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School mental health early interventions and academic outcomes for at-risk high school students: a meta-analysis

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The current educational policy context in the United States necessitates that school-based programs prioritize students' academic outcomes. This review examined the quantitative research on school mental health (SMH) early interventions and academic outcomes for at-risk high school students. Seven articles met the inclusion criteria for this review. All articles were examined according to study design and demographics, early intervention characteristics, and outcomes. Of the studies included, most were conducted in urban settings, involved the implementation of group-based early intervention strategies, and monitored GPA as a distal academic outcome. Counselors were frequent implementers of these early interventions. A meta-analysis found no statistically significant effect on the academic outcomes most commonly assessed in the studies (i.e., GPA, attendance, and discipline). Findings suggest the need for more rigorous research in this area. Implications for SMH early intervention research and practice are discussed.

Keywords: early intervention; at-risk students; high school students; school mental health; academic outcomes; meta-analysis

The expansion of the school mental health (SMH) movement in the United States (US) has coincided with an urgent need to address student barriers to learning (Weist et al., 2012; Weist & Evans, 2005). Today, youth face complex challenges to learning that include trauma and violence, bullying, disruptive home environments, and unmet mental health needs. National policies and briefs, such as the New Freedom Commission on Mental Health (2003) report, increasingly emphasize that schools are ideal settings to provide mental health services and supports to youth. Offering these services in schools not only enhances access, but also helps to address barriers to learning in a natural environment where students spend much of their time (Adelman & Taylor, 2002). As such, researchers and policymakers continue to highlight how SMH programs are central and integral to broader school reform efforts focused on the educational success of all students (Adelman & Taylor, 2002; Daly et al., 2006; Iachini, Dorr, & Anderson-Butcher, 2008).

The current policy context for education [e.g., Common Core State Standards (Fraser, 2013); Race to the Top (Tanner, 2013); No Child Left Behind Act (Smith*, 2005)] in the US places increasing demands on school-based programs and services to demonstrate their contribution to students' academic gains. SMH programs and other supportive services are no

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exception to this trend (Daly et al., 2006). Although considerable research, including several reviews and meta-analyses, documents the importance of SMH programs for students' social, emotional, and behavioral functioning (Bowen, 2009; Durlak & Wells, 1998; Greenberg, Domitrovich, & Bumbarger, 2001; Rones & Hoagwood, 2000), reviews in the area of SMH and academic outcomes are limited (Durlak & Wells, 1998; Hoagwood et al., 2007; Wilson, Gottfredson, & Najaka, 2001). Specifically, the reviews conducted to date have only focused on one or two specific academic indicators (e.g., dropout and absenteeism; Wilson et al., 2001) or have only included studies that report on both social/emotional/behavioral *and* academic indicators (Durlak & Wells, 1998; Hoagwood et al., 2007). To our knowledge, no review has been conducted that focuses on a wide variety of academic outcomes, includes studies regardless of whether social/emotional/behavioral outcomes also were examined, and focuses specifically on the at-risk high school student population. The purpose of this paper is to address this gap by reviewing the quantitative research focused on the impact of school-based SMH early intervention strategies on academic outcomes for at-risk high school students.

To begin, we briefly overview the importance of our two primary areas of focus: (a) early intervention SMH programs and services, and (b) the at-risk high school student population. Furthermore, we offer a conceptual rationale for how SMH early interventions might impact students' academic outcomes and summarize the limitations of the existing reviews in this area.

School mental health and early interventions

In the US, SMH programs offer a broad array of services and supports to promote students' overall well-being and address nonacademic barriers to learning (Weist et al., 2012). Increasingly, the services and supports offered in schools are conceptualized using a public health model, which places services along a continuum ranging from promotion of competencies for all students to intensive treatment for students with severe and diagnosed mental health conditions (Strein, Hoagwood, & Cohn, 2003). Multiple levels of prevention and early intervention services exist between these ends of the continuum (Kutash, Dunchnowski, & Lynn, 2006). This conceptualization of services is consistent with the multi-tiered system of supports emphasized within the Response to Intervention (RtI) framework (Kelly et al., 2010).

For the purpose of this paper, we focus on *early interventions*, also commonly referred to as indicated preventive interventions, or Tier 2 interventions within the multi-tiered framework (Kelly et al., 2010). Adopting the definition from Mrazek and Haggerty (1994) Institute of Medicine report, we define early interventions as those interventions that target at-risk youth demonstrating academic, social, emotional, or behavioral difficulties, but who have not yet met diagnostic criteria for a disorder. The goal of early intervention is to provide additional support through targeted focus on skill development in identified areas (O'Connell, Boat, & Warner, 2009). Oftentimes, this form of student support is provided through group counseling strategies (Kutash et al., 2006). It is important to distinguish this definition of early intervention from the use of this term in early childhood research. Many early childhood research studies use the term early intervention in reference to interventions offered to children 0–3 years of age with developmental delays or disabilities. We use this term in reference to children of any age who are identified as needing additional support, but not needing intensive individual interventions and services.

Focusing on early intervention programs and services for at-risk youth is an important priority for several reasons. First, there is a need to reduce the overall incidence of mental illness among youth. The most effective way to do that is by intervening early, before significant symptoms develop (Greenberg et al., 2001; O'Connell et al., 2009). Each year,

youth mental illness costs the US billions of dollars; thus, efforts to reduce the incidence of mental illness through early intervention strategies are likely to be economically beneficial in the long-term (Mrazek & Haggerty, 1994, O'Connell et al., 2009). Furthermore, early interventions may delay the onset of a mental health disorder or reduce the duration and severity of a disorder (Greenberg et al., 2001; Mrazek & Haggerty, 1994; O'Connell et al., 2009), which could influence the trajectory of development for mental illness among youth. Finally, the findings of research reviews and meta-analyses clearly support the effectiveness of early intervention programs and strategies in improving youths' social, emotional, and behavioral outcomes (Greenberg et al., 2001; Mytton, DiGuiseppi, Gough, Taylor, & Logan, 2006; O'Connell et al., 2009; Wilson & Lipsey, 2006). Yet, to date, no review has focused on the academic outcomes associated with SMH early interventions for at-risk high school youth.

