative analysis of those few studies can be appropriate.

Educational Attainment of General-Population Youth

Given the benefits of education to both individuals and to society, rates of secondary school completion and postsecondary school enrolment have become areas of extensive research (Baum et al., 2013). For researchers, the definition of secondary school completion is obtaining a secondary school diploma, or general education development (G.E.D.), (Baum & Ma, 2007, p. 46). The G.E.D. is the main equivalent of the secondary school diploma in the U.S.A. and in Canada. Consisting of four subject tests, when one passes the G.E.D. exams they are considered to have achieved the same level of knowledge and skills as graduates with secondary school diplomas (Heckman & Lafontaine, 2010). The definition of postsecondary school enrolment is enrolment in either a 4-year college/university, 2-year community college/university, or technical training/vocational school (Baum & Ma, 2007, p. 40). Among 87% of general-population youth who complete their secondary school education (U.S. Census Bureau, 2014), 78% graduate from secondary school with a diploma and the remaining 22% obtain their G.E.D. (Heckman & Lafontaine, 2010). Among the 58% of general-population youth enrolling in a postsecondary school (U.S. Census Bureau, 2014), 64% of them enrol in 4-year colleges/universities, 34% enrol in 2-year community colleges/universities or technical training/vocational schools, and 2% enrol in other programs lasting less than two years (Ginder & Kelly-Reid, 2013). In addition to the reporting of educational attainment rates, variables or moderators affecting those rates have also been the focus of extensive research.

A range of moderators may account for variation in educational attainment rates including socioeconomic status, geographic location, demographic variables, and mental health problems. Demographic variables such as gender, ethnicity, and age, in addition to mental health problems, are among the most well-researched (Baum et al., 2013; Blanco et al., 2008; Hunt &

Eisenberg, 2010; Melkevik, Nilsen, Evensen, Reneflot, & Mykletun, 2016). In regards to gender, U.S. census data shows slight advantages among women in educational attainment. Specifically, in 2014, 88% of women but only 86% of men aged 18 and over, had completed secondary school. Meanwhile, 60% of women, but only 56% of men had ever enrolled in a postsecondary school (U.S. Census Bureau, 2014). Ethnicity is also associated with educational attainment. In 2014, 91% of White Americans, but only 86% of Black Americans aged 18 and over completed secondary school. Meanwhile, 62% of White Americans, but only 52% of Black Americans aged 18 and over had ever enrolled in a postsecondary school (U.S. Census Bureau, 2014). Finally, more youth in the general population complete secondary school and enrol in a postsecondary school, with age. In 2014, 84% of American youth aged 18-29 had completed secondary school compared to 88% of individuals aged 30 years and older. The corresponding figures for postsecondary school enrolment are 57% for Americans aged 18-29, and 58% for Americans aged 30 years and older (U.S. Census Bureau, 2014). In addition to demographic variables, the presence of mental health problems can significantly impact educational attainment. A recent systematic review found that internalizing and externalizing psychiatric disorders positively predicted dropping out of secondary school (Melkevik et al., 2016). These moderators significantly impact educational attainment in the general population and may also account for significant variation in educational attainment rates among CPS-youth.

Educational Attainment Among CPS-Youth

Among reviews of the educational attainment of CPS-youth, Snow's (2009) systematic narrative review was exceptional. It included an explicit and systematic methodology for including studies. From her review of studies on CPS-youths' educational attainment, Snow (2009) concluded that they had low secondary school graduation rates. Specifically, she reported

secondary school completion percentages between 20% (English, Kouidou-Giles, & Plocke, 1994) and 84.8% (Pecora et al., 2006a). Similarly, in regards to postsecondary education, Snow (2009) concluded that CPS-youth lagged behind general-population youth with postsecondary school enrolment percentages between 30% (Courtney, Dworsky, & Pollack, 2007; Kufeldt, 2003) and 50% (Pecora et al., 2006b). A key limitation of Snow's (2009) review, however, was that it did not report a quantitative summary of its findings, failing to determine the overall mean percentages across studies of CPS-youth who completed secondary school, or who enrolled in a postsecondary school. It also did not address the variability in educational attainment rates across the literature, and therefore did not quantitatively assess the impact of moderators on educational attainment among CPS-youth.

Moreover, following Snow's (2009) article, 109 new studies have been published on the educational attainment percentages of CPS-youth. The increased number of studies provides further rationale to conduct another up to date systematic review including a quantitative meta-analysis.

Educational Attainment Variation Explained by Gender Gap in Educational Expectations

Educational attainment varies according to gender in the general-population and among CPS-youth (Baum & Ma, 2007; Baum et al., 2013; Kirk, Lewis, Brown, Nilsen, & Colvin, 2012). Kirk, Lewis, Brown, Nilsen, and Colvin (2012) theorized that among CPS-youth, a greater development of positive educational self-expectations among girls in CPS promotes their greater future educational attainment over men. Beginning in grade school, girls pay more attention in class, work better with others, and are better organizers of class materials than boys (Jacob, 2002). Boys on the other hand are more likely to dislike school, contributing to their educational lag behind girls (Jacob, 2002; Kirk et al., 2012). Kirk et al. (2012) also noted how

over time societal norms have changed to encourage more girls and women to pursue educational attainment (Goldin, Katz, & Kuziemko, 2006) and that women stand to gain more in completing higher levels of education (Becker, Hubbard, & Murphy, 2010; Christofides, Hoy, & Yang, 2008; Frenette & Zeman, 2007). These factors have combined to create the development of a greater positive educational self-expectation among women that translates into their higher levels of educational attainment.

Research supports Kirk et al.'s (2012) perspective. One study showed that girls in residential care had higher GPAs and less referrals for school changes than did boys in residential care (Griffith et al., 2009). CPS-involved female youth have also empirically demonstrated higher educational self-expectations and aspirations than men (Flynn & Tessier, 2011; Kirk et al., 2012; Marjoribanks, 2002; Yowell, 2000). In particular, Kirk et al. (2012) found that CPS-involved women were 2.3 times more likely to aspire to a Bachelor's degree and 2.7 times more likely to aspire to a graduate degree than CPS-involved men. Research also confirms that CPS-involved women experience greater achievements in secondary and postsecondary education than men (Benedict, Zuravin, & Stallings, 1996; Havalchak, White, O'Brien, Pecora, & Sepulveda, 2009; Kirk et al., 2012). The current project explored the extent to which variations in a sample's percentage of CPS-involved women impact educational attainment, and to what extent any association can be explained by educational self-expectations.

Demographic and Mental Health Moderators of Educational Attainment

In addition to gender, studies across the CPS-youth literature commonly report data on ethnicity and age; as well as on mental health problems. This provides the opportunity to determine whether these variables account for variation in CPS-youths' educational outcomes.

Ethnicity. In studies of the general-population, youth of ethnic minority status (e.g., Black, Hispanic, Native-American, Asian/Pacific Islander, or other minorities) often lag in educational attainment. Among these youth of ethnic minority status Black CPS-youth have been the most frequently compared against White CPS-youth (Baum & Ma, 2007; Baum et al., 2013; Day, Dworsky, & Feng, 2013). In contrast to studies of youth in the general population, most studies on CPS-youth and educational attainment find no significant differences in educational attainment between different ethnicities, including between Black and White CPS-youth (Day, Dworsky, Fogarty, & Damashek, 2011; Garcia, Pecora, Harachi, & Aisenberg, 2012; Harris, Jackson, O'Brien, & Pecora, 2009; Mersky & Topitzes, 2010).

Moreover, in contrast to youth in the general population, one study reported higher educational attainment among Black CPS-youth than white CPS-youth (Dworsky et al., 2010). Although this study concluded that differences in educational attainment between ethnicities are small or unreliable, they found in their Northwest sample of 479 participants that relative to non-Hispanic White CPS-youth, a significantly higher percentage of African-American CPS-youth possessed a high school diploma or G.E.D., any postsecondary education or training, or any college experience. This remained true after controlling for demographics, family background, and placement history (Dworsky et al., 2010).

