Published in final edited form as:

Fam Community Health. 2014 ; 37(1): 19–30. doi:10.1097/FCH.0000000000000012.

Feasibility and Preliminary Outcomes From a Pilot Study of an Integrated Health-Mental Health Promotion Program in School Mental Health Services

Melissa W. George, PhD, Nevelyn N. Trumpeter, MS, Dawn K. Wilson, PhD, Heather L. McDaniel, BA, Bryn Schiele, BA, Ron Prinz, PhD, and Mark D. Weist, PhD

Department of Psychology, University of South Carolina, Columbia.

Abstract

The prevalence of unmet health and mental health needs among youth has spurred the growing consensus to develop strategies that integrate services to promote overall well-being. This pilot study reports on the feasibility and outcomes of a theory-driven, family-focused, integrated health-mental health promotion program for underserved adolescents receiving school mental health services. Parent and adolescent assessments conducted prior to and following the brief, 6-session promotion program showed significant improvements in family support, youth self-efficacy, health behaviors, and mental health outcomes. Clinician reports contributed to a characterization of the feasibility, acceptability, and future recommendations for the integrated program.

Keywords

families; health promotion; obesity; school mental health; self-efficacy

Current estimates indicate that 1 in 3 adolescents is overweight, 1 in 6 is obese, and 1 in 8 is very obese.^{1,2} Overweight adolescents not only suffer from both current and future health problems,¹ but they often experience negative social and emotional consequences such as discrimination, diminished social isolation, and mental health problems.^{1,3,4} Obesity is even more prevalent among those with mental health difficulties with rates as high as 83%.^{5,6} Because adolescents with mental health problems are at greater risk for becoming overweight and for the persistence of obesity into adulthood,^{7,8} they experience an intensification of the social and health-related difficulties they face.^{1,7} For example, mental health problems often lead to social isolation, a sedentary lifestyle, and physical inactivity, increasing the risk for obesity and associated chronic conditions such as mood instability, low self-esteem, and poor quality of life.^{9,10} Therefore, it is not a surprise that there is a growing consensus to address the multifaceted nature of youth's health needs, that is, to simultaneously promote both their physical and mental health.¹¹

Copyright © 2014 Wolters Kluwer Health | Lippincott Williams & Wilkins

Correspondence: Melissa W. George, PhD, Department of Psychology, University of South Carolina, Columbia, SC 29208 (georgemr@mailbox.sc.edu)..

The authors declare no conflict of interest.

While there is a call to integrate health approaches, there is still an alarming gap between need and effective services for youth with emotional, behavioral, and physical health problems.¹²⁻¹⁴ As such, there is a national movement toward integrating mental health promotion, prevention, and treatment for youth “where they are,” in schools.^{15,16} Schools are uniquely positioned to provide health and mental health services to youth and their families.^{17,18} Strengthening the capacities of schools to provide high-quality, on-site mental health services and subsequently support students’ needs is a critical ongoing effort.¹⁹ Furthermore, federal agencies call for the expansion of services for youth in schools with explicit recommendations for integrated health-mental health programming.²⁰ This study presents the promising findings of a theory-driven, integrated health-mental health promotion program delivered to youth and families receiving school mental health (SMH) services, developed to help reduce the gap between need and treatment for reducing the nation's obesity epidemic, while promoting health lifestyles choices for youth and families who are not yet overweight or obese.

The theoretical framework for the integrated health-mental health promotion program integrates elements from Social Cognitive Theory,¹²⁻¹⁴ Self Determination Theory,^{15,21} and Family Systems Theory,¹⁶ which posit addressing adolescent self-regulation and self-efficacy (self-confidence) for health and mental health. Difficulties with self-regulation, including low self-efficacy, in adolescence are associated with a number of poor health outcomes including obesity-related health behaviors¹⁸⁻²⁰ and depression.²² Adolescence is a developmental period characterized by heightened vulnerability to emotional and behavioral problems due to poor self-regulatory skills,¹⁷ so building self-regulatory skills during this period is important for the prevention and early intervention of poor health outcomes. Promoting self-regulation and self-efficacy in adolescents occurs through practicing specific behavioral skills, including self-monitoring, goal-setting, and self-evaluation to build self-regulatory capacity and self-efficacy for behavior change.^{23,24} These behavioral skills for self-regulation and self-efficacy are effective for changing adolescent obesity-related health behaviors in intervention research.^{20,25,26} Moreover, these skills are fundamental for improving self-regulation and self-efficacy for adolescent mental health; that is, they are core practice elements in evidence-based practice in adolescent mental health treatment.^{27,28}