Early interventions for at-risk high school youth

This review also focused explicitly on the at-risk high school student population (i.e., those high school students identified as needing additional support beyond what is provided to all students in a school, but *not* needing intensive individual supports). We prioritized this population for several reasons. First, research has demonstrated that signs and symptoms of many mental health disorders may not emerge until adolescence (Jorm, Kitchener, Sawyer, Scales, & Cvetkovski, 2010; Merikangas et al., 2010). Moreover, Merikangas et al. (2010) note that "adolescence ... is a period of change and maturation in which emotional and behavioral difficulties may be common ..." (p. 988). High school is a time when many adolescents exhibit health risk behaviors such as substance use, risky sexual activity, physical fighting, and bullying (O'Connell et al., 2009). Therefore, high school (compared with elementary and middle school) is particularly suitable for early interventions aimed at providing support to students demonstrating initial academic, social, emotional, or behavioral difficulties, but who have not yet met diagnostic criteria for a mental health disorder.

High school also is a critical period in students' educational trajectories. When students drop out of school, many do so during their high school years. The economic cost of this is staggering, as each year's cohort of students who drop out costs the US more than $300 billion in lost wages (Alliance for Excellent Education, 2010). By focusing on early interventions for the at-risk high school population, we can help inform the development, implementation, and evaluation of programs to prevent this growing and persistent national dropout epidemic (Alliance for Excellent Education, 2010). Likewise, we can help contribute to the growing global focus on SMH programs for at-risk high school youth (Kutcher & Wei, 2012).

The influence of SMH early intervention strategies on academic outcomes for at-risk high school youth

Two school improvement frameworks, the Ohio Community Collaboration Model for School Improvement (OCCMSI; Anderson-Butcher, Lawson, Iachini, Bean, et al., 2010a; Anderson-Butcher, Lawson, Iachini, Flaspohler, et al., 2010b) and Adelman and Taylor's (2011) three component model of school improvement, lend insight into how early intervention SMH programs and services might influence at-risk high school students' academic outcomes. These conceptual models articulate a pathway whereby early intervention strategies offered as part of broader SMH programs influence barriers to learning and help to support the re-engagement (e.g., affective, cognitive, and behavioral; Appleton, Christenson, & Furlong, 2008) of at-risk students in the classroom. By addressing students' social/emotional needs, it is posited that students are better able to engage in school and benefit from instructional strategies, which

ultimately enhances their ability to learn and succeed academically. Longitudinal empirical studies in educational research support these relationships, documenting how socio-emotional well-being influences students' academic engagement, and in turn, the academic achievement of at-risk adolescents (e.g., National Research Council and the Institutes of Medicine, Committee on Increasing High School Students' Engagement and Motivation to Learn, 2004; Pizzolato, Brown, & Kanny, 2012; Spencer, Dupree, & Hartmann, 1997).

We acknowledge, however, that not all academic problems are appropriate for a SMH intervention. In schools, academic concerns are oftentimes noticed by teachers as the first 'sign and symptom' of a more complex issue occurring for a student (Vieira, Gadelha, Moriyama, Bressan, & Bordin, 2014; Weston, Anderson-Butcher, & Burke, 2008). To illustrate, despite the best instructional strategies, a student may struggle academically due to behaviors that impede his or her ability to learn. Providing a SMH early intervention support to this student may provide the necessary skills to improve classroom behavior and ultimately allow the student to become more engaged in the classroom and improve their grades over time. As such, when students are initially identified as needing additional support, comprehensive assessment strategies focused on understanding both academic and social/emotional needs are important to ensure that students are referred to appropriate early intervention strategies (Kelly, 2012). Furthermore, not all SMH early interventions should be expected to result in improvements in academic outcomes. As Michael et al. (2013) note,

> . . . academic variables such as GPA, discipline variables and attendance typically are treated as universal outcomes despite the fact that many, if not most, students who use SMH services are not necessarily struggling with these issues. Just as we would not universally predict changes in depression symptoms resulting from the treatment for oppositional defiant disorder, we should not always expect changes in academic outcomes resulting from the treatment for mental distress (p. 258).

If students are struggling academically, however, and identified as having an underlying social/emotional need, then based on the conceptual models above, addressing the underlying social/emotional need through SMH early-intervention strategies may result in academic improvements over time.

Related to this, defining what constitutes an academic outcome also poses a challenge to researchers, particularly when operationalizing the term from an interdisciplinary perspective. For the purpose of this study, we have differentiated between proximal and distal academic outcomes. This distinction is grounded in the conceptual models described above and in the definitions articulated by others (see Hoagwood et al., 2007; Terry, Strait, McQuillin, & Smith, 2013). Specifically, in this paper, we define proximal academic outcomes as those outcomes formally tracked by schools that serve as behavioral indicators of student engagement. Hoagwood et al. (2007) note that proximal outcomes, such as attendance and disciplinary problems, may be 'more sensitive to change in the short run' (p. 89). We define distal academic outcomes as those outcomes formally tracked by schools that serve as indicators of academic achievement (e.g., grades). Distal academic outcomes may not change immediately and, instead, may require a lengthy time period for change (Hoagwood et al., 2007).