While individual studies suggest that an educational advantage among White CPS-youth relative to Black CPS-youth will not be found in the CPS population, it is possible that some kind of effect may be found after pooling the studies in a meta-analysis. This is because a meta-analysis has the advantage of increasing the power to detect small differences not perceptible among primary studies (Card, 2012). The current meta-analysis was useful for determining how, and to what extent, ethnicity impacts educational attainment among CPS-youth across studies.

Age. Variation in the mean age of a sample may also account for differences in the educational attainment rates of CPS-youth. However, the effect of age on the educational attainment of CPS-youth may be confounded with the benefits of spending additional years in care. Like in the general population, CPS-youth are more likely to attain higher levels of education as they get older (Benedict et al., 1996; Flynn & Tessier, 2011). Flynn and Tessier (2011) assumed this is so because older CPS-youth have simply had more time to complete higher levels of education. While this represents one mechanism through which age might positively predict educational attainment among CPS-youth, Villegas, Rosenthal, O'Brien, and Pecora (2014) found that higher age was associated with educational attainment through youth spending longer time in care. Time spent in care is associated with more time devoted to growth and development and therefore educational attainment (Dworsky et al., 2010; Ringle, Ingram, & Thompson, 2010). Either explanation or both could account for any positive association between age and educational attainment.

Mental health. Mental health problems are a highly reported risk factor for poor educational attainment among CPS-youth (Cashmore & Paxman, 1996, pp. 149-150; Evans, Scott, & Schultz, 2004; Flynn & Tessier, 2011; Gharabaghi, 2011; Lee & Berrick, 2014; McIlhaney, Henderson, Gunn, & Wasser, 2008; McMillen & Tucker, 1999; Saunders & Broad, 1997; Snow, 2009, p. 302, 303; Stein, 2006). Research shows that CPS-youth are more likely than general-population youth to experience emotional disorders including depression and anxiety, and behavioural disorders including hyperactivity, inattention, conduct disorders, and physical aggression (Flynn & Biro, 1998). Researchers also report that CPS-youth experience more intellectual and cognitive impairments than general-population youth (Flynn & Tessier, 2011; Kortenkamp & Ehrle, 2002). Emotional and behavioural problems, intellectual and

cognitive impairments, and other psychiatric placements, interfere with the ability to pay attention and process information in school and have been directly associated with reduced secondary school completion and postsecondary school enrolment among CPS-youth (Benedict et al., 1996; Flynn & Tessier, 2011; McMillen & Tucker, 1999). It is possible that studies more composed of participants with mental health problems are more likely to report decreased educational attainment than studies less composed of participants with mental health problems. In the present project, mental health problems are defined as currently having any diagnoses of psychiatric disorders, or as currently receiving mental health services.

Sample and Methodological Characteristics

In addition to demographic and mental health moderators, sample and methodological characteristics vary between studies. For instance, when studies report on the educational attainment of CPS-youth, there exists variations in the type of CPS-care. Less restrictive types of CPS-care (e.g., family foster care) are associated with higher enrolment in postsecondary schools than more restrictive types of care (e.g., group homes, residential institutions, or psychiatric facilities; Mech & Fung, 1999; Vinnerljung & Hjern, 2011).

Educational attainment percentages may also depend on the type of secondary school completion, or postsecondary school enrolment outcome being examined. When compared to general-population youth, a larger proportion of CPS-youth obtain a G.E.D. than a secondary school diploma, although obtaining a diploma is more common in both populations (Dworksy et al., 2010; Havalchak et al., 2009). In regards to postsecondary school enrolment, CPS-youth are more likely to enrol in 2-year community colleges/universities and technical training/vocational schools than 4-year colleges/universities (Jones, 2008; 2010; Jackson & Cameron, 2012;

Merdinger, Hines, Osterling, & Wyatt, 2005). Using alternate outcome variables when conducting a meta-analysis can yield different results.

Not only may the educational attainment percentages depend on the type of educational attainment outcome used, but so may the effects of the gender, demographic, and mental health moderators on educational attainment. Therefore, after the initial analyses, the calculation of the prevalence rates, as well as the moderator analyses, were repeated using variations of secondary school completion (i.e., secondary school diploma, G.E.D.) and postsecondary enrolment (i.e., 4-year college/university, 2-year community college/university, technical training/vocational school) as outcome variables.

Research Goals

The research goal was to conduct a meta-analysis to:

1. Calculate the educational attainment prevalence rates of CPS-youth, in terms of:
 - a. Completing secondary school.
 - b. Enrolling in a postsecondary school.
2. Conduct moderator analyses to determine the roles of gender and self-expectations, ethnicity, age and time spent in care, mental health problems, and type of CPS-care, on the overall percentages of CPS-youth completing secondary school, and enrolling in a postsecondary school, respectively.
3. Determine when rates and the effects of the moderators depend on the type of educational attainment outcome used (i.e., secondary diploma versus G.E.D.; or 4-year college/university versus 2-year community college/university versus technical training/vocational school).

Method

Selection of Studies

An exhaustive three-step search was conducted for relevant articles using the PsycINFO, ERIC, Sociological Abstracts, Social Services Abstracts, CBCA Education, and Australian Education Index databases. Search terms synonymous with CPS-care (e.g., foster care, child welfare, see Appendix A) were crossed with terms synonymous with emancipation from CPS-care (e.g., alumni, age-out, transition; see Appendix A) in the first step, secondary school in the second step (see Appendix B), and postsecondary school in the third step (see Appendix C).

Inclusion/exclusion criteria applied to the results were that the study: 1. had to be a quantitative empirical study; 2. could not be a program evaluation/case-study; 3. had to be published in English; 4. had to include percentages of the secondary school completion or postsecondary school enrolment rates of CPS-youth specifically as outcome measures; 5. samples could not be fully comprised of disabled/incarcerated/refugee participants; 6. had to contain secondary school completion or postsecondary school enrolment outcomes measured when participants were at least 19 years of age; and 7. could not be suspected to have data duplicated from other included studies with smaller sample sizes. This last criterion ensured that the same data were not analysed twice (Russo, 2007) while ensuring the largest possible amount of included data. The number of studies resulting from the searches, published between 1903 and 2015, was 5942. After applying the inclusion/exclusion criteria, the final set of studies numbered 20 studies. This included 19 studies reporting secondary school completion data, and 12 studies reporting postsecondary school enrolment data (see Figure 1 for selection process of articles).

Coding of studies. Each study was coded for educational attainment as the percentage of the sample that had completed secondary school and that had enrolled in a postsecondary school,

respectively. Studies were also coded for information on: (a) gender, as the percentage of the sample being female; (b) self-expectations, as the percentage of the sample having positive educational self-expectations; (c) ethnicity, as the percentages of the sample being Black and White, respectively; (d) age, as the mean age of the sample in years; (e) time spent in care, as the sample's mean years spent in care; (f) mental health problems as the percentage of the sample experiencing mental health problems or receiving mental health services; (g) type of CPS-care, as the percentage of the sample with family foster care histories (as opposed to group home, residential institutions, or psychiatric facility histories); (h) secondary school completion type, as the percentages of the sample with secondary school diplomas and G.E.D.s, respectively; and (i) postsecondary school type, as the percentages of the sample that had enrolled in a 4-year college/university, 2-year community college/university, and technical training/vocational school, respectively. See Table 1 for these study details.

Inter-rater and intra-rater reliability. Using a coding manual developed specifically for this project (see Appendix D) three research assistants double-coded the articles and confirmed the coding of the studies reaching a final inter-rater agreement rate of 92.4%. The researcher also recoded the articles, four months after an initial coding reaching an intra-rater agreement rate of 89.1%. Averaging these inter-rater and intra-rater agreement rates, a 90.7% overall agreement was achieved. Inconsistencies were resolved through discussion.

