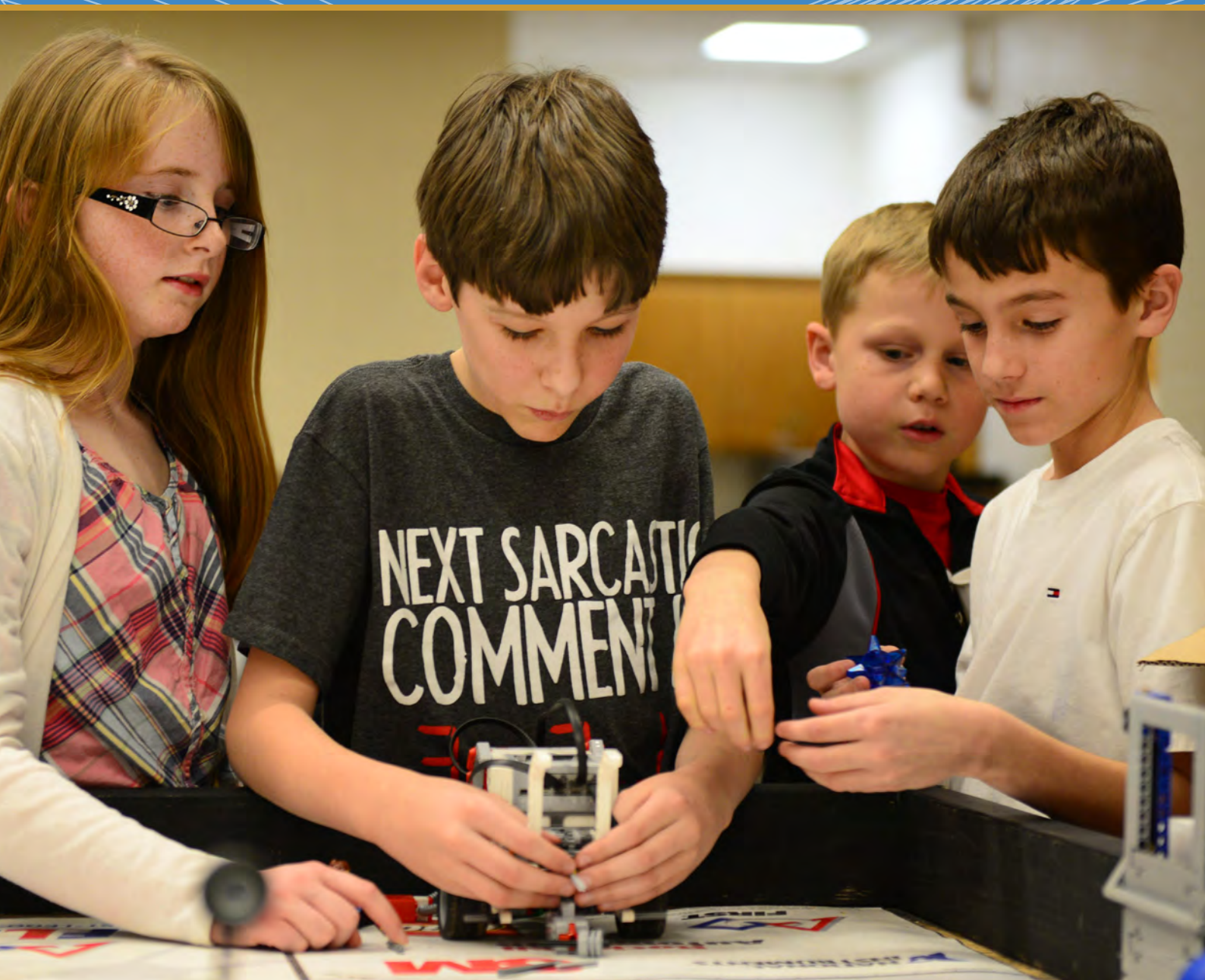


“No Excuses” Charter Schools for Increasing Math and Literacy Achievement in Primary and Secondary Education

Sarah Krowka, Alexandria Hadd, and Robert Marx

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Table of contents

PLAIN LANGUAGE SUMMARY	5
EXECUTIVE SUMMARY/ABSTRACT	8
Background	8
Objectives	8
Search methods	9
Data collection and analysis	9
Results	10
Authors' conclusions	11
1 BACKGROUND	12
1.1 The problem, condition or issue	12
1.2 The intervention: <i>No Excuses charter schools</i>	13
1.3 Why it is important to conduct this review	17
2 OBJECTIVES	18
3 METHODS	19
3.1 Criteria for selecting studies	19
3.2 Search Methods for identification of studies	21
3.3 Data collection and analysis	23
4 RESULTS	26
4.1 Results of the search	26
4.2 Description of the studies	27
4.3 Risk of bias in included studies	29
4.4 Synthesis of results	34
4.5 Moderator analyses	37
5 DISCUSSION	39
5.1 Summary of main results	39
5.2 Overall completeness and applicability of evidence	39
5.3 Quality of evidence	39
5.4 Limitations	39
5.5 Agreements and disagreements with other studies or reviews	42

6	AUTHORS' CONCLUSIONS	43
6.1	Implications for practice and policy	43
6.2	Implications for research	43
7	REFERENCES	45
7.1	References to included studies	45
7.2	Additional references	46
8	ABOUT THIS REVIEW	51
8.1	Review authors	51
8.2	Roles and responsibilities	52
8.3	Sources of support	52
8.4	Declaration of interest	52
8.5	Plans for updating the review	52
8.6	Author declaration	53
9	FIGURES	54
9.1	Forest plots for math outcomes	54
9.2	Forest plots for literacy outcomes	60
10	APPENDIX I	65
10.1	Coding manual	65

Plain language summary

No Excuses charter schools associated with greater gains in math and literacy than traditional public schools

The No Excuses charter school model focuses heavily on high academic expectations, rigid and consistent discipline, extended instructional time, intensive teacher training, and increased parental involvement. This review examines the effect of No Excuses charter schools on math and literacy achievement. On average, No Excuses charter schools are associated with greater student gains on standardized measures of math and literacy achievement when compared to traditional public schools – with higher gains for math.

What did the review study?

Students from low socio-economic backgrounds or traditionally disadvantaged groups often underperform their peers on standardized tests of math and literacy achievement. This “achievement gap” is associated with negative education and career outcomes – both short-term and long-term. No Excuses charter schools are intended to reduce this gap and improve the achievement gains of traditionally disenfranchised groups.

For the purposes of this review, No Excuses charter schools are those charter schools that highlight the importance of high academic expectations for all students, rigid discipline enforcement, extended time in school, intensive teacher training, and parental involvement.

This review examines whether No Excuses charter schools are associated with greater achievement gains in math and literacy compared to the achievement gains of similar students enrolled in traditional public schools.

What studies are included?

This review includes studies that evaluate the effects of No Excuses charter schools on students’ literacy and math achievement gains. It includes 18 studies conducted in the United States spanning from 1990-2015.

What is the aim of this review?

This Campbell systematic review examines the effects of No Excuses charter schools on students' math and literacy achievement gains compared to similar students in public schools. The review summarizes evidence from 18 studies, including 5 randomized controlled trials and 13 quasi-experimental studies.

What are the main results of this review?

No Excuses charter schools, on average, produced larger math and literacy achievement gains for their students than their public school peers – with higher gains for math. These benefits increase for three years, at which point the achievement gains stabilized or returned to lower gains.

What do the findings of this review mean?

No Excuses charter schools may help underperforming students make larger achievement gains in math and literacy, more so than at traditional public schools. Additional research is needed to examine the effects of this intervention while accounting for significant issues related to sample bias and to determine the scalability of the model.

What are the limitations in interpretation of this review?

Readers should take caution when interpreting this review due to several limitations. First, studies were inconsistent in reporting (or failed to report) important sample characteristics such as percentage of students receiving special education services, number of students exiting or expelled after enrollment etc., severely limiting interpretation of the equality of comparison groups and factors impacting differences in outcomes.

Second, follow-up years suggest a sustained significant effect on both math and literacy achievement. However, these results must be interpreted with caution as the number of samples decreased substantially at follow-up years with just one study accounting for the majority of the samples.

Third, studies included in this review did not report data indicating the degree to which each characteristic of No Excuses charter schools was implemented, prohibiting the interpretation of the presence, absence, or dosage of the individual characteristics of No Excuses charter schools.

Fourth, only five of the 18 included studies employed random assignment, limiting interpretation of the equality of the comparison groups due to the small number in independent samples using random assignment.

Fifth, a large number of the included studies examine the effects of the schools of a specific charter management organization: Knowledge is Power Program (KIPP). Though informative, the results of this review cannot be considered generalizable to all No Excuses charter schools.

Finally, most studies measured effects with only one, annual standardized achievement measure.

How up-to-date is this review?

The review authors searched for studies through June 2016.

Executive summary/Abstract

BACKGROUND

In response to the school accountability movement and the move toward market-oriented education policies in recent decades, many schools and districts have felt increased pressure to find effective ways to boost student achievement. However, many districts—largely those serving low-income black and hispanic students in urban settings—have still struggled to make sufficient academic gains (Barton & Coley, 2010; Jacob & Ludwig, 2008; Yeh, 2016). One model of urban school reform aimed at leveling achievement disparities in the public school systems that has garnered attention (both positive and negative) is the No Excuses model. The No Excuses model is driven by the philosophy that there should be no excuses (e.g., poverty) for low academic performance. This model has found its footing in charter schools—publicly funded but privately managed schools exempt from the restrictions of the laws and regulations affecting non-charter public schools. Due to the autonomy afforded to the management of charter schools, educators have the freedom to implement the tenets of the No Excuses model without the restrictions placed on non-charter public schools.

Along with the expansion of charter schools, overall, No Excuses charter schools have been increasing in number since their recognition in the 1990s. No Excuses charter schools primarily draw from low-income and minority communities with the aim of minimizing racial and income-based achievement gaps by improving the academic performance of their students. Although a definitive definition of the No Excuses charter school model does not exist, most definitions share a number of key characteristics—most notably: (a) high academic expectations, (b) rigid and consistent discipline, (c) extended instructional time, (d) intensive teacher training, and (e) parental involvement (Dobbie & Fryer, 2013; Whitman, 2008; Carter, 2000; Golann, 2015).

OBJECTIVES

This systematic review and meta-analysis aims to examine the available evidence on the impacts of No Excuses charter schools on students' math and literacy achievement, relative to students enrolled in traditional public schools. The focal research questions are as follows:

- Does the No Excuses charter school model enhance students' math or literacy achievement more so than traditional public schools?
- What is the magnitude and variability of the effects?
- What are the limitations to the evidence?

SEARCH METHODS

We conducted a comprehensive systematic literature search to identify all eligible studies, regardless of publication status. For the purposes of this review, the term “studies” is used to refer to separate reports and “samples” to refer to independent samples of students within (and over multiple, in some cases) studies. The search was conducted using electronic databases, internet search engines, citations in previous meta-analyses and literature reviews, citations in research reports screened for eligibility, conference listings, hand searches of relevant journals, and correspondence with experts in the field. We screened redactions and erratum for potentially eligible studies. We used date-of-publication restrictions limiting our search years to 1990 or later as No Excuses charter schools did not exist until the mid-1990s.

Selection criteria

Published or unpublished studies using randomized controlled trials (RCTs) or quasi-experimental design (QEDs) to assess the effects of No Excuses charter schools on math and literacy achievement of elementary and secondary students were included in this review. To be eligible for inclusion in this review, studies must have been conducted or reported between January, 1990 and June, 2016. The date range reflects the time period during which No Excuses charter schools have been present in the U.S. School system. In addition, studies must have reported or controlled for baseline and comparison data, and comparisons groups must have comprised students attending traditional public schools. Studies determined not to reflect charter schools using a No Excuses model, or comparing No Excuses charter schools to other charter schools were excluded from this review.

DATA COLLECTION AND ANALYSIS

A team of reviewers assessed each title and abstract for preliminary eligibility, which was confirmed during full-text screening. All studies that met the eligibility criteria in the citation and abstract, and full-text screening were coded using a detailed coding instrument developed by the authors. Data extracted from primary studies included information on methodology, design, intervention and comparison group characteristics, math or literacy outcome details and characteristics, etc. Coders met to review the coding agreement and any discrepancies were discussed and resolved by consensus. This review contains a description of the intervention, a summary of the authors’ findings and conclusions, and a narrative synthesis of the identified literature.

We report standardized mean differences with Hedges’ g . Separate meta-analyses were performed to synthesize the studies assessing the effects of No Excuses charter schools on math outcomes and to synthesize the studies assessing the effects of No Excuses charter schools on literacy outcomes. Separate meta-analyses were used to estimate the cumulative effects after one, two, three, and four years of attendance at No Excuses charter schools. Meta-analyses separately report the estimated effects from RCTs and QEDs. We calculated Q , τ^2 , and I^2 to assess heterogeneity.

Moderator analyses were planned to explain between-study heterogeneity in effects for several school-level moderator variables, including percent male, percent minority, percent free/reduced lunch, percent of students provided special education services, school size, average class size, and years that the charter school has been active. However, few studies reported these characteristics at the school level; further, several variables (such as percent male, percent minority, percent free/reduced lunch, and percent special education services) did not have sufficient variability between studies to serve as useful moderators for effect sizes. As such, no planned moderators were consistently significant predictors of math or literacy achievement gains.

RESULTS

The initial search of both academic and grey literature identified a total of 4,554 citations. After duplicates and removal of studies prior to 1990, 2,841 citations remained. Titles and abstracts were screened for initial relevance and 2,386 of the remaining reports were excluded for irrelevance or ineligibility. Full-texts of the remaining 455 studies were retrieved (no unretrievable reports) and screened for eligibility—18 of which passed full-text screening for inclusion in the primary review resulting in 73 independent samples over four years. Analysis of these samples examined the effects of No Excuses charter schools on the math and literacy achievement of 70,121 elementary and secondary students. Five of the included studies were RCTs (Abdulkadiroglu et al. 2011; Angrist et al. 2010; Curto & Fryer, 2014; Hastings, Nekilson, & Zimmerman, 2012; Tuttle et al., 2015) and the remaining 13 used quasi-experimental designs. The weight given to RCTs in the overall estimates (which pool the QED and RCT effects) of math and literacy effects were approximately 8% for year 1, 7% for year 2, 6% for year 3, and 5% for year 5. Studies included nongovernmental reports (9), journal articles (5), dissertations (2), working papers (1), and papers presented at conferences (1). All studies evaluated results using comparison groups comprised of students attending traditional public schools.

The effect of No Excuses charter schools on math and literacy outcomes was found to be significant in this meta-analysis. Similar to previous findings, a substantially smaller but significant effect on literacy was found.

Math results

The year 1 math analyses included 73 separate samples. The overall mean effect size for math outcomes was positive and significant ($g = 0.202$, 95% CI [0.148; 0.257]). The mean effect sizes were significant for QEDs ($g = 0.207$, 95% CI [0.148; 0.266]) and RCTs ($g = 0.149$, 95% CI [0.015; 0.283]) and were not significantly different from each other. There was significant heterogeneity in the estimates of the effect size ($\tau^2 = 0.0430$). Given the significant heterogeneity and potential bias for non-equivalent groups, the mean effect size should be interpreted with caution ($I^2 = 89.4$, $Q = 676.58$). At follow-up years, the mean effect on math outcomes remained significant: Year 2 ($n = 48$), $g = 0.293$, $p < 0.001$; Year 3 ($n = 33$), $g = 0.434$, $p < .001$; Year 4 ($n = 22$), $g = 0.299$, $p < 0.001$. The estimated mean effects after adjustment for potential publication bias using trim-and-fill for all four years were also significant: Year 1 (0 trimmed, $g = 0.207$, $p < 0.001$), Year 2 (4 trimmed, $g = 0.250$, $p < 0.001$), Year 3 (6 trimmed, $g = 0.331$, $p < 0.001$), Year 4 (0 trimmed; $g = 0.299$, $p < 0.001$).

Literacy results

The year 1 literacy analyses also included 73 separate samples. The overall mean effect size for literacy outcomes was positive and significant ($g = 0.069$, 95% CI [0.034; 0.104]). The mean effect sizes were significant for QEDs ($g = 0.061$, 95% CI [0.025; 0.097]) and RCTs ($g = 0.164$, 95% CI [0.019; 0.309]) and were not significantly different from each other. Heterogeneity was minimal ($I^2 = 70.6$, $\tau^2 = 0.0121$, $Q = 244.77$). At follow-up years, the effect on literacy outcomes remained significant and attenuated from the math results: Year 2 ($n = 48$), $g = 0.120$, $p < 0.001$; Year 3 ($n = 33$), $g = 0.212$, $p < .001$; Year 4 ($n = 22$), $g = 0.178$, $p < 0.001$). The Egger's test indicated potential publication bias for the Year 1 literacy results ($p = .047$). After adjusting the mean effect using trim-and-fill, the Year 1 mean effect was still significant (7 trimmed, $g = 0.041$, $p = 0.028$), as were all follow-up years: Year 2 (6 trimmed, $g = 0.091$, $p < 0.001$), Year 3 (3 trimmed, $g = 0.168$, $p < 0.001$), Year 4 (1 trimmed, $g = 0.178$, $p < 0.001$).

AUTHORS' CONCLUSIONS

The present review identified available evidence regarding the effectiveness of No Excuses charter schools on math and literacy achievement. This review found multiple studies providing tentative support for the No Excuses charter school model as an effective intervention for improving students' math and literacy achievement, with limitations. Further, this intervention was found to improve students' math achievement more significantly than literacy.

There were several significant limitations to this review. First and of utmost importance, studies were inconsistent in reporting (or failed to report) important sample characteristics (e.g., percent of students receiving special education services, number of students exiting or expelled after enrollment, etc), severely limiting interpretation of the equality of comparison groups and factors impacting differences in outcomes. Second, follow-up years suggest a sustained significant effect on both math and literacy achievement, however these results must be interpreted with caution as the number of samples decreased substantially at follow-up years with one study (Tuttle, Teh, Nichols-Barrer, Gill, & Gleason, 2010), accounting for the majority of the samples. Third, studies included in this review did not report data indicating the degree to which each characteristic of No Excuses charter schools was implemented. This is a significant limitation as it prohibits the interpretation of the presence, absence, or dosage of the individual characteristics of No Excuses charter schools. Fourth, only five of the 18 included studies (approximately 5.75% of the independent samples) employed random assignment, limiting interpretation of the equality of the comparison groups due to the small number in independent samples using random assignment. Fifth, a large number of the included studies examine the effects of the schools of a specific charter management organization: Knowledge is Power Program (KIPP). Specifically, approximately 57% of the weight in Year 1 effect size estimates came from KIPP samples. At year 2, 3, and 4 follow-ups, more than 57% of the weight in the effect size estimates are from KIPP samples. Though informative, the results of this review cannot be considered generalizable to all No Excuses charter schools. Of note, the results of this review reflect one unique model of charter schools and must not be generalized to all charter schools. Finally, most studies measured effects with only one, annual standardized achievement measure.