Limitations of existing reviews on SMH and academic outcomes

Previous reviews of SMH early intervention programs have explored one or two specific academic indicators (e.g., dropout and absenteeism; Wilson et al., 2001), or only included studies that reported on both social/emotional/behavioral *and* academic outcomes (Durlak & Wells, 1998). For example, in a meta-analysis of early interventions conducted by Durlak and Wells (1998), studies were only included if they reported on social and behavioral

adjustment indicators. If one of those studies included information relative to an academic indicator, then this information also was included as part of their review. The authors found that the reviewed behavioral and cognitive behavioral early interventions resulted in sizable changes in behavioral outcomes (effect sizes from .51 to .56), and more modest changes in academic outcomes (effect sizes from .29 to .33; Durlak & Wells, 1998). Likewise, in a more recent review that focused on SMH services more broadly, studies were only included if there was information on both social/emotional *and* academic outcomes (Hoagwood et al., 2007). Therefore, if a study examined the impact of a SMH intervention on *only* an academic outcome, the study was not included in the review. The authors found that out of over 2000 articles published between 1990 and 2006 on SMH interventions, only 24 examined both social/emotional and academic outcomes using a longitudinal experimental or quasi-experimental design, and only 15 found a positive impact on academic outcomes. Seven of the 24 articles focused on adolescents, and only four of these found significant improvements in academic outcomes (Hoagwood et al., 2007).

While these reviews provide important insights into the potential effectiveness of broader SMH programs and early intervention strategies on social/emotional outcomes, gaps in the research still remain. No review has been conducted that solely focuses on an examination of how SMH early interventions impact at-risk high school youths' academic outcomes. As such, this study aims to synthesize the quantitative research conducted on SMH early intervention strategies and academic outcomes for at-risk high school students.

Methods

Study selection

We conducted our review through four consecutive stages (see Figure 1).

First, in January 2013, we conducted a comprehensive literature search of the following bibliographic databases: Education Resources Information Center (ERIC), PsycINFO, and Academic Search Complete. We used search terms describing the population, intervention, and outcomes of interest, and also searched the thesaurus feature of all databases to identify other key words relevant to this review. All key words identified were then incorporated into subsequent searches (Franklin, Kim, Ryan, Kelly, & Montgomery, 2012). We also used an asterisk (*) on the end of some search terms to direct the databases to search multiple variations of that term. In addition, we included some terms in our search that were not specific outcomes of interest, but that we thought might help us to identify studies of interest for this review. In the end, this review incorporated the following search terms: *high school, adolescence*, at-risk* (i.e., the population of interest)*, early intervention*, group counseling, student support, school mental health* (i.e. interventions of interest)*, and/or, belonging, positive social behavior*, academic self-efficacy, academic motivation, school connected- ness, attendance, discipline reports*, detention*, GPA, grades*, and test scores** (i.e., outcomes of interest). The initial search resulted in a total of 3,078 publications.

Next, we read the title and abstract for each of the 3078 articles to see if the study met the inclusion criteria for this review. We only included studies in this quantitative review that (1) utilized a pre-post, quasi-experimental, or experimental research design; (2) were conducted in the United States ; (3) were published in a scholarly journal and printed in English; (4) included samples of adolescents in grades nine through twelve who were identified as at-risk using a described procedure (e.g., use of standardized assessments of functioning, specified processes of screening and assessment, teacher nomination and referral, or a review of discipline incidences); (5) included interventions conducted during school hours (i.e., afterschool or other out-of-school time interventions were excluded); and (6) reported on at
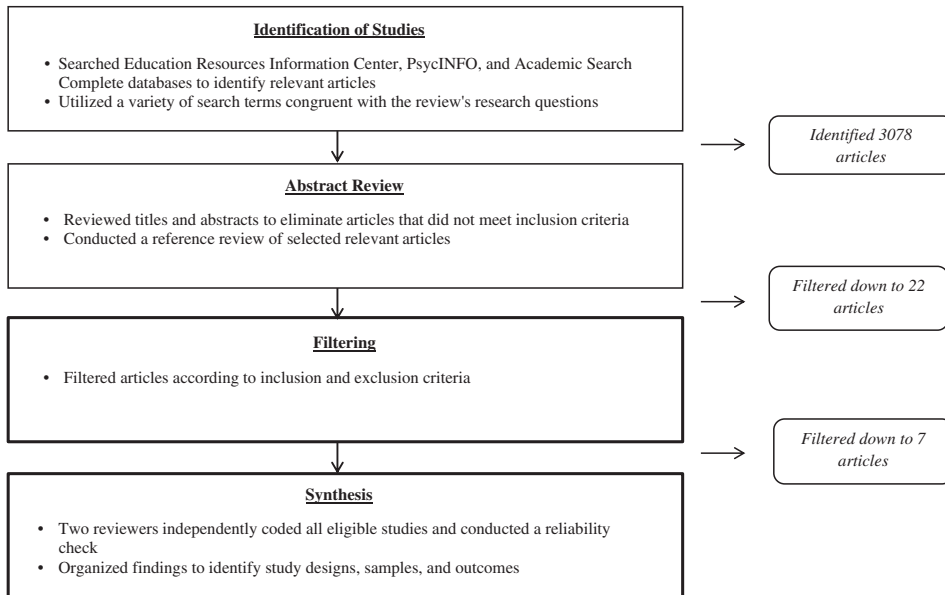
Figure 1.   The review process.

least one proximal or distal academic outcome. When studies included other outcomes (e.g., social, emotional, etc.), we reported on those outcomes as well to gain an understanding of the strengths and gaps in the current literature. Finally, the date of publication was not restricted, allowing for inclusion of both recent and older studies.

