Examining the Evidence-Base for the Interventions Used in a Large Urban District

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Abstract

A widely acknowledged gap between research and practice exists in education. Recent federal legislation mandates the use of research-based practices and allows districts to use a lack of response to intervention to qualify students for special education. This requires interventions with suitable evidence for such high-stakes decisions. To date, however, there has been little research on the evidence base for interventions that are commonly used in practice.

This study examined the evidence base for the interventions provided to students in a large urban district. This district uses the problem-solving method to assign interventions for students who demonstrate academic or behavioral concerns. School psychologists play an integral role in this process. Volunteer psychologists participated in focus group interviews that investigated their knowledge of interventions used to re-engage students. The results of this study indicate the gap between research and practice still exists despite the focus on evidence-based practices. The majority of academic interventions had minimal evidence or could not be rated due to vague descriptions. Behavior interventions had stronger evidence of effectiveness. Psychologists, however, identified academic interventions with stronger evidence than behavioral interventions. Implications for practice, research, and policy are discussed.

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Chapter 1: Introduction

All, regardless of race or class or economic status, are entitled to a fair chance and to the tools for developing their individual powers of mind and spirit to the utmost. This promise means that all children by virtue of their own efforts, competently guided, can hope to attain the mature and informed judgment needed to secure gainful employment, and to manage their own lives, thereby serving not only their own interests but also the progress of society itself. (National Commission on Excellence in Education, 1983, p.1)

Thirty years have passed since the *A Nation at Risk* report (National Commission on Excellence in Education, 1983) identified necessary reforms for American education, and public confidence in education is at an all-time low (Jones, 2012). Urban schools are at the forefront of this crisis (Kozol, 2005; Lee & Smith, 1999). These schools face more pressure for improvement than any other institutions in the United States (Casserly et al., 2011).

Rising concern about public education has ushered in an era of federal educational accountability and standards-based reform (DeBray-Pelot & McGuinn, 2009). Mandates including the No Child Left Behind Act of 2001 and the Individuals with Disabilities Education Improvement Act of 2004 require states to adopt challenging standards and implement statewide accountability programs. Student performance data are made public, and resulting performance reports have highlighted the number of chronically low-performing schools in urban environments. Many urban schools have become dropout factories that produce the majority of the nation's dropouts (Balfanz & Letgers, 2004). Such persistent failure of urban schools has dire consequences for their students, their communities, and the economic conditions of the nation.

It is impossible to disentangle the performance of urban schools from the communities and students they serve (Truscott & Truscott, 2005). Life in urban environments is often accompanied by a myriad of challenges such as poverty,

homelessness, or violence. American schools have been situated at the front line of

addressing these issues, often with limited resources (Osher et al., 2008). Despite such

challenges, stories of resilient urban youth exist.

Resilience—or successful adaption in the face of adversity—develops out of

"normative human resources in the minds, brains, and bodies of children, in their families

and relationships, and in their communities" (Masten, 2001, p. 235). Urban educators and

schools must serve as protective factors at the community level. Unfortunately, decades

of student performance data suggest that this is not the case. Schools in urban areas may

have perpetuated the challenges facing students and families in the past (Tyack, 1974).

Definition and Demographics

The definition of an urban school has blurred over the past 30 years (Stone, 1998).

In this paper, the term urban represents schools and districts located in a principal city

with a population of 250,000 or more. This is more stringent than other definitions, such

as membership criteria for the Council of Great City Schools. In 2010, 13,000 schools

(14.7% of public schools) serving approximately 7.2 million students (15.5% of total

enrollment) fit this definition. More recent data aggregated by location were not available

from the Common Core of Data.

Beyond location, the term "urban school" is synonymous with schools that serve

high percentages of ethnic minorities (Miranda & Olivo, 2008). The Digest of Education

Statistics (U.S. Department of Education, 2011) aggregates race and ethnicity data by

school location. The largest racial/ethnic groups in urban schools were Hispanic students

(39.6%), followed by Black students (29.5%), White students (21.4%), Asian/Pacific

Islander students (7.9%), and American Indian students (0.8%). In comparison, the

largest racial/ethnic groups in suburban schools were White students (55.5%), Hispanic students (22.9%), and Black students (14.9%).

Urban schools also serve a disproportionate number of students living in poverty. The U.S. Department of Education uses student eligibility for a free or reduced price lunch (FRL) as its main proxy for economic status. A high-poverty school is defined as any school where more than 75% of the students are eligible for FRL. In comparison, a low-poverty school has fewer than 25% students eligible for FRL. In 2010, 19.1% of American students attended a high-poverty school whereas 25.4% attended a low-poverty school. Comparatively, 46.4% of urban students attended a high-poverty school and 11.5% attended a low-poverty school. Urban schools served approximately 16% of the entire public school population in 2010; by comparison, they served nearly 33% of the students who attended a high-poverty school.

Urban School Performance

I used results from the National Assessment of Educational Progress (NAEP), the Program of International Student Assessment (PISA), and school completion data as indicators of student performance. I selected these indicators over state accountability data because (a) they are nationally representative, (b) there is a high level of concern about the performance of American students in comparison to international students, and (c) there is large variability between state standards and assessments (Bandiera de Mello, Blankenship, & McLaughlin, 2009). A comprehensive description of these measures is available on the National Center for Education Statistics website (http://nces.ed.gov) and all of these data are public (NCES, 2012).

NAEP data have been collected biennially since the 1970s in a variety of academic subjects. I focus on results from the math, reading, and science assessments of 4th and 8th grade students. The NCES has aggregated results by school location since 2002 in reading, 2003 in math, and 2009 in science. Urban students in both grades scored significantly lower than the national public school average on *every* NAEP assessment since data were aggregated by location.

Test scores are not the only indicator of school performance. School completion is a critical goal of public education, and the social and economic costs of dropouts are large. The Alliance for Excellence in Education (2010) estimated that if high schools had graduated the entire dropout population in 2009, those students would have provided over $330 billion to the economy in their lifetimes.

The National Center for Education Statistics uses dropout rate and the number of students graduating in four years (i.e., average freshman graduation rate) as indicators of school completion. During the 2005–2006 school year, the dropout rate in urban schools was nearly double the national average. The average freshman graduation rate for urban schools (59.7%) trailed the national average by more than 13 percentage points. In 2008 – 2009, the average freshman graduation rate in urban schools was 64.1% compared to a national average of 76.7%. Students in urban schools are lower performing and subsequently completing high school at a lower rate.

Student performance within urban districts has improved over the past 10 years. Urban students' performance in math and reading was significantly higher in 2011 than 2002 in 4th and 8th grade. The improvements in urban students' scores (range: 3–6 scaled points) were significantly larger than the associated improvements for all public school

students in both grades and subjects. School completion data also indicate improvement.

The average freshman graduation rate in urban areas has increased by nearly 5% between

2005–2006 and 2009–2010. These data corroborate recent reports of urban school

improvements on state accountability measures. Among member districts of the Council

of Great City Schools (CGCS), 79% of member districts improved the percentage of

students scoring at or above proficiency in math and 73% improved in reading (Uzzell et

al., 2010). Such improvements are noteworthy but they have not occurred quickly

enough. Despite these improvements, fewer than three of every 10 urban students scored

proficient in math or reading in 2011.

Chapter 2: Literature Review

The poor performance of urban schools has not been unnoticed. Most discussions regarding the persistent low performance of urban schools have focused on the socioeconomic status of their students. There is a wealth of evidence documenting the relationships between poverty and academic achievement (Evans, 2004; McLoyd, 1998; Sirin, 2005) and race/ethnicity and academic achievement (Lee, 2002: Steinberg, Dornbusch, & Brown, 1992). Below, I highlight findings from existing NCES reports and use the NAEP database to examine these relationships nationally and within urban schools.

Race and Ethnicity

The achievement gap between racial or ethnic minorities and White students has been well documented since the *Equality of Educational Opportunity* report (Coleman et al., 1966). The Black-White achievement gap receives the most attention, but the Hispanic-White and American Indian-White gaps are equally apparent. These gaps have been evident in NAEP data over the past 20 to 30 years depending on the minority group. Long-term trend analyses indicate the Hispanic-White and Black-White gaps are relatively static, while the American Indian-White gap has increased (Hemphill & Vanneman, 2010; National Center for Education Statistics, 2012; Vanneman, Hamilton, Anderson, & Rahman, 2009). PISA data corroborate the achievement gaps between racial and ethnic groups. Students in the United States who identified as Black or Hispanic scored significantly lower than the U.S. average and the Organization for Economic Cooperation and Development average (OCED; Fleischman, Hopstock, Pelczar, & Shelley, 2010).

Similar differences between racial and ethnic groups are apparent in school completion data. In 2011, the average freshman graduation rate for White students was approximately 80%, while the average for Black, Hispanic, or American Indian students was approximately 60%. The dropout percentage among students aged 16–24 was nearly double among American Indian and Hispanic students in comparison to White students. Students from these minority backgrounds are also less likely to graduate from college (Roderick, Coca, & Nagaoka, 2011).

Poverty

Students eligible for the FRL program performed significantly worse than ineligible students in 2011 (NCES, 2012). Differences in performance are evident across grades and subjects and appear relatively static since the early 1990s. Eligibility for the FRL program is negatively associated with NAEP performance regardless of racial or ethnic background.

The school-wide poverty level also affects student achievement. Students attending high-poverty schools (more than 75% FRL) performed significantly lower than students attending low-poverty schools (less than 25% FRL) on every NAEP assessment since 1998 (Aud et al., 2010). Although PISA data do not permit direct international comparisons regarding the relationship between poverty and achievement, students attending high-poverty schools in the U.S. scored significantly lower than the average score of countries within the OCED (Fleischman et al., 2010).

There are similar relationships between NAEP scores and parent education level. Parent educational level is another proxy of socioeconomic status due to the correlation between earning potential and formal education (e.g., Carnevale, Rose, & Cheah, 2011).

Parent educational level captures the highest level of education for either parent. There

are four categories: *did not finish high school, completed high school, some education*

after high school, or *graduated college.* In 2011, 8th grade students who reported a parent

educational level of less than or equal to *completed high school* performed significantly

worse than students who reported a parent *attended some education after high school* or

graduated college. Moreover, 8th grade students who reported a parent *graduated college*

performed significantly higher than students who reported one of the other three parent

education levels. This gap was consistent for each NAEP assessment since 2002. These

data suggest that the dropout problems in urban schools will contribute to the poor

performance of future urban students.

     Summary. Urban schools serve a large proportion of students who are at risk for

low academic achievement. Recent population trends and economic factors suggest this

will continue. Examining these risks does little beyond signal the urgent need for reform.

Recent advances in statistical methods have allowed educators to partition the effects of

schools and student characteristics. Growing evidence suggests that school quality

matters — perhaps especially for at-risk student groups (Borman & Dowling, 2010). In

the next section, I examine reforms that have targeted school structures.

Previous Reform Efforts

     School Funding. Discussions of urban student performance have identified

funding inequities as a major problem facing urban schools (Truscott & Truscott, 2005).

For example, Kozol (1991) reported funding gaps of more than $12,000 between

suburban schools and city schools in the New York City metropolitan area. The

Elementary and Secondary Education Act of 1965 was among the first of many federal

initiatives to improve the academic achievement of students from low-income

households. Federal monies were earmarked for high-poverty schools in order to close

the achievement gap. The federal government has distributed over $12 billion annually to

improve the academic achievement of low-income students since 2007.

I used NCES data to examine trends in per-pupil expenditures in urban schools.

The NCES provides information regarding school funding in two categories. Total

expenditures include spending on current expenditures, capital outlay, and interest

payments on debt. Current expenditures include monies spent on day-to-day operations of

schools (Aud et al., 2012) and are the focus of this section.

In the 2008–2009 academic year, current expenditures[1] averaged $11,457 in urban

districts compared to a national average of $10,476 and a suburban average of $10,742.

Among high-poverty districts, the urban average ($11,024) was slightly higher than the

national average ($10,052) or suburban average ($9,978). Long-term trends indicate

high-poverty districts, 70% of which are in urban areas, had the largest gains in per-pupil

expenditures since 1995. No trend information was provided for urban districts. These

data suggest that federal and state action has reduced the funding inequalities evident in

the early 1990s. Yet, there are some important considerations when interpreting school

expenditures.

First, national data do not account for the variance between different urban

districts or urban schools. Public districts in Atlanta, Minneapolis, Milwaukee, and

Detroit spent more per student than their respective state or the national average during

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[1] In 2008–2009, 61% of the current expenditures were for instruction (e.g., teacher
salaries, instructional materials), 11% for administration (e.g., principal, superintendent),
and 10% for student support (e.g., psychological, social work, health services) nationally
(Aud et al., 2012).

the 2008–2009 school year; whereas public districts in Dallas, Chicago, Dade County (Miami), and Philadelphia spent less than or equal to their respective states or the national average (Common Core Data, 2012).

Second, there is an inconsistent relationship between total per-pupil expenditures and student performance. A meta-analysis of 377 studies suggested a weak relationship between school resources and student performance (Hanushek, 1997). In comparison, Hedges and his colleagues found that the effect of funding was dependent on how it was spent (Greenwald, Hedges, & Laine, 1996; Hedges, Laine, & Greenwald, 1994). An alternative explanation is that urban schools need significantly more resources than the national average. The Harlem Children's Zone, for example, is considered one of the most promising efforts to improve urban education. The Promise Academy spent an estimated $4,657 per pupil beyond public funding (Dobbie, Fryer, & Fryer, 2011). More research is needed to determine how much school funding is required before significant improvements in achievement are realized.

Teacher Quality. The poor performance of urban schools was also attributed to teacher quality (Darling-Hammond, 1999; Ingersoll, 2001; Lankford, Loeb & Wyckoff, 2002; Rivkin, Hanushek, & Kain, 2005). Urban districts have historically had difficulty recruiting and retaining teachers (Jones & Sandidge, 1997). Others have cited district hiring practices that result in qualified teachers accepting jobs elsewhere. Urban districts have dealt with these shortages by hiring unqualified teachers or assigning teachers out of licensure areas (Jacob, 2007).