However, families are critical in supporting adolescent behavior change to promote health and mental health. As such, underscoring the importance of social context, recent reviews have noted the strong influence of family systems in health promotion programs and mental health interventions.²⁹⁻³² Family environments that promote autonomy, competence (ie, self-efficacy), and connectedness support motivation for behavior change and healthy functioning.^{33,34} Indeed, the practice of specific behavioral skills in a supportive family environment is foundational for changing behavior, developing self-regulation, and achieving overall well-being. Specifically, existing research points to authoritative parenting as essential in providing a supportive family environment for promoting adolescent health and mental health. Authoritative parenting practices, such as monitoring, communication, and autonomy support (eg, shared decision making),³⁵⁻³⁷ have been linked to fewer obesity-related health behaviors^{31,38,39} and emotional and behavioral difficulties^{40,41,42} because they promote self-regulation.^{40,41,43} Some experts have argued that involving parents to

engage the family system is necessary for successful weight loss and health promotion³¹ as well as in mental health treatment.⁴⁴

Preliminary evidence supports this theoretical framework for addressing adolescent obesity,^{45,46} and highlighting the importance of improvement in self-efficacy and self-regulation as key for the promotion of health⁴⁷⁻⁵¹ and adolescent well-being in various psychosocial domains.^{14,52,53} Moreover, the role of self-efficacy in mediating connections between health behavior and mental health, such as depression, has been shown in recent studies addressing multiple health outcomes.⁵⁴⁻⁵⁶ Thus, evidence suggests that essential elements for an integrated health-mental health promotion program for adolescents include a family-focused approach that supports adolescent skill-building for self-regulation and self-efficacy to change obesity-related health behavior and improve mental health.

The purpose of this study was to examine the feasibility, acceptability, and effectiveness of an integrated, theory-based obesity and mental health promotion program in the contexts of SMH services. The program focused on positive parenting practices and behavioral skills training for weight loss in youth with mental health issues who were already referred to receive treatment through SMH services. Specifically, this program emphasized communication, shared decision making, and problem solving (autonomy support), parental monitoring coupled with parental warmth (connectedness), and social support (emotional and tangible) for behavior change techniques. These elements are essential for building youth self-regulation and self-efficacy, the established protective factors for physical and mental health problems that we assert are the underlying mechanisms of change for our integrated health-mental health promotion program. It was hypothesized that the program would result in improvements in adolescent weight change, fruit and vegetable consumption, and overall mental health functioning based on changes in family-level and interpersonal psychosocial variables, including self-efficacy for regulation and for health behavior change consistent with our theory of change.

Specifically, we hypothesized that families with more supportive parenting for health and mental health will be associated with more youth self-efficacy for behavior change and, in turn, associated with improvements in health behaviors and mental health. Given the Changing Lifestyles to Impact Mind and Body's (CLIMB's) program attention to improving family-level variables (eg, parenting for autonomy-support, parenting for communication about health) and youth-level variables (eg, monitoring, goal-setting, and regulating health behavior to build self-efficacy for change) as mechanisms to promote youth change in health and mental health, we expected improvements in these domains of functioning from pre- to postprogram assessment. Over the 6-week program, we expected that we would see the greatest impact of the CLIMB program in changing specific family communication patterns about health and improvements in adolescent health; changes in family- and adolescent-level variables for mental health were expected to take longer to change which may not be reflected during the short 6-week period. Clinicians were interviewed after the program was implemented to assess feasibility and acceptability of the program.