After the title and abstract review, 22 publications appeared potentially relevant to the review. Each of these publications was read in its entirety, and the inclusion criteria (specified above) were applied. This full reading of each of the 22 articles resulted in 7 articles meeting the criteria for this review. Of the 15 publications removed, 6 were excluded because the samples were drawn from outside of the US, one study was removed because it did not report on a school-based intervention, four were removed because they examined academic interventions, and four were removed because they did not meet our inclusion criteria related to the population of interest (i.e., one study did not provide sufficient information about the population to assess its suitability for this review; one study was conducted with elementary students; and two studies did not utilize a described procedure to identify youth as at-risk).

Coding and reliability analyses

An initial coding form was developed to identify key components of each study. This form allowed each of the two coders to document intervention characteristics (i.e., type, length of intervention, and implementer), study design (i.e., experimental, quasi-experimental, and pre/post), and sample information (i.e., sample size, gender, grade level of students, race/ethnicity of students, and type of school). Also, the coding form allowed for documentation of the procedure used to define students as at-risk. Academic outcomes were recorded on the form, including each study construct and how it was operationalized. Other outcomes reported within each study also were documented.

Two members of the interdisciplinary research team independently read and coded the seven articles for intervention characteristics, study design, sample information, procedure

used to define students as at-risk, and study constructs and their operationalization. Please note the entire research team consisted of three faculty members from social work, one faculty member from psychology, and one faculty member from teacher education. Upon completion of the independent reviews, a percent agreement for coding was calculated based on each criterion coded for in each study. The percent agreement across the two reviewers was 89%. In addition, two members of the research team (one reviewer was the same) coded the statistical information (i.e., means, standard deviations) needed in order to calculate effect sizes. Similar to procedures used by Farahmand, Grant, Polo, and Duffy (2011) and Franklin et al. (2012), any discrepancies in coding were resolved by consensus of the entire research team.

Statistical analysis

We coded the standardized mean difference effect sizes of outcomes for the three common academic outcomes across reviewed studies (GPA, attendance, and discipline (following the procedures in Lipsey and Wilson (2001). The standardized mean difference effect size compares the means for the treatment and comparison groups relative to the standard deviations and allows for direct comparison of all outcomes. We adjusted for any baseline mean difference on the pre-and post-test measures, and coded the longest post-test or follow-up measure whenever possible. Two studies (*Page & Chandler, 1994; *Sharma, 1975) reported comparisons of two or more treatments with a no-treatment control. We coded each type of treatment as a separate intervention with its own effect size. Each effect size is, therefore, independent, representing separate samples. Thus, our data set contains nine ($k = 9$) independent effect sizes from six studies. Given the small sample sizes in the studies, we adjusted the effect sizes with Hedges' correction for unbiased effect sizes (Hedges, 1981). We computed the weighted mean effect size and confidence intervals to represent the overall distribution of effects and assessed homogeneity (Lipsey & Wilson, 2001).

Results

Below, we describe key findings for the seven studies that met the inclusion criteria for this review. Table 1 presents a synthesis of these articles.

Study design

Of the seven studies, three used a randomized control design, two utilized a quasi-experimental study design, and one study used a one-group pre/post design. One study (*Newsome, Anderson-Butcher, Fink, Hall, & Huffer, 2008) reported the use of a mixed study design (i.e., quasi-experimental in relationship to one outcome variable, and pre/post for other outcome variables). The dates in which the studies were published ranged from 1975 to 2008.

Study demographics

Most studies ($n = 4$) included a 9th grade student sample. One study had a 10th grade sample, one study reported participants to be in high school but did not report their specific grade level(s) (*Bauer, Sapp, & Johnson, 2000), and one study (*Newsome et al., 2008) reported that 23% of their sample was in 9–12th grade. Age was reported in only two of the seven studies. The age ranges of participants in these studies were 14–18 years old.

In terms of racial/ethnic composition of the study samples, only three of the seven studies reported on the racial and ethnic backgrounds of all participants. One study reported race/ethnicity for only those students in the experimental group. Across the studies that did report

Table 1. School mental health (SMH) early intervention programs and proximal and distal academic outcomes for at-risk high school students.

Author(s)	Study design	Student/school demographics	Definition of at-risk	Intervention	Proximal academic outcomes	Distal academic outcomes	Other outcomes
*Bauer et al. (2000)	Randomized pre/post design (stratified by gender)	*Students*: $N = 30$, 14–18 years old; race/ ethnicity and grade not reported; Male (50%) and Female (50%) *School*: Rural HS	Distal academic indicator (failing or below 2.0 GPA) or proximal academic indicator (5 + detentions/ Suspensions/ behavioral referrals from teachers or principals	*Content*: CBT group counseling vs. supportive group counseling; Grouped by gender (2 male and 2 female groups) *Length*: 9 weekly one-hour sessions *Implementer*: School psychologist, Guidance counselor, Student assistant program coordinator	*Detentions*: Students in supportive groups had significantly reduced number of detentions compared with students in CBT groups.	*GPA*: No significant difference between CBT and supportive groups.	*Academic self-concept*: Students in CBT groups had significantly greater improvements than those in supportive groups. *Self-esteem*: Students in CBT groups had significantly greater improvements than those in supportive groups.
Kayler and Sherman (2009)	Pre/post design	*Students*: $N = 90$; grade 9; age, gender, and race/ ethnicity not reported *School*: Suburban HS	Distal academic indicator (bottom 50% in terms of GPA or failing one or more eighth grade competency tests)	*Content*: Group study skills program *Length*: 6 weekly sessions *Implementer*: School counselor	–	*GPA*: No significant findings.	*Time usage, persistence, organization, concentration*: *note-taking skills, reading, and exam preparation*: Students experienced significant improvements on all outcomes except concentration.
*Page and Chandler (1994)	Randomized pre/post with follow-up	*Students*: $N = 36$; grade 9; age 14–16 years old; White (75%) and African American (25%); Male (42%) and Female (58%) *School*: Urban HS	Distal academic indicator (teacher/counselor/ assistant principal referral based on low academic achievement); Proximal academic indicator (discipline and attendance records last 10 weeks of semester)	*Content*: Activity-oriented self-concept group (experimental) vs. discussion-oriented group (experimental) vs. no treatment control *Length*: 10 weekly two hour sessions *Implementer*: Mental health counselor (master's degree in counseling)	*School attendance*: No significant differences in days absent across the three groups. *Discipline referrals*: No significant differences in disciplinary referrals across three groups.	*GPA*: Significantly higher at follow-up for discussion-oriented group compared with activity-oriented group when controlling for pretest scores.	*Self-concept*: Significantly higher at follow-up for activity-oriented group compared with no treatment control when controlling for pretest scores.