To increase the number of high-quality teachers, the No Child Left Behind Act of 2001 mandated that states require all teachers to have a bachelor's degree, full

certification, and demonstrated competency in subject matter. The legislation also provided funding to improve existing teacher quality, especially in high poverty schools. The Condition of Education (Aud et al., 2012) included an examination of changes in teacher characteristics between the 2003–2004 and 2007–2008 school years. In 2007–2008 there were more teachers with post baccalaureate degrees but no changes in experience. Unfortunately, multilevel research suggests that experience has a small effect, but a post-baccalaureate degree has no effect on student achievement after controlling for other variables (Buddin & Zamarro, 2009; Fryer, 2011; Hanushek & Rivkin, 2007). To this end, the majority of funds provided by the Race to the Top grant were spent on teacher retention (U.S. Government Accountability Office, 2012).

Summary. Improving the performance of high-poverty schools has been a federal initiative since 1965. The No Child Left Behind Act (2001) mandated high-quality teachers and provided funds to increase teacher quality. There have been some improvements in urban schools (Casserly, 2012), but on average academic achievement and school completion data are still dismal. Decades of reform efforts have not led to sustained improvement for urban students (Becker & Luthar, 2002; Kopetz, Lease, & Warren-Kring, 2006). Chronically failing schools need practices that will raise student achievement quickly and lead to sustained improvements (Herman, Dawson, Dee, Greene, Maynard, & Redding, 2008).

Current Reform Efforts

There are some promising examples of turnaround efforts in urban and other low-performing districts (de la Torre et al., 2012; Herman et al., 2008). A large-scale reform effort in Chicago found that making changes to school leadership and staff led to

significant and sustained improvements in elementary and high school achievement (de la

Torre et al., 2012). The Council of Great City Schools found similar patterns between

three urban districts that had significantly increased student performance on NAEP

measures and one that did not (Casserly et al., 2011). Strong leadership, high

accountability, district wide support, and professional development were related to

improvements in student performance. Further, turnaround urban districts aligned with

the common core state standards, developed coherent curricula, and used data to target

resources and support. These findings corroborate the recommendations made by the

Institute for Education Sciences for producing quick turnarounds in low-performing

schools (Herman et al., 2008).

The Obama administration has appropriated over $4.5 billion to improve the

lowest performing schools in the nation. This has had a direct impact on urban schools.

Approximately half of the schools that received funding from School Improvement

Grants were in urban areas (Hurlburt, Therriault, & Le Floch, 2012). School

improvement grants were used to fund "scientifically rigorous" reform models that

include new administration, new teachers, charter management, or school closure.

Improving classroom teaching and learning is the cornerstone of school turnaround

efforts (U.S. Department of Education, 2011).

These mechanisms were informed by research suggesting that school turnaround

requires strong administrative leadership, improving curriculum and instruction,

committed staff members, and high expectations for all students (Bryk, Sebring,

Allensworth, Luppescu, & Easton, 2010; de la Torre et al., 2012). We can make three

additional inferences from school turnaround literature. First, researchers have primarily

focused on case studies of successful schools (Hermann et al., 2008). Second, the

academic performance in many of the turnaround exemplars is still below district or

national averages (e.g., de la Torre et al., 2012). Third, policymakers have almost

exclusively addressed instruction and school governance.

Strong leadership and quality core instruction are foundational to increasing the

performance of urban schools. Yet nearly 30% of the students performed below grade

level in the exemplary turnaround districts highlighted by the Council of Great City

Schools (Casserly et al., 2011). These data suggest urban school reform will also require

strong programs to catch students up to grade level. Improving the capacity of urban

schools to provide additional academic and social emotional supports is critical to avoid

the failure of previous reforms.

Improving the Capacity of Urban Schools to Promote Resilience

Adopting an ecological perspective. Focusing on within-student characteristics

impeded the effectiveness of previous urban school reform (Balfanz, 2000; Becker &

Luthar, 2002; Kopetz et al., 2006). The reasons for poor academic performance are

complex (Daly, Witt, Martens, & Dool, 1997). Focusing on the correlational relationships

between sociodemographics and achievement does not inform effective intervention.

Finn and Zimmer (2012) used the Centers for Disease Control definition of health risk to

further illustrate this point.

The Centers for Disease Control defines health risks as conditions, events, or

behaviors that increase the probability of death or disease. Conditions are immutable risk

factors such as family history, ethnicity, or age. Events are current measures of health

that indicate future risk such as obesity, substance abuse, or cholesterol levels. The key

distinction between an event and a condition is that events are alterable. Family history of

diabetes may compound the health risks associated with obesity, which heightens the

need for prevention and early intervention to reduce body fat.

Returning to education, urban schools serve a large population of students who

are at risk for educational failure. Sociodemographic variables (e.g., SES, home

language) signal risk but are unlikely to be altered. There are other, malleable predictors

of academic achievement that school improvement can address (Finn & Zimmer, 2012).

Interventions should target students' ecological environments to address factors that

moderate the relationship between sociodemographic variables and poor academic or

behavioral outcomes (Apter, 1978; Kratochwill & Stoiber, 2002; Sheridan & Gutkin,

2000). This perspective fits with evidence that effective school reform must provide

academic and social-emotional support in a comprehensive fashion to effectively promote

student achievement (Adelman & Taylor, 2005; Atkins, Hoagwood, Kutash, & Seidman,

2010; Lee & Smith, 1999). A change in perspective should help educators target alterable

barriers to student achievement. The next question is how to address these barriers to

learning.

Using evidence-based practices. Educational practices and interventions are not

created equal. Educators' overreliance on programs with limited evidence is another

major factor in the failure of previous urban education reform (Beckar & Luthar, 2002;

Kopetz et al., 2006). The No Child Left Behind Act (2001) mandated the use of

educational practices based on "scientifically rigorous" research and the stakes were

subsequently raised with the reauthorization of the Individuals with Disabilities

Education Act (2004). Districts are now allowed the use of students' response to

"scientific research-based" intervention as part of the special education evaluation process. Additionally, widely adopted multi-tiered systems of support rely on the use of high-quality, evidence-based practices for prevention and intervention.

Evidence-based practices are necessary in classroom and individual settings. The poor performance of urban students suggests that many students may require additional interventions to meet grade level expectations. Implementing evidence-based interventions is a promising avenue to address the poor performance of urban schools (American Psychological Association, 2005; Miranda & Olivo, 2008) but the use of these practices is uncommon (Bramlett, Murphy, Johnson, Wallingsford, & Hall, 2002; Burns & Ysseldyke, 2009; Hoagwood et al., 2007).

The gap between research and practice is troublesome when considering the importance of evidence-based practices. The chasm between science and practice has been observed in many helping professions (Wandersman et al., 2008), but education has addressed it particularly slowly (Cuban & Tyack, 1995; Slavin, 2002). Educators' limited use of evidence-based practices is not related to a dearth of educational research. Instead, the research-to-practice gap has been reinforced by actions from researchers and practitioners alike.

Some researchers have painted educators as too reliant on professional judgment and unwilling adopters of what "works." However, it is unlikely many teachers would choose to waste valuable time and resources on something they thought would be ineffective. Educators may use a nonsystematic approach to selecting interventions (Algozzine, Ysseldyke, Christenson, & Thurlow, 1983; Bramlett et al., 2002), which may lead to the adoption of practices with limited evidence (Burns & Ysseldyke, 2009; Ellis,

2005; Slavin, 2002). Other educators are reluctant to use research-based programs and hold poor views of professional development (Boardman, Arguelles, Vaughn, Hughes, & Klingner, 2005; Stanovich & Stanovich, 1997).

Researchers have an equal share in this problem. Educational research has historically been characterized as methodologically weak (Feuer, Towne, & Shavelson, 2002) and has had an "awful reputation" with teachers and policymakers (Kaestle, 1993, p. 23). Moreover, educators often complain that research does not fit the daily realities of the classroom (Gersten, Vaughn, Deschler, & Schiller, 1997; Parajes, 1992). Research in education traditionally followed a top-down approach to investigations, leading Tikunoff and Ward (1983) to suggest that "teachers frequently were given solutions to problems they never had (p. 454)."

Researchers and practitioners must work together to increase the use of evidence-based practices to promote preferable student outcomes. Reducing the research-to-practice gap requires addressing underlying causes. Greenwood and Abbott (2001) found four major issues, including (a) a separation between researchers and educators, (b) limited relevance of research to actual practice, (c) failure of research to produce innovations that are useable, and (d) limited opportunities for meaningful professional development. Carnine (1997) identified three areas in which an increase in the relevance of research for schools was needed — availability, trust, and usefulness.

Availability. Educators need to be able to locate and discriminate between evidence-based practices that address the current problem. Research findings should be easy to locate and interpret in a practical manner, since increasing demands on educators

further shrinks the likelihood they will devote hours to conducting exhaustive literature reviews (Carnine, 1997).

The idea of increasing the availability of research has received a great deal of attention since the federal government increased demand for scientifically based practices. The U.S. Department of Education's Institute of Education Sciences created the What Works Clearinghouse (WWC) to disseminate research findings in an easily consumable manner. By the same token, other large agencies have created registries of evidence-based practices in prevention science and mental health (e.g., the National Registry of Evidence-Based Programs and Practices). These efforts and the widespread availability of the Internet have greatly increased educators' ability to access research.

Researchers have also conducted meta-analyseses to identify effective evidence-based practices. A brief literature search for meta-analyses in the School Psychology Review indicated that three were published prior to 2002 and 10 were published after 2002. These studies may be useful for practitioners who need to find an evidence-based practice but do not have time for exhaustive literature reviews (Lipsey & Wilson, 1993). The increasing use of multilevel modeling in meta-analytic research may identify contexts that moderate program effectiveness.

The label "evidence-based" is growing rapidly in psychology and related fields (APA, 2008). The widespread availability of research leads to an unintended consequence. Most educational innovations are purportedly based on research (Ellis, 205). These programs are often costly, and if they do not lead to the desired results they are quickly abandoned. This leads educators to expect similar results from any program claiming to be research-based (see also Slavin, 2002). This has led to an overreliance on

fads and subsequently failed innovations (Ellis, 2005). Many schools quickly adopt

innovative programs and then shift if the program is not immediately effective (Capella et

al., 2011).

Trust. Researchers can increase practitioners' trust in research by conducting

studies with strong designs. Educational research published in the 1980s was

characterized as being methodologically weak, infatuated with jargon, and fad driven

(Atkinson & Jackson, 1992). Improving the quality of research and assisting educators in

differentiating between research-based claims addresses the trustworthiness of research.

The profession of school psychology has a long history of addressing student

problems through the development and provision of supplemental supports (Shapiro,

2000). The American Psychological Association and the Society for the Study of School

Psychology commissioned a task force to review the methodological quality of school

psychology research. Building on foundational work in clinical psychology, Kratochwill

and colleagues led a movement to increase the trustworthiness of research in school

psychology.

Increasing trust in research requires criteria for differentiating between

interventions that claim to be based on evidence (Stoiber & Kratochwill, 2000). To this

end, the Task Force on Evidence-Based Interventions in School Psychology developed

criteria to rate the internal or causal validity of intervention research. Methodologically

strong studies facilitate the credibility of their results (Levin, 1994). The resulting criteria

provided guidelines for practitioners to rate studies on common threats to internal validity

(Shadish, Cook, & Campbell, 2002) and were published in 2003.

A recent study suggests that (a) the focus on scientifically based research and (b) the subsequent development of the What Works Clearinghouse and the Task Force criteria are associated with changes in the rigor of research in school psychology. The prevalence of intervention research has increased in school psychology journals (Burns, Klingbeil, Petersen-Brown, & Ysseldyke, 2012). This was especially true of single case designs, which are especially relevant for determining response to intervention (Riley-Tillman & Burns, 2009). The methodological rigor of quasi-experimental research has increased over the past 10 years. Quasi-experimental designs provide less support for interventions than a high quality randomized controlled trial, but the improvement is promising. A number of small issues led to lowered ratings of several studies. For example, among randomized controlled trials that failed to meet evidence standards, researchers often failed to specify the randomization process or baseline equivalence. This may reflect issues with reporting rather than the methodology used (Burns et al., 2012). Increasing methodological rigor is promising for improving educators' trust in research, but the findings must also be useful.

Usefulness. Increasing the usefulness of research requires studies of topics pertinent to educators. Educators need to know which interventions are effective, for whom, and under what conditions. Educators may be less likely to use research to inform intervention efforts if they adopt an "evidence-based" intervention and it is not effective in their classroom or school. This issue is related to the distinction between efficacy and effectiveness.

Chorpita (2003) developed a framework for categorizing types of research studies. Efficacy studies evaluate interventions in a tightly controlled environment

(Kratochwill & Shernoff, 2004). The implementation and outcomes of efficacy studies likely differ from actual practice. Efficacy studies are necessary to ensure that the intervention demonstrates the required effect.

Transportability studies examine the generalizability of efficacy studies in applied practice. They may also examine the feasibility of the intervention (Kratochwill & Shernoff, 2004). This allows researchers to identify both potential modifiers and implementation challenges. In transportability studies researchers are primarily responsible for intervention delivery and evaluation.

Dissemination studies move farther away from a controlled context. In these studies, a practitioner delivers the intervention while researchers provide consultation and performance feedback. These studies increase generalizability to actual practice, but the supervision and training from researchers may still influence effectiveness (Kratochwill & Shernoff, 2004).

Evaluation studies examine if practitioners can implement intervention effectively and if the intervention works without researcher involvement. Researchers may analyze the data, but typically practitioners implement the interventions and collect assessment data. These studies have the highest likelihood of generalizability to actual practice. Practitioner input should be included in stages 2 through 4 in order to increase the usefulness of intervention research.

Practice-Based Evidence

Addressing the research-to-practice gap by increasing trust, usefulness, and availability places the focus primarily on the role of researchers. A top-down approach to intervention development has been evident in education and related fields for some time.

Bridging the gap between researchers and educators requires a bidirectional relationship (Kratochwill et al., 2012).

Practice-based evidence is drawn from research in which practitioners and researchers collaborate to study interventions. Educators work in collaboration to implement the intervention while providing information regarding variables affecting intervention effectiveness and implementation. Kratochwill and colleagues (2012) posit that practice-based evidence will improve the usefulness of evidence-based interventions and identify challenges with intervention implementation or sustainability. Practice-based evidence may also identify the processes with which practitioners select an intervention from among many options.