METHODS

Participants

Participants included 10 adolescents (and their parents) referred to receive mental health services in a rural, underserved, Southeastern region of the United States that is characterized by low income, high poverty, and few resources (most students [$n = 9$] received free or reduced lunch). Adolescents attended middle school (grades 6-8) and were referred to a community mental health center for a variety of emotional and behavioral difficulties, including conduct problems, depression, and attention problems. Clinicians employed by the community mental health center provided school-based services to these adolescents. On average, adolescents had been receiving SMH services for an average of 1 to 2 months before beginning the integrated promotion program. Table 1 summarizes the demographic characteristics for participants; the majority of participating parents were the biological mother of the adolescent, half were married at the time of the study, and half were African American.

CLIMB: An integrated health-mental health program

The CLIMB program was developed from empirical support for improving diet and physical activity and mental health outcomes, integrating essential elements across over-weight/obesity promotion interventions⁴⁵ and evidence-based practice for child and adolescent mental health treatment.²⁸ These essential components for improving diet and exercise and for improving mental health include (1) supporting not only the youth directly but also the family context to improve family-level skills and supports for youth health and mental health, (2) directly providing youth with goal-setting and skill-building capacities, and (3) promoting healthy lifestyle choices to teach youth and families the utility and importance of achieving and maintaining health, mental health, and well-being.

The program materials were provided to clinicians and allowed to be used flexibly as indicated by the needs of the clinician, youth, and family. Flexibility of the program reflects the ability for clinicians to integrate the modules into the typical treatment session and to tailor the physical health components to the individualized target health goals (eg, increase fruits and vegetables, decrease sedentary behavior, increase physical activity, decrease junk food). Program materials were developed as 6 different content areas that could be integrated into typical SMH services: (1) foundations of behavior change (health and mental health interrelatedness, self-monitoring), (2) framework for behavior change (goal-setting and social support, family empowerment), (3) managing multiple systems (family support, environmental barriers, and facilitators), (4) youth autonomy and support for health change (health target behaviors, communication skills), (5) specific health targets (problem-solving strategies for barriers), and (6) sustaining behavior change (maintenance and prevention relapse strategies). These 6 modules comprising CLIMB could be integrated and provided during a portion of the therapy session that clients were otherwise receiving. Therefore, clinicians not only focused on the immediate mental health needs of the adolescent and family but also incorporated the scheduled CLIMB materials, so that all youth received the full 6-module CLIMB program.

Clinicians received in-person training, weekly training support via phone, a clinician resource guide, and youth and family workbooks to provide the program materials to families/students; weekly group training calls also served as fidelity checks regarding the specific program content delivered in the previous session. Clinicians provided sessions with families, including meeting at the families' homes for at least 1 session. Materials were developed to be implemented in different session types and depending on the module clinicians were instructed to deliver the material in 1 of 3 session types: youth-only sessions at school, family sessions either at school or over the phone if families could not attend the session at school, and family sessions in the home. Session type was determined by the particular module being used. For example, one of the modules focused on environmental barriers and facilitators of change and clinicians were asked to deliver this module as a family session in the home.

Procedure

The study was reviewed and dually approved by the institutional review boards for the mental health center and sponsoring university. After completion of parental consent and youth assent, parents and adolescents completed questionnaire measures at baseline before the CLIMB program was implemented, and again after the 6 modules had been delivered in services. Interviews were conducted with clinicians to collect feedback on the feasibility and acceptability of implementing CLIMB into existing services, including barriers to implementation, areas of improvement, and perceived usefulness of skills and modules.

Measures

Adolescent height was measured using a Shorr Height Board, and weight was measured with a SECA 880 digital scale. Two measures of height and weight were collected, and the average score used in anthropometric calculations. Body mass index (BMI) percentiles and the standardized BMI ($zBMI = \text{weight (lb)} / [\text{height (in)}]^2 \times 703$) were calculated using recent Centers "for Disease Control and Prevention growth reference curves.⁵⁷ Parents and adolescents completed an assessment battery of family and youth functioning. As summarized in Table 2, parents and adolescents reported on primary study outcomes and adolescent health and mental health outcomes, reporting fruit and vegetable consumption and overall adolescent mental health difficulties. Specific dimensions of family functioning, including parent support for psychosocial needs and for health behavior, perception of family support for health, and parent communication about health were measured. Assessments of the mechanisms specified in our theory of change were also included; these psychosocial variables included adolescent self-efficacy for emotional regulation and self-efficacy for health. After program implementation, interviews of the clinicians assessed program feasibility and acceptability.

