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Abstract

Students' freedom of choice is critical to promoting equity and literacy in the classroom. When students choose what they read, they are more likely to find books that represent their lives, interests, and personal desires and feel that they are autonomous and can self-regulate learning. Previous research suggests that offering choice during learning activities increases motivation. However, less is known about whether choice is related to reading performance and which factors predict choice. Examining data from fourth-grade students, we found that students' perception of choice in their reading materials is associated with literacy achievement, even when accounting for the degree to which the teacher reports providing choice of texts in the classroom and student interest. These findings suggest that true choice (i.e., choice that resides within the student) is linked to greater learning than choice that a teacher determines externally. Further, we argue it may be especially important for educators to explore ways to expand the perceived options available to students with the lowest demonstrated in-school literacy competencies.

Keywords: autonomy, choice, interest, literacy, motivation, equity

Choice allows people to do better at, enjoy, and persist at activities because they feel that they have autonomy, self-control, and the ability to determine their own fate (deCharms, 1968; Deci, Koestner, & Ryan, 2001; Deci & Ryan, 1985; Ryan & Deci, 2019). In the context of literacy, we argue that *true choice*—opportunities in which individuals feel that they can select what they read—facilitates intrinsic motivation to read, and thereby comprehension, because students are empowered to find texts that match their experiences, interests, and preferences. Although literacy educators have recommended the use of choice in the classroom (Duke, Pearson, Strachan & Billman, 2011; Flowerday & Schraw, 2000; Krashen, 2004; Miller, 2009; Trelease, 2006; Turner & Paris, 1995), more research is needed to establish the relationship between choice and reading comprehension. In this study, we used data from fourth-grade students in the United States to investigate the relationship between choice and literacy achievement,

and to explore opportunities for choice as they related to student characteristics such as interest and in-school reading competencies.

Theoretical Framework

We worked within an interdisciplinary framework that draws from self-determination theory (Deci et al., 2001; Deci & Ryan, 1985) and the pedagogy of multiliteracies (Freire, 1970; New London Group, 1996) to guide our investigation of choice and literacy achievement. Self-determination theory (Deci et al., 2001; Deci & Ryan, 1985) focuses on the degree to which intrinsic and extrinsic motivating factors mediate the basic psychological need to learn. Intrinsic motivation refers to engaging in an activity for its own sake, whereas extrinsic motivation is driven by external factors—for example, a grade (Deci & Ryan, 1985). Intrinsic motivation—which includes choice, interest, and self-efficacy (Bandura, 1997; Bandura & Schunk, 1981)—has been found to influence individuals' decisions to read, how long they read, how much effort they put into reading, how much they engage with reading, and how much they enjoy it (Guthrie & Wigfield, 2000; Taboada, Tonks, Wigfield, & Guthrie, 2009).

Scholars have argued that for choice to be an effective means of fostering intrinsic motivation it must include three critical conditions: autonomy (i.e., the quality of self-governance); the psychological need for competence; and relatedness (i.e., secure relational supports; Katz & Assor, 2007; Ryan & Deci, 2000, 2019). That is, for choice to be intrinsically motivating, students must perceive that they are independent and free in their decision-making, capable of succeeding at the challenges before them, and deeply connected to the people and the environment around them. For example, a student may feel a stronger connection to her learning community, a sense of self-efficacy related to reading, and a sense of competence in her ability to understand text when choosing books that reflect her interests and experiences. Choice, therefore, is intrinsically motivating when the locus of causality—or sense of agency—resides within the student. We argue that true choice, which is intrinsically motivating, is a determining factor in literacy performance (Baker & Wigfield, 1999; Guthrie & Klauda, 2014; Guthrie & Wigfield, 2000; Taboada et al., 2009).

The pedagogy of multiliteracies (Freire, 1970; New London Group, 1996) augments self-determination theory by drawing attention to the sociocultural context of learning. Multiliteracies perspectives call for broader definitions of literacy, literacy competency, and text than traditional approaches (Moje et al., 2004) and recognize that students contribute a variety of experiences and discourse practices that often differ from the teacher's (Gay, 2010; Ladson-Billings, 1995; Paris & Alim, 2017). The pedagogy of multiliteracies goes beyond in-school reading and writing and seeks to incorporate students' out-of-school, everyday literacies and multimodal texts to prepare students for modern ways of life. We contend that choice increases the possibility that students can pick out reading materials that honor their everyday language and literacy practices, thereby increasing their motivation to read.

Freire and Macedo (1987) were among the first scholars to draw our attention to the myriad ways that dominant cultural perspectives are embedded in traditional literacy practices, which may not reflect the lives of learners from non-dominant backgrounds (e.g., students of color and learners who do not progress at the expected rate; Dudley-

Marling & Lucas, 2009; Orellana, Reynolds, & Martínez, 2011). For example, typical remedial reading materials tend to take an ethnocentric, back-to-basics approach, emphasizing the development of technical reading and writing skills that reflect the values, discourses, and norms of the dominant culture (Dudley-Marling, 2011; Dudley-Marling & Murphy, 1997). Indeed, common educational policy is based on the belief that underperforming students are best served through highly constrained instruction, such as through programs that are designed to fix (i.e., remediate) students who do not to meet dominant culture's standards of achievement (Dudley-Marling, 2011; Genishi & Dyson, 2009). Accordingly, reading programs that contain highly regulated and sequenced decodable text often restrict opportunities for students to choose what they read (Quirk & Schwanenflugel, 2004). Thus, underperforming students are typically given more tightly controlled reading materials relative to students who have been deemed competent by dominant cultural standards.

We argue that true choice for all students—and especially for nondominant students (Gay, 2010; Ladson-Billings, 1995; Paris & Alim, 2017)—can be a catalyst for equity in the classroom, building student agency and motivation to read (Jang, Reeve, & Deci, 2010; Luke, Woods, & Dooley, 2011; Moje et al., 2004). Furthermore, true choice—which allows individuals to feel that they can select texts that reflect their interests, experiences, and personal preferences and can also identify with the characters and topic—may be particularly important for students with the lowest demonstrated in-school reading competencies.

Previous Research

Choice and Motivation

Most of the research on choice comes from the psychological literature on motivation. Various studies, primarily involving undergraduate participants, have suggested that choice increases intrinsic motivation (Cordova & Lepper, 1996; Pan & Gauvain, 2012; Patall, Cooper, & Robinson, 2008; Patall, Cooper, & Wynn, 2010; Reber, Hetland, Chen, Norman, & Kobbeltvedt, 2009; Thomas, 2015; Ward, Wilkinson, Graser, & Prusak, 2008). For example, Reber et al. (2009) found that when undergraduate students chose topics of interest (e.g., in the domains of pseudoscience, stereotypes, prejudice) during a learning activity, they were more motivated to engage in the task than students without choice. Patall et al. (2008) conducted a meta-analysis of 41 studies that explored choice and intrinsic motivation in both children and adults. All 41 studies reviewed were experiments—that manipulated choice and included at least one experimental group and one control group—and measured intrinsic motivation either behaviorally or through self-report. In summarizing their findings, the researchers concluded, "When individuals are allowed to affirm their sense of autonomy through choice they experience enhanced motivation, persistence, performance, and production" (p. 298). Notably, they also found that choice has a greater impact on children than on adults.

Further, Reeve, Deci, and Ryan (2004) reviewed the literature on choice and intrinsic motivation and argued that choice—in which individuals take meaningful actions to initiate and control their behavior (Cordova & Lepper, 1996; Zuckerman, Porac, Lathin, Smith, & Deci, 1978)—has greater impact on motivation and achievement than limited

options, such as, "Do you want to read a book about biology or civil rights" (Overskeid & Svartdal, 1996; Schraw, Flowerday, & Reisetter, 1998). Thus, choice appears to be most effective when it affirms individuals' sense of autonomy. That is, despite teachers' commonly held belief that teacher-determined options are sufficient to increase motivation (Flowerday & Schraw, 2000; Flowerday, Schraw, & Stevens, 2004), true choice must involve student self-regulation of the learning activity and the feeling of personal control.