Role of Theory

In the search for what works, it is important that evidence-based interventions be guided by theory (Burns, 2011; Hughes, 2000). A list of effective treatments is not enough information for practitioners to select interventions (Kratochwill, 2007). Theory is necessary to understand the causal mechanisms underlying the intervention. Moreover, theory provides a framework for identifying and addressing factors influencing intervention effectiveness (Kazdin, 2000). While the role of theory appears widely accepted, there is disagreement about which theory is most suited for guiding research on evidence-based interventions.

The theory of student engagement is well suited for developing and organizing interventions to support student achievement (Christenson et al., 2008). Student engagement is a broad meta-construct (Fredericks, Blumenfield, & Paris, 2004) that encompasses academic and social-emotional factors. Fostering student engagement is a

cornerstone of high school reform and central to promoting school completion (National Research Council/Institute of Medicine, 2004).

Engagement is relevant for all students, but appears particularly relevant in urban schools. Ethnic minorities (other than Asian Americans) and students with low socioeconomic standing exhibit lower levels of cognitive engagement, social/behavioral engagement, and affective engagement than their peers (Yazzie-Mintz, 2010). These groups represent a large portion of the population that urban schools serve. Evidence also shows that urban students feel low levels of belonging in school, a key indicator of psychological engagement that is related to academic achievement and school completion (Goodenow, 1992).

Student engagement theory is consistent with an ecological perspective. Connell and Wellborn (1991) posited that ecological factors influence students' thoughts, which in turn affect their actions (i.e., engagement) and outcomes. Engagement mediates the connection between the contexts surrounding the learner and academic outcomes (Christenson et al., 2008).

Several indicators (e.g., attendance, grades, behavior) of student engagement have been found to predict academic achievement. These indicators predict school dropout as early as the first grade (Balfanz et al., 2007; Jimerson, Sroufe, & Carlson, 2001) and serve as a protective factor against many of the risks facing African American youth in urban areas (Fantuzzo et al., 2012). Student engagement is alterable by families, educators, and schools. For example, early intervention targeting affective engagement may limit risk behaviors later in life (Hawkins, Catalano, Kosterman, Abbott, & Hill,

1999; Hawkins, Guo, Hill, & Battin-Pearson, 2001). The theory of student engagement

lends itself to prevention and early intervention.

Review of Engagement Theory

Differing perspectives on student engagement have led to multiple

conceptualizations of the construct (Christenson, Reschly, & Wiley, 2012). There is also

recognition that student engagement falls along a continuum between disaffection and

full engagement (Skinner, Furrer, Marchand, & Kinderman, 2008). Christenson and

colleagues (2012) defined student engagement as:

> A student's active participation in academic and co-curricular or school-related
> activities and commitment to educational goals and learning. Engaged students
> find learning meaningful and are invested in their learning and future. It is a
> multidimensional construct that consists of behavioral (including academic),
> cognitive, and affective subtypes. Student engagement drives learning; requires
> energy and effort; is affected by multiple contextual influences; and can be
> achieved for all learners.

Finn's (1989) seminal participation-identification model was the first to connect

engagement with the process of school withdrawal. Finn posited that participation in

school activities, which led to successful academic performance, would promote one's

identification (i.e. valuing, belonging) with school. School-level variables (e.g.,

instructional quality) influence students' participation and successful performance. The

relationship between identification and participation is cyclical: improving a student's

identification with school will increase future participation and academic performance,

leading to stronger identification with school (Finn, 1989).

The participation-identification model of school withdrawal is supported by social

control theory. According to social control theory, within the context of student

engagement, identification with school will reduce the number of students "free" to

engage in delinquent behavior such as truancy or dropping out (Finn, 1989). Based on this theory, increasing student engagement may reduce the problem behaviors often evident in urban classrooms. Facilitating student engagement is a promising way for educators to reconnect students at risk for dropping out of school.

More recent models of engagement expanded Finn's model to include cognitive engagement (Fredericks et al., 2004) and later academic engagement (Appleton et al., 2006; Finn & Zimmer, 2012). Early definitions of behavioral engagement included student behaviors related to conduct and participation (Finn, 1989; Fredericks et al., 2004). Christenson and colleagues (see Appleton et al., 2006) further refined the construct by separating academic indicators such as time on task and homework completion from behavioral indicators related to attendance and voluntary participation. This underscores the positive relationship between academic learning time and student achievement.

Educators may struggle to make a distinction between academic and behavioral engagement because both include observable behaviors such as time on task, compliance, classroom participation, and attendance. Therefore, Finn and Zimmer (2012) use the terms academic and social engagement. Academic engagement includes all student behaviors related directly to learning and social engagement includes behaviors related to classroom or school rules.

Academic engagement. Academic engagement encompasses behaviors related directly to learning, including attention, on-task behavior, and homework completion. There are multiple levels of participation that increase in complexity as children mature (Finn, 1989). The most basic level includes being prepared for activities and responding

to teacher questions. More advanced levels of participation include spending extra time at school, completing extra work, or participating in extracurricular activities related to academics.

Social engagement. Social engagement refers to behaviors that indicate students follow school rules. Common indicators include tardiness, truancy, and behavioral referrals. Social engagement may moderate the relationship between academic engagement and learning.

Cognitive engagement. This subtype refers to students' investment in learning, their motivation, and their ability to self-regulate learning (Fredericks et al., 2004). Cognitively engaged students invest in academic outcomes, desire to surpass basic requirements, and prefer to be challenged (Fredericks et al., 2004). Students with strong self-regulation capabilities are able to use metacognitive strategies to plan and monitor their learning (Pintrich & DeGroot, 1990). Self-regulation strategies are often used to facilitate cognitive engagement (Paris & Paris, 2001).

Affective engagement. This subtype includes the connection between a student and the school (Betts, Appleton, Reschly, Christenson, & Huebner, 2010). It involves feelings of relatedness, belonging, and identification with school activities. Strong affective engagement may lead to increased self-awareness, emotional regulation, and conflict resolution skills for students (Appleton et al., 2006). School climate and student-teacher relationships are important facilitators of belonging (Fredericks et al., 2004; Sinclair, Christenson, Lehr, & Anderson, 2003).

Gaps in the Literature

School psychologists have long been leaders in developing interventions to improve students' academic and social-emotional competence (Shapiro, 2000). Recent efforts to disseminate evidence-based practices coincided with legislative demands for scientifically based research and high-quality educational practices. Nearly a decade later there have been improvements in the methodological rigor of intervention research (Burns et al., 2012). The Internet and the creation of organizations (e.g., What Works Clearinghouse) to review, evaluate, and disseminate interventions has increased the accessibility of research to practitioners. A major question remains: has this focus led to increased use of evidence-based practices in the schools?

Discussions of the research-to-practice gap in education seldom include data regarding the prevalence of evidence-based practices. Examining the use of evidence-based interventions in urban districts will provide important information for the future direction of research and practice in school psychology. If educators are not using evidence-based interventions in practice, this may signal a need for more effective, studies in applied settings as well as professional development efforts to increase their use. If educators are using evidence-based interventions and student performance remains low, this may reflect issues with correctly targeting and implementing interventions.

The pressing need to re-engage urban students is reflected in low student achievement and poor graduation rates in many urban schools. It is unclear if the research identifying the importance of ecological factors and student engagement has bridged the gap between research and practice. School psychologists are trained to use assessment data to select interventions and are often integral to the process of assigning supplemental

supports. It is important to document psychologists' understanding of engagement and

the interventions they have seen used to re-engage urban students.

Purpose of Study

The first purpose of this study was to examine the type of interventions provided

to students needing additional support in a large urban district. I used the four-part theory

of student engagement (Appleton et al., 2006; Finn & Zimmer, 2012) to organize the

interventions. The second purpose was to examine school psychologists' perceptions of

student engagement and their knowledge of available interventions to re-engage urban

students. There were nine research questions related to the two aims (see Figure 1).

Figure 1

Research Questions

Research Questions	
1	What types of indicators do educators use to identify engagement as an intervention target?
2	What interventions are being used in this large urban district for students needing supplemental support?
3	To what extent are these interventions evidence based?
4	Does the use of evidence-based interventions differ based on student demographics?
5	To what extent does the use of evidence-based interventions predict student outcomes (e.g., exiting the problem-solving process or being referred to special education).
6	What are school psychologists' perceptions about the need for reengaging students?
7	What types of interventions do school psychologists' use and to what extent are they evidence based?
8	What barriers do school psychologists perceive to reengaging urban students?
9	What untapped resources could be used to promote student engagement?

Chapter 2: Methods

Sample

Extant data from the Minneapolis Public Schools (MPS) were used to answer the quantitative research questions. MPS has used a problem-solving process to provide supplemental supports for students since 1994. Students demonstrating academic or behavioral problems receive increasing support across three stages (Marston, Reschly, Lau, Muyskens, & Canter, 2007). In Stage 1, classroom teachers select and deliver supplemental interventions in the regular education setting.

Students who continue to demonstrate academic or behavioral concerns are referred to a problem-solving team (PST) in Stage 2 (Marston, Lau, & Muyskens, 2007). PSTs are typically composed of a regular education teacher, a special education teacher, a school social worker, and a school psychologist. The PST creates an electronic record for each student that documents the referral concerns and the student's current level of performance. Next, the team records (a) the type of intervention and implementation frequency, (b) progress monitoring procedures, (c) intervention goals, and (d) outcome data for each intervention.

After six to eight weeks of intervention implementation, the PST reconvenes to determine intervention effectiveness. Successful interventions are either discontinued due to successful remediation or continued with further monitoring. If the student has not made adequate progress, the team decides whether to modify the intervention, implement a new intervention, or refer the student for a special education evaluation.

This study focuses on the interventions used during the second stage of the problem-solving process. Data from the electronic records were compiled into a

spreadsheet for all students who received supplemental support. Demographic

information for these students is presented in Table 1.

Table 1

Descriptive Statistics of Students Who Received Supplemental Interventions

	Grades K–2 ($n = 558$)		Grades 3–5 ($n = 500$)		Grades 6–8 ($n = 381$)		Overall ($N = 1,439$)[†]		District K–8 ($N = 23,664$)	
	n	%	*n*	%	*n*	%	*N*	%	*N*	%
American Indian	30	0.5%	34	0.7%	36	9.4%	100	0.7%	1,212	5.1%
Asian	20	0.4%	22	0.4%	19	0.5%	61	0.4%	1,773	7.5%
Black	290	52.0%	245	49.0%	212	55.6%	756	53.0%	8,329	35.2%
Hispanic	121	21.7%	120	24.0%	63	16.5%	304	21.0%	4,645	19.6%
White	97	17.0%	70	14.0%	48	12.6%	215	15.0%	7,752	32.8%
FRL	461	82.6%	444	88.8%	341	89.5%	1246	86.6%	15,263*	64.5%
LEP	166	29.7%	192	38.4%	97	25.5%	455	31.6%	Not Available	
Female	195	34.9%	232	46.4%	171	44.9%	597	41.5%	16,115*	68.1%

Note: * = *n* estimated based on district percentages; FRL = free and reduced lunch, LEP = limited English proficiency; † = 18 students missing ethnicity data

Approximately 15% of the records contained only demographic information (*n* =

91), general notes (*n* = 69), performance data (*n* = 37), or goal statements (*n* = 23). These

cases were removed from the analyses, resulting in 1,219 complete records.

Participants

School psychologists from MPS (*n* = 24) volunteered to participate in focus group

interviews. The majority of participants were female (*n* = 18). Participants' average age

was 42 years (*SD* =16.3) and their average experience was 9.8 years (*SD* = 6.3). Other

demographic data were not collected to protect the anonymity of the participants. These

psychologists served schools with an average ratio of 833 students per psychologist (*SD*

= 499). Half of the participants were trained at a nearby university classified as having

very high research activity with 22 participants attending graduate training in the

Midwest. Almost all of the participants held Education Specialist degrees ($n = 20$).

Participants also provided information regarding their previous training regarding

student engagement. On average, participants completed 1.7 ($SD = 1.2$) graduate courses

covering student engagement, attended 2.4 ($SD = 1.5$) conference presentations on

student engagement, and received 2.1 ($SD = 1.5$) district trainings on fostering student

engagement. Approximately 75% of the participants received training on interventions to

re-engage students, but only 50% used the interventions in practice.

Procedure

Quantitative. I coded the information from the 1,219 electronic records for

students in Stage 2 of the problem-solving process. Referral concerns were coded as

indicators of engagement based on the definitions in Figure 2. I did not code descriptions

of academic deficits as signs of disengagement. These students may have been engaged

while still having academic difficulties. Labeling pure skill deficits or other distinct

constructs as a type of engagement may limit the usefulness of student engagement by

adding unnecessary complexity to the construct (Finn & Zimmer, 2012).

Figure 2

Operational Definitions of Indicators of Engagement Subtypes

Subtype	Definition	Example Indicators
Academic	Behaviors directly related to learning process	Attention, classwork or homework completion
Social	Behaviors related to following school and classroom rules	Behavior referrals
Cognitive	Directed effort toward learning, investment in school, and use of higher order cognitive strategies to facilitate learning	Self-report data, teacher reports of "low-motivation"
Affective	Emotional connection and valuing of school and academic achievement	Self-report data, observations of withdrawn behavior or poor peer relationships

Next, I coded interventions based on the type of intervention and the subtype of engagement it addressed. The presence of progress monitoring information was coded as a dichotomous yes or no variable. Progress-monitoring methods varied across students, schools, and targeted skills. The types of data and the frequency of monitoring were not evaluated in this study.

Finally, I adapted the Institute of Education Sciences' levels of evidence for practice guides (2010) to evaluate the evidence base for these interventions. Interventions were rated based on the empirical evidence for modifying the primary target behavior. The Institute of Education Sciences (IES) classifies evidence for educational practices as strong, moderate, or minimal. Strong evidence requires multiple studies with high external *and* internal validity. A large, well-designed, randomized, and controlled trial must exist. All available studies must demonstrate consistently positive effects.