1 Background

1.1 THE PROBLEM, CONDITION OR ISSUE

1.1.1 Persistent academic achievement gaps

In response to the school accountability movement and the move toward market-oriented education policies in recent decades, many schools and districts have felt increased pressure to find effective ways to boost student achievement. However, many districts—largely those serving low-income black and hispanic students in urban settings—have still struggled to make sufficient academic gains (Barton & Coley, 2010; Jacob & Ludwig, 2008; Yeh, 2016). The prevalence of this achievement gap is one of the most critical current issues in U.S. education and contributes significantly to racial and economic inequality (Duncan & Magnuson, 2013).

Racial and economic disparities develop in large part because children from low-income or minority (i.e., Black and Hispanic) households disproportionately manifest poor academic achievement in school. According to the Achievement Gap Initiative at Harvard University, disparities in family resources predict between one-half and two-thirds of the total racial achievement gap (Achievement Gap Initiative, 2013). Poverty rates in 2014 were 26.2% for Black and 23.6% for Hispanics, compared to 10.1% for non-Hispanic whites and 12% for Asians (DeNavas-Walt & Proctor [U.S. Census Bureau], 2014). Academic achievement gaps are both the causes and the consequences of the disparity of resources.

According to the National Assessment of Education Progress Long Term Trend Assessment (NAEP; U.S. Department of Education, 2014), the academic performance of both 9- and 13-year-olds has improved across all groups since the 1970s, and gaps between groups have narrowed. However, the gaps between Black and Hispanic 17 year-olds and their white peers, which narrowed during the 1970s and 1980s, have remained stable since 1990 without explanation, and the income-based achievement gap has widened significantly over the last three decades (Reardon, 2013). Despite periods of progress, racial and income-based achievement gaps remain substantial (Barton & Coley, 2010; Jacob & Ludwig, 2008). They begin early in life, and, given the rapidly growing population among the lowest-achieving groups (U.S. Census Project, 2010), these gaps will only become more critical in the future.

1.2 THE INTERVENTION: *NO EXCUSES CHARTER SCHOOLS*

1.2.1 Charter schools: an overview

The current school choice model intends to provide families with alternatives to publicly provided neighborhood schools by offering options such as school vouchers, scholarship tax credits, open enrollment laws, and charter schools. Beginning with the first charter written in Minnesota in 1991, charter schools have emerged as a educational reform concept that has attracted significant attention—and scrutiny—from education leader and reformers. A charter school is a publicly funded, semi-autonomous school that typically operates under a legislative contract with a "sponsor" (e.g., state, district, other entity). This contract—or *charter*—details school management, student expectations, and achievement measures while providing exemption from laws and regulations affecting non-charter public schools. In return for this flexibility and autonomy, the charter school must meet the accountability standards outlined in its charter. A school's charter is reviewed periodically by the entity that granted it and can be revoked if guidelines on curriculum and management are not followed or if the accountability standards are not met. Laws governing charter schools vary among states, and often differ on important factors, such as who is allowed to authorize charter schools, accountability for student outcomes, and whether to require certification for charter school teachers (Thomsen, 2016).

According to the U.S. Department of Education (2016), between 2000 and 2014, the enrollment of American public school students in charter schools as a percent of total enrollment in public schools grew from 0.7% (0.3 million) to 5.4% (2.7 million). Along with this growth in enrollment, the number of charter schools as a percent of total public schools increased from 1.7% to 6.9%. This data suggests that charter schools are poised for continued growth and expansion, making it crucial for educators, policymakers, researchers, and other stakeholders to develop a deeper understanding of their efficacy on student outcomes. Given the autonomy granted to charter schools in their operation and management, charters nationwide vary significantly among states, among districts, and among individual schools. This wide variation among charters makes it difficult to evaluate overall impact or draw broad inferences from nationwide data. This review aims to address this issue by exploring one subtype of charter school—*No Excuses* charter schools—allowing for comparison between charter schools that employ similar models of management, instruction, and school culture.

1.2.2 No Excuses charter schools

A growing number of charter schools in urban communities across the United States have employed a *No Excuses* philosophy, which focuses intensely on improving the math and literacy achievement of students who come primarily from low-income and minority backgrounds. The formal discussion of schools defined as "No Excuses" began as a national effort organized by The Heritage Foundation to mobilize public pressure on behalf of better education for the poor (Carter, 1999). Samuel Casey Carter, a Bradley Fellow at the Heritage Foundation, brought attention to the initiative in his book *No Excuses: Lessons from 21 High-Performing, High-Poverty Schools* (2000). The philosophy was further heralded by Thernstrom and Thernstrom in their book *No Excuses: Closing the Achievement Gap In Learning* (2003). The No Excuses philosophy is driven

by the philosophy that there is no excuse for the academic failure of schools serving low-income children and is aimed to embolden educators to develop school-based interventions and schooling models aimed at improving academic outcomes for this population (Carter, 1999). This model has found its footing in charter schools—publicly funded but privately managed schools exempt from the restrictions of the laws and regulations affecting non-charter public schools. Due to the autonomy afforded to the management of charter schools, educators have the freedom to implement the tenets of the No Excuses model without the restrictions placed on non-charter public schools. Since their introduction around the turn of the millennium, aspects of the No Excuses model have spread widely through the charter school landscape; in some states, charter schools that adhere somewhat or fully with No Excuses principals make up two-thirds of the urban charter schools (Angrist, Pathak, & Walters, 2013)

Several charter networks such as the Knowledge is Power Program (KIPP) and Uncommon Schools have received national attention by espousing a “no excuses” philosophy, and many lesser-known charter schools have adopted a similar model, such as the North Star Academy of Newark, New Jersey, and the Amistad Academy in New Haven, Achievement First, and Promise Academy (Armor, 2004; Golann, 2015). The adoption of the No Excuses model primarily in charter school settings is likely due to the operational autonomy afforded to charter schools, allowing charter management organizations the freedom to implement innovative models within their schools.

Although a consensus definition of the No Excuses charter school model has not been adopted, most definitions appear to center around common key characteristics. For the purposes of the present review, we will define a No Excuses charter school using these five common key characteristics: (a) high academic expectations, (b) rigid and consistent discipline, (c) extended instructional time, (d) intensive teacher training, and (e) increased parental involvement (Dobbie & Fryer, 2013; Thernstrom & Thernstrom, 2003; Whitman, 2008; Carter, 2000; Golann, 2015). For the purposes of this review, a charter school will be defined as No Excuses if it employs each of these five key characteristics. However, schools may adopt and employ these characteristics to varying degrees, along with additional policies that may distinguish them from other schools. Additional characteristics outlined by Carter (2000) may include autonomy of administrators, use of measurable goals, employment of master teachers, rigorous and regular testing, and requirement of mastery for grade promotion, among others.

1.2.3 Characteristics of No Excuses charter schools

1.2.3.1 High academic expectations

A common thread in the discussion of the reasons underlying the achievement gap is expectations, as both teacher and parental expectations can influence their students' academic achievement (Fan & Chen, 2001; Jussim, Madon, & Chatman, 1994; Rosenthal & Jacobson, 1968). Education stakeholders have speculated that expectations are reduced for low-income and minority students (Tenenbaum & Ruck, 2007) due to teachers' implicit biases against ethnic minority students (Van den Bergh, Denessen, Hornstra, Voeten, & Holland, 2010) and beliefs that minority students' poor performance stems from innate characteristics rather than situational factors (Jackson, 2002). Specifically, in No Excuses charter schools, teachers are asked to increase expectations of students by benchmarking their students' achievement against that of students in highly successful

classrooms across the country (Farr, 2010). As teachers' expectations have their greatest effects in classrooms in which high-achieving and low-achieving students are treated very differently (Kulinski & Weinstein, 2001), the No Excuses charter school model attempts to address the potential for lower achievement by ensuring that expectations are universally high for all students. Further, Fan and Chen (2001) found a strong relationship between parental expectations and their childrens' academic achievement. Thus, the high academic expectations set forth by the No Excuses charter schools may influence parents' expectations, further enhancing achievement outcomes. Within this model, high academic expectations are often met through intensive remediation of core subjects (e.g., intensive tutoring).

1.2.3.2 Rigid and consistent discipline

Rigid and consistent discipline appears to be a common and primary component of many No Excuses charter schools. Rigid disciplinary codes are often reflected in mandated dress codes and schoolwide, highly structured, consistently enforced conduct expectations; setting standards for how students walk in the hallways, demonstrate attentiveness in class, and organize their school work (Goodman, 2013; Lake et al., 2012; Whitman, 2008).

Research on the effects of school uniforms have not been compelling (Yeung, 2009). Several studies have either found school uniforms to be negatively correlated with academic performance (Brunsma & Rockquemore, 1998; Brunsma, 2004) or have found little to no significant association between uniforms and performance (e.g., Barton, Coley, & Wenglinisky, 1998; Gentile & Imberman, 2012; Sanchez, 2012).

In terms of conduct expectations, Lake and colleagues (2012) conducted a national study of charter management organization effectiveness and found a positive association between student behavior policies and math and reading achievement in four No Excuses charter school management organizations. Further, consistency of enforcement of behavioral expectations may play an important role in the effectiveness of No Excuses charter schools' disciplinary strategies as inconsistency of enforcement has been associated with behavior problems (Feehan, McGee, Stanton, & Silva, 2011; Stormshak, Bierman, McMahon, & Lengua, 2000). The rigid disciplinary approach used in the model continues to be controversial. Proponents suggest that the disciplinary approach is necessary to promote self-discipline and personal responsibility in an effort to teach students traditional, middle-class values (Whitman, 2008). Opponents of the disciplinary approach are concerned that the sole focus is compliance—undermining students' self confidence and identities, disallowing students the ability to learn to this for themselves, the rules are too numerous, and students are disciplined through a culture of shame (Ellison, 2012; Goodman, 2013; Lack, 2009).

1.2.3.3 Extended instructional time

No Excuses charter schools (and many other school models) make an effort to treat instructional time as an educational resource. However, measuring different aspects of the impact of extended instructional time has proved challenging for researchers. Findings related to its impact on student achievement appear to agree that there is little or no relationship between *allocated* time and student achievement (Aronson, Zimmerman, & Carlos, 1999; Checkoway et al., 2012). However,

when used for *academic learning*, extended instructional time has been shown to exert positive impacts on student achievement (Aronson et al., 1999; Farbman, 2012; Farbman & Kaplan, 2005).

1.2.3.4 Intensive teacher training

Teachers employed at No Excuses charter schools often participate in intensive pre-service training before the beginning of a new school year and ongoing professional development throughout the year in the form of intensive teacher coaching and monitoring. New teachers are observed by master teachers, receive feedback on their performance, and submit lesson plans for review (Lake et al., 2012). Despite several decades of research, the relationship between teacher effectiveness and teacher training has not been conclusively demonstrated for traditional school models. However, Lake and colleagues (2012) found intensive teacher coaching to be an effective strategy for four high-performing No Excuses charter school management organizations.

1.2.3.5 Parental involvement

The parental accountability implemented in No Excuses charter schools may play a key role in affecting student achievement. Many studies have found that students with involved parents were more likely to earn higher grades and test scores, no matter what their income or background (Fehrman, Keith, & Reimers, 1997; Jeynes, 2012; Steinberg, Lamborn, Dornbusch, & Darling, 1992). Several studies found that families of all income and education levels, and from all ethnic and cultural groups, are engaged in supporting their children's learning at home. White, middle-class families, however, tend to be more involved at school (Henderson & Mapp, 2002). Low-income and minority families, however, often face barriers to sufficient involvement in their children's schooling such as monetary constraints, time constraints, transportation needs, language and other communication differences, and cultural beliefs about the role of family in children's schooling (Boethel, 2003). Critical questions have been raised regarding how parental involvement is conceptualized, especially within low-income and minority communities (Barton, Drake, Perez, St. Louis, George, 2000). Social and cultural contexts must be taken into consideration when defining parental involvement.

The common parental accountability component of the No Excuses charter school model attempts to minimize barriers and cultivate commitment from parents to reinforce school actions with strategies such as written contracts explaining the school's expectations regarding (a) parental responsibilities, (b) academic standards, and (c) conduct and discipline, for example; requiring homework assignments to be checked and signed by parents; parent orientation meetings, and asking that the parent check and sign their child's homework before returning it to the teacher. However, further research is required to provide evidence that parental involvement requirements, such as those employed in a No Excuses charter school, are sufficient for overcoming the barriers noted.

1.2.4 Use of best practices

Research examining best practices from both charter school and traditional literatures finds that successful schools exhibit similar characteristics regardless of their status as public, private, or charter (Fryer & Leavitt, 2004; Maas & Lake, 2015). The success achieved by No Excuses charter schools may be the result of implementation of a key combination of best practices. For example,

Maas and Lake compared current knowledge about the characteristics of effective charter schools to effective school research. They found several best practices found in the education literature that appear to closely align with some of the key characteristics of No Excuses charter schools: (1) high expectations, (2) increased time, and (3) a focus on student learning. This demonstrated success of best practices across settings (i.e., charter and non-charter) suggests that stakeholders focus on the implementation of these practices in schools independent of the schools' status as a charter or non-charter.

1.3 WHY IT IS IMPORTANT TO CONDUCT THIS REVIEW

Taking into account the accumulating literature suggesting the potential benefits of No Excuses charter schools, there is a need to comprehensively synthesize the full evidence base of methodologically rigorous studies that examine impacts of No Excuses charter schools on math and literacy achievement. A systematic review that evaluates the efficacy of the model will advance the evidence base and provide researchers, educators, and policymakers with a means by which to make informed decisions about the use of the model in the field.

As students' poor academic achievement is associated with lower earning potential (Miller, 1998), greater youth violence (Hawkins, Herrenkohl, Farrington, Brewer, Catalano, & Harachi, 1998; Kingery, Pruitt, Heuberger, & Brizzolara, 1996), increased drug use (Cox, Zhang, Johnson, & Bender, 2007; Mensch & Kandel, 1988), and delinquency (Maguin & Loeber, 1996), identifying means of decreasing the achievement gap and improving all students' educational performance is an important priority for educational research.

Given the expanded recent interest in school choice and charter schools—and specifically in No Excuses charter schools—as an instrument of education reform for low-income and minority students, now more than ever, there is need for critically evaluating information about their performance. A growing body of controversial evidence suggests that No Excuses charter schools may represent a promising strategy for addressing the racial and income-based achievement gaps (Abdulkadiroğlu et al., 2009; Angrist, et al., 2011; Dobbie & Fryer, 2013), but also suggests that the small-scale success experienced by schools implementing this model may be the result of factors that do not permit the model to be scalable (e.g., high teacher attrition, disproportionate number of highly-dedicated teachers) (Yeh, 2016). Thus, the present review is necessary to determine if this model of schooling precipitates these purported effects in order to ensure that students are justly served by its use.

To our knowledge, one prior review was conducted to synthesize the effects of No Excuses charter schools on math and literacy achievement (Cheng, Hitt, Kisada, & Mills, 2017). The present review intends to expand upon the previous study primarily in four ways: (1) the present review represents a more inclusive, comprehensive, and systematic literature search and includes unpublished studies; (2) more relevant inclusion criteria were used to improve the tenability of the results; and (3) our results included theses and dissertations.

2 Objectives

The systematic review and meta-analysis aims to examine the available evidence on the impacts of No Excuses charter schools on students' math and literacy achievement relative to students enrolled in traditional public schools. The focal research questions are:

- Does the No Excuses charter school model enhance students' math or literacy achievement more so than traditional public schools?
- What is the magnitude and variability of the effects?
- What are the limitations to the evidence?

Secondarily, should the included studies provide us with sufficient relevant data to explore differential effects for No Excuses charter schools with different characteristics (i.e., potential moderators such as percent minority, percent male, school and class size, etc.), we will explore their presence and magnitude.

3 Methods

3.1 CRITERIA FOR SELECTING STUDIES

Eligible studies met all criteria set forth below for inclusion in this systematic review and meta-analysis.

3.1.1 Types of studies

Included studies used experimental RCTs or controlled QEDs. For QED studies to be eligible, researchers must have compared No Excuses charter school students to demographically similar students who attended nearby traditional public schools. Methods that can be used to establish the demographic similarity of groups included: individual or school-level matching on at least one measure of race, ethnicity, socioeconomic status, or achievement; regression models that use student fixed effects to adjust for student race, ethnicity, or socioeconomic status; or instrumental variables analyses that adjust an instrument for whether students enrolled in a charter school.

Eligible QED studies were required to report baseline achievement for the intervention and comparison conditions. Baseline equivalence, defined as less than one-fourth of a standard deviation difference between the means in the intervention and comparison at baseline achievement, was also measured and reported by study overall. If baseline achievement data were not reported, then the authors were required to use baseline achievement to match subjects (such as with propensity score methods) or to statistically adjust for difference in baseline achievement in their analyses (e.g., to adjust group means or as a covariate in a regression model).

3.1.2 Types of participants

This review specifically examined students enrolled in elementary and secondary No Excuses charter schools. The student populations attending No Excuses charter schools are predominantly low-income and/or minority (Frankenberg, Siegel-Hawley, Wang, & Orfield, 2012; Tuttle et al., 2010).

3.1.3 Types of interventions

This review examined charter schools that implemented a No Excuses model, both in the U.S. and abroad. To determine if a charter school used a No Excuses model, it was evaluated for the presence of five key characteristics discussed above [i.e., (a) high academic expectations, (b) rigid and consistent discipline, (c) extended instructional time, (d) intensive teacher training, and (e) increased parental involvement]. All five key characteristics were required to be present for a

school to be identified as a No Excuses charter school. These characteristics must be mentioned explicitly as being endorsed by the charter school, although leniency was granted for the degree of operationalization (e.g., what is “rigid and consistent” discipline and “intensive” teacher training). This method of defining a No Excuses charter school included schools that unknowingly conformed to the No Excuses model without including charter schools that only employ part of the No Excuses model. Because our interest is in No Excuses charter schools, studies that compare achievement in public schools to charter schools, without adequate information to separate No Excuses charter schools from charter schools employing other models, were not eligible.

3.1.4 Types of outcome measures

Eligible studies measured at least one standardized student-level math or literacy achievement outcome. All meta-analyses were conducted separately for the math and literacy outcomes (described in more detail in the synthesis section below).