Results

Analytic Strategy

In addition to calculating the prevalence rates of secondary school completion and postsecondary school enrolment among CPS-youth, moderator analyses were used to determine the impact of the gender, demographic, and sample/methodological moderators on those rates.

When there were fewer than five studies reporting data for all three of the moderator, covariate, and outcome variable in any given analysis, a narrative analysis of the studies' results is presented instead. This applied only to analyses using the two main outcome variables: secondary school completion and postsecondary enrolment. The effects of type of secondary school completion and of type of postsecondary school were assessed by repeating the calculation of the prevalence rates, and also the moderator analyses, only replacing secondary school completion and postsecondary enrolment with the various types of secondary school completion (i.e., diploma or G.E.D.) and postsecondary school (i.e., 4-year college/university, 2-year community college/university, or technical training/vocational school), respectively. Finally, some studies meeting inclusion/exclusion criteria were postsecondary studies recruiting participants from colleges or universities or from a population of individuals with postsecondary experience. Including these studies ran the risk of inflating the educational attainment prevalence rates, but were retained as long as their inclusion did not significantly alter the results.

Prevalence Rates of Educational Attainment

To calculate the prevalence rates of secondary school completion and postsecondary school enrolment among CPS-youth, percentage data were first transformed into proportions, and then into logits by Comprehensive Meta-Analysis Software 3.0 (CMA). Transformation into logits allowed the data to follow a normal distribution which is necessary for estimating mean overall percentages of educational attainment (Lipsey & Wilson, 2001, p. 39). The logits were then transformed back into proportions by the software, then into percentages by the researcher for interpretation. The random effects model was used as it assumes there is a distribution of

possible mean educational attainment percentages, of which the variability can be accounted for by moderators. This model was therefore the context needed to conduct moderator analyses.

Of 20 studies, there were 19 (95%) reporting CPS-youths' secondary school completion percentages, and 12 (60%) reporting postsecondary school enrolment percentages. Eleven (55%) of these studies overlapped including two (10%) with samples from postsecondary populations. When excluding postsecondary population studies (which would produce secondary school completion and postsecondary school enrolment rates of 100%), secondary school completion percentages ranged from 6% (Dumaret, 1988) to 90% (McKenzie, 2003; Ringle et al., 2010) and postsecondary school enrolment percentages ranged from 3.9% (Mersky & Topitzes, 2010) to 45% (Blome, 1997).

With the postsecondary population studies excluded the overall mean percentage of secondary school completion across studies was 68.5% (95% C.I. [58.3%, 77.2%]) and the mean percentage of postsecondary school enrolment was 26.3% (95% C.I. [17.8%, 36.9%]). With the postsecondary population studies included, the corresponding percentages rose to 72.8% (95% C.I. [63.3%, 80.5%]) and 34.3% (95% C.I. [23.9%, 46.5%]). Because these latter percentages stayed within the 95% confidence intervals of when the studies were excluded, the postsecondary population studies were retained in all the analyses.

Prevalence rates were also calculated for the secondary school diploma and G.E.D. completion; as well as for the 4-year college/university, 2-year community college/university, and technical training/vocational school enrolment rates. Across studies, the mean percentage of obtaining a secondary school diploma was 60.1% (95% C.I. [41.1%, 76.5%]), and of completing a G.E.D. was 17.7% (95% C.I. [15.0%, 20.8%]). Meanwhile, the percentage of CPS-youth enrolling in a 4-year college/university was 28.7% (95% C.I. [7.2%, 67.4%]), 2-year community

college/university 11.7% (95% C.I. [5.0%, 25.1%]), and technical training/vocational school 2.4% (95% C.I. [0.5%, 11.5%]).

In regards to the main secondary school completion and postsecondary school enrolment percentages, significant variability existed. Among secondary school percentages the Q-statistic was 2538.2 ($p < .001$) and among postsecondary school enrolment percentages, the Q-statistic was 517.7, ($p < .001$). Significant variation in these rates warranted moderator analyses.

Moderator Analyses

Gender and positive educational self-expectations. Gender was assessed as a moderator with fifteen studies (75%) reporting on the gender of their participants. Specifically, the percentages of women comprising the study samples ranged from 9.5% (Ringle et al., 2010) to 73.9% (Salazar, 2013). In order to test the effect of gender on the educational attainment variables, respective regressions of secondary school completion and postsecondary school enrolment percentages on female percentage were conducted. There was no significant effect of gender on secondary school completion ($B = 0.0032$, $p = 0.89$). However, there was a relatively large statistically significant positive effect of female percentage on postsecondary school enrolment ($B = 0.32$, 95% C.I. [0.18, 0.47], $p < .0001$).

Positive educational self-expectations. Positive educational self-expectations were not able to be assessed as a covariate. Only one study reported data on all three variables: gender, positive educational self-expectations, and either secondary school completion, or postsecondary school enrolment. For that reason, these studies are described narratively. The three studies defined positive educational self-expectations as wanting to enrol in or complete college/university (Blome, 1997; Courtney, Piliavin, Grogan-Kaylor, & Nesmith, 2001; Jones, 2010) and ranged from 35% (expecting to receive a Bachelor's or Master's degree, Blome, 1997)

to 80% (wanting to attend college, Jones, 2010). More CPS-youth aspired to attend college/university or obtain advanced degrees (35%-80%, Blome, 1997; Jones, 2010) than attend vocational or technical training schools (12%-19%, Blome, 1997; Jones, 2010). Unfortunately, none of the studies presented percentages of educational attainment cross-tabulated by percentages of participants with positive educational self-expectations.

Demographic moderators. *Ethnicity.* In regards to ethnicity, there were 12 studies (60%) reporting data on the percentages of Black participants and 11 studies (55%) reporting data on the percentages of White participants. Ten of these studies overlapped (50%). Percentages of Black participants ranged from 0.8% (McKenzie, 2003) to 93.1% (Mersky & Topitzes, 2010). Meanwhile, percentages of White participants ranged from 22.6% (Jones, 2010) to 97.4% (McKenzie, 2003). Samples more composed of Black CPS-youth had lower percentages of secondary school completion ($B = -0.017$, 95% C.I. $[-0.027, -0.0076]$, $p < .0005$). Percentage of Black CPS-youth also significantly and negatively predicted postsecondary school enrolment ($B = -0.043$, 95% C.I. $[-0.074, -0.012]$, $p < .01$). In contrast to percentage of Black CPS-youth, the effect of percentage of White CPS-youth on secondary school completion was positive and only marginally significant ($B = 0.018$, $p = 0.11$), and there was no statistically significant effect on postsecondary school enrolment ($B = -0.019$, $p = 0.51$). Note that the magnitudes and significances of the effects between Black and White CPS-youth were similar but not identical. This was because although samples overwhelmingly and predominantly included data from only Black and White CPS-youth, there were some minor amounts of data from other minority ethnicities as well making the Black percentages not perfectly negatively correlated with White percentages.

Age and time spent in care. Seven cross-sectional studies (35%) reported the mean ages of their participants, which ranged from 23 years (Benedict et al., 1996) to 68.3 years (McKenzie, 2003). Meanwhile, eight more longitudinal studies (40%), making a total of 15 studies (75%), reported the age ranges of their participant cohorts. The ages of the participants in these longitudinal studies were taken during the last wave of interviews, or during the wave where educational outcomes were assessed. These ranged from 18.3 years (Jones, 2010) to 32.9 years (Ringle et al., 2010). There was a marginally significant positive effect of age (i.e., for older students) on secondary school completion, ($B = 0.039$, $p = 0.057$), which became non-significant after controlling for time spent in care ($B = 0.18$, $p = 0.43$). There was a non-significant effect of age on postsecondary school enrolment ($B = 0.10$, $p = 0.21$) and there were too few studies to assess these effects while controlling for time spent in care.