Moderate evidence requires a combination of high internal or external validity and moderate validity in the other area. According to the IES (2010), the classification of

moderate evidence requires no contrary evidence. Minimal evidence results from studies that do not meet criteria for moderate or strong evidence (e.g., case studies). These interventions are often associated with weak or contradictory effects.

I rated the evidence for each intervention based on reviews of published meta-analytic research, systematic literature reviews, and reviews from federal organizations. I also conducted literature reviews using electronic databases such as PsychInfo and Academic Search Premier. Publisher evaluations were included if the studies demonstrated the methodological rigor required by the IES.

Qualitative. School psychologists working in MPS were invited to participate during two staff meetings and the department newsletter. Participants received a small meal and a 10-dollar gift card as compensation. A total of 26 of the 45 psychologists volunteered (54%) with 24 attending a focus group interview. Each session was scheduled to have approximately 5 participants to increase the depth of information gathered from each participant, but the actual sizes ranged from 2 to 7. Focus groups were composed of school psychologists who (a) practiced in the same setting (e.g., elementary school) and (b) had similar years of experience as a school psychologist to increase homogeneity (Krueger & Casey, 2009). However, scheduling conflicts led to one group with a mixture of participants working in K–8 and high school settings.

The questioning route was piloted with graduate students in school psychology. I modified three questions based on feedback. Each group interview was completed within 60 to 80 minutes. An assistant moderator recorded notes, collected forms, and helped with other aspects of the interview as needed. The interviews were digitally recorded and transcribed.

Analytic Plan

I used a mixed methods design to answer the research questions posed in this study. Mixed methods research combines qualitative and quantitative data (i.e., strands) throughout the methodology of a single study (Tashakkori & Teddlie, 1998). Mixed methods designs are helpful to explain initial results, generalize findings, or further explicate a problem beyond a single method. Mixed methods are used to explain findings generated by a single method and improve the usefulness of findings for applied settings (Bryman, 2006; Creswell & Clark, 2011). There are several designs that allow for the collection and interpretation of qualitative and quantitative information. Researchers must make four key decisions to choose an appropriate mixed methods design (Creswell & Clark, 2011).

1. Level of interaction between strands: The qualitative and quantitative data "strands" may be kept separate until the interpretation or mixed throughout data collection, data analysis, and interpretation.

2. Strand priority: Researchers may also choose to give one strand priority while answering the research questions.

3. Timing: Research designs also differ on whether strands are implemented at the same time or sequentially.

4. Mixing: Information from each strand may be mixed during interpretation, data analysis, data collection, or research design.

This study follows a convergent parallel design (Creswell & Clark, 2011). I considered qualitative and quantitative data as independent strands. The research questions, data collection, and data analyses were conducted separately. Chapters 2 and 3

are separated into qualitative and quantitative sections. Both strands were given equal emphasis and data were analyzed concurrently. The results of the strands are mixed in Chapter 4.

Data Analysis

      Quantitative. The associations between student outcomes and evidence-based interventions were calculated using correlational techniques. The frequency of interventions across the 4 subtypes of engagement was compared using Pearson χ^2 analyses. Logistic regression analyses were planned to examine if (a) student characteristics predicted the use of evidence-based interventions and (b) the use of evidence-based interventions predicted outcomes of the problem-solving process.

      Qualitative. I transcribed each focus group verbatim and used constant comparison analysis to generate themes. Constant comparison analyses provide a systematic process for analyzing, identifying, and visualizing relationships among parts of the data (Leech & Onwuegbuzie, 2008). There are three major steps to constant comparison analyses. First, I coded information from all 5 focus groups separately (open-coding). Second, I grouped these codes into larger categories (axial-coding). Third, I integrated the codes into a framework for each research question.

Chapter 3: Results

I analyzed the qualitative and quantitative data separately. In this section I present the results from the quantitative strand first. The findings from both strands are mixed in Chapter 4.

Quantitative Research Question 1

Question 1 examined the frequency of referral concerns and the most commonly recorded indicators of engagement. I used the referral information, baseline data, and intervention areas to code the most frequent areas of concern. Students were referred due to concerns regarding multiple academic skills (38.6%), reading (23.5%), behavior (16.9%), academic and behavior issues (13.6%), math (6.2%), or writing ($< 1\%$).

Next, I coded the referral concerns for indicators of student engagement. Over 57% ($n = 699$) of the referral concerns listed academic skill deficits. I did not consider these signs of disengagement as students could be engaged but still struggle with classwork. I coded the indicators of disengagement that were present for the remaining 43% of students. Very few cases contained indicators of cognitive (9.1%) or affective (4.7%) disengagement.

Quantitative Questions 2 and 3

Questions 2 and 3 were focused on the type and corresponding evidence base for the interventions recorded by district problem solving teams (PSTs) during the 2010 school year. Interventions that addressed speech, occupational or physical therapy, or referrals to outside providers ($n = 117$) were beyond the scope of this study and not included in the analyses. The analyses contained a total of 3,109 intervention descriptions for the 1,219 students with complete records.

Grade and setting. The average number of interventions per student varied significantly by grade, with $F(1, 1286) = 46.29$, $p < .001$. Post hoc comparisons using Tukey's HSD test indicated that students in grades K–2 and grades 3–5 received a higher average number of interventions when compared to students in grades in 6–8 ($p < 0.01$).

I also coded whether the intervention was delivered in a small group or individual setting. Interventions targeting academic engagement were provided relatively equally to small groups or individuals. Most interventions targeting cognitive engagement and social engagement were provided in groups. Interventions targeting affective engagement were almost exclusively provided to individuals.

Academic engagement. PSTs assigned 2,363 interventions (76% of total) that addressed academic engagement. The majority of interventions in this area targeted instructional strategies or delivery while a few targeted home-school collaboration. Most interventions were provided to fewer than 20 students. I reviewed the evidence for all interventions but focused on the interventions provided to more than 20 students (see Table 2). Focusing on the most common interventions eliminated interventions with minimal, moderate, and strong evidence.

Table 2

Interventions Targeting Academic Engagement (N = 2,363)

Intervention	*n* (%)	Setting	Evidence Rating
Guided reading	161 (6.8%)	SG	Minimal
Reading (phonics)*	150 (6.3%)	SG, Ind	Not Rated
Reading workshop	120 (5.1%)	SG	Minimal
After-school programs	105 (4.4%)	SG	Moderate
focusMATH	91 (3.9%)	SG	Minimal
Words their way	90 (3.8%)	SG, Ind	Moderate
Math (computation)*	88 (3.7%)	SG, Ind	Not Rated
Math (unspecified)*	83 (3.5%)	SG, Ind	Not Rated
Reading (unspecified)*	81 (3.4%)	SG, Ind	Not Rated
Computer assisted instruction	78 (3.2%)	Ind	Strong
First in math	23	Ind	Minimal
Reading lab	21	Ind	Minimal
Accelerated math/ Accelerated reading	12	Ind	Moderate
Other	12	Ind	Minimal
Reading A to Z	10	Ind	Minimal
Study hall	68 (2.9%)	SG	Minimal
English language or native language instruction	62 (2.6%)	SG, Ind	Not Rated
Reading mastery	57 (2.4%)	SG, Ind	Minimal
Increased OTR	57 (2.4%)	Ind	Strong
Math (number sense)*	56 (2.4%)	SG, Ind	Not Rated
Reading (multiple skill)*	56 (2.4%)	SG, Ind	Not Rated
Modified homework	56 (2.4%)	Ind	Strong
Small group instruction	55 (2.3%)	SG	Strong
Read naturally	53 (2.2%)	SG, Ind	Minimal
Add+Vantage math recovery	51 (2.2%)	SG, Ind	Moderate
Corrective reading	41 (1.7%)	SG	Moderate
"direct instruction"	39 (1.7%)	SG, Ind	Strong
Individual instruction/tutoring	38 (1.6%)	Ind	Minimal
Peer tutoring	37 (1.6%)	Ind	Strong
Leveled literacy intervention	33 (1.4%)	Small Group	Moderate
Drill and practice	33 (1.4%)	SG, Ind	Moderate

Reading 180	33 (1.4%)	Ind	Moderate
Reading (comprehension)	25 (1.1%)	SG, Ind	Not Rated
Math manipulatives	21 (<1.0%)	SG, Ind	Moderate
Minnesota reading corps	20 (<1.0%)	Ind	Moderate

Note. * = PST specified skill area rather than intervention; OTR = opportunities to respond; SG = small group; Ind = individual

Interventions with strong evidence. Six of the most common interventions met IES requirements for strong evidence of effectiveness. Computer-assisted instructional (CAI) programs were assigned in math and reading relatively equally. CAI programs have strong evidence overall (Hattie, 2009), but the programs assigned by the PSTs had minimal to moderate evidence of effectiveness. The evidence for the individual CAI programs is discussed below.

Small group instruction has been the focus of more than 100 empirical studies with consistent positive effects (Hattie, 2009). Small group instruction allows for cooperative learning and peer modeling that is not available during individual instruction. Student records indicated most small group interventions focused on reteaching classroom material or targeting instructional-level skills.

Direct instruction also has strong evidence of effectiveness. There are more than 300 studies of direct instruction (Hattie, 2009). Researchers have found moderate to strong positive effects for teaching multiple skills (Adams & Engelmann, 1996) and across student ability levels (Forness, Kavale, Blum, & Lloyd, 1997). Several of the interventions in this area used direct instruction principles (e.g., Reading Mastery). Therefore, more than 2% of students may have received direct instruction as a supplemental intervention.

Peer tutoring has strong evidence of effectiveness for improving students' academic skills (Bowman-Perrott, et al., 2013; Cook, Scruggs, Mastropieri, & Castro,

1985; Fuchs, Fuchs, Mathes, & Simmons, 1997). Peer tutoring was used infrequently to

target academic engagement. Peer-mediated interventions were also used to address

affective and social engagement. Interestingly, PSTs often paired students with high-

achieving peers rather than cross-age tutors.

Providing opportunities to respond is necessary for students to develop fluency

with academic tasks (Daly, Lentz, & Boyer, 1996). Repeated practice underpins several

evidence-based interventions such as repeated reading (Therrien, 2004) and cover-copy-

compare (Skinner, McLaughlin, & Logan, 1997). Providing opportunities to respond at

the proper instructional level is an important moderator of the relationship between

practice and academic outcomes (Burns, 2004), but PSTs rarely provided this

information.

Interventions with moderate evidence. There were 10 interventions that met IES

criteria for moderate evidence of effectiveness. The Words Their Way (WTW) program

was the most common. A program evaluation, using a randomized controlled trial,

demonstrated a small effect on spelling ($d = 0.11$) but not reading fluency (Eddy,

Ruitman, Hankel, Matelksi, & Schmalstig, 2011). The IES did not rate the evidence for

WTW as a beginning reading intervention (IES, 2013). I rated the evidence for the

program as moderate due to the positive effect on spelling demonstrated in a study that

met IES validity standards.

PSTs assigned the Add+Vantage Math Recovery program to address students'

numeracy and math operation skills. A recent multilevel study found positive effects of

math recovery on students' computation and problem solving skills (Smith et al., 2013). I

found no randomized controlled trials, which are required for a rating of strong evidence.

The IES found moderate evidence for using manipulatives during math instruction (Gersten et al., 2009). PSTs recorded these interventions primarily for elementary students needing support with number sense, operations, and place values.

Read 180 (Scholastic Inc., 2012) is computer-assisted program that also incorporates traditional small group instruction. An IES review of the Read 180 program found seven studies that met validity standards with reservations. There were small but consistent effects on general reading achievement. There were inconsistent effects on reading comprehension. Studies with stronger internal validity are needed before Read 180 could be considered an intervention with strong evidence.

Corrective Reading is part of the SRA Direct Instruction package of interventions (McGraw-Hill Education, 2012). The IES found small but consistent effects after reviewing the program in 2010. Other studies (Benner, Nelson, Stage, & Ralston, 2011; McDaniel, Houtchins, & Terry, 2012) showed Corrective Reading had a consistent positive effect on student reading, but these studies did not meet IES validity standards.

Accelerated Math and Accelerated Reading (Renaissance Learning, 2008) are technology-enhanced formative assessments designed to assist teachers with determining instructional levels and providing opportunities for repeated practice. Three studies of Accelerated Math and four studies of Accelerated Reading met IES validity standards. The IES found medium to large effects for elementary schools (2010) but no discernable effects of the programs in middle schools (2008). I characterized the evidence for these programs as moderate due to the differences across grades.

Finally, the Minnesota Reading Corps tutors provide individualized reading interventions that are evidence-based (e.g., listening passage preview). Program

evaluations (available at www.minnesotareadingcorps.org) have shown positive effects

on state test scores for program completers, but no peer-reviewed studies of the program

exist. It was difficult to determine the external validity of the program therefore a rating

of strong evidence was not applicable.

   Interventions with minimal evidence. PSTs commonly assigned 11 different

interventions that had minimal evidence of effectiveness. Guided reading (Fountas &

Pinnell, 1996) and Reading Workshop interventions were the most common. Both

include components that are research based, but I found no studies examining the

programs that met IES validity standards. Studies of Read Naturally and focusMATH

(Styers & Baird-Wilkerson, 2011) met IES criteria but provided mixed evidence of

effectiveness. Interventions with contrary effects are not eligible for moderate or strong

ratings according to the IES (2010).

   Study hall was one of the most common interventions assigned to students in

middle school grades. PSTs often assigned study hall to replace an elective for students

with multiple failing grades. PSTs indicated study halls were small classes where school

staff provided homework assistance. Out-of-school homework programs have small but

inconsistent effects on achievement (e.g., Cosden, Morrison, Albanese, & Macias, 2001;

Morrison et al., 2000), but few studies examined in-school homework assistance. A study

using national data showed that in-school homework in general had a negligible effect on

student achievement (Keith, Diamond-Hallam, & Fine, 2004).

   Individualized instruction and tutoring has minimal evidence of effectiveness due

to contrary results across studies with strong designs. In fact, a recent IES practice guide

found minimal evidence for providing intensive individualized instruction to struggling

readers (Gersten et al., 2009). Effect sizes for individualized instruction ranged from negative to moderate on academic achievement across nine meta-analyses (Hattie, 2009).