Math and literacy outcomes standardized to national, state, or another representative samples were used. These can be defined as standardized assessments on which students demonstrate grade-level appropriate knowledge of math or literacy domains. For example, math or literacy subtests of the NAEP, SAT, ACT, PISA were all acceptable standardized measures. Raw scores, standardized scores, and percentile scores were all acceptable outcomes. All unstandardized outcomes, such as curriculum-based measurements, grade point averages, or teacher-reported grades, were excluded from the review to minimize potential bias from such unstandardized assessments.

3.1.5 Additional criteria

Studies that only combined math and literacy outcomes into a unified achievement measure were excluded from the review. Consistent with previous findings on No Excuses charter schools (Cheng et al., 2017), we expected that math achievement gains might not be identical to literacy achievement gains.

Studies must have been conducted after 1990. This is the year the first charter school was founded, and thus we do not expect any studies to have been conducted prior to this date.

Eligible studies may have been conducted in any country. However, the cultural factors informing the development and implementation of No Excuses charter schools largely limited the eligible studies to the heterogeneous population of the United States.

To be included in the quantitative synthesis, studies were required to report statistics necessary for calculating effect sizes. If multiple forms of an eligible outcome were reported (such as means and standard deviations as well as pass rates), we used the maximally informative form. If both adjusted effect sizes (accounting for differences between the groups on baseline achievement, demographics, or both) and unadjusted effect sizes were reported, we used the adjusted effect sizes.

3.1.6 Duration of follow-up

We conducted separate meta-analyses for each yearly follow-up to estimate cumulative effects of No Excuses charter school attendance. Included studies reported sufficient information for four yearly follow-ups: Year 1, Year 2, Year 3, and Year 4.

3.1.7 Types of settings

Studies conducted in natural school settings were eligible for inclusion in this review. Studies conducted in non-school settings were ineligible due to external validity concerns including the potential limitation in providing generalizability of findings to the target population.

3.1.8 Types of comparison groups

Comparisons groups must have been comprised of students attending traditional public schools. Studies comparing No Excuses charter schools to other charter schools are excluded from this review. Charter school policies and practices (e.g., funding rules, operational requirements, accountability) vary widely across states and even within districts, while traditional public schools are held to similar rules and regulations. A comparison of No Excuses charter schools and charter schools overall would limit interpretation of the results.

3.1.9 Timeframe of studies

Studies must have been conducted or reported between January, 1990 and June, 2016. The date range reflects the time period during which No Excuses charter schools have been present in the U.S. School system.

3.1.10 Study locale

Eligible studies may have been conducted in any country. However, the cultural factors informing the development and implementation of No Excuses charter schools limited the eligible studies to the heterogeneous population of the United States.

3.2 SEARCH METHODS FOR IDENTIFICATION OF STUDIES

3.2.1 Electronic searches

We used the ProQuest database host to search 15 electronic databases:

PsycINFO, PsycARTICLES, ProQuest Social Sciences Premium Collection (includes ERIC), ProQuest Dissertations & Theses Global, ProQuest Sociology, ProQuest Social Science Journals, ProQuest Science Journals, ProQuest Religion, ProQuest Psychology Journals, ProQuest Political Science, ProQuest Health and Medical Complete, ProQuest Family Health, ProQuest Education Journals, ProQuest Criminal Justice, PILOTS, and ebrary e-books.

The search strategy used to search ProQuest is outlined in Table 3.1. Beyond including *charter* and *charter schools* in the search, we included specific brands of charter schools in the United States, such as *KIPP*, *Rocketship Education*, and *Great Hearts*. To identify international studies, we used the search terms *free*, *paternalistic*, *autonomous*, *foundation*, and *academies*. Through extensive

scoping searches, we found these to be the most common terms used for charter schools internationally. We suspected the term *free school* would draw a particularly diverse swath of irrelevant studies, including literature related to *smoke-free schools*, *free school meals*, and the *Free School Movement*. Thus, we excluded those terms from the title search.

To ensure comprehensive inclusion of relevant studies, we limited search terms about design and outcomes to only the broadest terms. While we hoped to target well-described studies with terms such as *lottery*, *propensity*, or *experiment**, we also included terms such as *match**, *compar**, and *control** to target studies that do not describe their methodology in great detail. To search eligible standardized achievement outcomes, we searched *standard**, *achiev**, and *assess** as well as *effect**, *affect*, *impact** and *outcome**.

Table 3.1. Search Strategy in ProQuest

Search Description	
Limited to title and abstract	ti,ab("charter school" OR "charter schools" OR charter* OR "KIPP" OR "Achievement First" OR "Uncommon schools" OR "Match Education" OR "Friendship public" OR "Breakthrough Schools" OR "Brighter Choice" OR "IDEA public" OR "YES prep" OR "Alliance of College Ready" OR "Alliance College-Ready" OR "Rocketship Education" OR "Summit Public" OR "Green Dot" OR "Great Hearts" OR "STRIVE Prep" OR "Strive Preparatory" OR "Aspire Public" OR "Bright Star" OR "Leadership Public" OR "Success Academies" OR "Summit public" OR "Synergy Academies" OR ((foundation OR free OR paternal* OR autonom*) PRE/1 school*) OR (("academy" OR "academies") AND ("United Kingdom" OR "England" OR "British" OR "Britain"))) AND ti,ab("lottery" OR compar* OR random* OR control* OR propensity OR match* OR experiment*) AND ti,ab(achiev* OR assess* OR math* OR liter* OR read* OR effect* OR outcome* OR standard* OR affect* OR impact*)
Excluded from title	NOT ti(lunch* OR meal* OR breakfast* OR drug* OR smok* OR bully* OR psychiatr*)
Additional delimiters	Date: After 1 January 1990

3.2.2 Searching other resources

In addition to the electronic search of the above databases, we reviewed the references lists of all retrieved documents. The websites of relevant professional organization such as Mathematica, and American Institutes for Research (AIR) were searched for potentially eligible research reports. Finally, key investigators who are known to be active in the field and experts identified during the

review process were contacted with a request to share any published, unpublished, and ongoing research relevant to the review.

3.3 DATA COLLECTION AND ANALYSIS

3.3.1 Data extraction and management

Two reviewers independently extracted data from at least 30% of the eligible studies. Prior to coding, the authors participated in comprehensive training involving review of coding rules and areas of ambiguity in the coding manual. Periodic reliability assessments to protect against coder drift were conducted during the initial stages of coding. Inter-rater reliability checks were conducted prior to coding the final set of eligible studies. Data extraction forms for reliability, coding, and screening were developed. If a study was found ineligible at the full-text coding stage, the reasons for ineligibility were documented and reported. Disagreements in coding were resolved through discussion and consensus; any disagreements about coding items were resolved through discussion with the third review author. Before synthesis of results, effect sizes were assessed for numerical accuracy to ensure extracted effect sizes match the direction of effects reported.

3.3.1.1 Potential moderators

To ensure robustness of findings, several study and design characteristics were pre-identified and extracted for inclusion in moderator analyses. These moderator analyses were only estimated if at least five studies contributed to a given subset. Data was extracted for the following potential moderator variables: (1) study source (e.g., journal, independent report), (2) achievement measure type (i.e., state or national), (3) percent of sample that was minority status, (4) percent of sample that was male, (5) percent of sample receiving free-and-reduced lunch (FRL), (6) percent of sample receiving special education services (SPED), (7) class size (i.e., student-to-teacher ratio), (8) school size, (9) number of years charter has been active, (10) charter school network status (i.e., if the charter school was part of a charter management organization), and (11) attrition.

Study design (RCT vs. QED) and study source (e.g., journal, dissertation, unpublished study) were included to determine if there are significant differences between randomized and non-randomized findings and to determine if unpublished reports—commonly sponsored by charter organizations—have significantly different findings from peer-reviewed published articles or dissertations. The types of reported achievement measures were also included, separating state-standardized from nationally standardized tests, to determine if findings differ for measures which vary widely in difficulty from state to state.

The school-level characteristics of No Excuses charter schools may help to identify school qualities that promote the effectiveness of the No Excuses model, as well as provide important information about the scalability of the No Excuses model. For instance, student gender was also included as moderator variables as it has been theorized that the high-expectations and strict discipline within No Excuses charter schools may help male students' performance more than female students'. Thus, we may expect different math or literacy gains from No Excuses charter schools with different percentages of males. Further, based on prior work showing that No Excuses charter schools (and charter school overall) enroll a lower percentage of students with disabilities

(Lacireno-Paquet, Holyoke, Moser, & Henig, 2002; Miron, Urschel, & Saxton, 2011; Nichols-Barrer et al., 2016), special education status was included to determine if effects differ in relation to the proportion of students receiving special education services.

3.3.1.2 Details of study coding categories

All studies that met the eligibility criteria in the citation and abstract, and full-text screening were coded using a detailed coding instrument developed by the authors. Data extracted from primary studies included information on methodology, design, intervention and comparison group characteristics, math or literacy outcome details and characteristics, etc. See Appendix I for coding manual.

3.3.1.3 Criteria for the determination of independent findings

We took several steps to ensure that all effect sizes used in our meta-analysis represent statistically independent observations. First, we collated multiple studies that report on a single sample; three studies were found that report on the same samples. Second, if a study reported multiple eligible math or literacy measures we averaged the measures into a single outcome within that outcome domain using the procedure outlined above (Borenstein et al., 2009 p.230). However, no study reported multiple eligible math or literacy outcomes in a given year. Finally, there is a risk that large-scale studies (such as Tuttle et al., 2010) that included multiple independent samples may overlap samples studies in smaller, single-school studies. To avoid over-weighting these samples (which represent a small fraction of the included samples), meta-analyses used robust standard errors for the large-scale studies. Coders also made every effort to re-identify the de-identified schools that might be over-represented and to confirm that the years and grades reported in each study did not overlap.

3.3.2 Statistical procedures and conventions

3.3.2.1 Measures of treatment effect

Most studies reported continuous measures of math or literacy outcomes, so we used the small-sample corrected standardized mean difference effect size metric (Hedges' g) to estimate the mean difference in outcomes by intervention and comparison conditions. If an eligible study reported binary outcomes (e.g., pass-fail rates for an achievement test) by condition, we computed log odds ratios; then converted these log odds ratios to Hedges' g effects (using procedures outlined in Borenstein et al., 2009, p. 47) and synthesized these effect sizes in a single meta-analysis for each outcome type. Several studies reported either standardized or unstandardized regression coefficients for the effect of No Excuses attendance. For these effect sizes, we converted used the Campbell Collaboration effect size calculator (<http://www.campbellcollaboration.org/escalc/html/EffectSizeCalculator-SMD-main.php>) to convert these effect sizes to Cohen's d , and then converted to Hedge's g (see Table 4.4).

3.3.2.2 Unit of analysis issues

For all included studies, the unit of assignment and the unit of analysis were at the level of the individual student.

3.3.2.3 Dealing with missing data

For studies missing sufficient data for calculation of effects sizes, we solicited authors for the needed information or made reasonable estimates from the reported data, if possible. If authors did not respond and reasonable estimates could not be made, these studies were excluded from the synthesis, but provide helpful information in the systematic review.

3.3.2.4 Assessment of heterogeneity

We calculated Q , τ^2 , and I^2 to assess heterogeneity. The Q statistic is distributed as a chi-square with $k-1$ degrees of freedom (k = the number of effect sizes).

3.3.2.5 Data synthesis

Given the presumed heterogeneity in included studies, we used random-effects meta-analysis models to synthesize findings across studies. All analyses were conducted separately for the two outcomes: math and literacy. All analyses were performed using meta-analysis commands that run in the Stata statistical environment (StataCorp, 2011).

3.3.2.6 Moderator and subgroup analysis

For each subset of studies (i.e., outcome type by follow-up year), we conducted meta-regression models to explore the potential effect of each of the moderator variables (see section 3.3.1.1 for discussion of included moderators). We examined the magnitude and statistical significance of the slope coefficients from the meta-regression models to assess moderator effects. For moderator analyses, we pooled effect size estimates for QEDs and RCTs for each year follow-up, and only conducted meta-regressions for each moderator if at least four samples reported moderator information. While meta-regressions with multiple moderators as predictors would have provided an even richer exploration of the school- and study-level moderators, multicollinearity between the moderators, as well as unreported moderator data and lack of moderator variability, prevented extensive moderator analyses. Results for the moderator analyses are reported in Section 4.4.

3.3.2.7 Sensitivity analysis

We defined outliers as effect sizes three standard deviations away from the median. In Year 1, we flagged one sample from Woodworth et al. (2008) as an outlier on both math and literacy. In Year 3, we flagged one sample from Mac Iver & Farley-Ripple (2007) on math and one sample from Tuttle et al. (2010) on literacy as outliers, respectively. No outliers were detected for Years 2 and 4. Meta-analyses were re-ran with the outliers removed and with the outliers Winzorized to three standard deviations above the mean. In both cases, the results were nearly identical to those conducted without changing the outliers. As such, we report the results from the analyses with the outliers included unchanged.

3.3.2.8 Detecting and adjusting for publication bias

We conducted Egger's tests to detect publication bias. Because Egger's test can be underpowered in small samples, we used trim-and-fill analyses even when Egger's test was non-significant to adjust for potential publication bias.

4 Results

4.1 RESULTS OF THE SEARCH

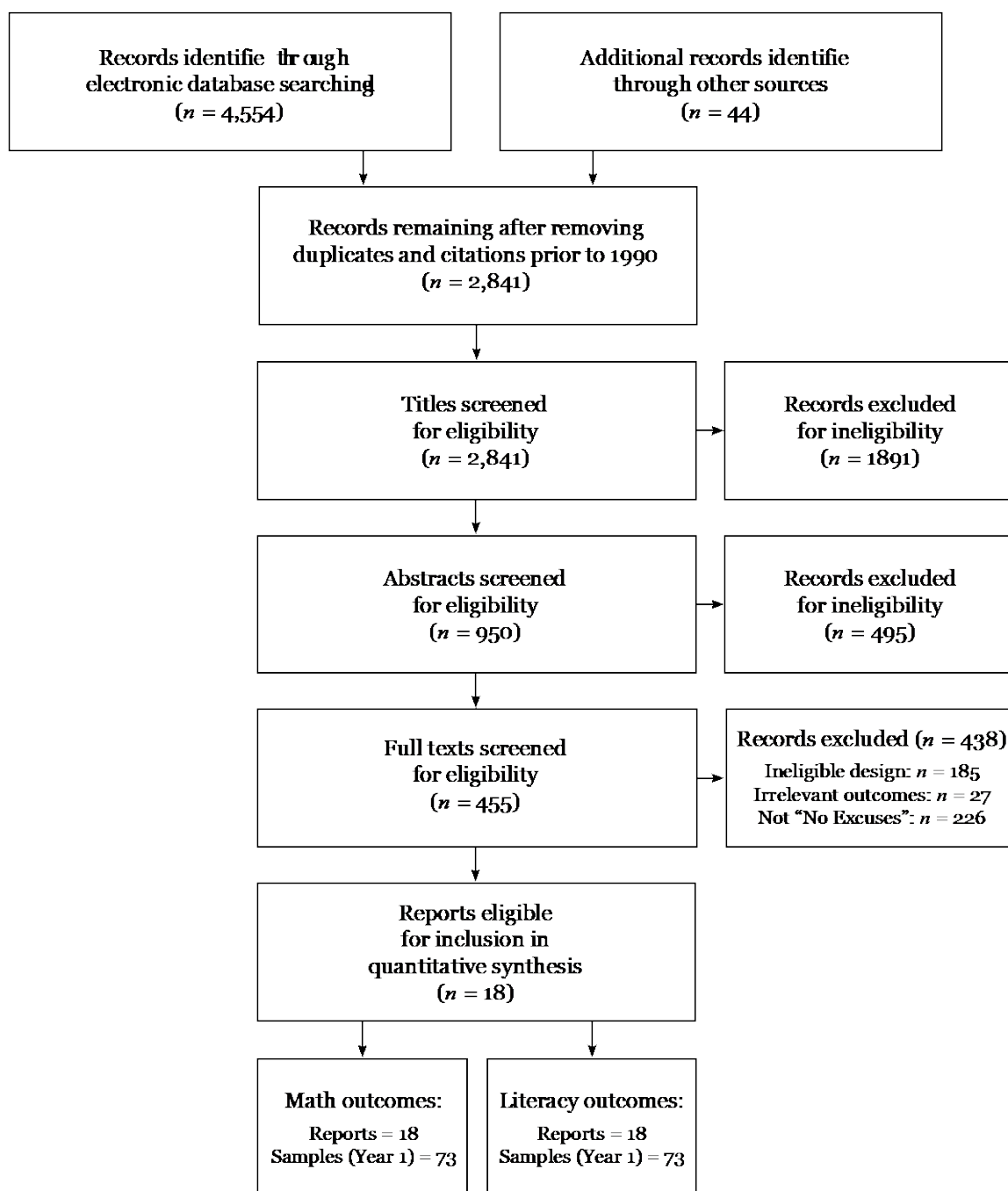
4.1.1 Included studies

Figure 4.1 shows the study identification flow diagram reflecting the study identification process for all identified research reports for the current review. Electronic searches of bibliographic databases and searches of other sources (e.g., citation search, etc.) identified a total of 4,554 citations with 44 additional records identified through other sources and search methods. After duplicates and removal of studies prior to 1990, 2,841 citations remained. Titles and abstracts were screened for initial relevance and 2,386 of the remaining reports were excluded for irrelevance or ineligibility. Full-texts of the remaining 455 studies were retrieved (no unretrievable reports) and screened for eligibility—18 of which passed full-text screening for inclusion in the primary review.

4.1.2 Excluded studies

During the full-text screening of the study selection process, 438 studies were excluded. The majority of these exclusions were due to the involved schools not employing a No Excuses model—an inclusionary criteria which could not often be determined during screening of the title and abstract. During full-text screening, if the study did not explicitly state that the school in the samples employed a No Excuses model, we examined the school descriptions reported in the study for the presence of the five characteristics of the No Excuses model. In the event that these characteristics were not explicitly reported, we explored the mission statements for or related information about the specific schools or schools included in the study to determine if the school either explicitly used the No Excuses model or reported implementation of the five characteristics of the No Excuses model identified for the purposes of this study. The remaining studies were excluded due to (a) not meeting criteria for study design, such as matching without using baseline achievement, or (b) reporting of outcomes irrelevant to our review (e.g., course grades). We further identified five potentially eligible reports that were conducted in the United Kingdom. However, we were unable to determine the employment of the No Excuses model in these studies and they were therefore excluded.