Analytic plan

Given the small sample size and the pilot nature of this study, descriptive data analyses were conducted and contributed to only the most conservative interpretations of these data. Correlations were calculated for family support, youth self-efficacy, and youth outcomes to consider the associations across domains of support for physical and mental health, highlighting the importance of these relations after the delivery of the program. Paired

sample t tests of pre- and postassessment data were calculated to assess change in family and youth variables from T1 and T2. Finally, feasibility and acceptability of the program were evaluated on the basis of clinician interviews. Clinician interviews were transcribed and coded for themes. Themes were defined as any statement or idea that was mentioned by 2 or more individuals.

RESULTS

Sample demographics and correlations

Demographic variables and correlations are shown in Tables 1 and 3. Correlations for primary study variables indicate that parenting support for psychosocial needs and for health behaviors were positively associated at T1 ($r = 0.64$; $P < .05$) and T2 ($r = 0.78$; $P < .05$). At T1, there was a positive association between parenting support for health and communication about health ($r = 0.70$; $P < .05$). Adolescent perception of family support for health was positively associated with self-efficacy for health ($r = 0.84$; $P < .01$) and fruit and vegetable consumption ($r = 0.71$; $P < .05$). Postassessment (T2), however, supported associations between family and adolescent variables across *health and mental health*. Parenting support for psychosocial needs was associated with adolescent perceptions of family support for health ($r = 0.79$; $P < .05$). With regard to adolescent outcomes at T2, adolescent perception of family support for health was associated with fewer mental health difficulties ($r = -0.71$; $P < .05$). Adolescent self-efficacy for health was positively correlated with regulatory self-efficacy ($r = 0.77$; $P < .05$) and fruit and vegetable consumption ($r = 0.73$; $P < .05$). There was marginal support for fewer mental health difficulties being linked to regulatory self-efficacy ($r = -0.65$; $P < .10$) and fruit and vegetable consumption ($r = -0.67$; $P < .10$).

Physical and mental health outcomes

Preliminary outcomes of the promotion program suggest that there were positive changes in many of the family and youth processes from pre- to postassessment. As shown in Table 3, which presents the mean and standard deviation for each variable at T1 and T2, there was a significant increase in parenting support for health ($t(7) = 1.95$; $P < .05$) and adolescent perception of family support ($t(6) = 2.44$; $P < .05$). As hypothesized, there was an increase in self-efficacy between T1 and T2 for adolescent's self-efficacy for health behavior change ($t(6) = 2.01$; $P < .05$). Moreover, when considering physical and mental health outcomes there was a significant improvement in mental health difficulties ($t(7) = 1.95$; $P < .05$) with overall symptoms decreasing over the course of the program. There was an increase in obesity-related health behaviors as adolescents reported an increase in the number of daily fruit and vegetable servings consumed ($t(6) = 2.76$; $P < .05$).

Considering the individual adolescent weight change from T1 and T2, while there was not a significant difference, notably, 3 of the 8 adolescents assessed for height and weight lost an average of 7.58 lb. The difference between T1 and T2 weight for all adolescents is shown in Figure 1. To describe the adolescents who lost weight, 2 of them were in the “healthy weight” range and the other was considered “obese” consistent with the Centers for Disease Control and Prevention⁵⁸ recommendations for youth based on age and gender; 2 of the

adolescents were male. Consistent with our hypotheses that family changes would first occur in improving communication about health, we further investigated this at T2 to characterize adolescents who lost weight. Differences in parent-child communication about health were further examined in relation with those students who lost weight and those who did not. Figure 1 displays weight difference pre to post for families who scored high in communication about health (above the mean) versus those who scored low in communication about health. None of the adolescents whose parents reported low levels of communication about health lost weight.