Interventions that were not rated. Members of the PSTs specified the target skill rather than an intervention on approximately 25% of the interventions addressing academic engagement. Many records indicated items such as "student will work on letter sounds 3 days per week with Ms. White," while others specified a general area (e.g., math). These skill descriptions were most common for interventions targeting phonics and math computation. I did not rate the evidence for these practices because it was impossible to identify the actual interventions used.

Other interventions were specified but lacked enough information to rate the evidence for these practices. Rating the evidence for English Language Learner (ELL) interventions was difficult. English learners benefit from bilingual instruction compared to instruction in English only (Cheung & Slavin, 2012; Slavin & Cheung, 2005), but the type of instruction is also important. Effective instruction in literacy, for example, should include formative evaluation, vocabulary instruction, paired practice, and small group instruction (Gersten et al., 2007). PSTs did not indicate instructional practices during ELL classes, but some noted that students attended pull-out classes. I did not rate the evidence for these programs due to the importance of instructional practices.

Affective engagement. Only two of the interventions recorded during the intervention process primarily addressed affective engagement (see Table 3). Descriptions of mentoring and the Check & Connect program suggested PSTs used these interventions to promote emotional support for students. It is important to note that other interventions may have had effects on students' affective engagement.

Table 3

Interventions Targeting Affective Engagement ($N = 57$)

Intervention	n (%)	Setting	Evidence Rating
Mentoring	54 (94.7%)	Individual	Minimal
Check & Connect	3 (5.3%)	Individual	Strong

Interventions with strong or moderate evidence. Check & Connect is an

intensive intervention that addresses all four engagement subtypes. The IES (2006)

identified one study that met validity standards and another that met with reservations.

Check & Connect had large effects on indicators of social and affective engagement. The

mentor-student relationship also impacts student engagement (Anderson, Christenson,

Sinclair, Lehr, 2004). There were only three students assigned to the Check & Connect

intervention through the problem-solving process. However, the district reported that

Check & Connect was only implemented for high school students during the 2010–2011

school year (C. Kaibel, personal communication, May 29th, 2013).

Interventions with minimal evidence. Mentoring interventions were mostly

informal. Students were assigned adult mentors to facilitate positive relationships. A

national study of school mentoring programs found no statistically significant effects for

mentoring across academic and behavioral outcomes (Bernstein, Rappaport, Olsho, Hunt,

& Levin, 2009). Studies using meta-analytic methods also show that mentoring is

associated with inconsistent effects on a variety of outcomes (Dubois, Holloway,

Valentine, & Cooper, 2002; Wood & Mayo-Wilson, 2012). For example, Dubois et al.

(2002) found a small average effect for mentoring, but 14% of the studies had contrary

effects. Other studies that met IES validity criteria (e.g., Karcher, Davis, & Powell, 2002) found positive effects on students' connectedness to school.

Cognitive engagement. Few interventions addressed cognitive engagement (see Table 4). In general, interventions targeting academic motivation, self-regulated learning strategies, and students' persistence with complex tasks foster cognitive engagement. Student records included two self-regulated learning strategies.

Table 4

Interventions Targeting Cognitive Engagement (*N* = 35)

Intervention	*n* (%)	Setting	Evidence Rating
Goal setting	30 (85.7%)	SG, Individual	Not Rated
Providing choices	5 (14.3%)	Individual	Minimal

Note. SG = Small group

Interventions with minimal evidence. The impact of student choice has been widely studied. A meta-analysis of 41 studies (Patall, Cooper, & Robinson, 2008) indicated providing choices has an average effect of $d = 0.36$ on intrinsic motivation, $d = 0.28$ on effort, and $d = 0.36$ on task performance. There was a small effect ($d = 0.10$) on subsequent academic achievement. Between 14% and 35% of the effect sizes for these outcomes had contrary effects. Therefore, I rated choice as having minimal evidence due to these contrary findings.

Interventions that were not rated. PSTs assigned goal-setting interventions primarily for middle school students who met with a school counselor in small groups. Goal setting has a positive effect on students' academic achievement and may enhance students' intrinsic motivation for academics and self-efficacy (Elliot, & Harackiewicz, 1994; Gaa, 1979; Schunk, 1991). Research also shows that the effects of goal setting and

students' goal orientation depend on the type and difficulty of the goals (Ames & Archer,

1988; Schunk, 1990). This information was rarely recorded in student records. Goal

setting interventions could have had minimal evidence (e.g., setting easily attained

performance goals) or strong evidence (e.g., setting difficult mastery goals) of

effectiveness.

      Social engagement. PSTs assigned 36 different interventions to address

behaviors that were incompatible with classroom or school rules. This included

disrupting instruction, task refusal, and poor attendance. I focused on the evidence for

interventions provided to 10 or more students (see Table 5).

Table 5

Interventions Targeting Social Engagement ($N = 643$)

Intervention	n (%)	Setting	Evidence Rating
Behavior charts	159 (24.7%)	Individual	Not Rated
Preferential seating	105 (16.3%)	Individual	Strong
Counseling	93 (14.5%)	SG, Individual	Not Rated
Adult attendance monitoring	47 (7.3%)	Individual	Moderate
Positive behavior recognition	37 (5.7%)	Classwide, Individual	Strong
Daily behavior report card	32 (4.9%)	Individual	Moderate
Punishment	29 (4.5%)	Individual	Strong
Time out	21	Individual	Strong
Sensory interventions	24 (3.7%)	Individual	Minimal
Structured breaks	23 (3.6%)	Individual	Minimal
Behavior contract	20 (3.1%)	Individual	Moderate
Peer modeling/mediation	19 (3.0%)	Individual	Moderate
Behavior education program	19 (3.0%)	Individual	Strong
Visual schedules	10 (1.5%)	Individual	Moderate
Increased parent contract	10 (1.5%)	Individual	Moderate

Note. SG = small group.

> ***Interventions with strong evidence.*** Five of the interventions targeting social engagement had strong evidence of effectiveness. Preferential seating was the most frequently assigned. Several studies demonstrated the positive effects of preferential seating on student behavior (Clifton, 2007; Purdie, Hattie, & Carroll, 2002; U.S. Department of Education, 2004).

PSTs also assigned interventions where teachers "caught the student being good." Increasing positive behavior recognition is a key component of positive behavior support

programs. Numerous studies show the positive effects of praise (Matheson & Shriver, 2005; Reinke, Lewis-Palmer, & Merrill, 2008) and positive behavior support programs (e.g., Horner et al., 2009; Lassen, Steele, & Sailor, 2006). I found no studies where there were negative effects of positive behavior recognition.

Time out and punishment have strong evidence of reducing social disengagement and more serious behavior when implemented effectively (Sterling-Turner & Watson, 1999). Intervention integrity is particularly salient for punishment. The rating of strong evidence does not suggest that punishment is appropriate, but only that strong evidence exists that punishment reduces problem behavior when used properly.

Researchers often identify the behavior education program, or Check In/Check Out, as an exemplary targeted strategy for students showing signs of social disengagement (e.g., Crone, Hawken, & Horner, 2010; Hulac, Terrell, Vining, & Bernstein, 2011). This program combines the use of a daily behavior rating with adult mentoring. The intervention has been shown to reduce problem behaviors (Hawken & Horner, 2003; Todd et al., 2008) without evidence of negative effects.

Interventions with moderate evidence. Six of the most common interventions targeting social engagement had moderate evidence. Adult attendance monitoring was the most common. PSTs indicated that these monitoring interventions included adult check-ins in addition to data tracking. The IES found six studies that included attendance monitoring that met validity standards. There were small but consistently positive effects of these programs on student attendance.

In contrast to peer tutoring, peer mentoring and mediation were used to modify student behavior. Recent studies of peer mentors (Karcher, 2005; 2008; Sheenan, DiCara,

LeBailly, & Christoffel, 1999) and peer mediation (Johnson & Johnson, 1996) showed positive effects on indicators of social engagement when the peers were trained appropriately. I found no randomized controlled trials of peer monitoring precluding a rating of strong evidence.

Visual schedules and behavior contracts were used for a small number of students. Visual schedules are often used to target indicators of social and academic engagement for students with pervasive developmental disorders. There is evidence that visual schedules are an effective intervention to reduce problem behavior, but many studies have limited external validity (e.g., Bryan & Gast, 2000; Dettmer, Simpson, Myles, & Ganz, 2000; Schneider & Goldstein, 2010). There is also evidence of the effectiveness of behavior contracts for reducing problem behavior (Kelley & Stokes, 1982; De Martini-Scully, Bray, & Kehle, 2000) and facilitating positive behavior (Allen, Howard, Sweeney, & McLaughlin, 1993). But again, there was limited external validity for many of these studies.

Interventions with minimal evidence. PSTs assigned frequent breaks and sensory interventions to address behavior concerns for a few students. Student breaks are often recommended as antecedent control of misbehavior or as consequences for desired behavior (DuPaul & Ervin, 1996). The PSTs did not note if breaks were provided to target the hypothesized function of the problem behavior. I did not find any studies of student breaks outside of a functional behavior plan.

Sensory-based interventions are often studied with students exhibiting autistic-like behavior or students exhibiting self-injurious behavior. Sensory interventions have inconsistent evidence across several studies. The effectiveness of these interventions

decreases when compared to behavioral methods (Devlin, Healy, Leader, & Hughes, 2011).

Interventions that were not rated. I did not rate the evidence for daily behavior charts or counseling. Unlike daily behavior report cards, daily behavior charts may not be used systematically or include reliable measurement. PSTs did not provide enough information to determine if these key moderators of effectiveness were included in the intervention.

The effectiveness of counseling interventions is also highly variable dependent on type and outcome (Weisz et al., 1995). For example, a meta-analysis of 74 effects resulted in an average effect of $d = .97$, but relaxation and skills-based therapies had some evidence of contrary effects (Prout & Prout, 1998). Cognitive-behavioral and behavioral therapies have larger effects than nonbehavioral therapies (Durlak & Wells, 1998). The effectiveness of therapy also depends on measured outcomes. Counseling has inconsistent effects on depression (Maag, Swearer, & Toland, 2009), but behavioral therapies have positive effects on externalizing behavior (Wilson & Lipsey, 2007). PSTs rarely noted the type of therapy provided, which was necessary to rate the evidence for these interventions.

Quantitative Questions 4 and 5

Questions 4 and 5 focused on the relationships between student characteristics and the use of evidence-based interventions. Students are disproportionately at risk for special education placement based on ethnic background and parents' socioeconomic status. I found no studies examining if this disproportionality extends to the use of evidence-based interventions prior to referral.

The evidence rating for each intervention was determined using IES (2010) evidence standards (see page 40). Approximately 75% of the interventions had strong, moderate, or minimal evidence for their use. The PSTs provided limited or ambiguous information for the remaining interventions, and I was unable to rate the evidence base for the remaining.

I created an ordinal variable (Total EBI) to represent the level of evidence for each intervention. For example, interventions with moderate evidence were assigned a 2. I summed these values to represent the overall evidence of the interventions each student received. A student who received three interventions that all had strong evidence ratings would have a total of 9. The outcome variable represents the PST decision to continue, modify, or refer the student for a special education evaluation. Preliminary descriptive statistics for intervention variables are presented in Table 6.

Table 6

Descriptive statistics for selected variables

	n	*M/%*	*SD*	Min	Max
Interventions per student	3,109	2.55	1.18	1	7
Total EBI	1,104	3.70	2.37	1	17
Total evidence ratings*	2,032	1.78	0.81	1	3
Strong evidence	570	18.2%			
Moderate evidence	670	21.6%			
Minimal evidence	1,066	18.2%			
Not rated	803	25.9%			
Outcome	1,215	--	--	--	--
Missing/moved	283	23.3%	--	--	--
Intervention successful	43	3.5%	--	--	--
Intervention continued	497	40.9%	--	--	--
Referral for evaluation	392	32.3%	--	--	--

Note. *Descriptive statistics for total evidence rating did not include items that were not rated.

I conducted preliminary descriptive analyses to examine if logistic regression analyses were warranted. The number of interventions did not differ significantly across student race or ethnicity χ^2 (12) = 9.13, p = .63. Moreover, the proxy variable I created to capture the evidence for the interventions each student received was not significantly correlated with student ethnicity (ϕ = 0.29, p = .95), English proficiency (r_{pb} = −0.09, p = .76), gender (r_{pb} = −0.05, p = .14) or free and reduced price lunch status (r_{pb} = 0.30, p = .31). In this sample it did not appear that student demographics predicted the use of evidence-based interventions during the second part of the problem solving stage.

The fifth quantitative question examined whether the use of evidence-based interventions predicted the outcome of the problem-solving process. After 6 to 8 weeks of intervention, PSTs decide whether the intervention should be discontinued, continued, modified, or if the student should be referred for a special education evaluation. I collapsed these categories into a binomial variable indicating whether the student was referred for an evaluation.

The Total EBI variable was not significantly associated with student outcomes from the problem solving process (r_{pb} = .02, p = .53). Moreover, student outcomes were not related and did not differ across the average evidence rating per intervention (χ^2 (6) = 4.29, p = .64). The evidence base for these interventions was not significantly associated with student outcomes, at least when rated using IES evidence standards. Logistic regression analyses were not appropriate given the lack of statistically significant associations between predictor and outcome variables.

Quantitative Summary

Students were most commonly referred to problem-solving teams due to concerns about multiple academic areas, reading, or behavior issues. PSTs assigned 3,109 interventions to students in grades K through 8. More than 75% of the assigned interventions targeted academic engagement. Corresponding evidence for interventions targeting academic engagement was variable.

A systematic review indicated that 16 of the top 35 interventions met IES criteria for moderate or strong evidence of effectiveness. The other 19 interventions had minimal evidence of effectiveness or could not be rated due to a lack of information. Some of the interventions with minimal evidence had average positive effects, but contrary findings precluded ratings of moderate or strong evidence.

Less than 3% of the interventions targeted affective or cognitive engagement primarily. The Check & Connect program had strong evidence of effectiveness. The other interventions targeting these areas had minimal evidence of effectiveness or could not be rated.

Approximately 21% of the interventions targeted social engagement. These interventions had the strongest evidence base overall. Eleven of the 15 most common interventions met IES criteria for moderate or strong evidence of effectiveness. PSTs commonly assigned counseling interventions and behavior charts, but there was rarely enough information about key moderators to rate the effectiveness of these practices.