However, even in the context of options, findings suggest that having multiple choices can be more beneficial than having just one—as long as individuals are not given too many choices (Edens & Potter, 2013; Iyengar & Lepper, 2000; Reed, DiGennaro Reed, Chok, & Brozyna, 2011). For example, Patall et al.'s (2008) meta-analysis found that the effect of choice was the strongest in studies that offered participants three to five options (i.e., bolstering individual autonomy); trends in the data suggested that two options felt restrictive, and more than five options could be cognitively draining. Based on these findings, the authors warned that having too many choices is overwhelming and difficult to manage. Similarly, Iyengar and Leppar argued that "choice overload," or having excessive options, might undermine a person's motivation and decision-making satisfaction. Too much choice, therefore, can result in ego-depletion, draining self-regulatory resources (Muraven & Baumeister, 2000). Thus, the perception of choice alone might not be a motivational factor in isolation. Rather, choice must satisfy the needs of the learner—autonomy, competence, and relatedness—to be a motivating factor (Katz & Assor, 2007; Ryan & Deci, 2019).

So, what does it mean to give students choice? Findings from the motivation research indicate that perception of choice, or illusory control, is sufficient for students to experience intrinsic motivation (Deci & Ryan, 1985). That is, intrinsic motivation may even arise when the perception of choice is only illusory—because true choice is rooted in the thoughts and attitudes of the learner (Langer, 1975, 1989). For example, perceived autonomy, even within a constrained reading level or topic, might be enough to motivate learning. Alternatively, even when choice is delimited to make it relevant to students' in-school competencies, simply the perception of choice seems to have a positive effect on motivation (Patall et al., 2010). Thus, true choice is an entirely individual, subjective experience regardless of whether opportunities for choice in the environment are actual or perceived.

With this prior research in mind, we argue that students on the lower end of the performance continuum are more motivated to read when they feel they have a greater degree of choice—even within a limited set of leveled options (e.g., Reading Apprenticeship; Greenleaf, Hale, Charney-Sirott, & Schoenbach, 2013)—than with a one-size-fits-all instructional approach with a single decodable text (e.g., DISTAR reading programs; Quirk & Schwanenflugel, 2004). As the first-grade child of one of the authors said when asked if she got to choose books in school: "I just choose certain books. Since I am on K, I just go into the KLM box where there are so much fiction books; I dig around in the back where there is just one information book. I don't really like fiction books, I like nonfiction books." This example shows that students can perceive choice even when books are constrained to their reading levels. However, it also shows that choice and interest are closely related, as we discuss below.

Choice, Interest, and Achievement

Although researchers have continued to affirm the role of choice in creating motivating contexts for learning (Duke et al., 2011; Turner & Paris, 1995), evidence regarding the direct connection between choice and achievement remains limited. Furthermore, the degree to which choice is a proxy for interest has not been definitively established.

Choice and achievement. Exploring the relationship between choice and achievement, Patall et al. (2010) found that students who were allowed to choose their homework—from two similar teacher-designed options—had higher average scores on an end-of-unit test than students who were assigned homework without choice. In their study, choice also was associated with greater rates of homework completion. Similarly, Cordova and Lepper (1996) found that third-grade students performed dramatically better on computer-based math problems in a condition that allowed choice than in a condition that was generic (i.e., did not allow choice).

In the specific context of reading, Reynolds and Symons (2001) found that when students experienced choice, their motivation to read what they selected also increased. In their randomized experiment, they compared two groups of third-grade children: 42 students in the treatment condition were given a choice of three books to read, and 42 students in the comparison condition were assigned to read one of the three books. Findings indicated that students in the choice condition were more motivated to find the answers to reading-comprehension questions.

However, other researchers have reported a negative effect of choice on learning when students are allowed to pick between options (D'Ailly, 2004; Parker & Lepper, 1992; Ullmann-Margalit & Morgenbesser, 1977), drawing our attention to the important distinction between *picking* (i.e., selection that feels limited from predetermined options) and *choosing* (i.e., choice that feels self-directed). We maintain that true choice—whether actualized as picking or choosing—must enhance students' perceptions of autonomy and agency, feelings of competence, and relatedness to increase achievement.

Choice and interest. The studies reviewed above suggest choice has a role in achievement. Nonetheless, some researchers have contended that such studies confound choice and interest, the latter defined as the interaction between individuals' goals, cognition, and affect and the environment (Deci, 1992; Hidi, 2006; Hidi & Renninger, 2006; Renninger, 2000). When students are intrinsically interested (i.e, activated by and predisposed to return to something over time) they are more likely to persist during a learning activity, and they learn more (Hidi, 2006; Hidi & Renninger, 2006).

Interest varies from person to person, and teachers do not always have the knowledge or capacity to tailor the learning environment to individual students. Thus, choice is thought to increase the possibility that students can access materials that are interesting to them. However, it is also possible that choice—by increasing feelings of autonomy—increases interest, or that the relationship between choice and interest is bidirectional. Either way, it has become increasingly common in educational contexts to offer students choices to allow them to find materials of interest (Reber et al., 2009). For example, let us return to the anecdote about the first-grade student, described previously, who is a highly motivated reader. Choice—which she described as actively searching through a box of leveled books and picking out books that she liked—may have allowed her to feel control over her learning experience, while at the same time granting her the opportunity to find

books in which she was interested (i.e., nonfiction).

Critics assert that the only way to assess the influence of a single variable, either choice or interest, on achievement is by controlling for the other (Flowerday et al., 2004). For example, in one experiment, Flowerday et al. found no effect of choice on learning when interest was removed. Students were allowed to choose but did not know what they were choosing (i.e., packet A or B). Similarly, Flowerday & Shell (2015) found that when undergraduate students performed a reading task, choice between multiple texts had a marginally negative effect on learning and engagement when controlling for interest. Specifically, they found interest, not choice, played the largest role in learning and engagement. However, we contend that—even if choice and interest are not mutually exclusive in most instructional contexts—it stands to reason that true choice uniquely effects achievement because it allows students to feel they are directing the learning experience regardless of their interest in the learning activity.

Choice and Equity

Individuals' social, economic, and institutional supports can also determine opportunities for autonomy and choice (Ryan & Deci, 2011). For example, as discussed earlier, literacy instruction for students labeled struggling readers—who do not meet school standards for literacy achievement—predominantly focuses on literacy as the obtainment of a decontextualized set of skills, such as those in isolated phonics lessons. Accordingly, students who have been labeled underperforming in schools are systematically given educational materials that limit their access to a wide range of texts, unlike high-achieving students (Dudley-Marling, 2011).

The use of highly constrained curricula such as that described above, and the associated restriction of choice, appears to be particularly prevalent in under-resourced and underperforming schools (Darling-Hammond & Post, 2000; Justice, Mashburn, Hamre, & Pianta, 2008). Darling-Hammond and Post described the discrepancies in instructional freedom and student autonomy among schools with varying levels of resources, asserting that students with fewer economic resources are less likely to have access to high-quality, varied learning materials. Specifically, students with the lowest in-school literacy competencies—who often come from under-resourced schools and schools predominantly serving students of color—tend to be taught with the most static and tightly circumscribed curricula (Moje et al., 2004). For example, when state test scores showed 80% of fourth graders were performing below proficient in reading in the Los Angeles Unified School District—in which 47% of students receive free- or reduced-price lunch, 70% are Latinx students, and 13% are African American students—the majority of schools adopted Open Court, one of three tightly scripted, prescribed reading programs introduced in the district (MacGillivray, Ardell, Curwen, & Palma, 2004).