Only three studies reported on all three variables: age, time spent in care, and postsecondary school enrolment. Given that there were these too few studies to quantitatively assess time spent in care as a covariate in the postsecondary school enrolment context, this variable is reviewed narratively. Five studies (20%) reporting the time that CPS-youth spent in care (Courtney et al., 2001; McKenzie, 2003; Pecora et al, 2006b; Ringle et al., 2010; Salazar, 2013) reported that CPS-youth spent from two (Ringle et al., 2010) to 8.7 years (Salazar, 2013) in care. Pecora et al. (2006b) reported that increased time in group care by one year led to a 1.3 times greater odds of completing secondary school, and five more years in this context led to a 3.4 times greater odds of completing secondary school. Ringle, Ingram, and Thompson (2010) concurred, finding that longer lengths of stay were positively associated with obtaining a secondary school education.

Mental health problems. Definitions of mental health problems varied across the studies. Five studies (25%) reported on psychiatric diagnoses (Courtney & Dworsky, 2006; Dworsky et al., 2010; Garcia et al., 2012; Pecora et al., 2006b; Salazar, 2013), two (10%) on receiving mental health services (Courtney et al., 2001; Mares, 2010), and one each on aggression (5%; Ringle et al., 2010), depressive symptoms (5%; Mersky & Topitzes, 2010), and general mental health problems (5%; Benedict et al., 1996). Among all these, mental health problem percentages ranged from 21% (Courtney et al., 2001) to 72% (Ringle et al., 2010).

A sample's percentage of CPS-youth with mental health problems was assessed for its impact on secondary school completion or postsecondary school enrolment. There were no statistically significant effects of mental health problems on secondary school completion ($B = -0.0040, p = 0.80$), or on postsecondary school enrolment ($B = -0.0016, p = 0.9326$). These results failed to suggest any effect of mental health on educational attainment.

Sample/Methodological Characteristics

Type of CPS-care. Eleven studies (55%) reported the percentages of participants from a family foster care background as opposed to the more restrictive group or residential care backgrounds. The percentages of youth coming from foster care backgrounds ranged from 0% (Jones, 2010; McKenzie, 2003) to 100% (Blome, 1997; Dumaret, 1988; Dworsky et al., 2010; Garcia et al., 2012; Mares, 2010; Pecora et al., 2006b). There was no statistically significant effect of family foster care on secondary school completion ($B = -0.0084, p = 0.31$). There was a marginally significant positive effect of family foster care percentage on postsecondary enrolment percentage ($B = 0.0066, p = 0.10$).

Types of secondary school completion and postsecondary school. Six studies reporting secondary school completion percentages specifically reported secondary school

diploma percentages, and four of these also specifically reported G.E.D. percentages. None of the thirteen remaining reports of secondary school completion percentages distinguished between obtaining a secondary school diploma and G.E.D.

Five studies reporting on postsecondary enrolment percentages specifically reported percentages for 4-year colleges/universities. Three studies overlapping with these reported 2-year community college/university enrolment percentages. Finally, these same three studies also reported on technical training/vocational school enrolment percentages. The seven remaining studies reporting postsecondary school enrolment percentages did not distinguish between these three types of postsecondary schools.

When using secondary school diploma as the outcome variable, there were no significant effects of gender ($B = 0.14, p = 0.70$), mental health problems ($B = 0.025, p = 0.36$), or family foster care history ($B = -0.0096, p = 0.19$) on secondary school completion. However, there was a significant negative effect of percentage of Black CPS-youth ($B = -0.025, 95\% \text{ C.I. } [-0.047, -0.0023], p < 0.05$), and a significant positive effect of mean age ($B = 0.050, 95\% \text{ C.I. } [0.023, 0.080], p < 0.0005$) on obtaining a secondary school diploma.

When using G.E.D. as the outcome variable, there were no significant effects of mean age ($B = 0.049, p = 0.19$), nor of percent with mental health problems ($B = 0.024, p = 0.079$) on obtaining the G.E.D. Due to too few studies, other variables were not able to be assessed.

In regards to enrolment in a 4-year college/university, there were no significant effects of percentage of female CPS youth ($B = 0.31, p = 0.14$), or of mean age ($B = 0.13, p = 0.65$). However, there was a significant negative effect of percentage of Black CPS-youth ($B = -0.10, 95\% \text{ C.I. } [-0.18, -0.014], p < 0.05$) on 4-year college/university enrolment. There were too few studies to assess other effects, including demographic, mental health problem, or

sample/methodological variable effects on percentages enrolled in 2-year community colleges/universities or technical training/vocational schools. See Tables 2-6 for summaries of the results of the moderator analyses.

Discussion

Employing meta-analytic techniques this study provides quantitative evidence of the educational outcomes of CPS-youth. The overall percentage of CPS-youth completing secondary school across studies was 72.8%, and the overall percentage of their postsecondary school enrolment was 34.3%. These figures are relatively low when compared to those for general-population youth for whom 87% complete secondary school and 58% enroll in a postsecondary school (U.S. Census Bureau, 2014). These figures are also to be compared with those from other reviews of CPS-youth.

Although Snow (2009) concluded in her review that CPS-youths' secondary school graduation rates were low, in actuality the secondary school completion rates reported in the studies she reviewed were highly variable. Reporting the secondary school completion percentages of eight studies, percentages ranged from 20% (English et al., 1994) to 84.8% (Pecora et al., 2006a). A wider range, even when excluding postsecondary population studies, was reported in the current meta-analysis (6% to 90%; Dumaret, 1988; McKenzie, 2003; Ringle et al., 2010). Snow also reviewed studies reporting that between 30% (Kufeldt, 2003) and 53% (Merdinger et al., 2005) of CPS-youth were in postsecondary training. This was a narrower range than that found in the current meta-analysis (3.9% to 45%; Blome, 1997; Mersky & Topitzes, 2010). Differences can be attributed to studies uniquely included in the current meta-analysis, including those published past 2009. In any event, Snow's (2009) conclusion that CPS-youth had low educational attainment rates lacked support from meta-analytic techniques. These could have

been used to summarize the range of educational attainment rates and confirm overall low percentages. In contrast, the current meta-analysis was able to confirm that overall, CPS-youth struggle in educational attainment. Moreover, moderator analyses revealed the ways in which gender, ethnicity, age, mental health problems, and type of CPS-care, affected the results.

Gender, Ethnicity, Age, and Mental Health Problems Moderators

Gender. Reported across both general population and CPS literatures is that women attain higher levels of education than men (Baum & Ma, 2007; Baum et al., 2013; Benedict et al., 1996; Havalchak et al., 2009; Kirk et al., 2012). Results from the current study confirmed this trend with samples more composed of women demonstrating higher postsecondary enrolment percentages, although not higher secondary school completion percentages.

The lack of an effect of CPS-female percentage on secondary school completion may be due to efforts to improve educational attainment among young men in CPS (Kirk & Day, 2011). These improvements may be allowing men to catch up to women in secondary school completion. However, women's higher self-expectations to enter *post*-secondary school may be promoting their academic advantage at this higher level (Kirk et al., 2012).

Various theories may explain why CPS-female percentage had a positive effect on postsecondary school enrolment, to the exclusion of secondary school completion. One perspective is that young girls' higher grades, reading assessment scores, and study habits in childhood give them an advantage in achieving higher levels of education in young adulthood (Becker et al., 2010; Christofides et al., 2008; Frenette & Zeman, 2007; Kirk et al., 2012). However, this perspective fails to explain why in the current meta-analysis, CPS-female percentage did not negatively affect secondary school completion percentages in addition to postsecondary school enrolment percentages. The full extent of Kirk et al.'s (2012) gendered

expectations perspective states that women have more to gain than men from uniquely engaging in postsecondary levels of education (Becker et al., 2010; Christofides et al, 2008; Frenette & Zeman, 2007). Furthermore, women are more likely than males to aspire to careers that necessitate a postsecondary education (Blackhurst & Auger, 2008). This could explain the strong effect of female CPS-youth percentage on postsecondary enrolment to the exclusion of secondary school completion. Unfortunately, too few studies precluded quantitatively assessing educational self-expectations as a covariate of gender on its effect on educational attainment.