Qualitative results

Interviews with clinicians supported both ease of integrating the program and benefits for working with their youth and families. As summarized in Table 4, the participating clinicians reported that the program elements were consistent with and easily integrated into their service delivery; for example—"it was great that a lot of the strategies matched up with the services that we already provide." Clinicians indicated that the focus on physical health goals made it easier to engage and talk with families; for example—"it reinforced to the families that, at least once every 6 weeks, they need to have a family session to go over their child's progress." Providing a focus on health made it easier to build a therapeutic relationship; for example—"overall, CLIMB enabled me to establish deeper relationships with my clients because I knew more about their overall health." Moreover, clinicians identified that the program provided tangible goals for changing adolescent behavior, making it easier for adolescents to see change in behavior resulting in improved self-efficacy.

The clinicians identified areas of improvement for the delivery of the program as well. They recommended more training before the beginning of the program and more of an emphasis on the delivery of physical health materials. Specific to changes in program content, the clinicians suggested modifications to ensure age appropriateness and to reduce the materials provided. Also, regarding improvements in changes to the program, the clinicians recommended that (1) all materials should be Internet accessible, (2) additional strategies for enhancing family involvement should be included, (3) group sessions would promote peer accountability, and (4) an additional summer component would support adolescents when school is not in session. Overall the CLIMB program was well-received by clinicians and provided a number of advantages for service delivery, the therapeutic relationship, family involvement, and adolescent behavior change.

DISCUSSION

Preliminary findings in this pilot study suggest the potential feasibility and promise of a brief, integrated health promotion approach to address youth's multifaceted health and mental health needs. This initial pilot study showed positive changes in adolescent obesity-related health behaviors including fruit and vegetable intake, overall mental health difficulties, adolescent self-efficacy for health behaviors, and family social support. A theory-based, family-focused, integrated health promotion program to address obesity and mental health issues provided in a natural service delivery setting (eg, SMH services) to

youth experiencing mental health challenges, and subsequent comorbid obesity-related health problems, would represent a substantial advance in child and adolescent health-mental health treatment. School mental health clinicians were trained on the CLIMB program and supported through weekly calls to integrate the program materials through youth and family workbooks and resource materials. The CLIMB content incorporated health-mental health promotion, strategies for supportive parenting and social support, and behavioral techniques (goal-setting, monitoring, and self-evaluation) to build youth self-efficacy for behavior change and self-regulation as these are fundamental underlying mechanisms for health and mental health. The goal of the pilot study was to assess the overall feasibility of delivering this integrated health-mental health program in existing services, including clinician's acceptability of this program and its relevance to their provision of youth's mental health treatment. Moreover, we intended to support the potential for this program to improve family and parenting support, build youth self-efficacy, and increase youth physical health behaviors and decrease mental health difficulties.

This pilot study suggests, consistent with our aims, that the program has the potential to improve family and parenting support, youth self-efficacy, and youth physical and mental health. Specifically, over the course of the 6-session program, changes in family processes, youth self-efficacy, and physical and mental health were noted. Parents reported increases in their use of parenting strategies that support adolescents' physical health, and adolescents reported an increase in their family support for health behaviors. The CLIMB's ability to improve family support for youth's health behavior change is critically important, given that social context, and especially the role of the family context, has been implicated as critical in interventions that target prevention and control of obesity-related behaviors.^{45,46} Recent evidence, for example, indicated that family-based weight loss interventions are effective at health outcomes including daily fruit intake, physical activity, and sedentary behavior^{45,46} and, more specifically, that parent-adolescent communication influences sedentary behavior.⁴⁶

While there was no apparent support for substantially addressing authoritative parenting for psychosocial needs over the course of the program, there was a significant correlation between parenting for health and psychosocial needs at the end of the program. Similarly, while there was support for change in self-efficacy for health behaviors, there was not an increase in self-efficacy for emotional self-regulation. Yet, self-efficacy for health at the end of the program was associated with regulatory self-efficacy at post as well. The observed relationships in self-efficacy across the physical health and mental health domains are consistent with recent reviews that suggest self-efficacy as a link between physical and mental health outcomes as it might generalize across domains.⁵⁴ Demonstrating improvements in adolescents' fruit and vegetable servings consumption and mental health difficulties over the course of the program is also notable, as the goal of the integrated promotion program is to improve both physical health and mental health for youth. Simultaneously, addressing youth's complex health needs and seeing progress in multiple domains of health can help alleviate not only negative social and emotional consequences that youth with mental health difficulties often face but address their increased risk for obesity. Attending to these mental and physical health needs in a comprehensive program may yield more optimal psychosocial functioning, as experiencing mental and physical

health concerns significantly increases youth's risk for social isolation, diminished occupational and financial success, and chronic physical and mental health problems.^{1,3,4,9,10}