(Continued)

Table 1 – *(continued)*

Author(s)	Study design	Student/school demographics	Definition of at-risk	Intervention	Proximal academic outcomes	Distal academic outcomes	Other outcomes
Holt et al. (2008)	Randomized pre/post with follow-up (stratified by gender and race/ethnicity)	*Students:* N = 40, grade 9, age not reported; Latino (47%), African American (28%), White (5%), Other (10%); Male (58%) and Female (42%) *School:* Urban HS	Distal academic indicator (low grades) Proximal academic indicator (discipline problems, frequent tardiness or absenteeism); Other (low academic motivation); plus teachers/vice principal/ guidance counselor referral	*Content:* One-on-one Achievement Mentoring (experimental) vs. no treatment control *Length:* On average, 8 weekly 20–30 minute sessions *Implementer:* Teachers, School counselors	*School Attendance:* No significant differences. *Discipline referrals:* No significant differences. *Students entering discipline system:* Significant decrease in entering the discipline system for experimental group compared with control group.	*GPA:* No significant differences.	*Academic self-efficacy, sense of school belonging, decision-making, teacher support:* No positive, significant findings across the four outcomes. For teacher support and decision-making, there were no changes for students in the mentoring group, but students in the control group experienced declines across these two outcomes.
*Newsome et al. (2008)	Mixed study design; Quasi-experimental, matched control group comparison for absence variable and pre/post for other variables	*Students:* N = 115; 23% in grades 9–12[a], age not reported; African American (66%), White (34%); Male (53%) and Female (47%) *School:* Urban HS	Referrals to school social worker (problem not specified)	*Content:* SSW services targeting youth, school personnel, parents/ guardians, and community partners *Length:* 9 week intervention period *Implementer:* School social worker	*School Attendance:* No significant differences in absences between experimental group and control group.	*Academic Performance (self-reported):* Significant improvement for the intervention group.	*School satisfaction, teacher support, home academic environment, parent education support, school behavior expectations, social support, happiness, self-esteem, neighborhood support, enjoyment of school, trouble avoidance:* Significant improvement for intervention group in school satisfaction, home academic environment, and self-esteem
Sharma (1975)	Quasi-experimental	*Students:* N = 84, grade 10; age not reported; race/ ethnicity not reported; Male (68%) and Female (32%) *School:* Urban HS	Distal academic indicator (T-score for academic achievement was 8 points below the T-score for ability); Anxiety problems (score of 51 or higher on Alpert and Haber Scale)	*Content:* Group 1 used a rational group orientation, Group 2 taught rational replacement ideas, Group 3 taught study skills, Group 4 was a no-treatment control group *Length:* 9 weekly 50 minute sessions	–	*GPA across four subjects:* Significant, positive differences for group 1 compared with other three groups at post (5 months)	*Irrational ideas:* Significant, positive differences for group 1 vs. control group

(Continued)

Table 1 – (*continued*)

Author(s)	Study design	Student/school demographics	Definition of at-risk	Intervention	Proximal academic outcomes	Distal academic outcomes	Other outcomes
Steen and Bemak (2008)	Quasi-experimental	*Students: N* = 18 grade 9; age not reported; race/ethnicity for experimental group: White (44%), Black (22%) Latino (22%), Asian (11%); race/ethnicity for control group not reported; gender for experimental group: Male (56%) and Female (44%); gender for control group not reported *School:* Not reported	Distal academic indicator (two F's in four core classes during first 9 weeks; teacher referrals for struggling academically)	*Implementers:* Guidance counselors *Content:* Supportive counseling group vs. no treatment control *Length:* 10 group sessions *Implementers* School counselor, University professor	–	*GPA:* No significant difference.	–

^aAlthough the sample in this study did not consist of only high school students, the authors indicated that a substantial portion of the sample was in high school. For this reason, this study was still included in the review.

race/ethnicity, White, African American, Latino, Asian and Other were the racial/ethnic categories represented. Regarding gender, five of the seven studies reported the gender of all participants. In one study, gender was only reported for the experimental group, and in another study, the gender of participants was not reported. In terms of school setting, four of the studies were conducted in urban schools, one was conducted in a suburban school, and one was conducted in a rural school. One study did not report information about the setting of the study.