Prescribed reading programs highlight the importance of skill building, time-on-task, and fidelity of implementation in an attempt to level the playing field for students from varying socioeconomic backgrounds. Although these programs draw from the research on—and have been found to improve—the development of component reading skills (Downing, Williams, & Holden, 2009), they do so often at the expense of research-based pedagogical approaches and materials that are more relevant and thus motivating for students—particularly students from nondominant backgrounds (Gay, 2010; Ladson-

Billings, 1995; Paris & Alim, 2017). After reviewing five popular reading remediation programs for accelerating reading development, Quirk and Schwanenflugel (2004) concluded that all five programs largely ignored theories of motivation in reading, including choice and interest. Instead, such programs rely on highly structured, decodable text taught from a one-size-fits-all perspective using an additive approach. Students are taught one skill at a time and must master each skill before being sequentially introduced to others (e.g., phonology, spelling, fluency, and comprehension; New London Group, 1996). Thus, these remedial programs appear to limit true choice and, by extension, students' motivation to read. As an alternative, the authors proposed that programs for underachieving readers should include a motivational component (e.g., choice) and highlight the role of motivation in triggering the Matthew Effect—when students are motivated they read more and become better readers, and, in turn, better reading leads to more motivation and interest in reading (Stanovich, 1986).

To summarize, existing literature provides considerable evidence that true choice, situations in which individuals feel they have control (even if illusory), is related to motivation and learning. However, few studies have explored the connection between true choice and literacy achievement, and, to our knowledge, little is known about whether opportunities for choice differ according to students' school-based reading competencies.

In this study, we investigated the relationship between true choice during reading instruction and literacy achievement while considering other motivational and contextual variables. Our research questions were as follows: (a) Is true choice in school related to literacy achievement when controlling for out-of-school choice, teacher provision of choice, interest, self-efficacy, gender, and economic background? (b) Which factors (i.e., reading level, out-of-school choice, teacher provision of choice, interest, self-efficacy, gender, and economic background) predict true choice in school? In an attempt to decipher the unique role of choice, we included students' perception of their ability to choose books outside of school as a control variable to rule out student proclivity to report choice as well as opportunities for choice outside of school. To better understand choice from teacher and student perspectives, we also considered the teacher's report on whether choice was offered in the classroom. We also examined students' self-efficacy and interest because these constructs have been theoretically and empirically linked to choice and achievement (Flowerday & Schraw, 2003) as well as economic status and gender (Bauerlein & Stotsky, 2005; Deary, Strand, Smith, & Fernandes, 2007; Lynn & Mikk, 2009).

Method

Data, Sampling Design, and Participants

Data. The data in this study come from the third cycle of the 2011 Progress in International Reading Literacy Study (PIRLS). Funding partners for PIRLS include the National Center for Education Statistics. We used data from U.S.-based fourth-grade student, teacher, and school questionnaires along with reading comprehension scores (Martin & Mullis, 2013).

Sampling design. The PIRLS assessment used a two-stage stratified random sample design to collect the data (i.e., schools were first randomly sampled and then classrooms

within schools). Probability samples were drawn to ensure that schools were representative of the general U.S. population in terms of region, school funding source (e.g., public/private), degree of urbanization, socioeconomic indicators, size, and achievement on standardized measures of performance (Hopstock & Pelczar, 2011; Joncas & Foy, 2013). We excluded fewer than 3% of students who participated in PIRLS from our sample because of missing data on perceived school choice, the primary variable of interest in this study.

Participants. The PIRLS participants were fourth-grade students who could follow basic instructions and were able to speak the language of the test. Typically, school officials excluded students from PIRLS who were physically, mentally, or emotionally unable to follow basic instructions and students who had received less than one year of instruction in English. Students with dyslexia and other learning disabilities were encouraged to participate. Based on the above criteria, the number of students excluded from PIRLS did not exceed 5% (Mullis, Martin, Kennedy, Trong, & Sainsbury, 2009). Additionally, school-level exclusions included schools that were geographically remote, had fewer than four students in fourth grade, or had a curriculum that was drastically different from mainstream schools (Joncas & Foy, 2013).

The current study includes 8,845 students (51% female) from 318 schools. The number of students tested at each school ranged from 10 to 320 students, with a mean of 140 students per school.

Assessment Design

The complete PIRLS assessment consisted of 10 reading passages and accompanying questions (Martin & Mullis, 2013). The reading booklets contained five literary and five informational texts, typical in length and interest for fourth grade, and avoided materials that depended too heavily on culture-specific knowledge. Specifically, because PIRLS is an international assessment, test developers made considerable efforts to select universally applicable texts—to the degree possible—across cultures and nations, drawing on texts from as many countries as possible (Mullis et al., 2009).

The test items were in both multiple-choice and constructed-response formats. Test administrators rotated the reading booklets systematically, and the test designers constructed scores on a common scale based on item response theory. Testing occurred at one time point and was limited to 80 minutes for each student, with an additional 15 to 30 minutes to fill out the student questionnaire. Methods, procedures, and quality assurance studies contributed to the reliability of the PIRLS administration (Martin & Mullis, 2013).

Measures

Literacy achievement. The reading comprehension assessment included a variety of item types (e.g., fictional short stories, biographies, scientific, and procedural texts). Items targeted basic skills (e.g., direct recall and inference making) and more complex reading processes (e.g., interpreting, integrating, and evaluating texts). In the language of Kintsch's (1998) construction-integration model, a predominant theory of reading comprehension, the PIRLS comprehension questions involved reading a text base and creating a situation model. The assessment required the reader to read the text, integrate

background knowledge, ideas, and information contained in the text, and make implicit connections based on the reader's perspective. A PIRLS evaluation panel made efforts to ensure that the items were culturally unbiased and appropriate in terms of fourth-grade students' interests and reading levels (Martin & Mullis, 2013).

The PIRLS reading comprehension measure was based on current reading theory and analyzed with item response theory techniques; test content was developed by experts, including experts from the United States, who reviewed the items and passages extensively. To keep the assessment burden low, each student took a portion of the PIRLS assessment, and plausible values (based on conditioning using all available data) were used to estimate comprehension performance ($M = 500$; $SD = 100$) on a wide range of literacy content from the assessment. Initially developed for the analysis of National Assessment of Educational Progress data and now common to large-scale assessments—including the Programme for International Student Assessment and the Trends in International Mathematics and Science Study—the procedure of using plausible values facilitates the unbiased estimation of structural parameters (compared to the use of raw scale scores, in which population variance is either under- or overestimated depending on the estimation method; Rubin, 1987; Schafer, 1997; Wu, 2005). The PIRLS plausible values approach imputes five scores for each student (Foy & Yin, 2017), which we standardized for ease of interpretation.

Motivation. Drawing on our experience as literacy educators and/or researchers, we discussed and deliberated how the PIRLS items relate to theories of motivation and literacy and established measures of reading motivation (e.g., Wigfield & Guthrie, 1997). Previous research guided our selection of motivation-related items, such as choice (e.g., Patall, 2013), self-efficacy (e.g., Schunk, 2003), and interest (e.g., Guthrie & Coddington, 2009; Hidi & Renninger, 2006). We selected motivation items from PIRLS that we judged to be moderately aligned with the Motivations for Reading Questionnaire, an established measure of reading motivation based on research involving fourth- and fifth-grade children (Wigfield & Guthrie, 1997). We then aggregated individual items on the student, teacher, and school questionnaires to create scales representing important aspects of motivation in school settings. To rule out potential confounding factors, we also included gender and economic background, which have been consistently tied to achievement (Clayton, 2011; Deary et al., 2007; Lynn & Mikk, 2009; Robinson & Lubienski, 2011).