Figure 4.1. PRISMA flowchart illustrating study identification process



4.2 DESCRIPTION OF THE STUDIES

The results of our search are comprised of nongovernmental reports (9), journal articles (5), dissertations (2), working papers (1), and papers presented at conferences (1). The included studies employed RCTs ($n = 5$; ~5.75% of independent samples) and QEDs ($n = 13$; ~94.25% of independent samples). All 18 studies were conducted in the United States and used state-level standardized tests to measure students' achievement, as opposed to national standardized test (e.g., SAT, ACT). See Table 4.1 for a summary of the included studies.

Table 4.1. Summary of included studies

Study	Design	Publication Type	Separate Samples	Grade Levels	Charter Schools	Follow-up Years	Charter Students in First Year	KIPP?
Abdulkadiroğlu et al. (2011)	RCT	Journal	2	M,H	8	4,1	2,634	No
Angrist, et al. (2010)	RCT	Journal	1	M	1	2	856	Yes
Crosby (2015)	QED	Dissertation	1	H	2	1-5	179	Yes
Curto & Fryer (2014)	RCT	Journal	1	M,H	1	1	129	No
Dobbie, Fryer, & Fryer (2011)	QED	Journal	2	E,M	1	1	1,098	No
Fryer (2014)	QED	Journal	3	E,M,H	20	1-3*	4,824	No
Gallagher & Ross (2005) †	QED	Report	3	M	1	1-2*	117	Yes
Hastings, Nekilson, & Zimmerman (2012)	RCT	Working Paper	1	E,M,H	8	1	237	No
Herman et al. (2011)	QED	Report	3	H	8	1-3*	1,119	No
Mac Iver & Farley-Ripple (2007)	QED	Report	4	M	1	1-4*	355	Yes
McDonald, Ross, Abney, & Zoblotsky (2008) †	QED	Conference Paper	10	M	1	1-4*	246	Yes
Rose (2013)	QED	Dissertation	1	M	1	1-4	90	Yes
Ross, McDonald, & McSparrin-Gallagher (2004) †	QED	Report	1	M	1	1	49	Yes
Teh, McCullough, & Gill (2010)	QED	Report	1	M	5	1-3	300	Yes
Tuttle et al., (2010)	QED	Report	22	M	22	1-4*	11,228	Yes
Tuttle et al., (2015)	RCT/QED	Report	3	E,M,H	38	1-3*	2,289	Yes
Woodworth, et al. (2008)	QED	Report	6	M	3	1	279	Yes
Young et al., (2009)	QED	Report	19	E,M	23	1-2*	2,670	No

Note. E=elementary, M=middle, H=high school. Studies report on some of the same samples.

* Indicates not all samples report on all follow-up years.

† Studies report on some of the same samples. Information on the fullest sample characteristics available from each report were coded.

4.3 RISK OF BIAS IN INCLUDED STUDIES

4.3.1 Potential sample bias

The basic research designs used in eligible studies were random assignment using enrollment lotteries at oversubscribed schools and comparing lottery winners with lottery losers (RCTs) or matching students for baseline equivalence on achievement and demographic characteristics (QEDs). Studies using random assignment via lottery may be largely free of the self-selection bias that often plagues studies of this type. However, only 5 of the 18 studies used random assignment, representing approximately 8% of the independent samples in Year 1. The remaining 13 QED studies demonstrated baseline equivalence on achievement, but may still be affected by self-selection bias (or other types of sample bias) despite the researchers efforts to equate matches.

Thus, the potential for sample bias remains a concern in the interpretation of the results for the majority of the studies, as unreported differences likely exist between students electing to enroll in a No Excuses charter school and students attending traditional schools. Sample biases may result primarily from differences in attrition (Miron et al., 2011) or differences in population of students with exceptional needs such as English language learners and students with learning disabilities (Lacireno-Paquet et al., 2002; Miron et al., 2011; Nichols-Barrer et al., 2016). To attempt to mitigate some of the potential sample bias, intent-to-treat (ITT) effects were coded, if available, rather than the more liberal treatment-on-treated (TOT) effects. See Section 5.4.1 for further discussion of sample biases.

4.3.2 Analysis of potential publication bias

Reporting (publication) bias stems from failing to detect unpublished studies. Underrepresentation of unpublished studies, which are more likely to have non-significant effects, can substantially bias effect size estimates (Borenstein et al., 2009). The majority of studies included in this review are nongovernmental reports conducted by independent research organizations. While the large proportion of unpublished studies in this review may suggest the absence of publication bias, the presence of a majority proportion of reports on large, multi-site studies may suggest the absence of smaller studies with null effects or the exclusion of samples within the multi-site studies in which a non-significant effect were found. We examined potential publication bias using Egger's regression-based assessment of asymmetry of funnel plots (see Figures 4.2 through 4.9; Egger, Smith, Schneider, & Minder, 1997). While many samples with small standard errors (indicating, in general, large sample sizes) show large effect sizes, there does not appear to be any bias in these samples toward larger effects or asymmetry in the plots. Because the funnel plots indicated no difference in publication bias between RCTs and QEDs, we conducted the Egger's tests on the combined results for math and literacy effects separately.

4.3.2.1 Publication bias of math results

The Egger's test did not find sufficient evidence of bias for math results for any year (Year 1, $p = 0.979$, Year 2, $p = 0.325$; Year 3, $p = 0.283$; Year 4, $p = 0.851$). These results are not confirmatory of the absence of publication bias. The Egger's test can be underpowered in small samples such as those analyzed in Years 2, 3, and 4. Further, the results from Years 3 and 4 are from samples from

only a few multi-site studies. However, they do suggest that its presence is unlikely and allow for increased confidence that few small sample studies with null or negative findings were omitted from the current analysis. Trim-and-fill analyses were conducted for each year. The estimated mean effects for each year after trimming-and-filling were consistent with the untrimmed analyses: Year 1 (0 trimmed, $g = 0.207$, $p < 0.001$), Year 2 (4 trimmed, $g = 0.250$, $p < 0.001$), Year 3 (6 trimmed, $g = 0.331$, $p < 0.001$), Year 4 (0 trimmed; $g = 0.299$, $p < 0.001$).

4.3.2.2 Publication bias of literacy results

The Egger's test found evidence of potential publication bias for the effect of the intervention on literacy in Year 1 (Year 1, $p = .047$). While Years 2, 3 and 4 do not show evidence of publication bias (Year 2, $p = .144$, Year 3, $p = .283$; Year 4, $p = .851$), again, we do not take this as confirmatory evidence of lack of publication bias. Using the trim-and-fill method to adjust for potential publication bias, estimated mean effects were attenuated but still significant and consistent with the untrimmed results: Year 1 (7 trimmed, $g = 0.041$, $p = 0.028$), Year 2 (6 trimmed, $g = 0.091$, $p < 0.001$), Year 3 (3 trimmed, $g = 0.168$, $p < 0.001$), Year 4 (1 trimmed, $g = 0.178$, $p < 0.001$).

Figure 4.2. Funnel plot (math outcomes - Year 1)

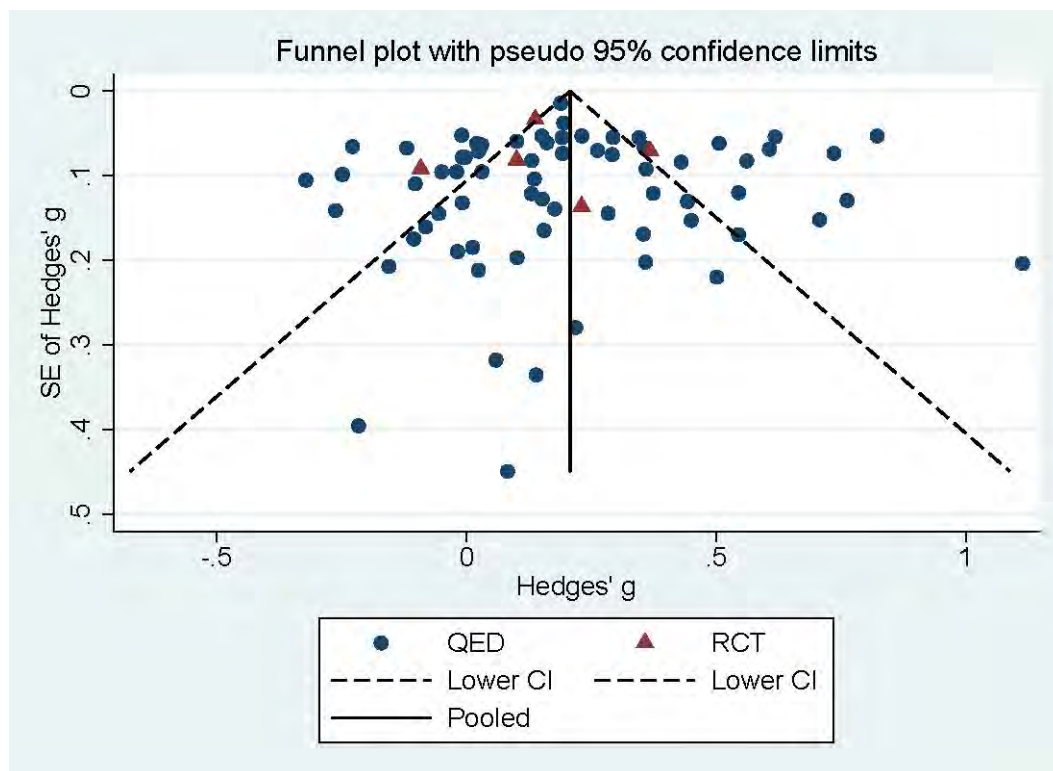


Figure 4.3. Funnel plot (math outcomes - Year 2)

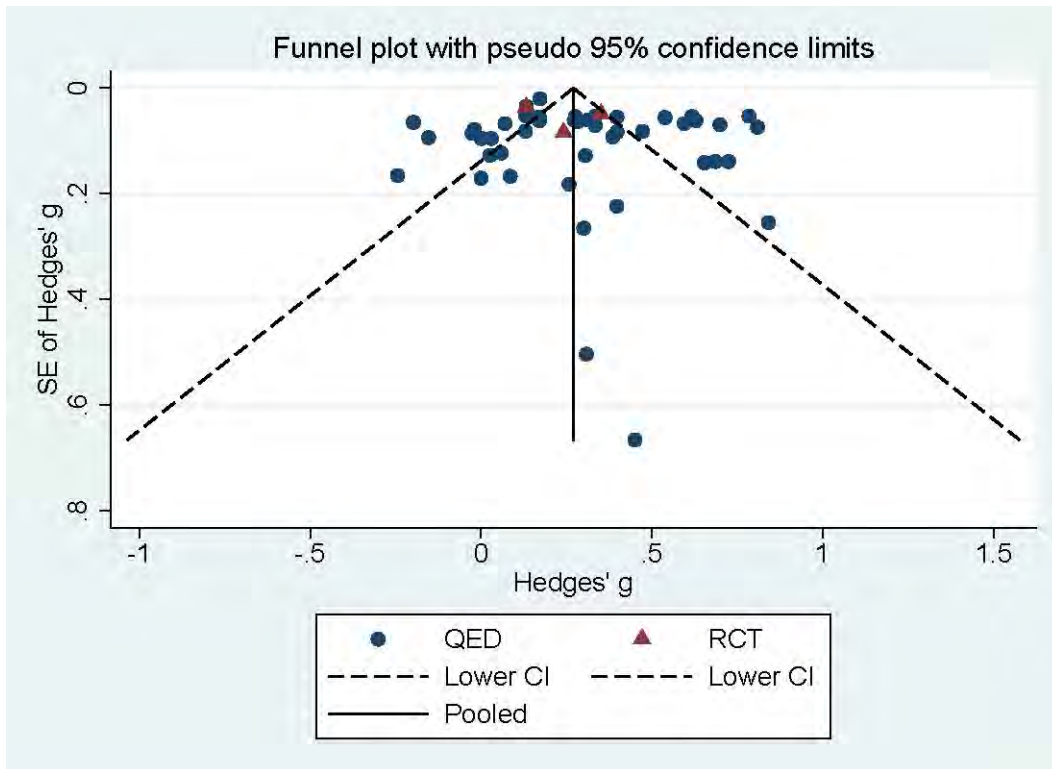


Figure 4.4. Funnel plot (math outcomes - Year 3)

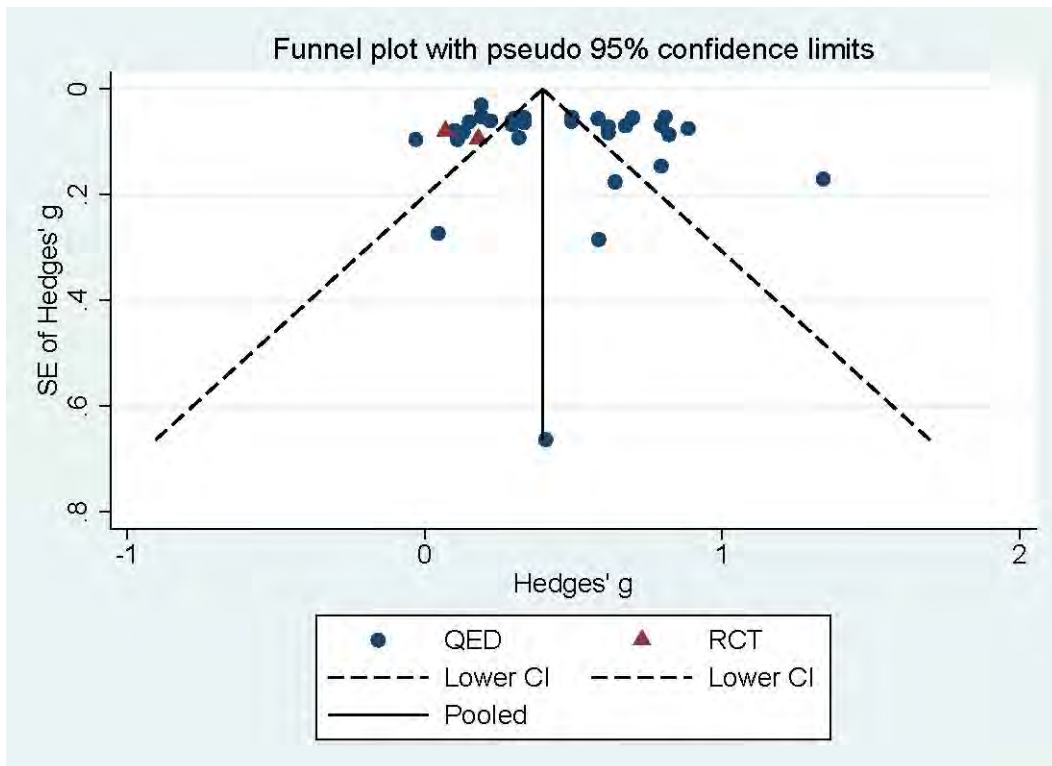


Figure 4.5. Funnel plot (math outcomes - Year 4)

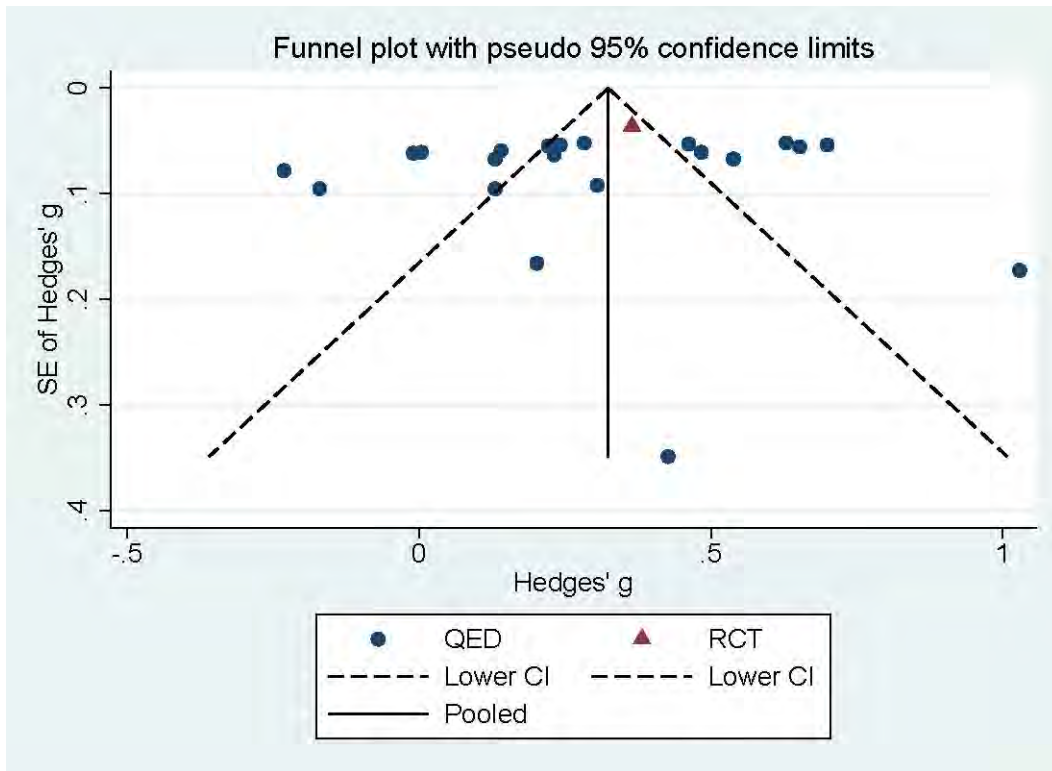


Figure 4.6. Funnel plot (literacy outcomes - Year 1)