Definition of at-risk

Of the seven studies, six studies utilized academic problems to identify and define their at-risk study population. All six of these studies identified their at-risk students utilizing a distal academic indicator (e.g., grades, GPA). In addition, three of these studies identified at-risk students utilizing a proximal academic indicator (e.g., discipline, attendance). Three studies identified students at-risk based on other indicators, including low academic motivation (Holt, Bry, & Johnson, 2008), anxiety problems (*Sharma, 1975), and referrals for behavioral problems (*Bauer et al., 2000). One study did not specify the exact problem students experienced, but reported identifying their at-risk population through referrals from the school social worker (*Newsome et al., 2008).

Early intervention characteristics

The content emphasis of the early interventions in these studies varied. Five studies included in this review implemented a group-based intervention. *Bauer et al. (2000) implemented a cognitive behavioral group, with emphasis on students identifying both academic and behavioral goals and strategies to achieve those goals. These authors also implemented a supportive group where students could discuss any topic of interest in a supportive environment (*Bauer et al., 2000). Kayler and Sherman (2009), also focused on cognitions and behaviors, but within a study skill building context with emphasis on topics such as goal setting, time management, and test-anxiety reduction. *Page and Chandler (1994) implemented an activity-oriented group with a focus on promoting healthy self-concepts via a discussion-oriented structure, similar to *Bauer et al. (2000) where students discussed any topic of interest in a caring environment. Steen and Bemak (2008) also implemented a supportive group, like *Bauer et al. (2000) and *Page and Chandler (1994).

    *Sharma (1975) implemented three different types of groups, with one group focused on students being able to identify and replace their irrational beliefs, a second group taught eleven major irrational ideas and their replacements, and a third group taught study skills. In contrast to these group-based interventions, Holt et al. (2008) implemented an individual intervention with a focus on students' cognitive and behavioral change. Last, *Newsome et al. (2008) described the use of a variety of early interventions (e.g., group counseling, one-on-one meetings).

    Implementation of these early interventions differed across studies. Six studies reported the exact number of sessions, which ranged from six to ten. The exception to this was *Newsome et al. (2008), who only referred to administering a nine week intervention, but did not acknowledge the specific number of sessions. Of those studies reporting the exact number of sessions, all but one reported meeting weekly; Steen and Bemak (2008) did not report session frequency. Four studies reported the length of contact for each session, with 20–30 min sessions for Holt et al. (2008), 50 min sessions for *Sharma (1975), one-hour sessions for *Bauer et al. (2000), and two hour sessions for *Page and Chandler (1994). For most studies ($n = 6$), counselors (e.g., school, guidance, mental health) were involved in early intervention implementation. School psychologists (*Bauer

et al., 2000), teachers (Holt et al., 2008), school social workers (*Newsome et al., 2008), and university professors (Steen & Bemak, 2008) represented other implementers of these early interventions.

Outcomes

Four of the seven studies assessed proximal academic behaviors, such as detentions, attendance/absence and discipline referrals. All seven studies assessed a distal academic outcome. In six out of the seven studies, the distal academic outcome assessed was GPA. One study utilized student reports of academic performance (i.e., grades) as a distal academic outcome measure (*Newsome et al., 2008). Table 2 provides further detail regarding how proximal and distal academic outcomes were operationalized in each study. Six of the seven studies also examined other student outcomes (e.g., self-esteem, self-concept) in addition to academic outcomes.

Table 3 presents the individual effects and weighted mean effects of each intervention for the three outcome categories – GPA, attendance, and discipline. The weighted mean effects were 0.11 for GPA ($k = 8$, 95% CI [(0.13, 0.35)]), 0.13 for attendance ($k = 4$, 95% CI [(0.14 0.37)]), and -0.15 for discipline ($k = 4$, 95% CI [(0.51, 0.21)]). None of the weighted mean effects were statistically significant. Thus, the weight of the evidence suggests that the SMH early interventions in these studies did not have a significant impact on GPA, attendance, or discipline. We found the effect size distributions to be homogeneous for all three outcomes based on nonsignificant Q statistics for GPA ($Q = 5.31$, df = 7, $p = 0.62$), attendance ($Q = 0.32$, df = 3, $p = 0.96$), and discipline ($Q = 0.46$, df = 3, $p = 0.93$). Therefore, differences among the effect sizes are likely related to subject-level sampling error rather than differences in study characteristics (Lipsey & Wilson, 2001).

Discussion

The purpose of this study was to explore the quantitative research on SMH early interventions and academic outcomes for at-risk high school students. Seven studies met the criteria for inclusion in this review and were examined.

Overall, the findings of this review indicate the limited extent of quantitative research studies published in this area. Given the current educational landscape, these results were surprising. There has been increasing pressure for SMH programs to document how they contribute to the educational priorities of schools (Daly et al., 2006; Hoagwood et al., 2007). There also has been a growing emphasis on dropout prevention in the US, particularly for at-risk high school students (Alliance for Excellent Education, 2010). As such, we expected more studies to examine the impact of early SMH interventions on academic outcomes for this student population. On the other hand, though, these findings may not be surprising given that Hoagwood et al. (2007) only identified 24 studies that focused on both social/emotional and academic outcomes, and of those, only seven were focused on the adolescent population. Perhaps the continued paucity of research in this area relates to some of the challenges researchers might encounter when conducting quantitative research studies in schools. For example, randomization of students to experimental and control groups oftentimes can be challenging as schools want to ensure all students get the support they might need. This could explain why several of the studies included in this review examined multiple treatment conditions. In addition, there also can be challenges related to primary data collection and potential infringement upon students'

academic learning time. All together, these potential challenges related to conducting quantitative research in schools may explain the limited studies in this area to date.