Finally, there were no relationships between student characteristics and the provision of evidence-based interventions. The total ratings of evidence were not related to the outcome of the problem-solving process. That is, the evidence rating of the

interventions a student received was not correlated with whether the student exited the problem-solving process, continued with the same intervention, or was referred for a special education intervention.

Qualitative Results

Qualitative data were collected during focus group interviews with school psychologists. Groups were split between participants working in elementary and middle/high school settings when possible. Approximately half of the psychologists in the district voluntarily participated.

Qualitative Research Question 1

This question addressed participants' (a) perceptions about the construct of engagement, (b) knowledge of common indicators of engagement, and (c) perceptions about the need to re-engage urban students. Current conceptualizations of student engagement include three to four subtypes (Appleton et al., 2008; Fredericks et al., 2004). This question examined the extent to which participants' views of engagement and understanding of indicators of student engagement reflected current theory.

Approximately half of the participants identified multiple subtypes in their definitions of student engagement. Academic was the most commonly identified subtype, followed by social, affective, and cognitive engagement. Similarly, participants identified more indicators of academic engagement (42%), than indicators of social engagement (22%), affective engagement (19%), or cognitive engagement (17%). Participants unanimously agreed on the importance of re-engaging urban students.

Qualitative Research Question 2

Question 2 examined the types of interventions that school participants have used, or seen implemented, to re-engage students. The focus group moderators provided a definition of student engagement that included all four subtypes to promote participants' consideration of interventions targeting all areas. The results follow the same format as the quantitative questions 2 and 3.

Participants identified interventions across universal, targeted, and individual levels. Although universal interventions likely foster student engagement, the focus of this study was on interventions provided to students needing additional support. I do not report mentions of universal interventions in the following sections.

Academic engagement. Interventions targeting academic engagement addressed instructional delivery, classroom management, and home-school collaboration. Post-secondary transition programs were the most common intervention targeting academic engagement despite fewer than 33% of the participants working in secondary settings (see Table 7).

Table 7

Academic engagement interventions identified in focus group interviews (N = 33)

Intervention	Setting	Mentions	% of Groups	Evidence Rating
Postsecondary transitions	SG, Individual	10	100%	--
College-readiness programs	Individual	6	40%	Moderate
Voyager program	Individual	2	20%	Minimal
Jump start to college	Individual	2	20%	Minimal
Increasing home-school communication	Individual	10	60%	Moderate
Fostering family-school partnerships	Classwide	9	60%	Moderate
Problem-solving teams	Individual	4	40%	Moderate

Interventions with moderate evidence. Participants identified several strategies

used to increase home-school collaboration and parent involvement. Facilitating two-way

communication between the home and school has moderate evidence of evidence (Cox;

2005).

Other participants discussed establishing parent involvement committees (i.e.,

emphasized partnerships), holding evening family events, and connecting families with

community resources. These interventions were provided at the universal level, but

participants discussed their targeting of students who are at risk for poor achievement.

These programs addressed barriers to creating strong family-school partnerships

(Christenson, 2004). Meta-analytic research (e.g., Fan & Chen, 2001; Hong & Ho, 2005)

and longitudinal studies have documented that parent involvement has positive effects on

achievement (Keith & Lichtman, 1994; Keith, Quirk, Sperduto, Santillo, & Killings,

1998). School-based attempts to foster parent involvement have smaller but positive

effects on student achievement (Jeynes, 2005; 2012). I found no randomized controlled

trials of interventions designed to promote family-school partnerships.

Problem-solving teams are crucial to the problem-solving process (Burns, Wiley,

& Viglietta, 2008). Despite their critical nature, few studies examined the use of problem-

solving teams in comparison to other models. Early studies on PSTs evidenced reductions

in referral rates (Graden, Casey, & Christenson, 1985) and improvements in student

behavior. Burns and Symington (2002) reviewed the literature using meta-analytic

methods and found consistent positive effects between $d = 0.54$ and $d = 1.15$ depending

on researcher involvement. Several case studies have documented the association among

PSTs, combined with tiered systems of support and improvements in academic

achievement (Bollman, Silberglitt, & Gibbons, 2007; Tucker & Sornson, 2007). I found no randomized controlled trials of problem-solving teams indicating a rating of strong evidence was inappropriate.

Finally, participants identified two college readiness programs with moderate evidence of effectiveness. Psychologists reported that these programs fostered engagement by preparing students for college and building a sense of community among secondary students. The Advancement Via Individual Determination (AVID) program provides high-quality curricula and tutoring to students who are not meeting their academic potential. I found two studies of AVID that met IES evidence standards with reservations. AVID is associated with increases in graduation rates (Watt, Powell, Mendiola, & Cossio, 2006) and attendance (Watt, Powell, & Mediola, 2004). Similar evidence exists for the College Possible program. An independent evaluation found a within-student effect of $d = 0.94$ on the ACT college readiness assessment.

Interventions with minimal evidence. Two other post-secondary transition programs had minimal evidence of effectiveness. There were no published evaluations of the Voyager learning program, which is sponsored by community businesses. Jump Start to College is a dual-credit program that allows MPS students to take college courses at no cost. Some correlational research exists suggesting similar programs are associated with positive effects on graduation rates and academic achievement (e.g., Bailey & Karp, 2003). I did not find any studies that met IES validity standards.

Affective engagement. Interventions targeting students' belonging and perceptions of support were discussed in all five focus groups. Participants discussed

interventions that fell into 4 major themes (see Table 8). Mentoring was the most

commonly mentioned intervention across all four subtypes.

Table 8

Affective engagement interventions identified in focus group interviews ($N = 34$)

Intervention	Mentions	% of Groups	Evidence Rating
Mentoring	18	100%	Minimal
Check & Connect	9	80%	Strong
Cultural connections	7	60%	Minimal

Note. SG = Small group

Interventions with moderate or strong evidence. There were more mentions of

Check & Connect during the focus groups than on the student worksheets. Moreover,

Check & Connect was mentioned relatively equally by participants working in K–8

schools and participants working in high schools. Check & Connect meets IES

requirements for strong evidence of effectiveness (see quantitative question 2).

Interventions with minimal evidence. Mentoring was used formally in some

schools and informally in others. Participants discussed the use of school staff and

community volunteers as mentors. Studies of mentoring have shown contrary effects;

therefore the rating of moderate or strong evidence of effectiveness is not applicable (see

quantitative question 2).

Participants also discussed school-based activities that were designed to connect

school and home cultures. Cultural discontinuity is often associated with poor

engagement and academic achievement despite several moderating variables (Bingham &

Okagaki, 2012). Another intervention mentioned was the use of cultural liaisons. There is

some correlational evidence that cultural liaisons may improve family-school

involvement (Sanders, 2008), but I found no studies that met IES validity standards

precluding a rating of moderate or strong evidence.

   Cognitive engagement. Participants made fewer mentions of interventions

targeting cognitive engagement than any other engagement subtype. Participants

identified goal setting and multiple self-regulated strategies in most focus groups (see

Table 9).

Table 9

Cognitive engagement interventions identified in focus group interviews ($N = 26$)

Intervention	Mentions	% of Groups	Evidence Rating
Goal setting	13	100%	Strong
Self-regulated strategies	12	80%	Strong
Self-monitoring progress	6	80%	Strong
Student-led conferences	2	20%	Moderate
Providing choices	1	20%	Minimal

   Interventions with strong evidence. There is strong evidence for the use of goal

setting, depending on the type of goal, to improve students' effort and persistence with

difficult tasks (Hattie, 2009; Schunk & Mullen, 2012). These psychologists discussed the

use of goal setting during individual counseling with students, academic interventions,

and parent-teacher conferences. Participants discussed having students set difficult but

attainable goals for students to promote their self-efficacy. These interventions appeared

to be rarely used across the district and fairly staff specific. I assigned a rating of strong

evidence, as these discussions identified mastery goals and ensured goals were difficult

but attainable.

   Participants' descriptions of self-monitoring strategies were analogous to self-

regulated learning strategies. In the focus group interviews, a few participants identified

students monitoring their own progress during interventions, participating in authentic

learning activities, and taking ownership of their academic achievement by leading

parent-teacher conferences. Students' use of self-regulated learning strategies had

moderate-to-large effects on achievement and small-to-moderate effects on motivation

across two meta-analyses (Dignath & Buettner, 2008; Dignath, Buettner, & Langfeldt,

2008; Hattie, 2009).

Social engagement. There were more mentions of interventions targeting social

engagement than any other engagement subtype. Participants identified interventions

targeting attendance, classroom disruptions, and externalizing behaviors.

Table 10

Social engagement interventions identified in focus group interviews ($N = 75$)

Intervention	Mentions	% of Groups	Evidence Rating
Counseling	14	100%	Not Rated
Recognition of positive behavior	12	80%	Strong
Behavior education program	11	100%	Strong
After school programs	7	80%	Moderate
Adult attendance monitoring	6	60%	Moderate
External agency support	6	40%	Minimal
Family social services	4	40%	Minimal
Court system	2	20%	Minimal
Playworks	3	40%	Moderate

Interventions with strong evidence. Participants identified four interventions with

strong evidence of effectiveness. The evidence for the recognition of positive behavior

and the behavior education program are reviewed in quantitative question 2. Multiple

psychologists indicated that their schools used a modified version of this intervention.

Varying implementation integrity was a common theme throughout the interviews.

Interventions with moderate evidence. Three interventions had moderate evidence of effectiveness. The evidence for adult attendance monitoring and after school programs is discussed in quantitative question 2. Playworks is an organized recess program that is provided at the universal level. I included it here as participants noted its effects on students who otherwise would (a) engage in negative behavior or (b) struggle to develop positive peer relationships. Playworks was associated with decreases in teacher-reported bullying and increases in student activity during recess in a recent randomized controlled trial (Mathematica Policy Research, 2013).

Interventions with minimal evidence. Participants noted that students with attendance issues are often referred to the court system, which is "ineffective and not user friendly." The Office of Juvenile Justice and Delinquency Programs identified court monitoring as an alternative practice to address truancy (Yedie & Kobrin, 2009), but the report did not present evidence of effectiveness. Similarly, I found no studies examining the effect of family social service programs on student engagement of any subtype.

Qualitative Research Question 3

Participants were asked to describe the barriers they have encountered to re-engaging urban students. I categorized participants' responses into 14 major themes. The major themes and subthemes that captured these barriers are presented in Table 11. Total mentions of subthemes do not sum to the total mention of major themes because in some cases responses reflected the overall theme.

Table 11

Barriers to using interventions to reengage urban students

Barriers	Total Mentions	% of Groups
Teacher issues	45	100%
Job demands	13	100%
Unwilling to intervene	10	80%
Teacher-student relationships	12	60%
Teacher-psychologist relationship	6	40%
Training on engagement	4	40%
Disconnections between home and school	29	100%
Disengaged parents	9	100%
Lack of academic role models	8	
Expectations and valuing	7	80%
Cultural discontinuity	3	20%
Parent mistrust	2	20%
Home ecological factors	24	100%
Basic needs unmet	12	80%
Unmet mental health needs	10	100%
Mobility	2	20%
Student factors	21	80%
Academic diversity	6	60%
Lack of school readiness	5	40%
Competing reinforcers	5	40%
Peer role models	3	40%
Perceived relevance	2	20%
Time constraints	20	100%
Evaluation load	6	80%
Student-psychologist ratio	4	60%
High-need populations	4	60%
School resources and policies	20	100%
Diminishing resources	9	80%
Inequitable resource deployment between schools	6	40%
School/class sizes	4	60%
Busing issues	1	20%
Administration/Leadership	19	100%
Definitions of role	8	100%
Intervention/program commitment	4	40%
Resource allotment	4	40%
Transient principles	3	20%

Lack of coordinated services	6	60%
Communication issues	3	40%
Difficulty partnering with community resources	3	20%
Limited use of prereferral interventions	6	100%
Ownership	4	40%
External validity	3	20%
Cost	2	20%
Identifying interventions	2	20%

Teacher issues. This theme incorporates barriers stemming from participants' relationships with teachers, teacher attitudes, demands on teachers, and teacher-student relationships. Growing teacher-student ratios, increasing job demands, and the focus on accountability were contributing factors to the number of teachers that participants felt were overwhelmed. Participants estimated many teachers would do more if possible but they were understandably focused on classroom instruction. For example, two participants shared the following: "our teachers are not doing the minimum *they* feel they *could* because they are drowning." The second participant added, "even among teachers who are very willing to do interventions, they are simply overwhelmed and it falls to the side."

Other teachers are unwilling to intervene and reengage students. In most focus group interviews, participants made distinctions between these two attitudes: "that effort is not everywhere. Other teachers say I cannot meet on my prep time, I cannot do that intervention." This presented a unique challenge to psychologists in middle and secondary schools. Participants mentioned how interventions were unsuccessful because 1 of 4 teachers did not follow through, which eventually caused others to stop implementation.

Barriers to re-engaging students also arise from teacher-student relationships and teacher-psychologist relationships. Teacher-student relationships drive interventions to re-engage students. As one participant said, "teachers are exhausted, so why would I want to reengage this student so he comes back into my classroom and disrupts us more." Teacher attitudes also affect professional relationships. If teachers have a history of not providing interventions, many participants noted they inevitably direct more consultation effort to teachers who want to re-engage students.

Others felt teacher training regarding classroom engagement was a barrier to re-engaging students. Training issues may be exacerbated by other barriers, as one participant hypothesized that "that goes back to the other barriers we were talking about like the student-teacher ratio, maybe it comes down to training teachers to make the classroom more inviting."

Limited home-school connections. These barriers are related to the relationships between families, students, and the school. The influence of disengaged parents on student engagement was the most common barrier. In some cases, participants hypothesized that these parents were disengaged as students themselves. Participants often discussed the difficulty of re-engaging youth when parents hold negative attitudes toward school: "I would agree with that especially if the parents were disengaged and had a difficult time in school. How do you reach those students? Especially when their parents talk negatively about school or their school experience." In some cases, parents will speak of the importance of school but do not model respectful interactions with adults when they are upset.