Choice. Three items on PIRLS measured choice from the students' and teachers' perspectives. We named these variables *perceived school choice*, *out-of-school choice*, and *teacher-provided choice*. Two student questions probed students' thoughts and attitudes regarding how often they perceived experiencing opportunities for choice in and outside of school. One question asked teachers to report the frequency with which they provided choice in their classrooms. Both students and teachers responded by choosing "every day or almost every day," "once or twice a week," "once or twice a month," or "never or almost never."

Perceived school choice. To measure student perceptions of text choice in school, students responded to the statement, "I read books that I choose myself."

Out-of-school choice. To measure student perceptions of choice of texts outside of school, students responded to the statement, "I read books that I choose myself."

Teacher provided choice. Teachers were asked, "When you have reading instruction and/or do reading activities with the students, how often do [you] give students time to

read books of their own choosing?" We included students who had missing data on out-of-school choice and teacher-provided choice by including a category for students with missing data in each set of dummy variables.

Self-efficacy and interest. We created aggregate scales for self-efficacy and interest by taking the row mean of all relevant questions for each construct, effectively imputing missing data. The majority of students (> 96%) had complete data for all five items, and we calculated their score by adding up their total score on all five items (4 = *agree a lot,* 3 = *agree a little,* 2 = *disagree a little, and* 1 = *disagree a lot*) and dividing by five. For students with missing data, we calculated scores by adding up their total score on all items and dividing by the total number of questions answered. Total scores, which ranged from 1–4, were standardized using a *z*-score transformation for ease of interpretation.

Self-efficacy. We created the self-efficacy scale by combining five items on the PIRLS student questionnaire. Students rated the following statements: "I usually do well in reading," "Reading is easy for me," "Reading is harder for me than for many of my classmates," "My teacher tells me I am a good reader," and "Reading is harder for me than any other subject." In response to each statement, the students chose from "agree a lot," "agree a little," "disagree a little," and "disagree a lot." Negatively worded questions were reverse coded. The reliability of the scale was estimated at Cronbach's alpha = .73.

Interest. The composite for interest was calculated from five items on the PIRLS student questionnaire. Students responded to "I like to read things that make me think," "If a book is interesting, I don't care how hard it is to read," "I read to find out things I want to learn," "Reading is boring," and "I read only if I have to." For each of these five items, students selected from "agree a lot," "agree a little," "disagree a little," or "disagree a lot." Negatively worded questions were reverse coded. The reliability of the scale was estimated at Cronbach's alpha = .58.

Economic background. The PIRLS questionnaires probed student economic resources at the school level. Economic background was measured by percentage of the student's school that came from economically disadvantaged backgrounds as reported by the school principal—in a school questionnaire—as 0 to 10%, 11 to 25%, 26 to 50%, or more than 50%. Students with missing data were included in their own category.

Gender. Students reported their gender as male or female.

Analytic Strategy

To begin our analysis, we examined descriptive statistics along with correlations between all variables in this study. Next, we estimated three-level regression models with scores (*y*) nested in students and students nested in classrooms. We modeled the five plausible values as five conditionally independent observations for each student; that is, we treated plausible values as nested within students. Additionally, students sampled from the same school are unlikely to be conditionally independent, as is assumed in typical parametric statistical models. Instead, the cluster-randomized sampling procedure previously described suggests that students should be modeled as clustered within schools. Although the sample size varies among schools, this does not introduce bias into the estimates of the parameters as long as it can be assumed that students were randomly sampled within each school (see Rabe-Hesketh & Skrondal, 2005).

We defined the general model as follows:

$$y_{ijk} = \beta_0 + \beta_{1\ldots} x_{1\ldots jk} + \zeta_{jk}^{(2)} + \zeta_k^{(3)} + \varepsilon_{ijk}$$

Each variable x—perceived school choice (x_1), out-of-school choice (x_2), teacher's report on choice (x_3), interest (x_4), self-efficacy (x_5), percentage of school economically disadvantaged (x_6), and gender (x_7)—was entered individually if it was correlated with literacy achievement in Models 1–7. Here ε_{ijk} represents the level-1 residual (i.e., unexplained variance between scores for the same students), $\zeta_{jk}^{(2)}$ represents the level-2 residual (i.e., unexplained variance between students in the same schools), and $\zeta_k^{(3)}$ represents the level-3 residual (i.e., unexplained variance between schools). All variables were modeled as varying at the student level except for percentage of school economically disadvantaged (x_6), which was modeled as varying at the school level.

The choice variables (perceived school choice, out-of-school choice, and teacher-provided choice) were entered as a block of dummy variables—represented for convenience using a single x variable in the equations—for the following categories: "*every day or almost every day,*" "*once or twice a week,*" "*once or twice a month,*" or "*never or almost never,*" with an additional dummy category for missing data. Gelman & Hill (2007, p.533) note that this approach is a "simple and often useful approach" to modeling missing data, though also note that it can lead to under-estimation of standard errors. Given the very large sample size of the PIRLS database, this is judged to not be of primary concern in this context.

Then, in Models 8–12, plausible values of reading comprehension were regressed on the variables described previously to determine if perceived school choice held as a predictor of reading performance when the other variables were added to the model.

First, perceived school choice was examined when controlling for out-of-school choice and teacher-provided choice (Model 8), as such:

$$y_{ijk} = \beta_0 + \beta_1 x_{1jk} + \beta_2 x_{2jk} + \beta_3 x_{3jk} + \zeta_{jk}^{(2)} + \zeta_k^{(3)} + \varepsilon_{ijk}$$

Second, interest and self-efficacy were added to the model (Model 9):

$$y_{ijk} = \beta_0 + \beta_1 x_{1jk} + \beta_2 x_{2jk} + \beta_3 x_{3jk} + \beta_4 x_{4jk} + \beta_5 x_{5jk} + \beta_6 x_{6k} + \beta_7 x_{7jk} + \zeta_{jk}^{(2)} + \zeta_k^{(3)} + \varepsilon_{ijk}$$

And third, a final model added a control block, the percentage of the student's school that was economically disadvantaged and the student's gender (Model 10):

$$y_{ijk} = \beta_0 + \beta_1 x_{1jk} + \beta_2 x_{2jk} + \beta_3 x_{3jk} + \beta_4 x_{4jk} + \beta_5 x_{5jk} + \beta_6 x_{6k} + \beta_7 x_{7jk} + \zeta_{jk}^{(2)} + \zeta_k^{(3)} + \varepsilon_{ijk}$$

Multiple regression modeling is a common analytic technique used in reading research to identify the connection between two variables while ruling out possible causal explanations by removing the influence of other key variables (Arya, McClung, Maul, & Cunningham, 2014; Bowey, 2005; Carlisle, 1995; Cohen, West & Aiken, 2014; Cunningham, Stanovich & Maul, 2011; Share, Jorm, Maclean & Matthews, 1984).

Following the estimation of the models predicting literacy achievement, we estimated three sets of two-level logistic models with students nested in schools. In these analyses, perceived school choice was collapsed into two categories in which the student either reported "never or almost never" having choice versus having any other amount of choice at school. Perceived school choice was regressed on each individual variable: out-of-school choice, teacher's report on choice, interest, self-efficacy, percentage of school economically disadvantaged, gender, and literacy achievement (now x_8; Models 11–18), a model with all variables (Model 19), and a final model that included the variables that

continued to remain significantly related to perceived school choice (Model 20) is presented here for exemplification:

$$\text{logit}(y_{jk}) = \beta_0 + \beta_1 x_{1jk} + \beta_4 x_{4jk} + \beta_8 x_{8jk} + \zeta_k^{(2)}$$

All models were estimated using Stata (Version 13.1; StataCorp, 2013).