Ethnicity. Due to the availability of data, assessing the effect of ethnicity on CPS educational attainment focused on Black and White ethnicities only. Because in the general population Black CPS-youth are more likely to struggle academically than White CPS-youth (Baum & Ma, 2007, p. 2; Baum et al., 2013; Day et al., 2013), one might have expected the same in the CPS-population. Consistent with this, in the current meta-analysis samples more composed of Black CPS-youth had lower educational attainment percentages. However, it should be noted that these effects were small compared to the size of the effect of CPS-female percentage on postsecondary enrolment. In fact, this effect was small enough so as to not appear in the individual CPS studies included in the moderator analysis (Day et al., 2011; Garcia, 2012; Harris et al. 2009; Mersky & Topitzes, 2010). Similarly, although in one of their two samples, Dworsky et al. (2010) found a difference in educational attainment between Black and White CPS-youth, they concluded that the overall effect of ethnicity on CPS-youths' educational attainment was small and nearly non-significant.

Age. Small effects were also found in the context of age as a moderator. Although age only marginally positively affected secondary school completion it significantly predicted obtaining a secondary school diploma to the exclusion of predicting completing the G.E.D. The

small size of this effect combined with it being unique to the diploma context suggests that CPS-youth are taking a few years longer to complete secondary school and to obtain a diploma as opposed to dropping out and engaging a G.E.D. which might take more years (Maralani, 2006). Note, however, that controlling for time spent in CPS-care reduced the marginal effect of age on general secondary school completion to non-significance. The latter supports Ringle et al.'s (2010) view that extra time spent in care may explain the effect of age on secondary school completion. Extra time in care allows CPS-youth more time to develop which facilitates higher educational attainment, all the while advancing their age (Ringle et al., 2010). Also interesting is that although CPS-youth are less likely to attain higher levels of education than general-population youth, more of them aspire to earn higher levels of education (Bachelor's or Master's degrees) than to attend technical training or vocational schools (Blome, 1997; Jones, 2010). Such ambition may influence them to persist in educational pursuits and to catch up to general-population youth as time goes on. This supports Flynn and Tessier's (2011) view that greater age simply provides more time and opportunities for CPS-youth to attain higher levels of education.

Mental health problems. Less clear is why mental health problems did not predict the educational attainment of CPS-youth in the current study, despite reports across the literature of their negative effect on educational attainment (Benedict et al., 1996; Melkevik et al., 2016; Salazar, 2013). Explanations include the possibilities that the mental health problem variable was not reliable, confounds could have been suppressing an existing effect, or there was not enough power to detect a small effect. More research is needed to determine whether these explanations can be responsible for the results.

Methodological Characteristics

Type of CPS-care. In the current-meta-analysis there was only a marginally significant positive effect of family foster care history percentage on postsecondary school enrolment. More research is needed to explain this trend. Research shows that less restrictive placements are associated with greater educational attainment (e.g., Mech & Fung, 1999). However, more theory and research beyond what is offered by this meta-analysis is needed to explain why this is so.

Limitations

Many limitations of this meta-analysis apply to the meta-analysis process in general. One such major limitation is that a meta-analysis is restricted to the data available. For example, in the current meta-analysis there were not enough studies to assess the effect of positive educational self-expectations, or of time spent in care, on educational attainment. Also, other variables could not be examined. For example, sexual activity level, which has a negative impact on educational attainment (Sabia & Rees, 2009) and is also relatively high among CPS-youth (Dworksy & Courtney, 2010), could not be examined due to there being too few studies. A second limitation of meta-analysis is that variables cannot be assumed to be equivalent across studies (Card, 2012, p. 25). For example, in the current meta-analysis the definition of having mental health problems varied from study to study. Third, in meta-analysis, qualitative data are not analysed (Card, 2012, p. 24) so participants' opinions cannot be taken into account. Interpretations should take these limitations into account, as should future research.

Research Implications

Future research is needed to develop theories on educational attainment among CPS-youth, as well as to generate replications of existing studies. First, there exists a lack of theory on moderators accounting for variation in CPS-youths' educational attainment rates. While this

study used Kirk et al.'s (2012) gendered expectations perspective, which explained the study's largest effect, this perspective cannot explain all of the results. Second, there needs to be more studies examining the effect of achieving a secondary school diploma versus G.E.D. on CPS-youths' levels of educational attainment (Heckman & Lafontaine, 2010). Most studies simply report secondary school completion statistics without distinguishing between these two types. This hampers the ability to determine whether CPS-youth differentially benefit from achieving a secondary school diploma versus G.E.D. Similarly, reporting on the breakdowns of different types of postsecondary enrolment would be useful (Blome, 1997; Courtney et al., 2001; Dworsky et al., 2010). Third, multiple research studies should be done on other moderators affecting rates of educational attainment beyond demographic, mental health, and sample/methodological variables. With enough consistency across multiple studies, other moderators, such as sexual activity level (Dworsky & Courtney, 2010; Sabia & Rees, 2009) might prove to significantly affect CPS-youths' educational attainment rates. Additional possibilities for moderators from the general-population literature include degree of parental or caregiver support, stress, and social adaptation; as well as goals and commitments set towards educational attainment (Wintre & Bowers, 2007). Further knowledge on moderators affecting CPS-youths' educational prospects will inform the development of interventions and policies that can improve their educational outcomes.

Practice and Policy Implications

In particular, this research suggests that male CPS-youth, younger CPS-youth, and Black CPS-youth struggle to attain various levels of educational attainment. Further research is needed on environmental factors that may increase or decrease these youths' educational prospects. One environmental factor found in this meta-analysis to be marginally associated with improvements

in CPS-youths' educational prospects is having had histories of family foster care as opposed to more restrictive alternatives. Other factors such as time spent in care, and the development of positive educational self-expectations have been investigated in other research and shown to affect CPS-youths' educational prospects (Blome, 1997; Ringle et al., 2010), but are still under-researched. If they are confirmed to significantly affect CPS-youths' educational outcomes, such findings may be used in policy change initiatives such as sanctioning less restrictive over more restrictive care, or increasing the length of time youth spend in care. More research should be conducted to determine whether interventions to increase youths' positive educational expectations might increase their educational prospects as well.

Conclusion

Early neglect or abuse can have long-lasting effects on youth, including potentially compromising their long-term social and economic prospects. This can occur through reduced educational attainment (Snow, 2009). Researchers have been investigating CPS-youths' educational outcomes and moderators of these outcomes, to understand how to better guide CPS-youth towards educational, social, and economic success. This meta-analytic review is the first to quantitatively summarize the research on the educational outcomes of CPS-youth, and to assess the impact of moderators on those outcomes. Young Black CPS-involved men in secondary school are at particular risk for falling short of their true academic potential. Further research is needed to investigate whether promoting family foster care, greater time spent in care, or increasing youths' positive educational self-expectations, will improve their educational prospects. This thesis should serve as a guide for future research and policies that can help improve the educational and future prospects of CPS-youth.

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Table 1.