An encouraging finding of this review was that most of the SMH early interventions included in these studies were group-based, of brief duration (i.e., between 6 and 10 sessions), and implemented by SMH professionals (e.g., counselors, social workers). Given the pressures schools face to increase academic learning time, early interventions that are designed to be less time intensive and maximize available human resources are oftentimes easier and more likely to be implemented in the school context (Hoagwood et al., 2007). Attention to these characteristics continues to be important, particularly as researchers and SMH practitioners design and evaluate SMH early intervention strategies for at-risk high school youth that are realistic and feasible to implement during the school day.

In addition, another main finding of this review was the use of GPA as a common distal academic outcome. Proximal indicators such as discipline and attendance also were frequently tracked. These results are similar to Hoagwood et al. (2007), who found that grades and attendance were commonly measured academic outcomes across their reviewed studies. Because all of the aforementioned outcomes are commonly tracked by schools, it seems reasonable that researchers are utilizing them as they aim to document the impact of SMH early interventions on academic outcomes.

Unfortunately, however, a meta-analysis of the seven studies found no statistically significant effect overall on key academic outcomes (GPA, attendance, and discipline). Overall, this finding may not be surprising given that others also have found relatively small effect sizes for the impact of SMH interventions on academic outcomes (e.g., Durlak & Wells, 1998). We note, however, that the one program with the strongest, significant effect on GPA was the rational group counseling intervention (*Sharma, 1975). The other intervention with a small, but nonsignificant, effect on both GPA and discipline was implemented in the study by *Bauer et al. (2000). Interestingly, both of these interventions were group-based, and grounded in an orientation toward identifying irrational cognitions and then teaching students skills to replace those maladaptive cognitions. There is evidence in the school mental health literature demonstrating that cognitive strategies are effective in supporting students who experience a range of challenges (Chorpita, Becker, Daleiden, & Hamilton, 2007). Given this, practitioners might consider translating this research into practice through incorporating the use of cognitive techniques in their SMH early intervention programs and evaluating their impact on SMH and academic outcomes.

When considering study design, there appeared to be no overall pattern in the effect sizes for GPA. *Sharma (1975) utilized a quasi-experimental design and *Bauer et al. (2000) utilized an experimental design; yet the effect size was larger and significant in the *Sharma (1975) study. For discipline, all three studies that examined this outcome were experimental in nature. Two of these had small and fairly comparable (but nonsignificant) effects on discipline. With attendance, however, the largest effect size was in *Newsome et al. (2008) study that used a quasi-experimental design; in the experimental studies (Holt et al., 2008; *Page & Chandler, 1994), the effect sizes ranged from .00 to .04.

Also important to note, many studies in this review did not report key demographic information related to their study participants or the school context in which the study was conducted. It is well-documented that access to resources and SMH services differ among rural and urban school communities (Slade, 2003). As such, this demographic information is critical to understanding these research studies, particularly as SMH researchers, practitioners, and others explore the utility of SMH early interventions for their student populations and school contexts.

Table 2. Measurement Strategies for Proximal and Distal Academic Outcomes

	Proximal academic outcomes	Distal academic outcomes
*Bauer et al. (2000)	*Detentions*: pre-measure was the average number of detentions across the 10 weeks prior to intervention; post-measure was the average number of detentions across 20 weeks (with the start of the intervention being the first week)	*GPA*: pre-measure was the first semester GPA; post-measure was the second semester GPA (subjects included in GPA calculation were not reported)
Kayler and Sherman (2009)	—	*GPA*: pre-measure was the first semester GPA; post-measure was the second semester GPA (subjects included in GPA calculation were not reported)
*Page and Chandler (1994)	*School attendance*: number of days absent for a student during the last 10 weeks of 8th grade (pre), the 10 week period that commenced with the start of the group (post), and the 10 weeks after conclusion of group (follow-up) *Discipline referrals*: number of discipline incidents for a student during the last 10 weeks of 8th grade (pre), the 10 week period that commenced with the start of the group (post), and the 10 weeks after conclusion of group (follow-up); no explicit definition of what constitutes a discipline incident	*GPA*: calculated based on all courses a student completed during the last 10 weeks of 8th grade (pre), the 10 week period that commenced with the start of the group (post), and the 10 weeks after conclusion of group (follow-up)
Holt et al. (2008)	*School attendance*: number of days a student attended from school records for the Fall (pre), Spring (post) and the next Fall (follow-up) *Discipline referral*: number of discipline referrals collected from school records for the Fall (pre), Spring (post), and the next Fall (follow-up) *Students entering the discipline system*: the presence or absence of a discipline referral during the pretest and intervention periods	*GPA*: average grades for 4 subjects (science, math, language arts, and social studies) for the Fall (pre), Spring (post), and the next Fall (follow-up)
*Newsome et al. (2008)	*School Attendance*: number of unexcused absences for the 9 weeks prior to intervention (pre) and the 9 weeks from the start of the intervention (post)	*Academic Performance*: the academic performance subscale of The School Success Profile (SSP; Bowen & Richman, 1997) completed prior to intervention (pre); collected again at 8–10 weeks after the intervention (post)[a]
*Sharma (1975)	—	*GPA*: average grades for 4 subjects (science, math, language arts, and social studies) at pre-treatment (not defined) and 5 months after the end of treatment (post)
Steen and Bemak (2008)	—	*GPA*: pre-measure included GPA before treatment at end of 1st quarter (pre) and end of 3rd quarter at conclusion of group (post); subjects included in GPA calculation were not reported

Table 3. Mean effects for six studies for GPA, discipline, and attendance[a]