Results

The descriptive statistics suggest that the majority of students perceived experiencing daily choice of texts in school (74%) and at home (61%). Likewise, the majority of teachers reported offering choice every day (72%). Table 1 provides descriptive statistics.

Table 1
Descriptive Statistics for 8,845 Students in 318 schools

	No.	%
Perceived school choice		
Never	292	3
Monthly	390	4
Weekly	1,580	18
Daily	6,583	74
Out-of-school choice		
Never	660	77
Monthly	806	9
Weekly	1,824	21
Daily	5,427	61
Missing	128	1
Teacher provided choice		
Never	51	1
Monthly	139	2
Weekly	1,020	12
Daily	6,327	72
Missing	1,308	15
% of school economically disadvantaged		
0-10%	1,108	13
11-25%	1,565	18
26-50%	1,905	22
>50%	3,406	39
Missing	861	10
Female	4,509	51
	M	SD
Interest	0	0.99
Self-efficacy	0	1.00
Literacy achievement (original scale)	558	73

The results from the regression analyses suggest that each variable was, on its own, statistically significant and positively related to literacy achievement, with the exception

of teacher-provided choice, which was statistically significant but negatively related to achievement. The direction of the results from the regression models mirrored the correlation analyses, except the relationship between teacher-provided choice and achievement, which is positive in the correlation analyses. However, in interpreting our results, we focused on the regression results, which took into account the multilevel data structure. Table 2 shows the results of the correlation analyses. Table 3 provides the results from three-level regression models predicting literacy achievement.

Table 2
Correlations Between Variables

	Reading	School Choice	Out-of-School Choice	Teacher Report (Choice)	Interest	Self-Efficacy	% of School Econ. Dis.
Reading score							
Perceived school Choice	0.11***						
Out-of-school choice	0.18***	0.39***					
Teacher provided choice	0.07***	0.13***	0.04**				
Interest	0.20***	0.31***	0.44***	0.01			
Self efficacy	0.42***	0.16***	0.20***	0.03***	0.32***		
% of school econ dis	0.33***	0.01	0.07***	0.06*	0.02	0.10**	
Female	0.33***	0.08***	0.11***	-0.01	0.10***	0.07**	0.01

*$p < .05$. **$p < .01$. ***$p < .001$

Our first multiple-regression model examined the relationship between perceived choice and literacy achievement when controlling for out-of-school choice and teacher-reported choice. We built the next set of models from Model 8 by adding the motivation variables (interest and self-efficacy) followed by the control block (economic background and gender). Although the pattern of choice effects was attenuated, findings remained similar to the models with individual-choice variables, despite possible collinearity between many of the variables (e.g., perceived school choice and interest).

On its own, the relationship between perceived school choice and literacy achievement was statistically significant. On average, students who perceived choice had higher reading scores than students who did not ($\beta = .51$ for "Daily," $\beta = .43$ for "Weekly," $\beta = .51$ for "Monthly," $p < .001$ for all comparisons). When out-of-school choice and teacher-provided choice were included in the model—and, later, interest and self-efficacy and economic background and gender—the effect of perceived in-school choice remained moderately strong ($\beta = .16$ for "Daily," $\beta = .22$ for "Weekly," $\beta = .23$ for "Monthly," $p < .001$ for all comparisons). Out-of-school choice was also positively related to achievement ($\beta = .24$ for "Daily," $\beta = .20$ for "Weekly," $\beta = .21$ for "Monthly", $p < .001$ for all comparisons), whereas teacher-provided choice continued to be negatively related to achievement ($\beta = -.75$ for "Daily," $\beta = -.80$ for "Weekly," $\beta = -.86$ for "Monthly"; see Table 3 for significance levels) when controlling for the other variables in the model.

Across models, interest [β = .04 (individual model), -.19 (full model with control variables)] and self-efficacy [β = .36 (individual model), -.38 (full model with control variables)] were significantly related to achievement. Consistent with previous research, self-efficacy had the largest effect (Parker, Marsh, Ciarrochi, Marshall, & Abduljabbar, 2014), but gender (β = .05–.12; Robinson & Lubienski, 2011) and economic resources (Lee & Burkam, 2002)—as measured by the percentage of students at the school from economically disadvantaged backgrounds [0–10% (β= .72–.84), 11–25% (β=.54–.65), 26–50% (β=.36–.41)]— were also significantly related to achievement (p < .001). Students with missing data on teacher-provided choice, out-of-school choice, and economic background tended to be among the lowest performing students. Importantly, both perceived choice and interest remained significant when both were in the model, indicating that both variables had an independent effect on achievement.

The final set of analyses, looking at equity and choice, examined the predictors of student perceptions of text choice at school. On its own, each variable was statistically significant and positively related to perceived school choice, except for teacher-provided choice, which was not statistically significant. Entered together, only out-of-school choice, interest, identifying as female, and literacy achievement remained significantly related to perceived school choice. Table 4 shows the estimated odds of perceived school choice as predicted by out-of-school choice, teacher provided choice, interest, self-efficacy, economic background, gender, and literacy achievement.

Students who reported that they could choose what they read outside of school had consistently greater odds of reporting they could choose texts at school compared to students who perceived less out-of-school choice. Models for the individual variables (Models 11–18) suggested that for every standard deviation increase in interest, there was a 2.98 increase in the odds of reporting freedom of choice at school. The estimated odds of perceived school choice also increased by 84% for every standard deviation increase in literacy achievement, and the estimated odds of perceived school choice for females was 1.89 times the odds of males. Thus, interest and literacy achievement had the largest effects on perceived school choice. In other words, students who were relatively more interested in reading and demonstrated higher literacy achievement tended to perceive more choice in what they read in the classroom compared to students who were less interested and had lower achievement. These effects were slightly less strong in the final model (Model 20), but they remained statistically significant.

Table 3
Predictors of Standardized Literacy Achievement

| | | Models 1–7 | | Model 8 | | Model 9 | | Model 10 | |
| | | Individual predictors | | Choice variables | | Motivation variables | | Motivation and control variables | |
		β	95% CI	β	95% CI	β	95% CI	β	95% CI
Perceived school choice	Monthly	0.39 ***	[0.27, 0.53]	0.27***	[0.12, 0.36]	0.24***	[0.12, 0.36]	0.23***	[0.10, 0.35]
	Weekly	0.43***	[0.34, 0.60]	0.25***	[0.14, 0.34]	0.24***	[0.14, 0.34]	0.22***	[0.12, 0.33]
	Daily	0.53***	[0.44, 0.64]	0.29***	[0.18, 0.39]	0.18***	[0.07, 0.27]	0.16**	[0.05, 0.26]
Out-of-school choice	Monthly	0.32***	[0.25, 0.42]	0.26***	[0.19, 0.37]	0.23***	[0.16, 0.31]	0.21***	[0.15, 0.32]
	Weekly	0.38***	[0.31, 0.46]	0.32***	[0.24, 0.40]	0.21***	[0.15, 0.29]	0.20***	[0.14, 0.29]
	Daily	0.53***	[0.48, 0.61]	0.46***	[0.40, 0.54]	0.24***	[0.19, 0.33]	0.24***	[0.19, 0.33]
Teacher provided choice	Monthly	-0.53*	[-1.00, -0.06]	-0.53*	[-0.98, -0.07]	0-64**	[-1.05, -0.22]	-0.86*	[-1.69, -0.04]
	Weekly	-0.52*	[-0.92, -0.11]	-0.52*	[-0.91, -0.12]	-0.58***	[-0.93, -0.22]	-0.80*	[-1.59, -0.01]
	Daily	-0.44*	[-0.76, -0.07]	-0.46*	[-0.86, -0.06]	-0.53**	[-0.88, -0.16]	-0.75	[-1.54, -0.05]
Interest		0.19***	[0.17, 0.21]			0.04***	[0.02, 0.05]	0.04***	[0.02, 0.06]
Efficacy		0.39***	[0.37, 0.40]			0.37***	[0.35, 0.38]	0.36***	[0.34, 0.37]
% of school economically disadvantaged	26–50%	0.41***	[0.30, 0.53]					0.36***	[0.25, 0.46]
	11–25%	0.65***	[0.51, 0.76]					0.54***	[0.42, 0.65]
	0–10%	0.84***	[0.70, 0.98]					0.72***	[0.59, 0.85]
Female		0.12***	[0.09, 0.16]					0.05**	[0.02, 0.08]
Intercept		ns	ns	-0.60	[-0.62, 0.19]	.10	[-0.27, 0.48]	0.09	[-0.73, 0.86]
Random effects									
Level 3		ns	ns	0.48	[0.42, 0.50]	0.43	[0.38, 0.46]	0.33	[0.27, 0.34]
Level 2		ns	ns	0.79	[0.78, 0.81]	0.70	[0.70, 0.72]	0.70	[0.70, 0.35]