*Studies Reporting Secondary School Completion and Postsecondary School Enrolment**Percentages of CPS-youth and Their Demographic, Mental Health Problem, and**Sample/Methodological Data*

First Author (Year)	% Sec. Com.	% Dip.	% GED	% Enrol Post secondary	% 4-Yr	% 2-Yr	% Tec Vc	% Fem	% Pos Slf Ex.	% Wh	% Blk	N	Mn Age	Mn Yrs in Care	% Men Hlth Prbl	% Fam. Fostr Care
Benedict (1996)	58.0	-	-	-	-	-	-	55.0	-	-	87.0	214	23.0	-	58.1	-
Blome (1997)	77.0	-	-	45.0	-	-	-	-	35.0	-	-	140	21.0	-	-	100.0
Boden (2007)	81.9	-	-	39.9	39.9	-	-	50.5	-	-	-	1053	25.0	-	-	-
Brownell (2010)	35.2	35.2	-	-	-	-	-	-	-	-	-	2016	21.0	-	-	-
Courtney (2001)	63.0	55.0	8.0	9.0	-	-	-	55.0	79.0	68.0	24.0	141	19.0	5.5	21.0	27.0
Courtney (2006)	63.9	-	-	28.0	5.0	15.0	8.0	54.1	-	31.5	56.5	603	19.0	-	33.0	39.3
Day (2011)	100.0	-	-	100.0	100.0	0.0	0.0	59.0	-	45.0	42.0	444	-	-	-	-
Dumaret (1988)	6.0	-	-	-	-	-	-	-	-	-	-	130	-	-	-	100.0
Dworsky (2010)	81.4	61.6	19.8	41.8	-	-	-	-	-	45.6	21.3	479	24.0	-	46.8	100.0
Garcia (2012)	85.8	-	-	-	-	-	-	48.9	-	67.2	17.4	805	30.5	-	44.4	100.0
Jackson (2012)	87.4	-	-	31.5	-	-	-	-	-	-	-	143	-	-	-	58.5
Jackson (1998)	61.7	-	-	-	-	-	-	63.3	-	58.3	8.3	60	25.6	-	-	-
Jones (2010)	-	-	-	36.8	13.2	20.8	2.8	60.4	80.0	22.6	49.1	106	18.3	-	-	0.0
Mares (2010)	54.0	-	-	18.0	-	-	-	58.0	-	39.0	57.0	108	-	-	96.0	100.0
McKenzie (2003)	90.0	90.0	-	-	-	-	-	52.4	-	97.4	0.8	839	68.3	8.6	-	0.0
Mersky (2010)	53.9	34.8	19.1	3.9	3.9	-	-	50.2	-	-	93.1	1368	24	-	34.9	-
Pecora (2006b)	87.8	69.7	18.2	43.7	-	-	-	54.6	-	-	-	1087	30.5	7.2	50.6	100.0
Ringle (2010)	90.0	-	-	-	-	-	-	9.5	-	70.1	-	210	32.9	2.0	72.0	-
Salazar (2013)	100.0	-	-	100.0	-	-	-	73.9	-	44.6	27.9	329	25.6	8.7	32.0	-
Vinnerljung (2005)	43.9	-	-	-	-	-	-	45.8	-	-	-	31,355	-	-	-	-

Notes: % Sec. Com. = % Secondary School Completion; % Dip. = % Diploma; % GED = % General Education Development; % Enrol Postsecondary = % Enrolled in Postsecondary School; % 4-Yr = % Enrolled in 4-year College/University; % 2-Yr = % Enrolled in 2-year Community College/University; % Tec Vc = % Enrolled in Technical Training/Vocational School; % Fem = % Female; % Pos. Slf. Ex. = % Positive Educational Self-expectations; % Wh = % White; % Blk = % Black; N = Sample Size; Mn Age = Mean Age; Mn Yrs in Care = Mean Years in Care; % Men Hlth Prbl = % Mental Health Problems; % Fam. Fostr Care = % Family Foster Care.

Table 2.

*Summary of Moderator Analyses: Moderators of the Percentages of Secondary School**Completion*

Moderator/ covariates		Moderator	Moderator controlled by covariate	Unique effect of covariate
% Female/ % Positive educational self- expectations	K	14	1	1
	B	0.0032	N/A	N/A
	95%CI	[-0.041, 0.047]	N/A	N/A
	Q	0.02	N/A	N/A
% Black, Sample size	K	11	11	11
	B	-0.017***	-0.020***	0.0007
	95%CI	[-0.027, - 0.0076]	[-0.029, - .0098]	[-0.0000, 0.0015]
	Q	12.23***	16.41***	16.41***
% White, Sample size	K	10	10	10
	B	0.018	0.013	0.0012
	95%CI	[-0.0039, 0.040]	[-.0100, 0.035]	[-0.0003, 0.0027]
	Q	2.58	5.31	5.31

Mean Age, <i>Time spent in care</i>	K	14	5	5
	<i>B</i>	0.039	-0.0012	0.18
	95%CI	[-0.0011, 0.079]	[-0.062, 0.059]	[-0.26, 0.62]
	Q	3.63	0.76	0.76
% Mental health problems	K	10	N/A	N/A
	<i>B</i>	-0.0040	N/A	N/A
	95%CI	[-0.030, 0.022]	N/A	N/A
	Q	0.09	N/A	N/A
% Family foster care history	K	10	N/A	N/A
	<i>B</i>	-0.0084	N/A	N/A
	95%CI	[-0.025, 0.0079]	N/A	N/A
	Q	1.03	N/A	N/A

Notes: K = number of studies, *B* = the magnitude of change in educational attainment percentages per one-unit change of the moderator or covariate, **p* < .05, ***p* < .01, ****p* < .001.

Table 3.

Summary of Moderator Analyses: Moderators of the Percentages of Postsecondary Enrolment

Moderator/ covariates		Moderator	Moderator controlled by covariate	Unique effect of covariate
% Women, <i>Positive educational self- expectations</i>	K	9	2	2
	B	0.32***	N/A	N/A
	95%CI	[0.18, 0.47]	N/A	N/A
	Q	19.24***	N/A	N/A
% Black, <i>Sample size</i>	K	8	8	8
	B	-0.043*	-0.048	0.0002
	95%CI	[-0.074, - 0.012]	[-0.097, 0.0004]	[-.0025, .0029]
	Q	7.53*	6.78*	6.78*
% White, <i>Sample size</i>	K	7	7	7
	B	-.0186	-0.0093	.0036
	95%CI	[-.073, .036]	[-0.0011, 0.0083]	[-0.0011, 0.0083]
	Q	0.44	2.49	2.49

Mean age, <i>Time spent in care</i>	K	9	3	3
	B	0.10	N/A	N/A
	95%CI	[-0.059, 0.27]	N/A	N/A
	Q	1.56	N/A	N/A
% Mental health problems	K	7	N/A	N/A
	B	-0.0016	N/A	N/A
	95%CI	[-0.038, 0.035]	N/A	N/A
	Q	.01	N/A	N/A
% Family foster care history	K	8	N/A	N/A
	B	0.0066	N/A	N/A
	95%CI	[-0.0012, 0.0015]	N/A	N/A
	Q	2.73	N/A	N/A

Notes: K = number of studies, B = the magnitude of change in educational attainment percentages per one-unit change of the moderator or covariate, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 4.

Summary of Moderator Analyses: Moderators of the Percentages of Secondary School Diplomas

Moderator/ covariates		Moderator	Moderator controlled by covariate	Unique effect of covariate
% Female/ % <i>Positive</i> <i>educational</i> <i>self-</i> <i>expectations</i>	K	4	1	1
	<i>B</i>	0.14	N/A	N/A
	95%CI	[-0.58, 0.86]	N/A	N/A
	Q	0.14	N/A	N/A
% Black, <i>Sample size</i>	K	4	4	4
	<i>B</i>	-0.025*	N/A	N/A
	95%CI	[-0.047, - 0.0023]	N/A	N/A
	Q	4.68*	N/A	N/A
% White, <i>Sample size</i>	K	3	3	3
	<i>B</i>	N/A	N/A	N/A
	95%CI	N/A	N/A	N/A
	Q	N/A	N/A	N/A

Mean Age, <i>Time spent in care</i>	K	6	3	3
	<i>B</i>	0.050***	N/A	N/A
	95%CI	[0.023, 0.077]	N/A	N/A
	Q	13.41***	N/A	N/A
% Mental health problems	K	4	N/A	N/A
	<i>B</i>	0.025	N/A	N/A
	95%CI	[-0.029, 0.079]	N/A	N/A
	Q	0.82	N/A	N/A
% Family foster care history	K	4	N/A	N/A
	<i>B</i>	-0.0096	N/A	N/A
	95%CI	[-0.024, 0.0047]	N/A	N/A
	Q	1.73	N/A	N/A

Notes: K = number of studies, *B* = the magnitude of change in educational attainment percentages per one-unit change of the moderator or covariate, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 5.