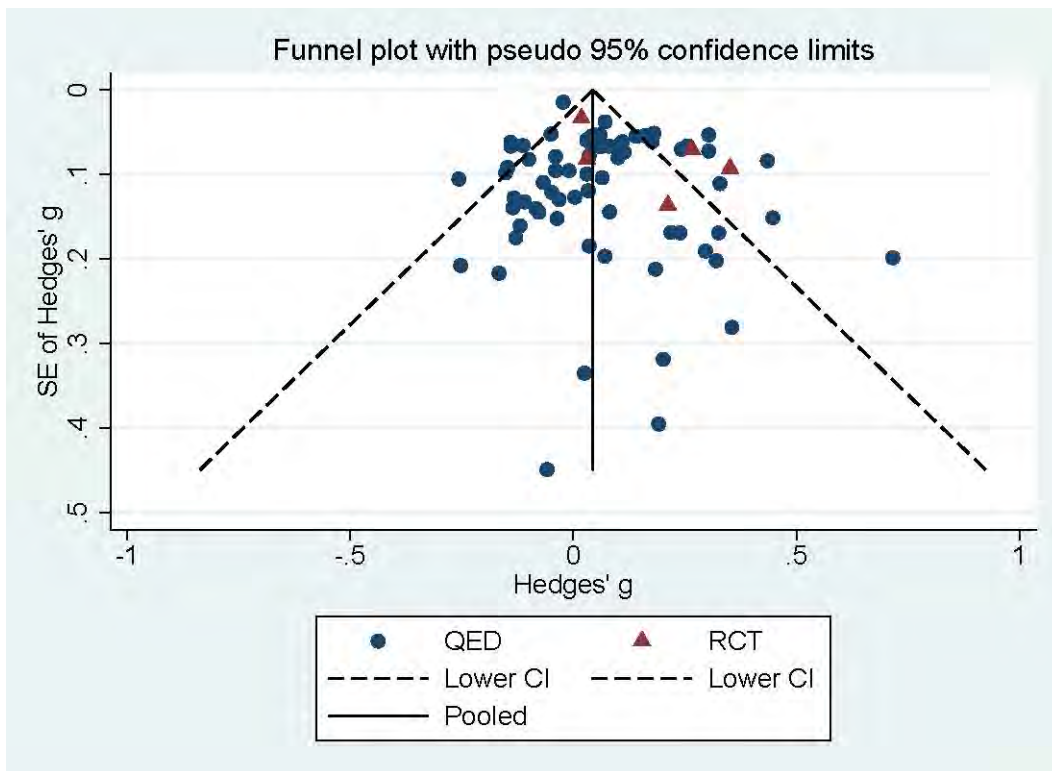


Figure 4.7. Funnel plot (literacy outcomes - Year 2)

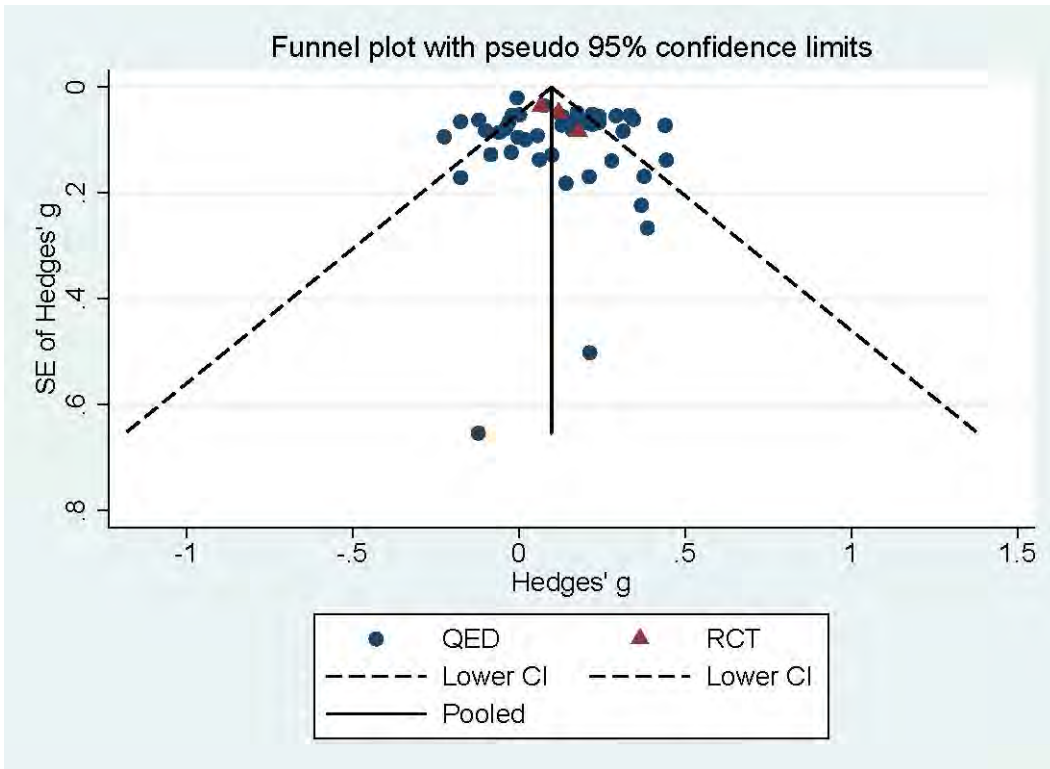


Figure 4.8. Funnel plot (literacy outcomes - Year 3)

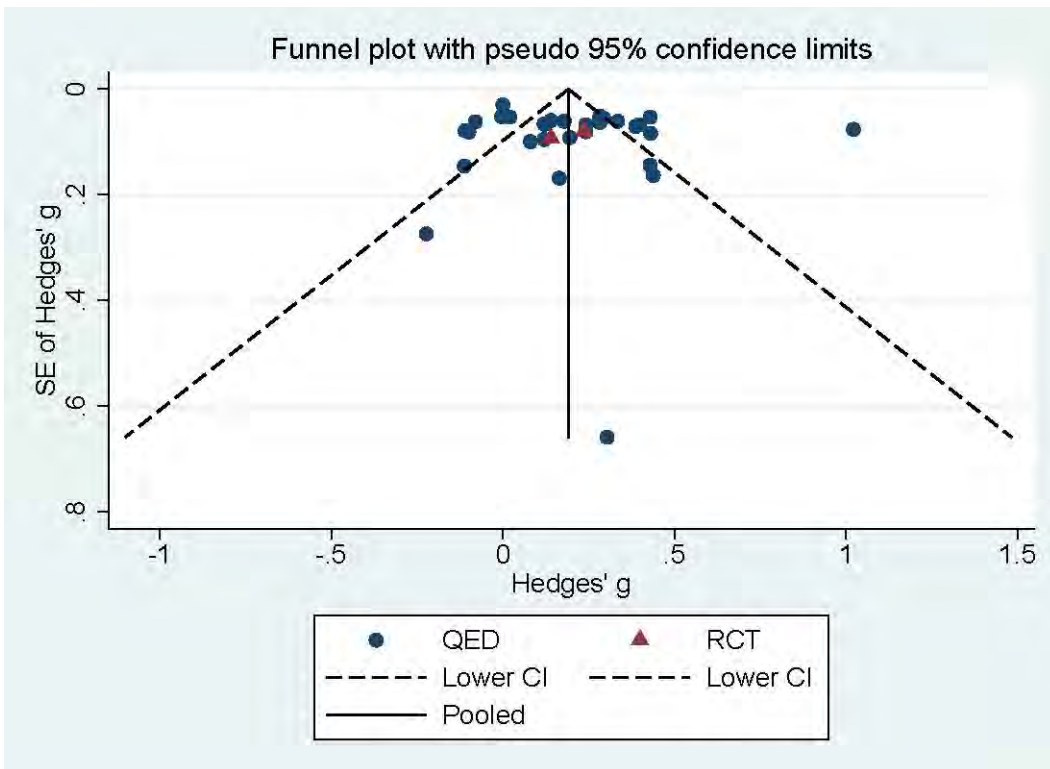
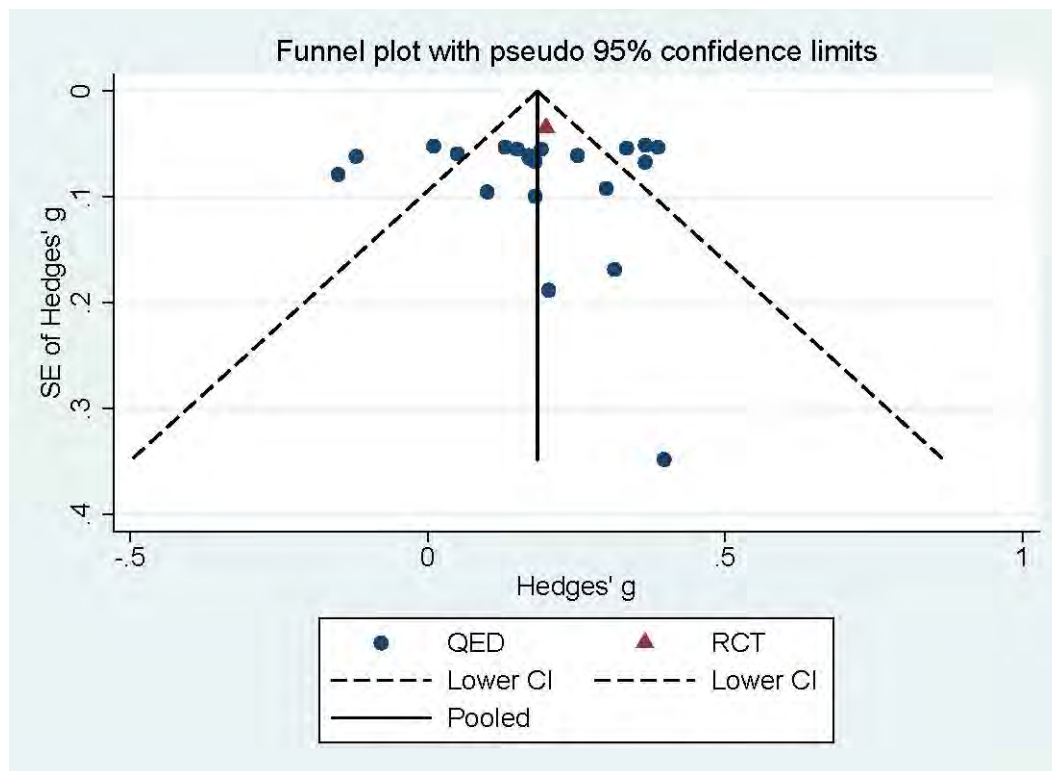


Figure 4.9. Funnel plot (literacy outcomes - Year 4)



4.3.3 Risk of bias in the randomized control trials

For the five studies employing a RCT, we investigated reporting bias (via selective reporting), and other potential bias sources. We found no evidence of reporting bias as all five RCTs investigated standardized achievement measures and reported both math and literacy achievement.

4.4 SYNTHESIS OF RESULTS

Overall Hedges' g mean effect size measures by year and achievement outcome are reported Table 4.2. Figure 10.1.1 through 10.2.4 present the forest plots for the math and literacy outcomes by year and by assignment type. The forest plots are organized by effect size, and include standard error bars for each sample. Sample effect sizes, confidence intervals, and weights are expressed in the plots as well. However, only five of the 18 eligible studies were RCTs. As such, the number of independent samples implementing RCTs was small for Year 1 and was even smaller for Years 2, 3, and 4. Table 4.3 provides further information about the effect sizes gathered from each study, including types of effect sizes reported (mean differences, pass rate, regression coefficients, etc.) and covariate adjustment of effect sizes.

Table 4.2. Hedges' *g* mean effect sizes and heterogeneity statistics by outcome type and year

Outcome	<i>N</i>	Hedges' <i>g</i>	<i>p</i>	95% CI	<i>Q</i>	<i>I</i> ²	τ^2
Math							
Year 1	73	0.202	0.000	0.15;0.26	676.58	89.4	0.043
Year 2	48	0.293	0.000	0.22;0.36	574.16	91.8	0.048
Year 3	33	0.434	0.000	0.34;0.53	461.54	93.1	0.063
Year 4	22	0.299	0.000	0.19;0.41	325.85	93.6	0.058
Literacy							
Year 1	73	0.069	0.000	0.03;0.10	244.77	70.6	0.012
Year 2	48	0.120	0.000	0.08;0.17	263.91	85.3	0.020
Year 3	33	0.212	0.000	0.14;0.29	313.98	89.8	0.040
Year 4	22	0.179	0.000	0.13;0.24	107.80	80.5	0.016

4.4.1 Mean effects on math outcomes

The Year 1 math results indicated that the overall mean effect size for math achievement gains was positive and significant ($g = 0.202$, 95% CI [0.148; 0.257]). After one year of No Excuses charter school attendance, students outperformed comparable peers who attended public schools by 0.202 standard deviations. The estimates of the effect size were heterogeneous, with a variance component of τ^2 equal to 0.043 that is significantly different from zero. Given the significant heterogeneity and potential bias for non-equivalent groups, the mean effect size should be interpreted with caution ($I^2 = 89.4$, $Q = 676.58$). These results indicate that attending a No Excuses charter school is associated with about one-fifth of a standard deviation improvement over the course of a year. At follow-up years, the mean effect on math outcomes remained significant: Year 2, $g = 0.293$, $p < 0.001$; Year 3, $g = 0.434$, $p < .001$; Year 4, $g = 0.299$, $p < 0.001$. Interestingly, we observed a general increase in math achievement improvement from Year 1 to Year 3, at which point the math achievement gains stabilized or returned to lower gains.

4.4.2 Mean effects on literacy outcomes

The Year 1 literacy results indicated that the overall mean effect size for literacy achievement gains was positive and significant ($g = 0.069$, 95% CI [0.034; 0.104]), although much smaller than effects associated with math achievement. After one year of No Excuses charter school attendance, students outperformed comparable peers who attended public schools by 0.069 standard deviations, or about one-fourteenth of a standard deviation. Again, heterogeneity was significant and due to true between-study differences, but was quite small ($I^2 = 70.6$, $Q = 244.77$, $\tau^2 = 0.0121$). These results indicate that attending a No Excuses charter school is associated with a small, but statistically significant, increase in literacy achievement. At follow-up years, the effect on literacy outcomes remained significant and attenuated from the math results: Year 2, $g = 0.120$, $p < 0.001$;

Year 3, $g = 0.212$, $p < .001$; Year 4 ($n = 22$), $g = 0.178$, $p < 0.001$). Much like the math results, though, we observed that students' achievement gains increased year-on-year until Year 4, at which point literacy achievement gains stabilized or decreased.

Table 4.3. Types of effect sizes and covariate adjustment by study

Study	ES reported	Covariate Adjustments
Abdulkadiroğlu et al. (2011)	Regression coefficient	Baseline achievement, demographics
Angrist, et al. (2010)	Regression coefficient	Baseline achievement, demographics
Crosby (2015)	Means and SDs	None‡
Curto & Fryer (2014)	Regression coefficient	Baseline achievement, demographics, year of test
Dobbie, Fryer, & Fryer (2011)	Regression coefficient	Baseline achievement, demographics, year of test
Fryer (2014)	Regression coefficient	Baseline achievement, demographics, year of test
Gallagher & Ross (2005) †	Means and SDs	Baseline achievement
Hastings, Nekilson, & Zimmerman (2012)	Regression coefficient	None‡
Herman et al. (2011)	Mean Difference*	Baseline achievement
Mac Iver & Farley-Ripple (2007)	Regression coefficient†	Baseline achievement, demographics
McDonald, Ross, Abney, & Zoblotsky (2008) †	Means and SDs	Baseline achievement
Rose (2013)	Percent Passed Rates	None‡
Ross, McDonald, & McSparrin-Gallagher (2004) †	Means and SDs	Baseline achievement
Teh, McCullough, & Gill (2010)	Regression coefficient	Baseline achievement, demographics, year of test
Tuttle et al., (2010)	Regression coefficient	Baseline achievement, demographics, year of test
Tuttle et al., (2015)	Regression coefficient	Baseline achievement, demographics, year of test
Woodworth, et al. (2008)	Means and SDs	None‡
Young et al., (2009)	Regression coefficient	Baseline achievement, demographics

* SDs not reported, but were estimated from the reported p -values.

† SDs for achievement not reported, but estimated from a state report on the achievement measure. Authors have been contacted for exact SDs.

‡ Demonstrate equivalence between the groups on baseline achievement (<0.25 SD difference between group means).

4.5 MODERATOR ANALYSES

Plans for moderator analyses on several school- and study-level characteristics are outlined in Section 3.3.2.6. Many studies failed to report moderator data for independent samples, such as school size, class and class size, preventing analyses for these moderators. Further, several moderators (state versus national standardized test, and if the charter school was part of a charter management organization) showed insufficient variability among the included studies to conduct moderator analyses. However, we were able to conduct meta-regressions to explain variability in math and literacy gains with several moderators: number of year charter has been active (Years Active), percent of sample that was minority status (% minority), percent of sample that was male (% male), percent of sample receiving free/reduced lunch (% FRL), and percent of sample receiving special education services (% SPED).

Table 4.4 reports the zero-order meta-regression coefficients for moderators by year. None of our planned moderators consistently predicted heterogeneity in math or literacy effects. This is likely due to lack of variability in the moderator variables. For example, the majority of the included samples had high percentages of minority students and students receiving free or reduced lunch—this is the student demographic No Excuses schools were designed to support. Further, in Years 2, 3, and 4, many of the independent samples were reported from a few large, multi-site studies, which further limited variability. As such, we recommend caution in interpretation of the non-significant moderator analyses.

Table 4.4. Zero-order meta-regression coefficients for moderators

	Years Active	% Minority	% Male	% FRL	% SPED
Math					
Year 1	-0.034 (.04)	-0.005 (.01)	-0.013 (.01)	-0.005 (.01)	-0.013 (.02)
Year 2	-0.267 (.13)	0.026 (.03)	-0.017 (.02)	0.007 (.02)	-0.045 (.04)
Year 3	-0.079 (.21)	0.320 (.24)	-0.023 (.04)	0.010 (.04)	0.131 (.31)
Year 4	N/A	0.024 (.06)	0.056 (.06)	0.001 (.05)	N/A
Literacy					
Year 1	0.011 (.01)	-.004 (.01)	-0.001 (.01)	-0.006 (.003)	-.004 (.01)
Year 2	-0.044 (.09)	0.014 (.02)	-0.020 (.01)	0.009 (.01)	-0.016 (.02)
Year 3	-0.095 (.13)	0.184 (.13)	-0.002 (.02)	0.013 (.02)	0.030 (.18)
Year 4	N/A	0.013 (.02)	0.014 (.02)	0.005 (.01)	N/A

Note. “Years Active” refers to the number of years the charter school in each sample has been active. % Minority, Male, Free/Reduced Lunch (FRL), and Special Education (SPED) indicate school- and/or sample-level percentages. Standard errors are shown in parentheses, bolded coefficients are significant at $\alpha = .05$. Samples sizes vary by year and moderator due to unreported data. N/A indicates either no variability in the moderator or less than four independent samples for the given meta-regression.

After data collection, we observed that several of the multi-site studies reported solely on KIPP schools. As such, we conducted post-hoc, separate meta-analyses for included KIPP versus Non-KIPP No Excuses charter schools for math and literacy effects for Year 1 (Figures 4.10 and 4.11). Approximately 57% of the overall math and literacy effect sizes were due to KIPP samples. Effect estimates from KIPP schools were stronger (math, $g = 0.32$, 95% CI [0.23; 0.40]; literacy, $g = 0.09$, 95% CI [0.05; 0.14]) than for non-KIPP schools (math, $g = 0.06$, 95% CI [0.00; 0.12]; literacy, $g = 0.04$, 95% CI [-0.01; 0.09]). This result may either indicate publication bias favoring KIPP versus Non-KIPP No Excuses charter schools or may represent true differences in achievement gains due to implementation of the No Excuses model in KIPP versus Non-KIPP No Excuses charter schools. See Figures 9.1.5 and 9.2.5 for Forest plots for KIPP versus non-KIPP math and literacy outcomes.