Note. CI = confidence interval; "Never" is the reference group for choice, "> 50%" is the reference group for % school economically disadvantaged, and male is the reference group for female; missing categories and the CIs for the intercepts and random effects for Models 1–7 are not shown (ns).
*p < .05. **p < .01. ***p < .001

Table 4
Estimated Odds of Perceived School Choice

		Models 11–18 Individual predictors		Model 19 Full model		Model 20 Final model	
		OR	95% CI	OR	95% CI	OR	95% CI
Out-of-school choice							
	Monthly	8.09***	[7.42, 10.97]	5.54***	[5.15, 7.74]	5.40***	[5.15, 7.74]
	Weekly	23.87***	[22.22, 33.60]	11.15***	[10.44, 16.18]	11.30***	[10.48, 16.23]
	Daily	31.33***	[29.78, 40.97]	11.12***	[10.51, 15.01]	11.18***	[10.52, 15.00]
Teacher provided choice							
	Monthly	0.81	[0.06, 1.01]	0.27*	[0.03, 0.56]		
	Weekly	1.03	[0.18, 1.41]	0.38*	[0.07, 0.75]		
	Daily	2.02	[0.24, 2.04]	0.68	[0.10, 1.21]		
Interest		2.98***	[2.89, 3.23]	1.88***	[1.82, 2.08]	1.87***	[1.81, 2.06]
Self-efficacy		1.60***	[1.47, 1.67]	0.98	[0.90, 1.05]		
% of school economically disadvantaged							
	26-50%	1.26	[0.73, 2.76]	1.02	[0.61, 2.18]		
	11-25%	1.45	[0.65, 2.70]	1.05	[0.45, 1.79]		
	0-10%	1.67	[0.80, 4.16]	0.85	[0.38, 1.92]		
Female		1.89***	[1.74, 2.19]	1.32	[1.17, 1.53]	1.31*	[1.19, 1.56]
Literacy achievement		1.84***	[1.78, 2.01]	1.40	[1.35, 1.58]	1.43***	[1.35, 1.57]
Intercept		ns	ns	13.32	[19.19, 230.02]	18.24	[13.66, 25.08]
Random effects							
Level 2		ns	ns	0.34	[0.21, .56]	0.48	[.28, .97]

Note. OR = odds ratio; CI = confidence interval; "Never" is the reference group for out-of-school and teacher provided choice, "> 50%" is the reference group for % school economically disadvantaged, and male is the reference group for female; missing categories and the CIs for the intercepts and random effects for Models 11–18 are not shown (ns).
*$p < .05$. **$p < .01$. ***$p < .001$

Limitations

There are several limitations to this study. First, we faced many methodological challenges in using secondary data, yet this limitation was balanced by the benefits of relying on large databases composed by other researchers. It would have been impractical, if not impossible, to collect such a large amount of data for this specific study. Indeed, literacy researchers have employed the strategy of repurposing data for decades (e.g., Cervetti, Hiebert, Pearson, & McClung, 2015; Glass, 1976; Guthrie, Schafer, & Huang, 2001; McClung & Pearson, in press). Particularly noteworthy in this study is the limitation in the item design for choice variables in which one question measured the perceived frequency with which students had access to choice of reading materials both inside and outside of school. It is possible that discrepant results from the students' perception of choice—that came from the student questionnaire—and teacher-provided choice—that came from the teacher questionnaire—might be due to weaknesses in the item formats and not actual conflicting views on whether there were choice opportunities in the classroom. Similarly, although the PIRLS items that we chose for the self-efficacy and interest scales were theoretically driven and moderately aligned with items on the Motivations for Reading Questionnaire (Wigfield & Guthrie, 1997), reliabilities ranged from being acceptable (self-efficacy; Cronbach's $\alpha = .73$) to low (interest; Cronbach's $\alpha = .58$). Finally, related limitations are that the economic resources variable was measured at the school rather than the student level and that the gender question constrained students to the gender binary. Thus, our results should be interpreted with caution.

Second, there are myriad factors that may be related to motivation and influence achievement that were not accounted for in this study. A comprehensive study of choice could include children's implicit theories of learning related to whether academic outcomes are the result of effort or ability (Heyman & Dweck, 1998; Molden & Dweck, 2006) and variability in perseverance and the ability to sustain interest when faced with difficult texts (Duckworth, Peterson, Matthews, & Kelly, 2007). Similarly, our choice variables focused only on books, and there are certainly other types of choice or opportunities for student autonomy in the classroom that may impact learning.

Third, nearly 15% of the data for the teacher-choice variable was missing. Although we could not examine the influence of these teachers' reported provision of choice in the classroom, including a category for missing data was a reasonable approach allowing us to include these teachers and students in the sample—whose data we could not conclude was missing at random—ultimately dropping fewer than 3% of participants from the entire sample (Gelman & Hill, 2007).

Finally, although an experiment would surely get us closer to determining if choice is causally implicated in literacy achievement, or vice versa, our analysis of a large database did allow us to include a large number of possible confounders—and to rule out possible causal explanations (Bowey, 2005; Cunningham et al., 2011). Our findings suggest that perceived choice is a unique predictor of literacy achievement separate from interest—even if the two are closely related.

Discussion

This study examined the relationship between choice and literacy achievement when considering a variety of other motivational and contextual variables. We were particularly

interested in the possibility that true choice (i.e., choice that resides within the student) might yield greater learning than choice that is provided externally by the teacher (deCharms, 1968; Deci, Koestner, & Ryan, 1999), even when controlling for interest. Furthermore, we explored which factors predicted student perceptions of choice and whether particular groups of students (i.e., more versus fewer in-school literacy competencies) reported different perceptions of choice in school texts.

In the following sections, we begin by discussing our analyses that addressed the first research question, exploring the relationship between school choice and literacy achievement when controlling for out-of-school choice, teacher provided choice, interest, self-efficacy, gender, and student economic background. We proceed by discussing our results related to the second research question that examined the predictors of choice, focusing on equity and in-school literacy competencies.