Clinicians delivering the CLIMB program also supported the integration of the approach into the mental health services they were providing suggesting the utility of the approach. Moreover, clinicians identified many advantages of the program in improving facets of their service delivery, the therapeutic relationship with their clients, engagement and involvement of families in services, and even in improving their client's behavior change. However, further work is needed to better train clinicians on the delivery of physical activity and diet information. While the small sample and pilot nature of this work yields caution, and without an experimental design, no causal conclusions about the current pilot project can be made, the study does suggest feasibility, acceptability, and preliminary impact of this integrated health-mental health promotion program for adolescents in schools. The study capitalizes on the reality that while health and mental health issues in adolescents (and all people) are intertwined, most promotion programs do not match this reality. Our approach capitalizes on the significant advantage of SMH staff, who are perhaps the only staff in schools with dedicated time and opportunities to interact intensively with students and families, to integrate health promotion into mental health services.⁵⁹

Acknowledgments

Nevelyn N. Trumpeter was supported by T32 GM081740 (PI: R. Prinz); Dawn K. Wilson was supported by from R01DK06761, R01 DK067615-03S1A1, R01 HD072153 (PI: D.K. Wilson); Heather L. McDaniel was supported by R01MH081941-01A2 (PI: M.D. Weist); and Mark D. Weist was supported by R01MH081941-01A2 (PI: M.D. Weist).

REFERENCES

1. Lobstein T, Baur L, Uauy R. Obesity in children and young people: a crisis in public health. *Obes Rev.* 2004; 5:4–85. [PubMed: 15096099]
2. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of obesity and trends in body mass index among US children and adolescents. *JAMA.* 2012; 307:483–490. [PubMed: 22253364]
3. Vander Wal JS, Mitchell ER. Psychological complications of pediatric obesity. *Pediatr Clin North Am.* 2011; 58:1393–1401. [PubMed: 22093858]
4. Wyatt SB, Winters KP, Dubbert PM. Overweight and obesity: prevalence, consequences, and causes of a growing public health problem. *Am J Med Sci.* 2006; 331:166–174. [PubMed: 16617231]
5. Holt RI, Peveler RC. Obesity, serious mental illness and antipsychotic drugs. *Diabetes Obes Metab.* 2009; 11(7):665–679. [PubMed: 19476478]
6. Hofmann W, Gawronski B, Gschwendner T, Le H, Schmitt M. A meta-analysis on the correlation between the Implicit Association Test and explicit self-report measure. *Pers Soc Psychol Bull.* 2005; 31:1369–1385. [PubMed: 16143669]
7. Blaine B. Does depression cause obesity? *J Health Psychol.* 2008; 13(8):1190–1197. [PubMed: 18987092]
8. Goodman E, Whitaker RC. A prospective study of the role of depression in the development and persistence of adolescent obesity. *Pediatrics.* 2002; 110(3):497–504. [PubMed: 12205250]
9. Anderson ES, Winett RA, Wojcik JR. Self-regulation, self-efficacy, outcome expectations, and social support: social cognitive theory and nutrition behavior. *Ann Behav Med.* 2007; 34(3):304–312. [PubMed: 18020940]
10. Boutelle KN, Hannan P, Fulkerson JA, Crow SJ, Stice E. Obesity as a prospective predictor of depression in adolescent females. *Health Psychol.* 2010; 29(3):293–298. [PubMed: 20496983]