Summary of Moderator Analyses: Moderators of the Percentages of G.E.D.s

Moderator/ covariates		Moderator	Moderator controlled by covariate	Unique effect of covariate
% Female/ % <i>Positive</i> educational self- expectations	K	3	1	1
	B	N/A	N/A	N/A
	95%CI	N/A	N/A	N/A
	Q	N/A	N/A	N/A
% Black, <i>Sample size</i>	K	3	3	3
	B	N/A	N/A	N/A
	95%CI	N/A	N/A	N/A
	Q	N/A	N/A	N/A
% White, <i>Sample size</i>	K	2	2	2
	B	N/A	N/A	N/A
	95%CI	N/A	N/A	N/A
	Q	N/A	N/A	N/A

Mean Age, <i>Time spent in care</i>	K	4	2	2
	<i>B</i>	0.049	N/A	N/A
	95%CI	[-0.024, 0.12]	N/A	N/A
	Q	1.71	N/A	N/A
% Mental health problems	K	4	N/A	N/A
	<i>B</i>	0.024	N/A	N/A
	95%CI	[-0.0028, 0.051]	N/A	N/A
	Q	3.09	N/A	N/A
% Family foster care history	K	10	N/A	N/A
	<i>B</i>	N/A	N/A	N/A
	95%CI	N/A	N/A	N/A
	Q	N/A	N/A	N/A

Notes: K = number of studies, *B* = the magnitude of change in educational attainment percentages per one-unit change of the moderator or covariate, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 6.

*Summary of Moderator Analyses: Moderators of the Percentages of 4-Year College/University**Enrolment*

Moderator/ covariates		Moderator	Moderator controlled by covariate	Unique effect of covariate
% Women, <i>Positive educational self- expectations</i>	K	5	1	1
	B	0.31	N/A	N/A
	95%CI	[-0.11, 0.73]	N/A	N/A
	Q	2.13	N/A	N/A
% Black, <i>Sample size</i>	K	4	4	4
	B	-0.096*	N/A	N/A
	95%CI	[-0.18, -0.014]	N/A	N/A
	Q	5.24*	N/A	N/A
% White, <i>Sample size</i>	K	3	3	3
	B	N/A	N/A	N/A
	95%CI	N/A	N/A	N/A
	Q	N/A	N/A	N/A

Mean age, <i>Time spent in care</i>	K	4	0	0
	B	0.13	N/A	N/A
	95%CI	[-0.44, 0.70]	N/A	N/A
	Q	0.21	N/A	N/A
% Mental health problems	K	2	N/A	N/A
	B	N/A	N/A	N/A
	95%CI	N/A	N/A	N/A
	Q	N/A	N/A	N/A
% Family foster care history	K	2	N/A	N/A
	B	N/A	N/A	N/A
	95%CI	N/A	N/A	N/A
	Q	N/A	N/A	N/A

Notes: K = number of studies, B = the magnitude of change in educational attainment percentages per one-unit change of the moderator, * $p < .05$, ** $p < .01$, *** $p < .001$

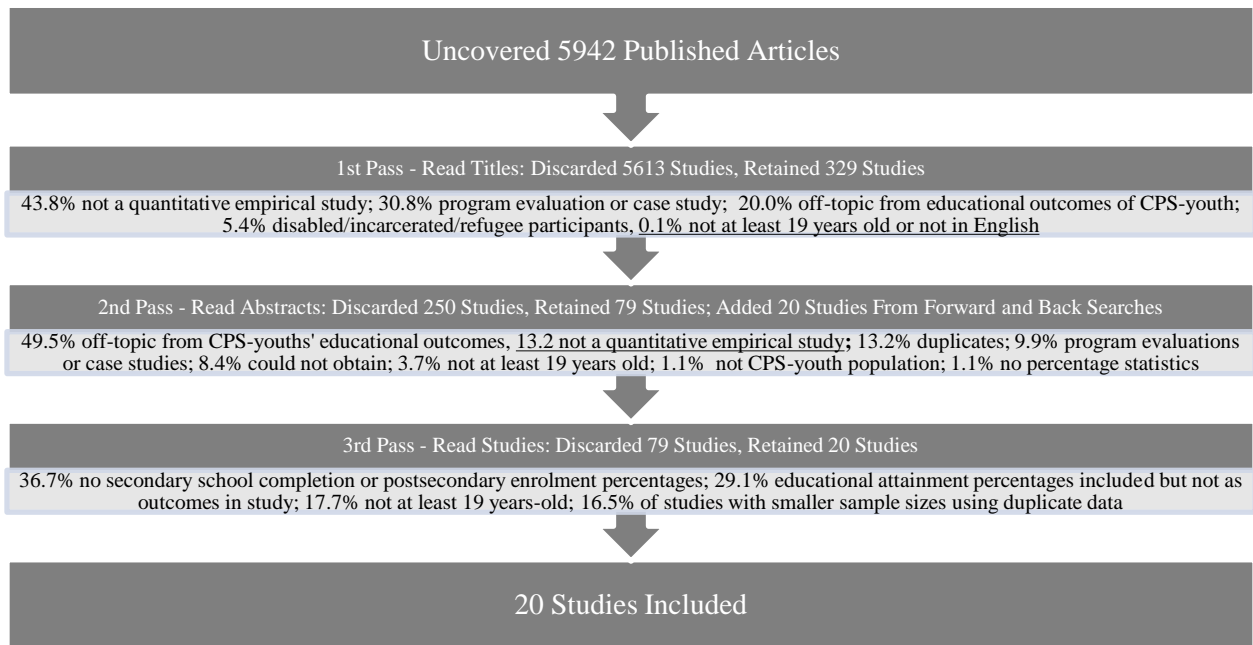


Figure 1. Included studies on the secondary school completion and postsecondary enrolment percentages of CPS-youth.

Appendix A
Search Terms From Original Search
Crossing Foster-care Terms Against Emancipation Terms

((all("foster care") OR all(foster-care) OR all("foster child*") OR all(foster-child*) OR all("child welfare") OR all(child-welfare) OR all("child protective service*") OR all("children's aid society") OR all("crown ward") OR all(crown-ward) OR all("permanent ward") OR all(permanent-ward) OR all("substitute care") OR all(substitute-care) OR all("out-of-home care") OR all(out-of-home-care) OR all("foster youth") OR all(foster-youth) OR all("looked-after child*") OR all("looked-after youth") OR all("youth protection system") OR all(allocare)) AND (all(alumni*) OR all(emanci*) OR all("age out") OR all("age-out") OR all(transit*) OR all("leaving care") OR all(leaving-care) OR all(graduate*) OR all(exit*) OR all("after care") OR all(aftercare) OR all("out of care") OR all(out-of-care) OR all("former foster youth") OR all("foster care follow-up") OR all("reunif*") OR all("dischargeed foster youth") OR all(discharge*) OR all("care leav*") OR all("care-leav*") OR all(postinstitution*) OR all("following foster care") OR all("following foster-care") OR all("former foster chil*")))) AND peer(yes)