Higher-Performing Students Indicate Higher Perceived School Choice

Perceived school choice. Findings related to our first research question suggests that when students believe that they have frequent opportunities to choose their own texts at school, they tend to perform better on reading assessments. This finding is consistent with the current literature on choice and task performance (Patall et al., 2008; Patall et al., 2010) and extends our knowledge of choice into the domain of literacy performance. One explanation for this finding is that when students think they have choice in what they read, they are more likely to find texts that reflect their own everyday experiences, interests, and desires. As a result, they read more, and they get more engaged in what they are reading (Stanovich, 1986). For example, within the same classroom one child might be drawn to a fantasy book like *Life of Pi* (Martel, 2001) whereas another child may feel more connected to a historical or Black-Lives-Matter-inspired fiction, such as *The Hate U Give* (Thomas, 2017). Both children, however, may get more engaged in their chosen books than they would in a text assigned by the teacher or embedded in the reading curriculum. In both cases, choice increases the probability that students will encounter books that interest and engage them.

Alternatively, it is possible that competent and skilled readers feel that they can meaningfully choose a wider range of texts in the classroom than students who have less competent in-school literacy skills. For example, as mentioned in the anecdote about the first author's child's first-grade classroom, students must choose books within their limited box of leveled books (e.g., KLM); however, once they advance beyond grade-level expectations, they are allowed to choose any book in the classroom, which they refer to as, "reading around the room." Thus, it is possible that choice increases literacy achievement, or that students with higher literacy achievement may have more opportunities for choice. It is also possible that the relationship between choice and literacy achievement is bidirectional.

Another possibility is that when students believe they have choice, choice becomes an intrinsic motivator (i.e., the locus of causality resides within the student). That is, students feel greater autonomy, and thus motivation to read, when they regulate their own choices compared to when the teacher controls those choices (Cappella & Weinstein, 2001; deCharms, 1968; Deci & Ryan, 2002). Thus, our findings, which drew on an item from the student questionnaire that probed the frequency with which students felt they

could choose what they read, are consistent with the principle that illusory choice might be enough to satisfy the learner's need for autonomy in the classroom (Deci & Ryan, 1985).

However, the effect size of perceived choice on literacy achievement is somewhat difficult to gauge because of the overlap between interest and choice, which has been described in previous research. It is possible that the positive effect of choice can only be present when the students are interested in what they are reading, and thus choice influences achievement only because it is a proxy for interest (Flowerday et al., 2004; Flowerday & Shell, 2015). In our study, however, the effect of perceived choice at school was large when interest was not in the model and remained moderately strong even when interest was included. Additionally, our inclusion of perceived choice outside of school might have accounted for the possibility that interest and choice are collinear. Thus, our findings do provide tentative counterevidence to the claim that choice—on its own, without interest—does not affect on achievement (Flowerday et al., 2004; Flowerday & Shell, 2015). There seem to be benefits to ensuring students believe they can choose what they read, rather than simply being handed an interesting book.

Out-of-school choice, teacher-provided choice, and literacy achievement. Although not core to our purpose in investigating the relationship between perceived choice at school and literacy achievement, we examined students' perception of text choice outside of school and teachers' provision of choice in the classroom as a way of factoring out these key variables. Our findings show that out-of-school choice was significantly related to achievement, even when controlling for perceived in-school choice. One likely explanation is that students who report more choice outside of school simply have more books at home and are more likely to pick up an interesting book and read it. Also, books at home are an indicator of greater economic resources, which is related to higher performance in school, and may not have been completely accounted for in our economic background variable that came from the principal's report on the percentage of economically disadvantaged students at the school. Finally, it is possible that when it comes to reading, a child-led learning environment in which the child makes choices about what to read—both inside and outside of school—is more intrinsically motivating and thus more supportive of learning than an afterschool program or home environment that is more adult driven.

Perceived out-of-school choice was strongly aligned with perceived in-school choice, such that students' perceptions of choice in school tended to align with their perception of choice at home. We speculate that some children may be inclined to believe that they live in a world that is self-determined and full of choices, whereas other children simply may not be so inclined. Another possibility is that students with more resources at home, including books, are also more likely to attend schools with greater resources and more books from which to choose. It is again likely that the economic resources variable somewhat accounted for this explanation by controlling for the percentage of students at the school from economically disadvantaged backgrounds. Nevertheless, regardless of why perceived in-school choice and out-of-school choice were so tightly connected, it appears that even when out-of-school choice is controlled, perceived school choice continues to uniquely influence achievement.

Importantly, teachers and students had different perspectives on whether students had opportunities for choice in the classroom—that is, the relationship between the teachers' report on offering text choice in the classroom was not statistically significantly related to

student perceptions of choice in school. The differentiation between students and teachers in our analysis contributes to the body of work on choice by drawing attention to the possibility that teachers and students may have very different perspectives on what constitutes choice. Of course, as we have mentioned, the distinguishing feature of true choice is whether or not individuals feel self-actualized and free to determine their own fate, which is a subjective experience that cannot be determined by another person (i.e., the teacher or another person offering choice to the individual). We argue, thus, that teachers could enhance the efficacy of choice in the classroom by asking students for ideas, rather than assuming that students share their perspectives. For example, it might be beneficial for teachers to ask students if they prefer fiction or nonfiction (Duke, Purcell-Gates, Hall, & Tower, 2006), want to take more trips to the school or local library, or be involved in decision-making when purchasing books for the classroom. In other words, our findings suggest that choice may be most advantageous when teachers move beyond simply offering students time to read books of their choosing to co-creating student-informed learning contexts. Interestingly, the discrepant views we found among teachers and students on choice within the same classroom also underscore the possibility that it might be the perception of choice—rather than the actual opportunities for choice—that is most supportive of learning. Thus, illusory choice might be enough to satisfy the learner's need for autonomy in the classroom (Deci & Ryan, 1985).

Our finding that teacher-driven choice was negatively related to achievement also supports the importance of true choice in literacy achievement. One possibility is that although teachers may believe that choice is an important method to increase motivation, they might struggle to implement it (Flowerday & Schraw, 2000) or to relinquish control and let students guide learning (McClung, 2017). It is also possible that teacher responses to the choice question measured the degree of choice overload in the classroom, which negatively influences students' motivation to read (Scheibehenne, Greifeneder, & Todd, 2010). This interpretation is in line with Flowerday and Schraw (2000) who found that choice is not always beneficial for learning.

Interest, self-efficacy, and literacy achievement. Interest was a key control variable in this study because of its theoretical and empirical link to choice (Flowerday et al., 2004; Flowerday & Shell, 2015). Flowerday et al. (2004) found that when they removed interest from choice (i.e., students could choose Packet A or B, but they did not know what they were choosing), choice no longer mattered. Based on these findings, the researchers recommended that teachers should offer choices that students find highly interesting to increase learning and engagement. However, our findings suggest that both choice and interest are independent predictors of literacy achievement (i.e., they were both statistically significantly related to achievement when controlling for the other.) Thus, we believe that handing students books in which they are interested does not appear to be nearly as beneficial as ensuring that they perceive they have a variety of interesting choices. Furthermore, interest was a statistically significant predictor of perceived choice, even when controlling for literacy achievement. This finding suggests that when students are more interested in reading, they are also more likely to believe that they have choice; that is, students with higher interest are more likely to feel they have chosen what they read because they are interested in it. Thus, although choice and interest appear to be independently linked to literacy achievement, they are also closely related. Another possible explanation for the unique role of choice is that students choose books

for reasons other than interest, such as believing a book will be easier to read (Patall, Sylvester, & Han, 2014).