5 Discussion

5.1 SUMMARY OF MAIN RESULTS

The present review evaluated eighteen studies examining the effects of No Excuses charter schools on math and literacy achievement. The findings of the review point to positive and significant effects on both math and literacy, with math gains larger than literacy gains. Our findings indicate that one year of attending a No Excuses charter school is associated with approximately one-fifth of a standard deviation improvement in math performance and one-fourteenth of a standard deviation in literacy performance. However, follow-up analyses indicated that these benefits accrued for three years, which point the achievement gains stabilized or returned to lower gains. The present finding of higher estimated effects for math outcomes has been demonstrated in the prior No Excuses charter school review (Cheng et al., 2017); that this pattern of findings is observed for the No Excuses charter school model lends confidence to the results. The potential presence of sample bias limits our confidence in these results.

5.2 OVERALL COMPLETENESS AND APPLICABILITY OF EVIDENCE

Our screening of 2,841 citations from across academic and grey literature yielded 18 eligible studies. The comprehensiveness of our search and ability to obtain all identified articles for review and screening makes us confident that we identified all available literature. However, this also suggests that there are significant limitations to the availability of rigorous, high-quality evidence for this intervention.

Interpretation of the available evidence is limited by sample bias and missing data and thus does not allow us to draw strong, generalizable conclusions regarding the effects of the intervention.

5.3 QUALITY OF EVIDENCE

Studies meeting eligibility criteria for this review were required to meet stringent methodological standards (i.e., RCTs and QEDs).

5.4 LIMITATIONS

5.4.1 Sample biases

Studies were inconsistent in reporting (or failed to report) several important sample characteristics (e.g., school size, percent of students receiving special education services, attrition). The student

populations of No Excuses charter schools (and charter schools in general) have been shown to differ in important ways from their traditional public school counterparts. The lack of this important information limits the interpretability of the results of this review.

First, students with more motivation to be academically successful or students with more parental involvement (factors difficult to observe and measure) may elect to enter charter lotteries at higher rates than the average student attending a traditional public school—traits that would likely affect academic achievement regardless of school model.

Second, charter schools as a whole appear to use expulsion and suspension as a mechanism of discipline enforcement at a higher rate than non-charters (Losen & Keith, 2016). These practices may result in lower-performing or less-compliant students exiting the schools, leaving behind a population of students more compliant to the practices of the No Excuses model—again, the traits of the compliant students would likely affect academic achievement regardless of school model. In the first comprehensive report of charter school discipline, Losen, Keith, Hodson, and Martinez (2016) examined data from the 2010-2011 school year for 89,750 public non-charter schools and more than 5,250 charter schools. They found the national charter school suspension rate to be 16% higher than the non-charter school suspension rate. Further, data from the office of Civil Rights suggest that more than 17% of all secondary-level charter schools reportedly suspended zero students, leading Losen and colleagues to suspect that a high number of secondary charter schools might not have reported their data.

Third, students with exceptional needs such as English language learners, students with disabilities, or students with behaviour problems are often a smaller proportion of students attending all types of charter schools than traditional public schools (Lacireno-Paquet et al., 2002; Miron et al., 2011; Nichols-Barrer et al., 2016). Charter schools have been shown to initially enroll a lower percentage of students with disabilities than traditional public schools (Scott, 2012). For example, during 2008-2009, KIPP schools (charter schools specifically employing the No Excuses model) enrolled a lower percentage of students with disabilities (5.9%) and English language learners (11.5%) than did their local school districts (12.1% and 19.2%, respectively) (Miron et al., 2011). This important factor that is likely to inflate the academic performance of a charter school. Further, the high expectations, rigid disciplinary policies, and higher rates of expulsion and suspension at No Excuses charter schools may reduce the population of students with exceptional needs through attrition, leaving these students to fall behind and rejoin their peers in higher concentrations at traditional public schools.

Finally, the available research on the rates of attrition of No Excuses charter schools indicates higher rates than traditional public school counterparts (e.g., Casey, 2016; Miron et al., 2011; Nichols-Barrer et al., 2016). Although the studies in this review include RCTs, it is important to consider that lottery winners and losers who appear similar at the time the lotteries were held, subsequent attrition may lead to important differences in the follow-up sample if the attrition process is nonrandom. The analysis conducted by Miron et al. on KIPP schools during 2008-2009 revealed that, on average, approximately 15% of students exit the KIPP grade cohorts each year. These three analyses also each observed that fewer students are replaced in the later years of middle school. In one example, Casey reports the graduating class of Harlem Success Academy I

had 32 students in eighth grade during 2013-2014—less than half of the 73 students who started in the cohort eight years prior. Further, Nichols-Barrer and colleagues (2016) observed that KIPP schools tended to replace exiting students with higher-achieving students. These practices are likely to result in significant differential attrition, specifically in the higher grades.

5.4.2 Differences in teacher quality

A recent analysis conducted by Yeh (2017) suggests that the observed effects of No Excuses charter schools on achievement are likely due to a "hoarding of a disproportionate share of the nation's limited pool of highly-dedicated teachers, rather than gains that could be sustained when the programs are scaled up and implemented nationwide" (pp. 98-99). Although we extracted all available teacher data, included studies did not report measures of teacher quality and dedication, disallowing the ability of this review to explore the this hypothesis.

5.4.3 Disproportionate number of samples examining KIPP

Further, a large number of the included studies (10 of the 18 included studies and approximately 58% of the independent samples) examine the effects of KIPP schools, specifically. The prevalence of KIPP schools in this body of evidence is expected, as KIPP schools—although not the first to use it—were the first to become widely known for implementing a No Excuses model. However, in addition to implementing the policies common to other No Excuses charter schools, KIPP schools presumably also have features unique to KIPP schools. Though informative, the results of this review cannot be considered generalizable to all No Excuses charter schools.

5.4.4 Studies limited to U.S. schools

During the literature search, extensive efforts were made to thoroughly search the grey literature. This process is designed to collect as many potentially relevant as possible and to mitigate against any potential threat of reporting (publication) bias. Our comprehensive and indiscriminate searches of international literature provided studies examining charter school performance; however, upon full-text screening, we were unable to decisively determine whether the potential international studies were assessing charter schools using the No Excuses model due to limited reporting of charter school model details. Thus, this review may have missed relevant extant international literature and results cannot be generalized to other populations.

5.4.5 Additional limitations

Follow-up years suggest a sustained significant effect on both math and literacy achievement, however these results must be interpreted with caution as the number of samples decreased substantially at follow-up years, with one study (Tuttle et al., 2010), accounting for the majority of the independent samples.

Studies included in this review did not report data indicating the degree to which each characteristic of No Excuses charter schools was implemented. This is a significant limitation as it prohibits the interpretation of the presence, absence, or dosage of the individual characteristics of No Excuses charter schools.

Only five of the 18 included studies (approximately 5.75% of the independent samples) employed random assignment, limiting interpretation of the equality of the comparison groups due to the small number in independent samples using random assignment.

A large number of the included studies (10 of the included studies; approximately 58% of the independent samples) examine the effects of the schools of a specific charter management organization: Knowledge is Power Program (KIPP). Though informative, the results of this review cannot be considered generalizable to all No Excuses charter schools. Finally,

Additional limitations include the following: (a) the majority of studies included in this review employed QEDs, thus increasing the threat of potential bias associated with QEDs, (b) included studies were limited to the U.S., reducing generalizability of results to other countries which may be implementing a No Excuses model within its charter schools, (c) most studies measured effects with only one, annual standardized achievement measure, and (d) the lack of a clear definition of a No Excuses charter school led us to develop a comprehensive set of key characteristics with which to determine a charter school's model type, introducing the potential for mislabeling a charter school's model.

5.5 AGREEMENTS AND DISAGREEMENTS WITH OTHER STUDIES OR REVIEWS

To our knowledge, only one prior review of No Excuses charter schools has been conducted using systematic review procedures as a working paper for the Education Reform (EDRE) Department at the University of Arkansas (Cheng et al., 2017). Findings are in agreement, suggesting that No Excuses charter schools may be more effective than traditional public schools in increasing achievement in math and literacy.

6 Authors' conclusions

The present review synthesized multiple rigorous studies with numerous independent samples and provides initial evidence that the No Excuses charter school model may be effective as an intervention for math and literacy outcomes, as measured by standardized achievement measures. Data indicates that these benefits accrue for three years, which point the achievement gains stabilized or returned to lower gains.

Strong potential for sample bias and the presence of further limitations restricts interpretability of the results. Further, most studies measured effects with only one, annual standardized achievement measure and thus the evidence suggesting sustained intervention effects is more limited. Additional research examining school-level characteristics beyond those available for this review is necessary for thorough investigation of the causes of achievement gains for No Excuses charter schools.

6.1 IMPLICATIONS FOR PRACTICE AND POLICY

These findings appear to have the greatest implications for those seeking to expand the No Excuses model to additional schools and to apply tenets of the model to existing educational environments. Because these results tentatively indicate positive effects associated with the No Excuses model, some policymakers and educators may wish to explore the possibility of incorporating aspects of the No Excuses model into the current educational landscape and may wish to lobby for the expansion of the model. Thus, we urge that policymakers and practitioners take these results with the caution, especially in consideration of the publication bias and heterogeneity present in these findings.

6.2 IMPLICATIONS FOR RESEARCH

The results of this review have substantial implications for future research and should be of interest to researchers, educators, education reformers, administrators, policymakers, and other stakeholders invested in closing gaps in achievement and improving academic outcomes for students.

First, additional research is needed to determine the scalability of the No Excuses model. Prior studies exploring scalability have returned conflicting results. Yeh (2017), conducted a reanalysis of the Knowledge is Power Program (KIPP) and the Harlem Children's Zone Promise Academies and found that gains would fall to zero upon full scale-up. In contrast, Tuttle and colleagues (2015)

examined an effort to scale up the Knowledge is Power Program (KIPP) with results suggesting gains in student academic achievement can be maintained with program expansion.

Second, studies using more rigorous controls for self-selection and sample bias are necessary to determine the true effect of the No Excuses model on achievement. Third, while these findings suggest that students attending No Excuses charter schools tend to outperform peers attending traditional public schools, the individual key characteristics of No Excuses charter schools critical to the No Excuses model are not yet understood. Future research may involve component analyses to determine if certain key characteristics have a higher impact on outcomes than others. Finally, future research in these areas may be able to inform the field regarding instructional practices, interventions, and other strategies that may help to reduce the achievement gaps.

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8 About this review

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8.2 ROLES AND RESPONSIBILITIES

Content: Sarah Krowka, doctoral student in the Department of Special Education at the Peabody College of Education and Human Development at Vanderbilt University led the team on the overall content of the review and was responsible for the integrity of the work as a whole. She has been an educator in both public and charter school settings during much of her professional career, focusing on children at-risk of academic failure. This population is also an area of focus in Sarah's master's and doctoral work, with an emphasis on intervention research. Robert Marx, a doctoral student in the Department of Human and Organizational Development at the Peabody College of Education also has content expertise, as much of his research centers on charter school funding and philanthropic giving based on charter school characteristics, including those with No Excuses status.

Systematic review methods, statistical analysis, and information retrieval: The systematic review and meta-analysis was conducted by Alexandria Hadd, doctoral student of quantitative methods in the Department of Psychological Sciences at the Peabody College of Education and Human Development at Vanderbilt University and Sarah Krowka. Alexandria and Sarah have received training in conducting meta-analyses through participation in a graduate-level course focused on this topic. Robert Marx, doctoral student in the Department of Human and Organizational Development at Vanderbilt University, Alexandria, and Sarah conducted report retrieval, reliability checks, eligibility selecting, and coding of research reports. In addition, the team sought the support of the head social sciences librarian of the Jean and Alexander Heard Libraries at Vanderbilt University in order to identify optimal search strategies (e.g., identifying other databases or sources to search for relevant research reports).

8.3 SOURCES OF SUPPORT

This review is supported by a grant from the Campbell Collaboration Education Coordinating Group. No additional funding will be sought the proposed review.

8.4 DECLARATION OF INTEREST

The authors have no vested interest in the outcomes of this review, nor any incentive to represent findings in a biased manner. There are no potential conflicts of interest to disclose.

8.5 PLANS FOR UPDATING THE REVIEW

Sarah Krowka will be responsible for updating the review in the light of new evidence, comments, criticisms, and other developments at least once every three years.

8.6 AUTHOR DECLARATION

Authors' responsibilities

By completing this form, you accept responsibility for maintaining the review in light of new evidence, comments and criticisms, and other developments, and updating the review at least once every five years, or, if requested, transferring responsibility for maintaining the review to others as agreed with the Coordinating Group. If an update is not submitted according to agreed plans, or if we are unable to contact you for an extended period, the relevant Coordinating Group has the right to propose the update to alternative authors.

Publication in the Campbell Library

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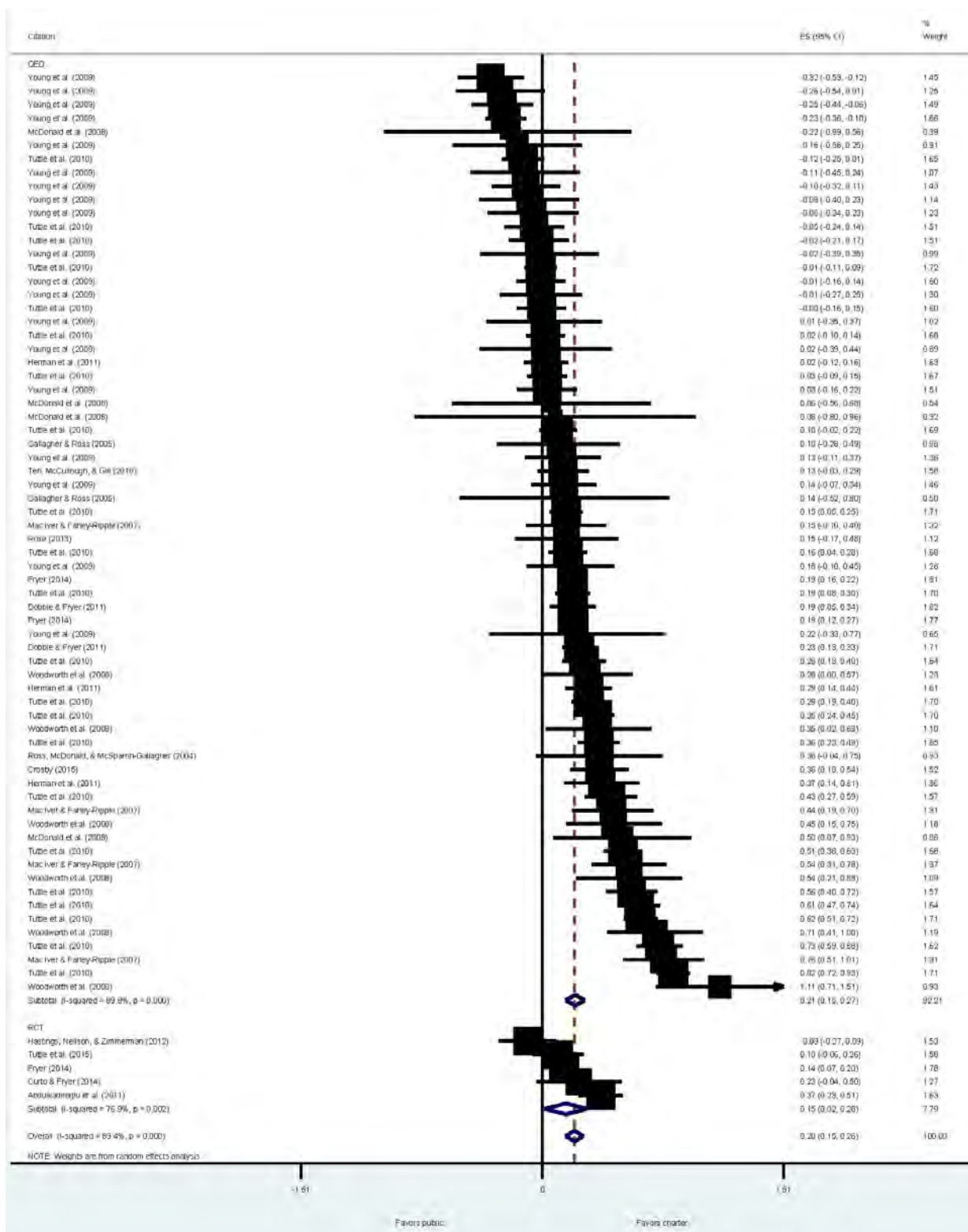
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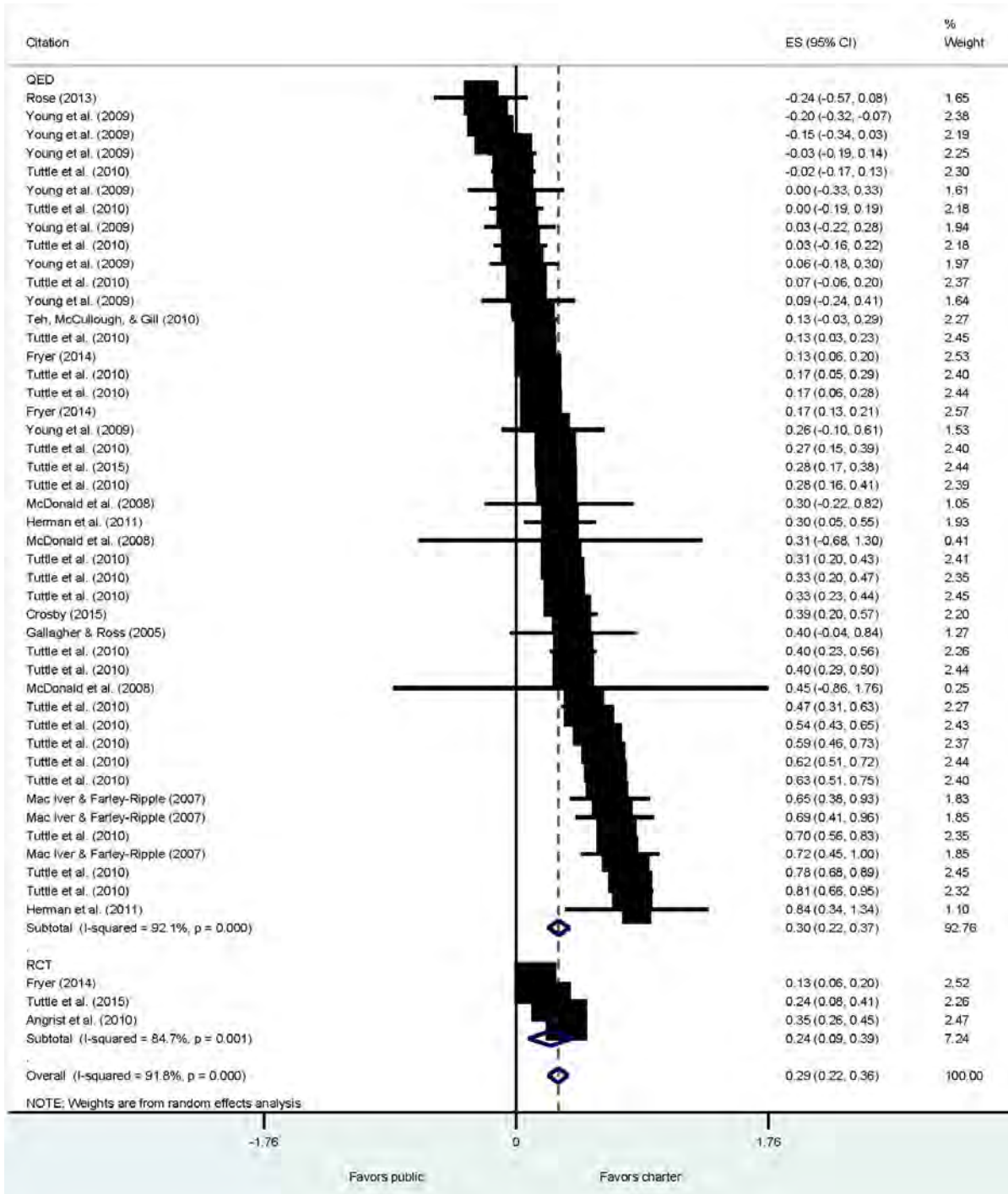
9 Figures