Parent expectations and valuing of education are also barriers to re-engaging students. Participants identified the overt and covert messages families and schools send. Overt messages include parent influences on attendance and stated expectations for post-secondary outcomes. Multiple participants discussed parents who kept children home for several reasons, including childcare and the inability to force the students to go to school. In most cases this appears necessary, but as one psychologist described, "there are times I think parents have their older child stay home so the parent can get away for the afternoon."

Covert messages include children's perceptions of parent behavior. Students may perceive their parent as successful despite not graduating from high school, and this can lower their own engagement. During one focus group interview, participants discussed how a history of negative interactions often leads to parent mistrust: "At times I think we can be perceived as intrusive, and the family gets angry that they feel we are blaming them. We worked really hard to build the relationship and then there is defensiveness we have not been able to get past."

Throughout these discussions participants identified families and communities as integral to re-engaging students: "It is not only thinking about strategies to re-engage kids, but it is thinking about strategies to engage or re-engage parents. Because you are not a island trying to get this kid engaged." Another participant elaborated: "Even if it was our only job to re-engage students in school, I still do not think we could do it effectively. I think we would help a little bit but it has to be a family-school-community partnership."

An additional two barriers—lack of academic role models and cultural discontinuity between home and school—impact student attitudes toward school. According to a participant who worked at a secondary school, "A lot of our students do not have the modeling at home to get up, go to work, be prepared, and even if you do not want to you push through it because it is important." Many participants had encountered students without academic role models who did not perceive postsecondary education as an option for themselves.

Participants discussed cultural mismatches between home and school in two major ways. First, some families were recent immigrants who may not have been exposed to formal education. School-based barriers for these families included the limited number of cultural liaisons and interpreters to connect with the families. Second, the influence of groups within a culture is also a barrier to re-engaging students. This was a point of contention among some participants. For example, one participant stated "that among one cultural group, especially males, there is a sense that you do not want to be academically successful." In contrast, another participant discussed how working against this mindset was a barrier in itself: "Getting the group of students that we work with to understand that even though some students at this school behave like this, it is not the norm for your cultural or ethnic group. For some reason we cannot find a way to change or modify this behavior."

Home ecological factors. This theme refers to barriers that surround students and families at home and in the community. Unlike barriers related to home-school connections, these factors exist outside of school. The challenge of urban poverty was highlighted throughout these discussions. The most commonly discussed barrier in this

theme was the unmet mental health needs of parents and students. Mental health issues often make partnering with families difficult even when the parents are supportive of their child's education.

Unmet basic needs (e.g., physiological or safety needs) are also barriers to re-engaging students. Almost all of the interviews included discussions of families who, due to external issues, are not meeting the basic needs of their children. Almost every participant noted these barriers are not the fault of the families, but they do impact the staff's ability to re-engage parents and children. These issues are often concomitant with situations in which students face daily trauma in their home and community environments: "The day to day trauma that our students experience … being hungry all the time, or having your only meal come from school; or the trauma of having community violence."

Participants also discussed how changes in education policies affected the district's ability to support these families:

"In Minneapolis the resources are not always visible, so I think a lot of the families who are dealing with mental health problems or don't have enough money to pay rent; they don't see the school as a place where that can be solved. It is not the community center anymore; its just one more thing I am obligated to."

Participants also face barriers in attempting to provide resources to meet mental health or basic needs. During the discussion one participant noted, "It is difficult, and the minute you are not successful families cross you off their list because you are another person who did not keep their promise." This was a clear connection to the barriers involving limited home-school connections and parent mistrust of the school.

Student factors. Barriers in this theme addressed students' attitudes toward school, peer influences, and academic skills. Academic diversity and a lack of school readiness were barriers related to students' academic skills. Classrooms in this district have students with a wide range of academic abilities. Participants noted that teachers struggle to meet the needs of all students given district curriculum and pacing mandates. One participant noted that "Struggling students disengage, and the students who think the material is boring because it is easy also disengage." Some high school students receive remediation classes, but this is not always the case: "remediation classes are offered to the students who are close to passing the tests, not to the students who are really low. They do not have any support set up."

Participants in elementary and secondary settings discussed a general lack of readiness for students entering their schools. Students also have difficulties following basic classroom rules. One of the participants noted, "Watching the kindergarten classrooms this year, it took them almost a month and a half to teach the students how to walk in a line." Participants employed in secondary schools discussed the lack of study and prerequisite academic skills that are required for 9th grade.

Peer role models and competing reinforcers were related to students' academic motivation. Practitioners reported that students often preferred more immediate reinforcers such as peer attention and many do not assign intrinsic value to academics. These barriers were often worsened for students with a history of academic failure: "In school it is constant failure, and I have always been a poor student. There is no notoriety and the peer attention coming from negative actions is immediately rewarding." Participants noted that the number of students who do not perceive the relevance of

schooling is growing. With one participant noting, "These students think they are only at school because they have to be, they do not see their own potential and do not listen if you try to point it out."

Administration/Leadership. This theme refers to school-level or district-level administrative decisions that increase the difficulty of re-engaging urban students. Most discussions pertained to administration influences on the role and function of participants. In MPS, administrators specify the amount of psychologist time that the school receives after covering the evaluation load. Some administration teams collaborate with psychologists to determine the best use of their skill set. This leads to participants engaging in a wide variety of duties that allow them to devote time to re-engaging students. Other administrators appeared inflexible and assigned participants to tasks (e.g., bus duty) that prevented them from promoting student engagement.

Administrators' commitment to interventions, shifting administration teams, and resource allotments also are barriers to re-engaging students. Participants described how successful programs such as Positive Behavior in Schools or Check & Connect were phased out to allocate resources to different areas. Other programs were cut after quick gains were not realized. One participant summarized, "We let go of things too quickly. When administrators do not have the numbers they desire they often try something new rather than refine what is in place or determine if it needs more time." Quick turnover among administration also leads to similar problems. Interventions may be changed quickly, or as one participant reported, the school did not put any school-wide interventions in place over the past two years because administration drives that process.

Time constraints. This theme includes barriers that result from overwhelming demands on school psychologists in this district. Numerous participants were frustrated by the lack of time to provide services they know were needed. For example, one participant voiced concerns about time constrains and finding a work-life balance:

> We can help, we know a few things that help some students, but we don't have the time and the people to monitor all the different things that should be in place. I would love to do an FBA on every student and say here is the way we can make sure the kid gets re-engaged, but that takes time and energy and you have reports, your own family, and how much work do you want to take home over the weekend.

Although common to most discussions, most participants appeared averse to using time as an excuse: "I hate landing on time all the time … it is not a good excuse, but it is a reality." Participants also voiced frustration with evaluation caseloads and large student-psychologist ratios. Evaluations are prioritized due to legal regulations, but this limits participants' ability to provide other services: "The more evaluations you have, the more paperwork, reports, observations, and testing you have to do. It is less time you can interact with more than just one student."

During one focus group interview, however, a few participants noted they preferred their current role to alternative service-delivery options. For example, in some urban districts school psychologists only provide mental health services. One participant summarized, "I enjoy doing the mental health piece and I enjoy doing the assessment piece so I really do not want to go to another model, but it is overwhelming to do both."

School resources and policies. Barriers in this theme were related to funding and policy decisions made above school-level administrations. Quickly diminishing resources have led to cuts to programs and services necessary to keep students engaged. Further, schools often lose cultural liaisons and other paraprofessionals who provide an integral connection between students' homes and school: "We watched the number of language interpreters decrease from 4 to a part-time staff. Now we have someone that speaks a language that 40% of the building needs to be engaged for half a week."

Changes in funding are associated with increased class sizes. This barrier was described as a moderator for challenges from overwhelmed teachers and evaluation loads. Increased school sizes lead almost all staff members to focus on getting by rather than reengaging students who need extra support: "When you compare 10–20% of a school with 200 students to a school with 500 students, the need becomes a huge barrier." Another participant hypothesized that budget cuts and increased school sizes would limit the number of students who would make adequate growth from core instruction alone.

In two focus groups, participants discussed how the district shares resources across schools. For example, one participant discussed how the district assigns students who need many resources: "K–5 principals say we do not have the resources for those students, so they go to the K–8 buildings where there are already more problems." Others echoed this sentiment, "It seems like the extreme-need schools get the same resources as the schools where they earn $10,000 dollars on a garden sale." Throughout the focus group interviews, there was widespread agreement that schools with higher need populations received equal funding rather than funding based on need.

Lack of coordinated services. This theme refers to barriers that result from difficulty accessing services and fragmentation among services that do exist. Participants noted that coordination within schools and across schools is a barrier to reengaging students. Two participants noted that resources are mixed up because of the size of the district. Others discussed how district planning is a barrier because some schools have resources and others do not. Barriers also resulted from communication between community services and schools: "Some students are getting help but we do not know, and then the agency sends a letter saying they are no longer receiving services and the school has no idea they ever were."

Limited use of prereferral interventions. Barriers in this theme refer to the varying use of prereferral interventions to promote student engagement. It does not include mentions of educators who appear unwilling to provide interventions to re-engage students (see barrier 1). The most common barrier in this theme related to ownership of these interventions. According to one participant, "A lot of the programs are staff specific. If you have an active social worker or psychologist the program happens, if not, then it does not." Participants also discussed how changes in building staff lead to interventions being stopped or phased out.

Other barriers related to the interventions themselves. These barriers were mentioned less frequently, but a few participants discussed difficulties identifying interventions or finding interventions that would work in their school: "There are so many other factors than what the intervention targets, they are not studied with Johnny who is from a single parent home and does not have food on the table." Participants also

experienced frustration due to many programs being too expensive limiting the likelihood

they would be purchased by their schools.

Qualitative Question 4

Finally, participants were asked to identify untapped resources in the district that

may address student engagement. Participants' responses fit into five major themes

regarding community, district resources, school resources, additional training, and

engagement interventions.

Table 12

Untapped resources for promoting student engagement

Barriers	Total Mentions	% of Groups
District resources	36	100%
Use of paraprofessionals	9	100%
Early childhood programs	7	100%
Sharing between departments	7	100%
Master teachers	5	60%
Grant writing	4	20%
Community resources	29	100%
Business partnerships	10	100%
Cultural liaisons	7	100%
Police resource officers	6	80%
Volunteers	5	40%
School resources	25	100%
Fostering family-school partnerships	12	100%
Mentoring/tutoring	6	60%
Mental health services	3	40%
Changing school structures	2	20%
School psychologist role	2	20%
Intervention issues	21	100%
Dissemination of knowledge	6	80%
Student interventionists	4	60%
Comprehensive system of support	5	40%
Quick turnarounds	3	20%
Externally valid	3	20%
Increased training	16	80%
For school psychologists	5	60%

For teachers	4	40%
Cultural training	4	40%
Consultation	3	20%

District resources. This theme refers to resources or policies that exist at the

district level. As noted throughout these discussions, many of these resources exist but

should be reallocated or modified to reengage disaffected students. Participants

mentioned how educational assistants or paraprofessionals could be trained to provide

engagement interventions. According to several participants, paraprofessionals are

assigned menial tasks instead of intervening or being given a more substantive role.

Early childhood interventions and programs were another underused resource.

Interventions at the middle and high school levels are not able to re-engage the numbers

of students who have already begun the process of dropping out. For example, one

participant stated, "if you really want to help the high schools, you put your money in

early childhood education. Get to these kids early because by kindergarten we are seeing

kids who are already disengaging."

The use of master teachers and sharing between departments are both related to

reallocating existing resources. Participants noted that master teachers are retiring at a

higher rate and that the district should have them mentor teachers and intervene with

students. A participant noted, "The district does not have any coordinated way of using

returning master teachers effectively." Another added, "Master teachers might come in

and volunteer but, it's diffuse, it's not channeled to use the energy and skills they have."

In terms of sharing between departments, participants in all focus groups

discussed how sharing effective interventions or resources could make re-engaging

students easier. Grant writing was identified as a way to get more resources. These grants

often exist but the participants did not know a systematic way to obtain funding: "There

are so many resources out there and we know there are grants, but people do not have the

time or energy."

  Community resources. This theme pertains to untapped resources available in

the community. All five subthemes related to developing partnerships with community

businesses, community organizations, and community members. Establishing these

partnerships were described as ways to get additional resources and provide positive

adult-student relationships. Participants also noted how business partnerships could

provide funding and vocational experiences for students.

  Connections with the local police department were mentioned in most focus

group interviews. According to one participant, "The school district has tapped into the

police force, but they are only working on a crisis basis rather than interactive and

positive level. Other participants noted that a more preventative and interactive approach

would be beneficial. Having more visible and positive contact with officers may build

trust for law enforcement throughout the community. Another participant noted these

efforts could make the school a safer and more welcoming place that would build student

engagement.

  Cultural liaisons were another resource participants identified to re-engage urban

students. These liaisons could be community members or students' family members.

Participants mentioned that staff would benefit from information on different cultures. At

one school a participant described the effect of having cultural liaisons: "A few parents

came in and talked about culture. It made students less fearful of playing with children

who did not look like them." The participants identified these liaisons as ways to make schools feel more welcoming and promote student belonging.

School resources. This theme includes resources participants' schools could use to re-engage students. The majority of discussions revolved around establishing or strengthening family-school partnerships. Participants identified (a) after-school activities, (b) increasing teacher access after school, (c) providing resource fairs for students and families, and (d) providing necessary community health services on the school campus. Many participants discussed how these partnerships would re-engage parents, which would ultimately lead to more engaged students (see qualitative question 3).

The second most common subtheme was providing mentoring and tutoring services. In many of the focus groups, participants focused on having older students mentor younger students. This was described as a social intervention more than an academic intervention. Other participants discussed the need for academically successful role models. Participants identified assigning peers as mentors as a way to increase gender-specific role models that are missing for many disengaged students.

Intervention issues. This theme refers to discussions regarding interventions used to foster student engagement. Participants discussed the benefits of sharing interventions throughout the psychological services department. There has been more frequent sharing of intervention ideas within the department, but as one participant noted, "Sometimes I don't know what interventions I will need in the future, so it would be nice to compile what other people have found effective."

Two subthemes—comprehensive systems of supports and quick turnarounds— were related. Participants noted that current efforts to re-engage students are fragmented and inconsistent. This is exacerbated by district level decisions to add and discontinue interventions quickly, regardless of evidence of effectiveness in other districts.