11. Penedo FJ, Dahn JR. Exercise and well-being: a review of mental and physical health benefits associated with physical activity. *Curr Opin Psychiatry*. 2005; 18(2):189. [PubMed: 16639173]
12. Burns BJ, Costello EJ, Angold A, et al. Children's mental health service use across service sectors. *Health Aff (Millwood)*. 1995; 14(3):147–159. [PubMed: 7498888]
13. Leaf PJ, Alegria M, Cohen P, et al. Mental health service use in the community and schools: results from the Four-Community MECA Study. *J Am Acad Child Adolesc Psychiatry*. 1996; 35(7):889–897. [PubMed: 8768348]
14. Weisz, J. *Psychotherapy for Children and Adolescents: Evidence-Based Treatments and Case Examples*. Cambridge University Press; New York: 2004.
15. Weist, MD.; Stephan, S.; Lever, N., et al. Quality and school mental health.. In: Evans, SW.; Weist, MD.; Serpell, ZN., editors. *Advances in School-Based Mental Health Interventions: Best Practices and Program Models*. Vol. 4. Civic Research Institute; Princeton, NJ: 2007. p. 1-4:14.
16. Weist MD, Lever N, Stephan S, et al. Formative evaluation of a framework for high quality evidence-based services in school mental health. *School Mental Health*. 2009; 1(4):196–211.
17. Adelman HS, Taylor L. Mental health in schools and public health. *Public Health Rep*. 2006; 121(3):294. [PubMed: 16640153]
18. Stephan S, Weist M, Kataoka S, Adelsheim S, Mills C. Transformation of children's mental health services: the role of school mental health. *Psychiatr Serv*. 2007; 58(10):1330–1338. [PubMed: 17914011]
19. Weist, MD.; Evans, SW.; Lever, NA., editors. *Handbook of School Mental Health: Advancing Practice and Research*. Kluwer Academic/Plenum; New York, NY: 2003. Advancing mental health practice and research in schools.; p. 1-8.
20. US Department of Health and Human Services. *The Surgeon General's Vision for a Healthy and Fit Nation*. US Department of Health and Human Services, Office of the Surgeon General; Rockville, MD: 2010.
21. Kremers SPJ, Brug J, de Vries H, Engels RCME. Parenting style and adolescent fruit consumption. *Appetite*. 2003; 41(1):43–50. [PubMed: 12880620]
22. Bandura, A. *Social Foundations of Thought and Action: A Social Cognitive Theory*. Prentice-Hall Inc; Englewood Cliffs, NJ: 1986.
23. Bandura A. Health promotion by social cognitive means. *Health Educ Behav*. 2004; 31(2):143–164. [PubMed: 15090118]
24. Bandura A, Caprara GV, Barbaranelli C, Gerbino M, Pastorelli C. Role of affective self-regulatory efficacy in diverse spheres of psychosocial functioning. *Child Dev*. 2003; 74(3):769–782. [PubMed: 12795389]
25. Lawman H, Wilson DK, Van Horn ML, Resnicow K, Kitzman-Ulrich H. The relationship between psychosocial correlates and physical activity in underserved adolescent boys and girls in the ACT trial. *J Phys Act Health*. 2011; 8:253–261. [PubMed: 21359129]
26. Lawman HG, Wilson DK, Van Horn LM, Zarrett N. The role of motivation in understanding social contextual influences on physical activity in underserved adolescents in the ACT trial: a cross-sectional study. *Child Obes*. 2012; 8:542–550. [PubMed: 23181920]
27. Craggs C, Corder K, Van Sluijs EMF, Griffin SJ. Determinants of change in PA in children and adolescents: a systematic review. *Am J Prev Med*. 2011; 40(6):645–658. [PubMed: 21565658]
28. Peterson MS, Lawman HG, Wilson DK, Fairchild A, Van Horn ML. The association of self-efficacy and parent social support on physical activity in male and female adolescents. *Health Psychol*. 2013; 32(6):666–674. [PubMed: 22888813]
29. Weersing VR, Weisz JR. Mechanisms of action in youth psychotherapy. *J Child Psychol Psychiatry*. 2002; 43(1):3–29. [PubMed: 11848335]
30. Araújo-Soares V, McIntyre T, Sniehotta FF. Predicting changes in physical activity among adolescents: the role of self-efficacy, intention, action planning and coping planning. *Health Educ Res*. 2009; 24:128–139. [PubMed: 18344230]
31. Ward-Begnoche, WL.; Pasold, TL.; McNeill, V., et al. Childhood obesity treatment literature review.. In: James, L.; Linton, JC., editors. *Handbook of Obesity Intervention for the Lifespan*. Springer Science + Business Media; New York, NY: 2009. p. 5-20.