9.1 FOREST PLOTS FOR MATH OUTCOMES

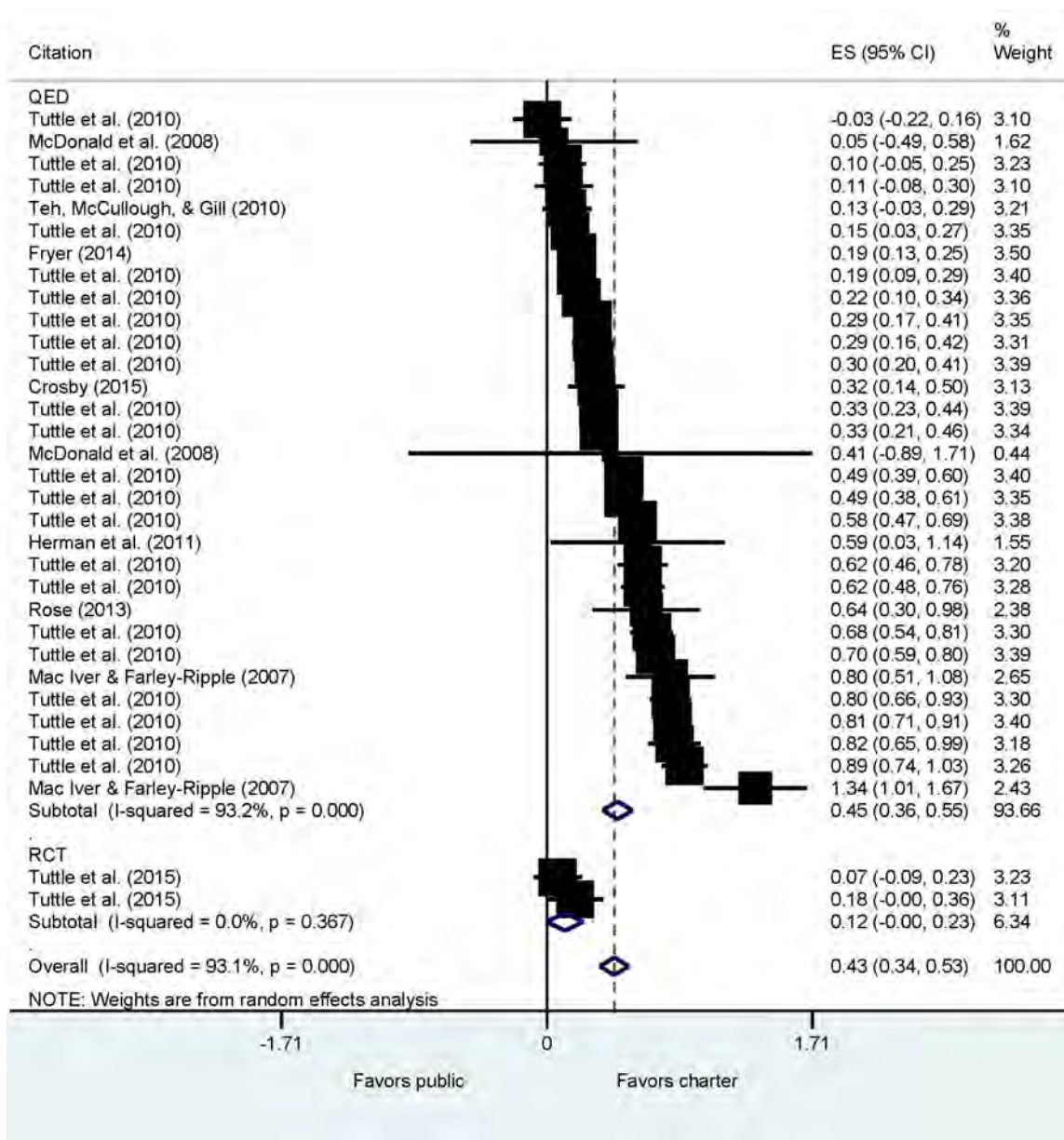
9.1.1 Math outcomes – Year 1



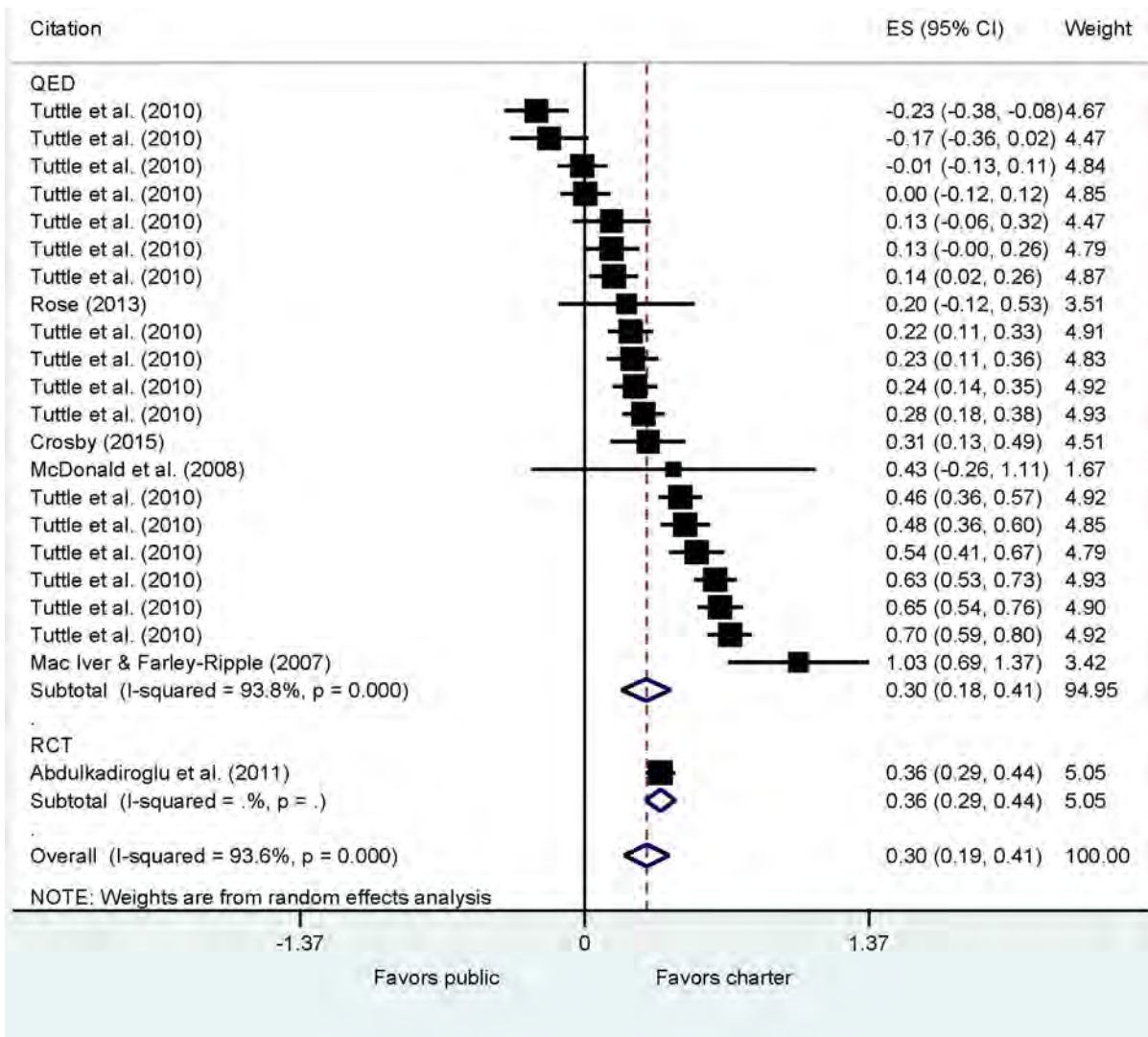
9.1.2 Math outcomes – Year 2



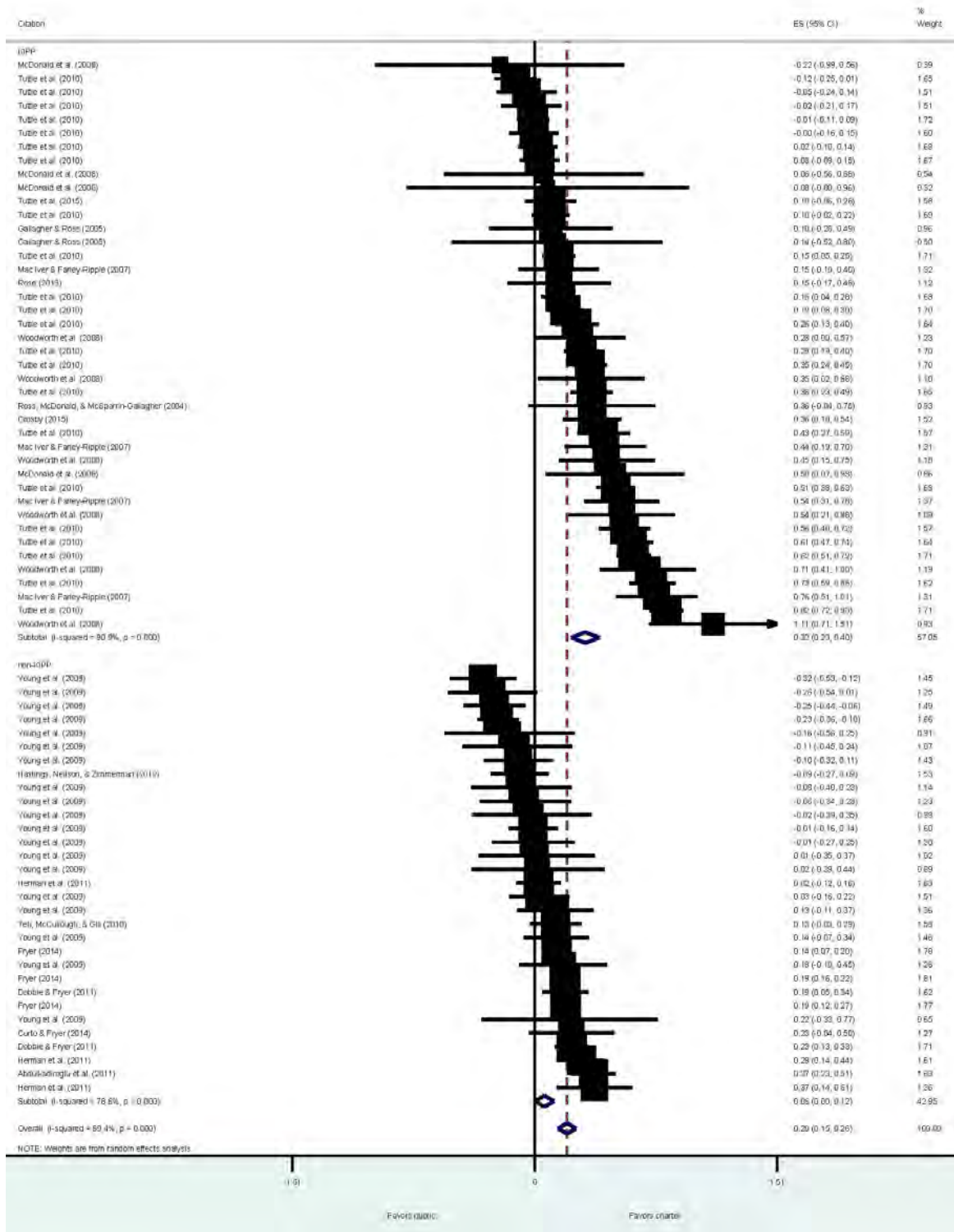
9.1.3 Math outcomes – Year 3



9.1.4 Math outcomes – Year 4

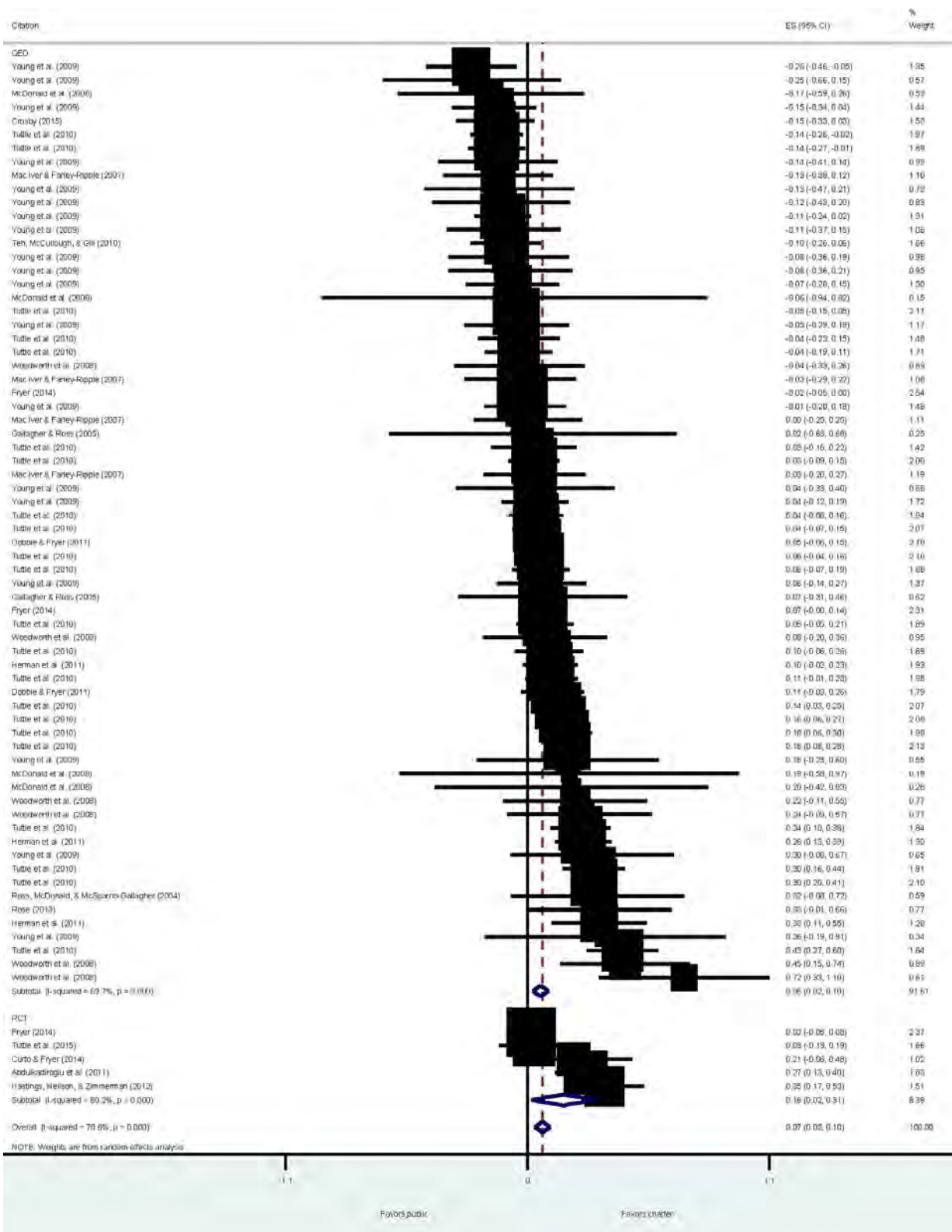


9.1.5 Math outcomes KIPP vs Non-KIPP – Year 1

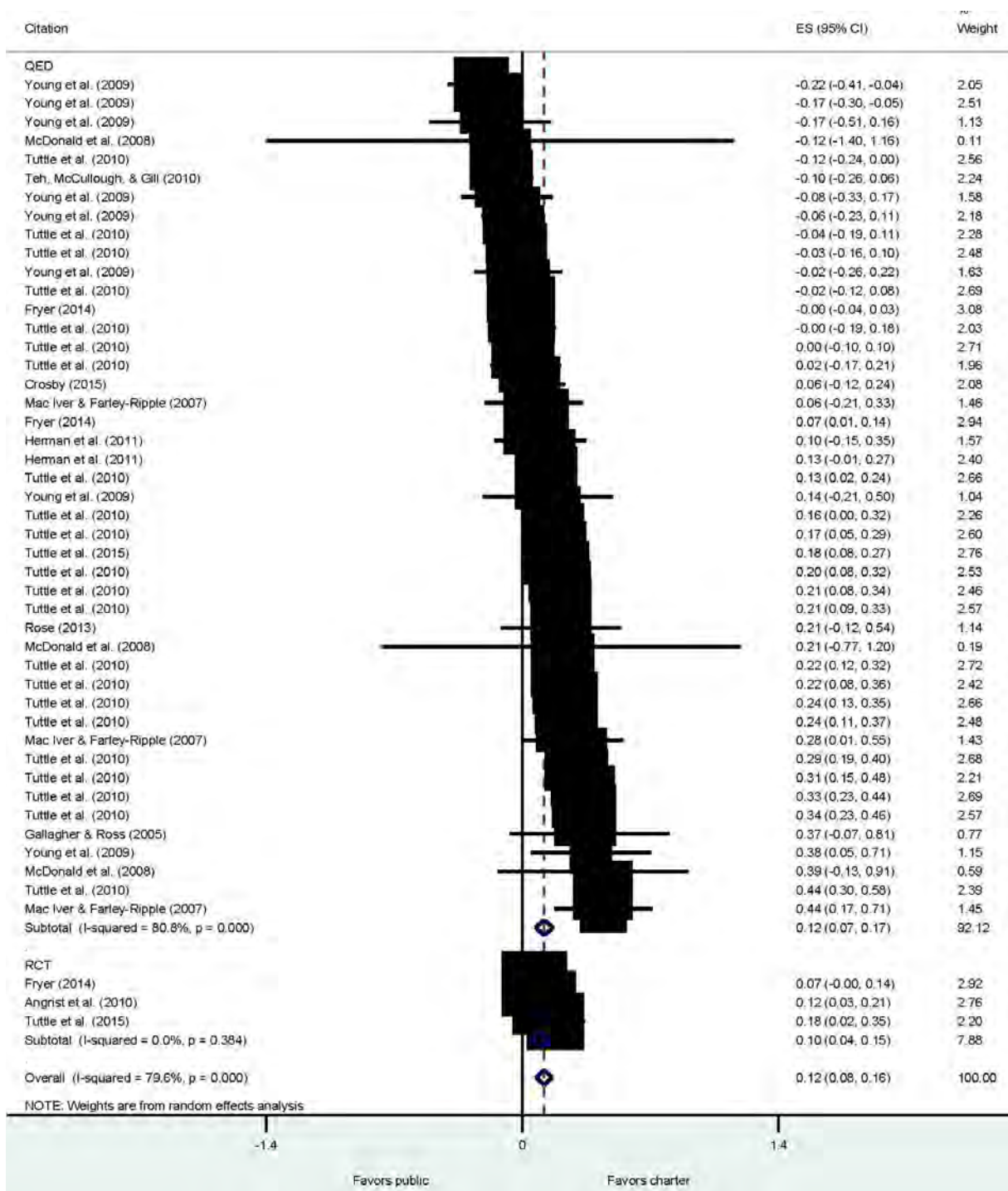


9.2 FOREST PLOTS FOR LITERACY OUTCOMES

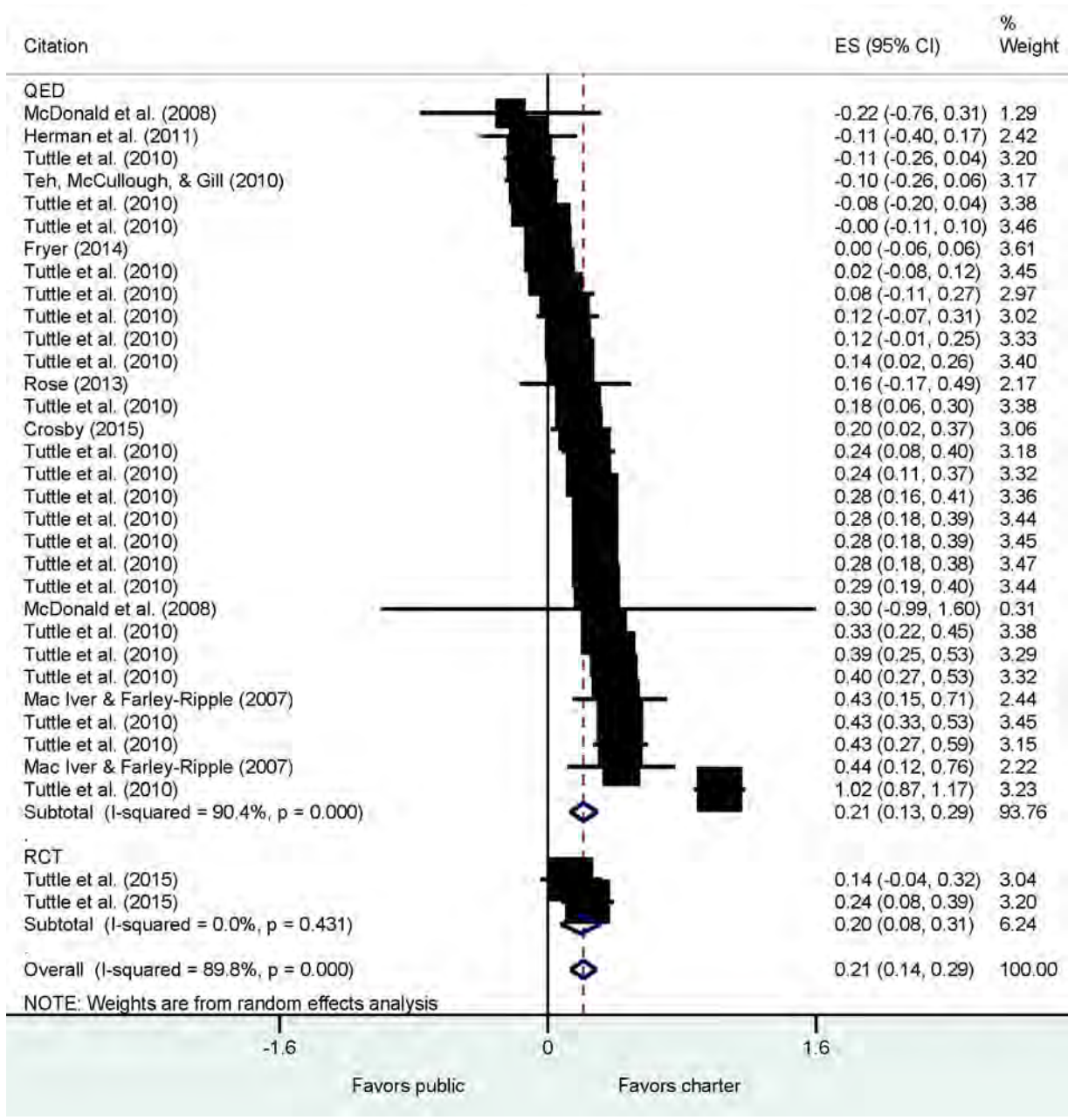
9.2.1 Literacy outcomes – Year 1



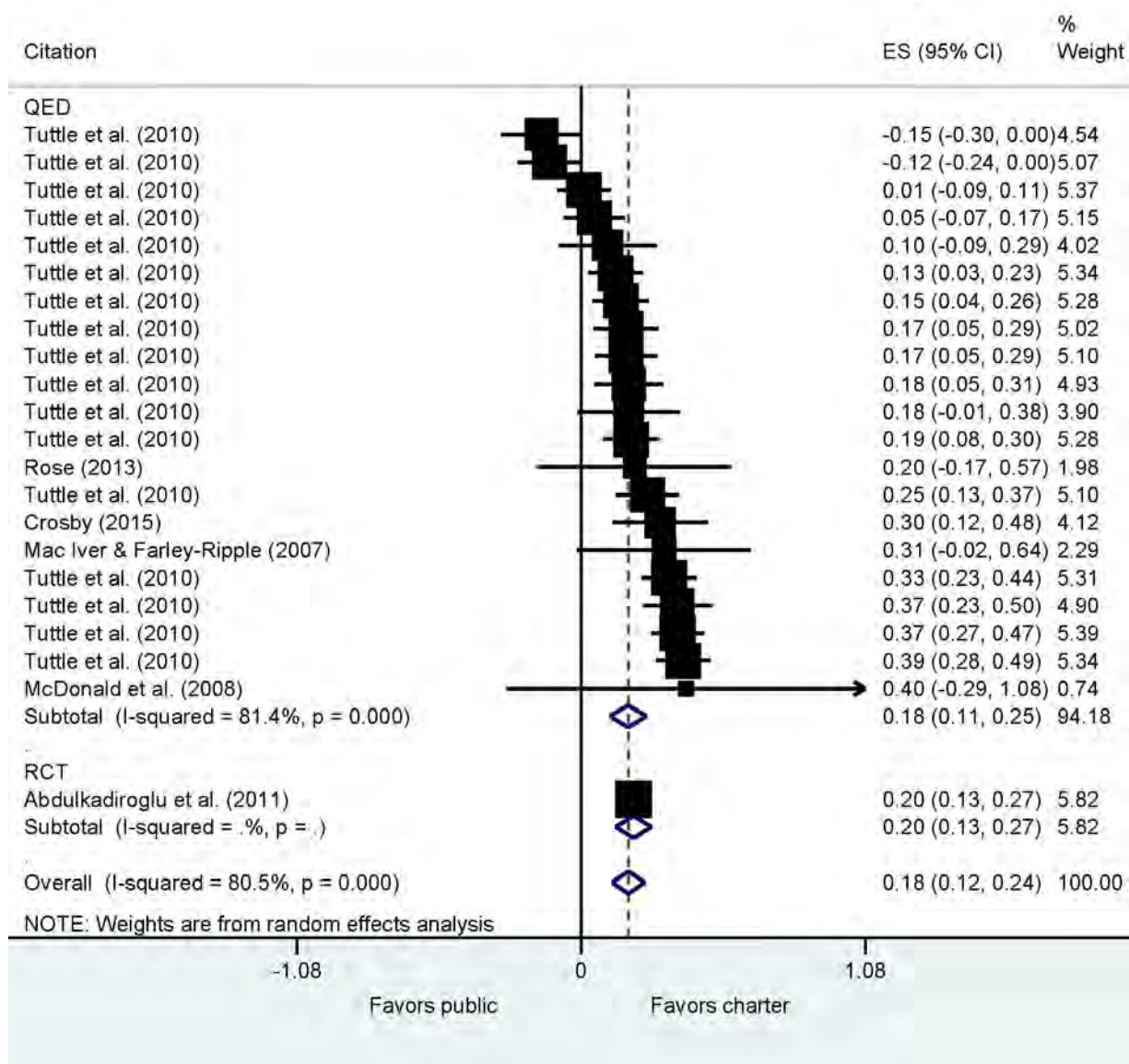
9.2.2 Literacy outcomes – Year 2



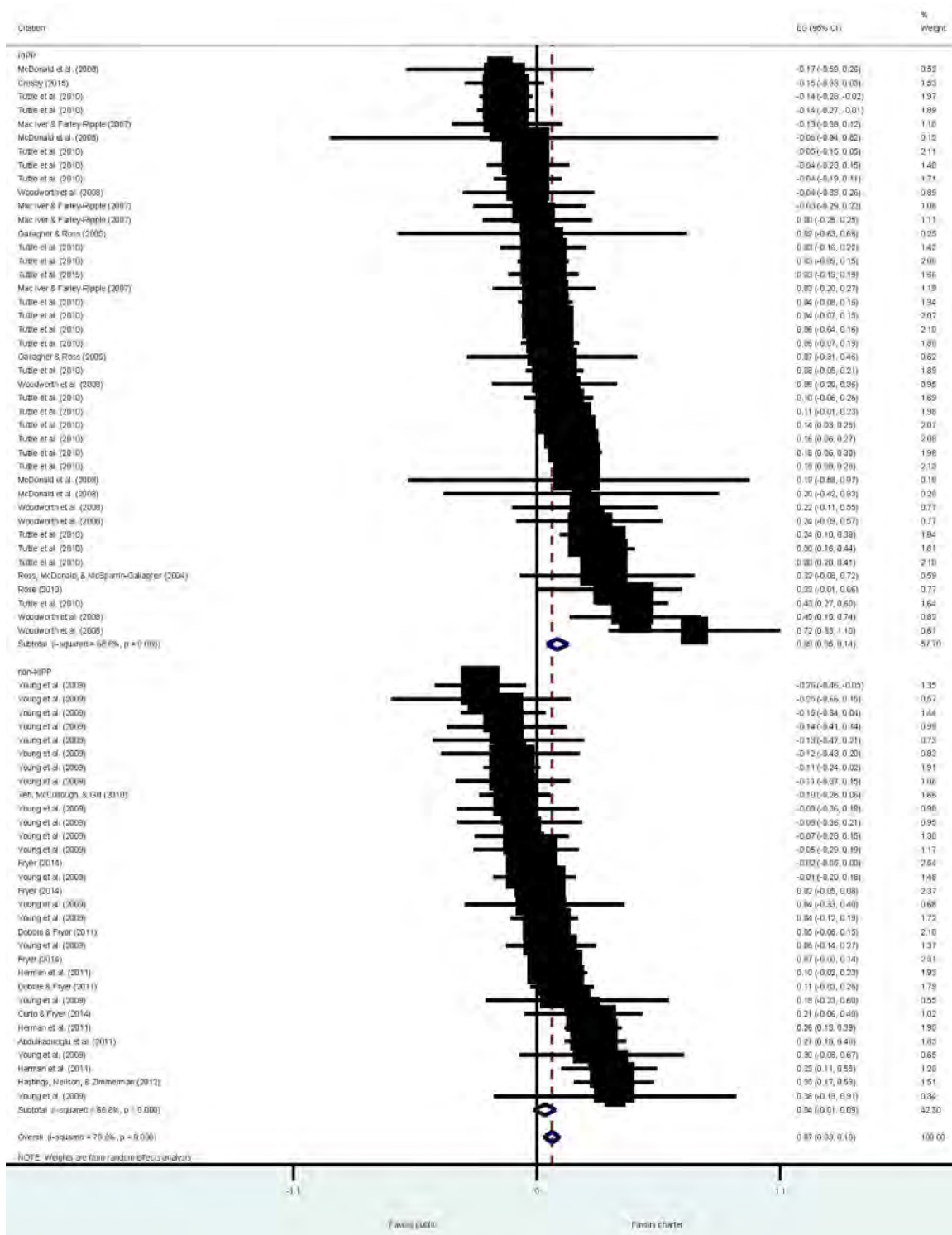
9.2.3 Literacy outcomes – Year 3



9.2.4 Literacy outcomes – Year 4



9.2.5 Literacy outcomes KIPP vs. Non-KIPP – Year 1



10 Appendix I

10.1 CODING MANUAL

Study Characteristics

1. Study ID
Number the study to follow sequentially after the last study ID. If multiple studies are reported in the same article/report, follow the study ID given to the article with separate letters (e.g., A, B, C, etc.) to indicate the separate studies reported.
2. Report ID
Separate articles/reports that provide information on the same study (i.e., the same sample appears in multiple articles or reports) will have the same study ID, but separate report IDs.
3. Author(s) and (year)
Specify the author(s) and year (in parentheses) as they would appear at the start of an APA citation. This text will be used for final forest plots.
4. Publication type
1 = journal article, 2 = dissertation/thesis, 3 = book/book chapter, 4 = report, 5 = other
5. Year published
Indicate in YYYY format.
6. Country published
1 = United States, 2 = United Kingdom, 3 = other

Design and Charter Characteristics

7. Assignment procedure
1 = random, 2 = matched, 3 = convenience sample, 4 = other, 5 = unknown
Note: For this type of study, random assignment will typically be through a lottery process. To qualify for matched assignment, individuals must be matched on baseline achievement measures. If convenience sampling is used, the study must still report baseline achievement data, as well as demographic data; the researcher might not have chosen a comparison group that matches as closely as possible, however.

8. Charter explicitly “no excuses”?

1 = yes, 2 = no

Note: Choose “yes” if either A) the study describes the charter school as ‘No Excuses’, B) the study describes a known ‘No Excuses’ brand of charter school, or C) the coder can identify (by online sources or otherwise) that the charter school is a ‘No Excuses’ brand of charter.

Otherwise, the study must report (or reference sources must verify), that the charter school meets all five criteria of the ‘No Excuses’ model: 1) data-driven policies, 2) expectations of college attendance, 3) restrictive discipline policies, 4) increased instructional time, 5) intensive teacher training. Leniency should be given for operationalization (e.g., what is considered “restrictive” discipline policies), but each criterion should be clearly referenced.

9. Number of years charter has been active:

Note: This applies to the specific school (i.e., not the brand of the school, if applicable). Code -999 if cannot tell.

10. Charter school type:

1 = managed by a charter management organization, 2 = stand-alone charter school