Study	Intervention	Effect size			95% confidence interval [lower, upper]	
		GPA		Discipline		Attendance
*Bauer et al. (2000)	CBT group counseling	0.28 [−0.44, 1.00]		−0.22 [−0.94, 0.50]		–
Holt et al. (2008)	Achievement mentoring	−0.01 [−0.63, 0.61]		−0.27 [−0.90, 0.35]		0.04 [−0.58, 0.66]
*Newsome et al. (2008)	School social worker	–		–		0.17 [−0.16, 0.50]
*Page and Chandler (1994)	Action self-concept group	0.00 [−0.80, 0.80]		0.00 [−0.80, 0.80]		0.00 [−0.80, 0.80]
*Page and Chandler (1994)	Discussion group	0.00 [−0.80, 0.80]		0.00 [−0.80, 0.80]		0.00 [−0.80, 0.80]
*Sharma (1975)	Rational group counseling	0.69* [0.07, 1.31]		–		–
*Sharma (1975)	Rational teaching	−0.23 [−0.83, 0.38]		–		–
*Sharma (1975)	Study skills	0.03 [−0.58, 0.63]		–		–
Steen and Bemak (2008)	Supportive group counseling	0.00 [−0.92, 0.92]		–		–
Weighted means		0.11 [−0.13, 0.35]		−0.15 [−0.51, 0.21]		0.11 [−0.14, 0.37]
Homogeneity (Q_{Total})		5.31 (df = 7, p = 0.62)		0.46 (df = 3, p = 0.93)		0.32 (df = 3, p = 0.96)

Note: *Statistically significant at $p < 0.05$.
[a]One study (Kayler & Sherman, 2009) was excluded because the effect sizes could not be calculated.

Limitations

Before offering implications for SMH research and practice, it is important to note the limitations to this review. First, only published articles were included; thus, there is potential for publication bias (Littell, Corcoran, & Pillai, 2008). And, while we conducted a thorough review of published research, it is possible that we may have inadvertently missed some studies. Similar to other reviews of SMH interventions (e.g., Hoagwood et al., 2007), we did not include single subject designs. We acknowledge that some reviews choose to include these designs, and therefore this is a limitation to our study. We also want to acknowledge the limitations that our operational definitions of proximal and distal academic outcomes bring to this study. Other researchers might argue that discipline and attendance are behavioral outcomes, and thus might have concluded with a different set of studies based on their operationalization of the terms. Finally, because the educational and SMH context in the US is qualitatively different from that in other countries, the findings of this review may have limited generalizability beyond the US.

Implications for SMH research and practice

The findings of this study offer several implications for future SMH research. For one, the limited number of studies represented in this review warrants concern. Consistent with calls from other scholars (e.g., Hoagwood et al., 2007), continued scientific inquiry in the area of SMH early interventions and academic outcomes for at-risk high school youth is desperately needed. Although recent scholarly contributions (i.e., Advances in School Mental Health Special Issue, 2014) begin to advance this body of literature, this review documents the importance of continued research in this area. In addition, future research would benefit from researchers providing a coherent articulation of their theory of change regarding how a SMH early intervention might influence academic outcomes for a specific student population. For example, while many of the studies included in this review were clear that their at-risk population struggled academically or behaviorally, it was less clear how the researchers conceptualized the pathway regarding how their SMH early intervention would influence a change in academic outcomes. While the two frameworks described in this paper—the Ohio Community Collaboration Model for School Improvement (OCCMSI; Anderson-Butcher et al., 2010a, 2010b) and Adelman and Taylor (2011) three component model of school improvement (offer insights into how SMH early interventions might impact academic outcomes, the field needs additional research that explicitly proposes and empirically tests theoretical frameworks connecting school mental health interventions and academic outcomes. Qualitative research also could contribute to this area of research, particularly through helping to uncover the pathways and interconnections between mental health strategies and academic outcomes. Also, it is imperative that researchers document demographic information, including gender, race, grade, age, geographic location, and contextual features (e.g., type of school). It also is clear that more research studies on this topic need to be conducted in diverse contexts (e.g., rural and suburban).

Future studies also might benefit from examining other distal academic outcomes. For example, standardized test scores are another indicator of academic achievement formally tracked by schools (Hoagwood et al., 2007); however, none of the studies in this review reported on this measure of achievement. Dropout and grade promotion also could serve as important outcomes to track in these studies. More broadly, given the interdisciplinary focus of research in the SMH field, future research could benefit from coherent operational definitions of academic outcomes. As research in SMH continues to be advanced by interdisciplinary teams of researchers, common definitions of academic outcomes may

help both in terms of study design and measurement, but also more broadly in terms of the ability to synthesize findings across studies.

Beyond research, the findings of this review also have important implications for SMH practitioners. Given the current policy context, it is imperative for SMH practitioners to document the contribution of their interventions to both academic and mental health outcomes (Hoagwood et al., 2007). It may be important for SMH practitioners and educators to collaborate when identifying the best outcomes for assessment and monitoring. Several studies reported on both academic and other outcomes of interest, including outcomes of relevance to educators and SMH professionals (e.g., self-esteem, self-concept). Enhancing collaboration across educators and SMH practitioners in identifying outcomes and measures could help to support SMH practitioners in their efforts to demonstrate the value and importance of SMH to the broader educational context within their school.

Conclusion

This review synthesized the state of published evidence with regard to quantitative research exploring SMH early intervention strategies and academic outcomes for at-risk high school students. The findings of this review document that the current evidence base in this area is limited and that the SMH early interventions studied had a minimal impact on students' academic outcomes. As SMH programs continue to face pressure to demonstrate their contribution to students' academic gains, researchers must continue to conduct theoretically and empirically supported research to address this growing need in the field. Findings of this review highlight critical areas in which to expand and advance quantitative research focused on SMH early interventions and academic outcomes for at-risk high school students.

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