Another issue was the external validity of current interventions. A primary concern was the implementation of engagement interventions in the context of an overwhelmed urban school. One participant indicated difficulty with selecting interventions due to the myriad of factors that affect effectiveness. Another participant added, "I would like to learn more about strategies that are feasible given our daily schedule." Others discussed the realities of working in a large school and reengaging students with the limited time available. Peer interventionists were discussed as ways to increase students' academic skills, use available resources more effectively, and increase the number of role models in students' lives.

Increased training. The final theme refers to desired training activities. Participants desired more training on providing effective consultation and providing culturally competent services. Discussions focused on helping teachers create welcoming classrooms and dealing with disengaged students quickly. Participants also noted the desire to have training on the cultural backgrounds served in the district. One noted that "knowing how education looks and the cultural background of education" might help psychologists re-engage families and students. A few mentions in this theme pertained to increased training on engagement for teachers. Additional teacher training was identified as a step toward improving teacher-student relationships: "it really gets down to each teachers make a positive relationship or they can not."

Qualitative Summary.

Participating school psychologists unanimously agreed that re-engaging urban students was a priority in their schools. This was evident for school psychologists working in elementary and secondary settings. Participants were asked to define engagement and provide indicators of disengaged students. Half of the participants included multiple subtypes of engagement in their definitions. Indicators of academic engagement were the most prevalent.

Psychologists identified a variety of formal interventions used to re-engage students. The most common targeted indicators of social engagement. These interventions also had the strongest evidence of effectiveness. Participants identified interventions with stronger evidence, on average, than those used in the problem-solving process.

Chapter 4: Discussion

This study examined the types and corresponding evidence base for interventions provided to students needing supplemental support and school psychologists' knowledge and use of interventions to re-engage students. In this urban school district, problem-solving teams are responsible for assigning interventions to students demonstrating academic or behavioral problems (Marston et al., 2007). These results suggest that the gap between research and practice still exists, despite the promotion of evidence-based practices in education and related professions.

Interventions and Corresponding Evidence Base

Problem-solving teams (PSTs) assigned 176 different interventions to students in grades K through 8 who needed additional support. Most referrals were due to academic problems and accordingly over 75% of the interventions targeted students' academic skills. I used the Institute of Education Sciences (IES) standards to determine the evidence for these practices. PSTs assigned 78 (44%) interventions with minimal evidence, 46 (26%) interventions with moderate evidence, and 28 (16%) interventions with strong evidence. The evidence was indeterminable for 24 (14%) interventions. Fewer than 25% of the interventions were provided to more than 20 students. A slightly different pattern emerges when examining the evidence for the most common academic and behavioral interventions.

The evidence for the 20 most common academic interventions was relatively weak. PSTs assigned four (20%) interventions with strong evidence and three (15%) with moderate evidence. In contrast, seven (35%) of these had minimal evidence of effectiveness. I was unable to rate the evidence for six (25%) of the most common

academic interventions. PST descriptions of target skills accounted for five of the top 20

academic interventions. PSTs did not provide enough information regarding ELL

services to determine the evidence for these practices.

The most common behavior interventions had stronger evidence than the

academic interventions. PSTs assigned eight (40%) interventions with strong evidence

and six (30%) with moderate evidence. There were four (20%) interventions with

minimal evidence, and two of these were empirically studied but had evidence of

contrary effects. PSTs did not provide enough information regarding key mediators of

effectiveness for counseling or behavior charts.

School Psychologists' Identification of Evidence-Based Interventions

School psychologists are integral members of PSTs. Participating psychologists

were asked to identify interventions that targeted one of the four subareas of engagement.

I used constant comparison analysis to identify 24 targeted or intensive interventions. The

evidence base for these interventions was fairly equal across minimal ($n = 8$), moderate

($n = 7$), and strong ($n = 6$) levels. I was unable to determine the evidence for counseling

interventions because participants did not provide information about key moderators of

effectiveness. Psychologists identified a larger percentage of interventions with moderate

to strong evidence (54%) than were recorded in student records from the problem-solving

process (42%).

Psychologists identified six interventions that were rarely recorded by PSTs. Post-

secondary transition programs were rarely assigned as part of the problem-solving

process. The AVID program was the only post-secondary transition program identified

by the psychologists that appeared in the quantitative analyses. It is important to note I

did not evaluate the interventions provided to students in high school grades, where post-secondary transition interventions were likely to be more common.

Psychologists also frequently discussed self-regulated learning interventions. Self-regulated learning strategies have strong evidence of effectiveness, but PSTs assigned such interventions infrequently. For example, fewer than 10 students were assigned interventions that required students to monitor their own progress. It was not clear if (a) interventions based on self-regulated learning strategies were not used or (b) these interventions were used but not recorded during the problem-solving process.

Patterns among Interventions with Minimal Evidence

Interventions with minimal evidence fell into one of three broad categories. Interventions in the first category had not been empirically studied and appeared to be novel or teacher-created. The use of such novel practices is akin to the notion of throwing resources at a problem to solve it (Hanushek, 1981). Assigning novel, unevaluated interventions suggests PSTs considered providing any intervention better than nothing. Yet there are certainly interventions that have been shown to have contrary effects on student achievement or behavior. The provision of interventions in this category likely wasted scarce resources.

Interventions in the second category had not been studied but were based on existing research and theory. Guided reading (Fountas & Pinnell, 1996), the most common intervention assigned, incorporates small group instruction, scaffolding, instructional-level materials, and explicit instruction. All of these practices have strong evidence of effectiveness, but I did not find an empirical study of guided reading programs. This leads to an important question: did these students receive a scientifically-

research-based intervention or an intervention based on scientific research? The implications of this question are discussed below.

Interventions in the third category were studied empirically but were associated with contrary effects. IES standards (2010) require no contrary effects for interventions to receive a rating of moderate or strong evidence of effectiveness. Some of the interventions with minimal evidence had average positive effects overall, but a few contrary findings precluded a rating of moderate or strong evidence. PSTs' use of these interventions was understandable. Other interventions with minimal evidence had mostly contrary or no effects. The use of these interventions was unlikely to have an effect on student achievement or behavior.

Summary of Intervention Evidence

Examining the interventions assigned by PSTs and during focus group interviews suggests that a gap between research and practice remains. In order to examine this apparent gap more closely, I compared the evidence ratings for these interventions to the recommendations made by the IES. The IES has published 16 guides since September 2007 with a total of 86 recommendations. Of these, 37 (42%) recommendations had minimal evidence, 32 (36%) had moderate evidence, and 19 (22%) had strong evidence.

I compared the distributions of evidence between all interventions, the most common academic and behavioral interventions, and the IES recommendations (see Table 13). I did not include interventions that I was unable to determine the evidence for. The interventions used in the problem-solving process had similar evidence as the recommendations made in the IES practice guides. The most common behavioral

interventions had stronger evidence than the overall group or the recommendations in the

IES guides.

Table 13

Comparing the evidence levels between problem-solving teams and IES practice guides

IES Evidence Ratings	Overall (*n* = 152)	Academic (*n* = 14)	Behavioral (*n* = 18)	IES Guides (*n* = 86)
Strong	18%	29%	33%	22%
Moderate	30%	21%	50%	34%
Minimal	52%	50%	17%	44%

Limitations

These findings should be considered in the context of some important limitations.

First, the generalizability of these findings is limited. These data were provided by a large

urban district that has used the problem-solving process to provide supplemental supports

for more than 20 years. The interventions in other urban districts may be quite different.

A second limitation was the use of extant data. These electronic records did not

allow me to identify the interventions in almost 25% of the cases. The evidence patterns

for the interventions provided within the problem-solving process may have looked

different if more information was available. Moreover, PSTs rarely provided information

regarding implementation integrity, which highly influence the effectiveness of any

intervention. The lack of an observed relationship between student outcomes and the

provision of evidence-based practices may have been related to implementation integrity.

Third, the use of IES practice as a guide to evidence criteria is an important

limitation. Empirical analyses regarding intervention effectiveness are typically based on

effect sizes. I did not use effect sizes to rate the evidence of the interventions in this study

because many interventions had not been studied. I did not want to arbitrarily assign an

effect size of zero because there were other interventions that had been studied but had no effect. Therefore, I used IES criteria for rating educational practices.

IES criteria were also difficult to apply to interventions that address multiple outcomes or have been studied with children and adolescents. For example, the Read Naturally program received ratings of small effects on alphabetics and general literacy achievement but medium to large for reading fluency and comprehension. Other interventions (e.g., Accelerated Reading) have been associated with positive effects in elementary grades but not in middle school.

According to the 2010 criteria, interventions with contrary effects were automatically classified as having minimal evidence of effectiveness. The IES recently revised its practice guide criteria and now allows the reviewers to assign a rating of moderate evidence based on "a preponderance of evidence of positive effects." A few of the interventions assigned by PSTs may have met IES criteria for moderate evidence if some contradictory findings were allowable.

Implications for Practice

The clearest implication for practice is the need for more accurate descriptions of interventions used within this process. The evidence was not rated for 14% of the total interventions due to vague descriptions. This is problematic for three reasons. First, the effectiveness of many interventions is mediated by intervention characteristics. For example, nearly 100 students were provided counseling interventions due to behavior concerns. The type of therapy has a large role on the evidence for these interventions. These students likely received counseling interventions with varying empirical evidence.

Second, vague descriptions do not inform future intervention. If a student did not respond to an evidence-based intervention that promoted skill fluency, a logical step is to provide an intervention targeting skill acquisition. Records that indicated a student practices phonics skills do not inform such instructional modifications. Further, vague descriptions make it difficult to specify if the intervention was modified due to lack of response. It was unclear if PSTs assigned one intervention or multiple interventions that addressed "counting skills."

Third, the lack of clarity in intervention descriptions does not provide information regarding whether the student received an evidence-based intervention. State law requires that a student receive a scientifically research-based intervention for 7 weeks prior to being classified as having a specific learning disability. The electronic records for 14% of these interventions did not provide this necessary information. Students who "worked on letter sounds" may have participated in blending and segmenting interventions (strong evidence) or may have participated in an intervention with minimal evidence. This is a critical issue in states that require pre-referral interventions before determining student eligibility for special education services.

These data also suggest PSTs should work to provide interventions with stronger evidence. PSTs assigned 10 academic interventions with strong evidence to fewer than 20 students. Interventions such as repeated reading, incremental rehearsal, and blending activities should be used more frequently. Other interventions with evidence of small or contrary effects are not suited for the problem-solving process. Assigning interventions with small or negative effects uses valuable resources with a small likelihood of remediating the referral concerns.

School psychologists identified multiple barriers to providing interventions during focus group interviews. Intervention integrity was commonly discussed, and very few student records contained implementation integrity data. Psychologists also identified barriers from teachers who appeared overwhelmed or unwilling to provide interventions. Further, some administrators failed to prioritize supplemental interventions. Administrators at the school and district level should play a key role in ensuring that educators are committed to providing evidence-based interventions for students needing additional support (cf. Herman et al., 2008).

Implications for Policy

A hallmark of problem solving is the idiographic nature of intervention selection. PSTs meet to identify the issues based on available data and design interventions that target the problem. Other models of tiered student support systems predetermine the interventions used for students needing additional support. The use of problem solving provides teams with additional flexibility but also allows the selection of interventions with limited evidence. These results corroborate previous findings (Bramlett et al., 2002) suggesting that PSTs need additional guidance in choosing among interventions for a target skill. Psychologists indicated teachers often require more training on selecting and implementing interventions. Training in the selection and provision of supplemental interventions should be extended to teachers and administrators working in high-need schools.

A criticism of the evidence-based movement is that identifying what works could overlook clinical judgement (Kratochwill & Stoiber, 2001). I did not collect data on how PSTs assigned interventions. Regardless of how PSTs identified interventions, the results

of this study suggest that members of PSTs would benefit from training on how to distinguish between interventions with small or large effects. Educators must look past the ubiquitous phrase "research-based" (Ellis, 2005) to determine the extent of the evidence for the proposed intervention. Providing access to meta-analytic research in addition to the What Works Clearinghouse may facilitate this goal by allowing practitioners to identify which interventions address the current problem and which interventions are most likely to be successful.

The second implication for policy pertains to interventions that are based on research but have not been studied. Guided reading, reading workshop, and focusMATH were the most common academic interventions. Scientific research underpins these interventions, but I found no empirical investigations of the actual programs. For example, small group instruction has strong evidence but how should educators classify a small group intervention that has not been studied? Policymakers should provide guidance on whether such intervention programs are scientifically-research based.

School psychologists are common members of problem-solving or student-support teams. Participants indicated that the overwhelming evaluation load in their schools was a barrier to providing interventions to re-engage students. The National Association of School Psychologists provides recommendations for maximum student-psychologist ratio. Lowering the recommended student-psychologist ratio in urban schools would help psychologists in these settings promote student engagement. If adopted by districts, lower student-psychologist rations should provide psychologists with more flexibility to support the selection and provision of evidence-based interventions. It would also allow a greater focus on implementation integrity.

Implications for Research

Future research should investigate the evidence base for the supplemental interventions in other districts that use a problem-solving model. Such studies will determine how well these results generalize to other urban districts. An interesting question for future research is how the evidence-base for interventions differs between problem-solving and standard protocol support systems.

Future studies should also examine how PSTs select interventions. Moreover, researchers should investigate if training on selecting interventions will promote the use of interventions with stronger evidence. Research suggests that performance feedback improves the fidelity of the PST process (Burns, Noell, & Peters, 2008). Providing immediate feedback on the intervention selection may lead to more interventions with stronger evidence. This may reduce the number of students who are eventually referred for a special education placement and improve student achievement.

Conclusion

Leaders in education and related professions have identified the importance of evidence-based practices over the past decade. Federal legislation has mandated the use of scientifically-research based interventions. Students in this district received interventions with varied empirical evidence. This was especially apparent for academic interventions. Professional development for educators, combined with more research and clear policies regarding intervention selection, should improve educators' ability to meet the diverse needs of urban students. Combined with strong core instruction, strong interventions may improve the persistent low achievement of urban students and promote school completion.

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