Appendix B
Search Terms from Second Search
Crossing Foster-care Terms Against Secondary School Terms

(all("foster care" OR foster-care OR "foster child*" OR foster-child* OR "child welfare" OR child-welfare OR "child protective service*" OR "children's aid society" OR "crown ward" OR crown-ward OR "permanent ward" OR permanent-ward OR "substitute care" OR substitute-care OR "out-of-home care" OR out-of-home-care OR "foster youth" OR foster-youth OR "looked-after child*" OR "looked-after youth" OR "youth protection system" OR allocare) AND all("high school" OR highschool OR high-school OR "secondary school" OR secondaryschool OR secondary-school OR "secondary education" OR "secondary-education" OR GED OR "general education development" OR "general education diploma" OR "secondary school equivalent" OR "secondary-school equivalent" OR "high school equivalency certificate" OR "high-school equivalency" OR "highschool equivalency certificate")) AND peer(yes)

Appendix C
Search Terms From Third Search
Crossing Foster-care Terms Against Post-secondary School Terms

all("foster care" OR foster-care OR "foster child*" OR foster-child* OR "child welfare" OR child-welfare OR "child protective service*" OR "children's aid society" OR "crown ward" OR crown-ward OR "permanent ward" OR permanent-ward OR "substitute care" OR substitute-care OR "out-of-home care" OR out-of-home-care OR "foster youth" OR foster-youth OR "looked-after child*" OR "looked-after youth" OR "youth protection system" OR allocare) AND all(college OR university OR post-secondary OR "post secondary" OR "community college" OR community-college OR "trade school" OR trade-school OR trades-school OR "trades school") AND peer(yes)

Appendix D Coding Manual

Thank you for volunteering. Without you this project could not be a success!

Instructions

Please open the file “Inter-rater coding.xls”. You will see columns corresponding to the column headings listed below.

First, please note:

- For all columns, if a particular study does not provide a percentage please indicate so with an X.
- Percent of the sample refers to CPS sample alone (any control groups must be excluded in calculating percentages). In cases where data are only presented for subgroups of the CPS sample it may be necessary to calculate percentages weighted for each subgroup before adding them together (*please see far below at the asterisk for an android play-store app that calculates weighted averages/percentages for you).
- The following are possible synonyms for the CPS-sample. We are interested in samples or subsamples of these individuals: foster care, child-welfare, child-protective services, children’s aid society, crown ward, permanent-ward, substitute care, out-of-home care, looked-after, youth protection system, or allocare children/youth.

Spreadsheet Columns

- A. Secondary school completion – Indicate the percent of the sample that had completed secondary school (i.e., who had obtained a high school diploma OR G.E.D.). This happens to be the percent of the sample that had obtained a high school diploma plus (+)

the percent that had obtained their G.E.D. Sometimes just high school graduation may be reported.

- B. High school diploma – If available, indicate the percent of the sample that had obtained their high school diploma (as opposed to their G.E.D. or high school diploma/G.E.D. combination).
- C. G.E.D. – If available, indicate the percent of the sample that had obtained their G.E.D (as opposed to their high school diploma or high school diploma/G.E.D. combination).
- D. Postsecondary school enrolment – Indicate the percent of the sample that had enrolled in any type of postsecondary institution (i.e., a 4-year university/college, 2-year community college/university, technical training school/vocational school, etc...). Enrolment for any length of time/number of credits is acceptable. However, this percent cannot be derived from the percent of the sample that had achieved a degree (more people may have enrolled than obtained a degree). This is the percent of the sample enrolled in a 4-year university/college + those enrolled in a 2-year community college/university + those enrolled in a technical training school/vocational school. Often just the percentage enrolled in “college” (in the States this often means a 4-year university) is reported.
- E. 4-year university/college – Indicate the percent of the sample that had enrolled in a 4-year college/university (as opposed to 2-year community college/university, technical training school/vocational school, etc...).
- F. 2-year university/college – Indicate the percent of the sample that had enrolled in a 2-year university/community college (as opposed to 4-year university/college, technical training school/vocational school, etc...).

- G. Technical training school/vocational school – Indicate the percent of the sample that had enrolled in a technical training school/vocational school, etc... (as opposed to 4-year university/college, 2-year community college/university).

If it is not possible to indicate a percent of the sample completing secondary school, or enrolling in postsecondary school, discontinue coding for that study. Highlight the entire row in red.

- H. Gender – Indicate the percent of the overall sample being female.
- I. Self-expectation – Indicate the percent of the overall sample having a positive academic self-expectation, or self-aspirations (e.g., the percent of a sample of high school graduates expecting to achieve a Master’s degree). Indicate in brackets what self-expectation/self-aspirations means in that study.
- J. Mental health – Indicate the percent of the sample experiencing a current mental health issue or diagnosis or currently receiving psychiatric services. In brackets indicate what that study means by mental health issue (e.g., write ‘diagnosed with depression’ in brackets if that study indicated a percentage of CPS-youth currently diagnosed with depression).
- K. Ethnicity (African origin) – Indicate the percent of the sample being of African/Caribbean origin (i.e., black, African-American, Caribbean, etc...).
- L. Ethnicity (white/Caucasian) – Indicate the percent of the sample being white/Caucasian
- M. Sample size – Indicate the sample size, in terms of numbers of participants in the CPS-sample.
- N. Age – Indicate the mean age of the sample in years and decimal points.
- O. Time spent in care – Indicate the mean time spent in care in terms of years.

- P. CPS-care type – Indicate the percent of the sample with care histories (predominantly consisting) of group care including residential schools, group homes, psychiatric facilities or any CPS care that has an institution style to it (exclude foster care, kinship/family care, adoption in this percentage). Write in brackets what you mean by group care.
- Q. Sample recruitment source – Indicate the percent of the sample recruited directly from a postsecondary institution (100% for yes, 0% for no) or from a sample of CPS-youth with postsecondary degrees.

Additional Instructions

-If a longitudinal study

- Indicate values from the same year/wave the educational attainment data were collected, or during the last wave of data collection. Similarly, indicate the age of the sample the year the educational attainment data were collected, or the age from the last wave of data collection. There is, however, no average age. Indicate beside the age “(age at education/last wave)”.

-When in doubt write down your percentage value, and then briefly explain the meaning behind your figure (e.g., if unsure of mean age of a sample, but a median birth year is reported indicate the median birth year and write in brackets – “median birth year”, if you suspect there could be a way of calculating the mean age of the sample from that, that you are not sure of).

***Percentages split across subgroups**

*Use the app “weighted average” from the android play-store to calculate sample percentages when percentages are split between subgroups (the logo of the “weighted average” app should be a grey circle with orange writing “5.0” inside).

As an example, imagine you are coding a study for percentage obtaining a high school diploma. However, they only present the percentage of males obtaining a diploma separately from the percentage of females, and not of the whole sample of both males+females. If there are uneven numbers of males and females, you will have to calculate the weighted percentage of CPS-youth obtaining their diploma from this study.

Using the weighted average app, in the “name” field enter the name of the subgroup (e.g., male, or ‘M’ or anything you like). In the “mark” field enter the sub-group percentage of interest (e.g., 85, for 85% of males obtaining a high school diploma). In the “weight” field enter either the number of participants in the subgroup, or the percentage of the subgroup to the whole CPS-sample (e.g., 36, or 51, if 36 males made up 51% of the sample). You would then click “add element” and redo this process for the females. (e.g., in name field “female or ‘F’” or whatever you like; in “mark” field 90% for 90% of females obtaining a high school diploma; in the “weight” field 35 or 49 if 35 females made up 49% of the sample).

Tip – ensure that after data for the last subgroup is entered you hit “add element” which triggers the app to calculate the weighted average (if you don’t do this, you may still be looking at a weighted average from a previous calculation). In these cases record the subgroup percentages and weights used to calculate the overall sample percentages.