Our findings related to self-efficacy are consistent with previous research (e.g., Bandura, 1997; Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Eccles, & Wigfield, 1995). Self-efficacy had a larger effect on literacy achievement than interest. It is likely that students who are confident that they can succeed at reading new and challenging texts are more persistent, voracious, and successful readers. It also makes sense that more self-efficacious, stronger readers would report more choice if their reading competencies enable access to a wider array of books than less competent readers. For example, a reader with relatively more self-efficacy and in-school reading competencies might be allowed to choose any book in the classroom, whereas a student who is still learning to read (i.e., decode) might be directed to a box of leveled books or other tightly constrained reading materials. However, when reading competencies were taken into account, we found that self-efficacy no longer remained related to choice.

Economic background, gender, and literacy achievement. Consistent with previous research, the economic background of the student was moderately related to literacy achievement (Ryan & Patrick, 2001). Presumably, schools and families with more economic resources have more books and reading materials, which could create the perception that students have more choice. Yet, even when controlling for the percentage of students at the school from economically disadvantaged backgrounds, perceived choice still predicted literacy achievement, again giving merit to the idea that it might not be the number of choices to which a student has access but a student's perception of choice that matters most.

When it came to predicting choice, economic background was not significant when literacy achievement was included in the model. However, the strong correlation between economic status and reading competency made it difficult to disentangle the effect of economic status and literacy achievement on students' perceptions of choice. Thus, it is likely that students with fewer economic resources, who demonstrate lower average in-school literacy competencies, also tend to perceive they have less choice.

Girls reported having significantly more choice than boys did, as gender remained one of a handful of statistically significant variables in the final model predicting choice, even when controlling for literacy achievement. This finding extends previous research showing that girls and boys differ on important social and motivational dimensions related to reading (Eccles, Wigfield, Harold, & Blumenfeld, 1993; Greaney & Hegarty, 1987; Kush & Watkins, 1996; Marsh, 1989; Wigfield & Guthrie, 1997). Although beyond the scope of this study, it is possible that boys and girls are socialized to view choice differently. Regardless of the reasons, our findings again draw attention to the possibility that the illusion of choice is sufficient to positively affect learning—assuming, of course, that it is the perception of choice that differs by gender and not gender bias in the actual opportunities for choices given to boys versus girls. That is, gender-based social practices appear to impact students' subjective experiences of choice.

Lowest-Performing Students Reported Fewest Opportunities for Choice

Finally, our second research question focused on the degree to which opportunities for choice differed by student characteristics. Our findings, which showed that students with fewer in-school literacy competencies perceived they had less choice in the

classroom compared to their more highly competent counterparts, draw attention to the possibility that underperforming readers in our study were in learning environments that had more tightly controlled reading materials (i.e., less choice) than students who met grade-level standards in reading (Darling-Hammond & Post, 2000; Justice et al., 2008). If this is so, we contend that teachers might explore ways to adapt instructional contexts to increase motivation for reading (Quirk & Schwanenflugel, 2004). For example, teachers could meet individually with students to find out about their interests and ways in which they could provide students with supported choices (i.e., choice and readability) and work with students to bring in a variety of multimodal, everyday texts in the classroom (New London Group, 1996).

Our findings suggest that there is a relationship between students' perceptions of opportunities to read what they like and standardized measures of literacy performance. It may be that when students perceive more choice, they are more like to be motivated to read, enjoy reading, and persist when reading is difficult and therefore attain higher levels of achievement. Furthermore, choice may enable students to find books that match their preferences and experiences. If this is so, educators might reconsider whether it is beneficial to constrain choice with standardized curricular materials, particularly for students with fewer school-recognized literacy competencies—especially those from non-dominant communities (Gay, 2010; Ladson-Billings, 1995; Paris & Alim, 2017). It is possible that simple curricular changes, such as the inclusion of texts that reflect and build on students' out-of-school discursive practices, would support students' beliefs that learning is a self-directed and personalized activity.

Furthermore, we would be remiss not to mention that, despite PIRLS developers' best intentions to avoid culturally specific materials, such an effort actually reveals their adherence to culturally specific, dominant models of literacy. Such models assume that literacy is a decontextualized, neutral set of skills and are biased toward/against particular groups of students; this perspective stands in contrast to the pedagogy of multiliteracies that proposes that all texts and literacy practices are tied to specific social and cultural contexts and power relations (Freire, 1970; New London Group, 1996; Street, 1993). Thus, the connection in our study between choice and literacy achievement could suggest that students who are members of the majoritarian culture in the United States perceive more choice in schools because the available texts disproportionately represent their discourse practices and culture (McClung, 2017). Likewise, PIRLS stimulus texts, and thus student comprehension of such texts, probably reflect students' competencies in dominant, global standards as defined by traditional definitions of literacy. Thus, if opportunities for true choice require the condition of relatedness (Katz & Assor, 2007; Ryan & Deci, 2000, 2019), true choice must be culturally—as well as individually—specific. Thus, to make choice truly effective for all students, teachers may need to provide a variety of texts in the classroom that reflect nondominant cultures and literacy practices. Teachers might also support students by clarifying the personal and cultural relevance of in-school texts (Assor, Kaplan, & Roth, 2002) when the texts in schools do not readily reflect students' lives outside of school.

However, as mentioned, it is also important to keep in mind that our results are correlational and that the relationship between choice and reading might be bidirectional. In other words, it is possible that it is actually reading competency that determines the degree to which students perceive choice—and not that more choice leads to better

literacy scores. It is possible that students with lower literacy achievement believe they have less choice because they are unable to read the full range of texts in the classroom that their peers with higher in-school literacy skills enjoy. Perhaps the direction of the choice-reading relationship is an area for future research best suited to experimental designs. Nevertheless, because teachers' primary concern is to improve students' reading skills, it may be worthwhile for teachers to explore ways to communicate with lower-performing students that ensure they feel self-directed and free to choose what they want to read (Katz & Assor, 2007; Ryan, & Deci, 2019).

Conclusion

Our findings suggest that when students perceive that they have more opportunities to read what they like, they tend to have higher literacy achievement. However, many teachers may run into challenges with implementing reading choice, particularly those who are constrained by policies and practices that emphasize the use of prescribed curriculum. It is also possible that even teachers with strong intentions to allow for student choice may also view themselves as experts on learning and have difficulty relinquishing control to students, particularly for underperforming students. However, the findings from this study suggest that students' perceptions of text choice may be a critical factor in increasing their achievement.

Teachers might be able to influence students' perception of choice in school in several ways. We recommend that teachers encourage students to develop their knowledge of books that reflect their interests, and—when appropriate—push students to expand their repertoire of text range and complexity, which may have a positive impact on expanding the reading interests of students. Teachers might be able to support true choice by allowing reading time with student-selected texts every day; checking in with students to determine which books they would like to read; providing a designated place and time for independent reading; visiting the school or local library to select texts; validating students' choice of reading materials; encouraging students to read a requisite number of genres over a school year or semester; prompting students to reflect on their reading experiences, likes, and dislikes to create a reading identity that informs choice; giving students opportunities to talk with one another about their choice of texts (Miller, 2009; Miller & Kelley, 2014); and, importantly, helping students make connections between in-school and out-of-school discursive practices and texts. Providing opportunities for true choice, however, does not mean shifting classroom practice to a reading free-for-all. It is important to remember that students can perceive choice even when given a narrow list of options, especially if they are involved in self-regulating and controlling learning (Patall et al., 2008).

The results from our study suggest that perceptions of choice matter. Ensuring that students believe that learning is self-driven, and thus that they can select their own books, is critical for equity and for engaging students from all backgrounds in classroom activities. Importantly, we believe that choice increases the possibility that students will find books that reflect their lives, values, interests, discourses, and cultures in ways that might not be readily apparent to the teacher (Cope & Kalantzis, 2009). Thus, adding choice-related instructional practices may give students agency in their own education (Kozol, 2005; Luke et al., 2011)—and thereby help democratize the classroom—while at the same time increasing their understanding of text.

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