11. Comparison school type

1 = general public school (or no indication otherwise), 2 = no excuses public school, 3 = mix of public schools, charter schools, and/or private schools

Baseline Characteristics

Note: Code characteristics as percentages (i.e., ##%) rather than proportions when appropriate. If the charter and comparison samples are matched on certain characteristics (e.g., prior achievement, ethnicity, etc), and only the pooled characteristics are reported, code those pooled characteristics for both samples and code the other characteristics as cannot tell. If cannot tell, code as -999.

12. Charter grade

13. Comparison grade

Note: Code average grade to nearest whole number. If international (or unconventional) grade system is used, use average age and subtract 5.5 from average age for grade estimate.

14. Charter percent minority

15. Comparison percent minority

16. Charter percent free/reduced lunch

17. Comparison percent free/reduced lunch

18. Charter percent male

19. Comparison percent male

20. Charter school size

21. Comparison school size

22. Charter class size

23. Comparison class size

Note: Code student/teacher ratio if given.

Assessment Details

24. Test name

Give short text name for assessment

25. Assessment content

1 = math, 2 = literacy, 3 = both

26. Assessment scope

1 = state, 2 = nation, 3 = other

Effect Size

27. Charter sample size at assignment

28. Comparison sample size at assignment

29. Charter sample size at assessment

30. Comparison sample size at assessment

31. Years between assignment and assessment

Note: Round to nearest year (e.g., 9 months post-assignment = 1 year). If multiple follow-up years are reported, report on all years (with appropriate assessment sample size and effect size information associated with each year).

32. Charter math DV mean

33. Charter math DV standard deviation

34. Comparison math DV mean

35. Comparison math DV standard deviation

36. Charter math DV percent passed

Note: If information is given for DV mean/standard deviation and percent passed, use mean/standard deviation.

37. Comparison math DV percent passed

38. Charter other math effect size measure

39. Comparison other math effect size measure

40. Charter literacy DV mean

41. Charter literacy DV standard deviation

42. Comparison literacy DV mean

43. Comparison literacy DV standard deviation

44. Charter literacy DV percent passed

Note: If information is given for DV mean/standard deviation and percent passed, use mean/standard deviation.

45. Comparison literacy DV percent passed

46. Charter other literacy effect size measure

47. Comparison other literacy effect size measure

48. Estimation used for ES?

1 = yes, 2 = no

Note: If 'yes', explain what estimation is used.

About this review

The No Excuses charter school model focuses heavily on high academic expectations, rigid and consistent discipline, extended instructional time, intensive teacher training, and increased parental involvement.

This review examines the effect of No Excuses charter schools on math and literacy achievement. On average, No Excuses charter schools are associated with greater student gains on standardized measures of math and literacy achievement when compared to traditional public schools—with higher gains for math.