32. Chorpita BF, Daleiden EL, Weisz JR. Identifying and selecting the common elements of evidence based interventions: a distillation and matching model. *Ment Health Serv Res.* 2005; 7(1):5–20. [PubMed: 15832690]
33. Broderick, CB. *Understanding Family Process: Basics of Family Systems Theory.* Sage Publications, Inc; Thousand Oaks, CA: 1993.
34. Steinberg, L.; Dahl, R.; Keating, D.; Kupfer, DJ.; Masten, AS.; Pine, DS. The study of developmental psychopathology in adolescence: integrating affective neuroscience with the study of context.. In: Cicchetti, D., editor. *Developmental Psychopathology.* 2nd ed.. John Wiley & Sons Inc; Hoboken, NJ: 2006. p. 712-735.
35. Zabinski MF, Norman GJ, Sallis JF, Calfas KJ, Patrick K. Patterns of sedentary behavior among adolescents. *Health Psychol.* 2007; 26:113–120. [PubMed: 17209704]
36. Brody GH, Ge X. Linking parenting processes and self-regulation to psychological functioning and alcohol use during early adolescence. *J Fam Psychol.* 2001; 15(1):82–94. [PubMed: 11322087]
37. Garber J, Robinson NS, Valentiner D. The relation between parenting and adolescent depression: self-worth as a mediator. *J Adolesc Res.* 1997; 12(1):12–33.
38. Epstein LH, Paluch RA, Roemmich JN, Beecher MD. Family-based obesity treatment, then and now: twenty-five years of pediatric obesity treatment. *Health Psychol.* 2007; 26(4):381–391. [PubMed: 17605557]
39. Kitzmann KM, Beech BM. Family-based interventions for pediatric obesity: methodological and conceptual challenges from family psychology. *J Fam Psychol.* 2008; 20(2):175–189. [PubMed: 16756393]
40. Kitzman-Ulrich H, Wilson DK, George SM, Lawman H, Segal M, Fairchild A. The integration of a family systems approach for understanding youth obesity, physical activity, and dietary programs. *Clin Child Fam Psychol Rev.* 2010; 13(3):231–253. [PubMed: 20689989]
41. Cummings EM, Schatz JN. Family conflict, emotional security, and child development: translating research findings into a prevention program for community families. *Clin Child Fam Psychol Rev.* 2012; 15(1):14–27. [PubMed: 22311087]
42. Prinz, RJ.; Dumas, JE. Prevention of oppositional defiant disorder and conduct disorder in children and adolescents.. In: Barrett, PA.; Ollendick, TH., editors. *Handbook of Interventions That Work With Children and Adolescents: Prevention and Treatment.* Wiley; Chichester, England: 2004. p. 475-488.
43. Finkenauer C, Engels RCME, Baumeister RF. Parenting behaviour and adolescent behavioural and emotional problems: the role of self-control. *Int J Behav Dev.* 2005; 29(1):58–69.
44. Wilson DK, Friend R, Teasley N, Green S, Reaves IL, Sica DA. Motivational versus social cognitive interventions for promoting healthy diet and physical activity in African-American adolescents. *Ann Behav Med.* 2002; 24:310–319. [PubMed: 12434942]
45. Dobrowski S, Luszczynska A. The interplay between conscious and automatic self-regulation and adolescents' physical activity: the role of planning, intentions, and lack of awareness. *Appl Psychol.* 2009; 58(2):257–273.
46. Kalavana TV, Maes S, De Gucht V. Interpersonal and self-regulation determinants of healthy and unhealthy eating behavior in adolescents. *J Health Psychol.* 2010; 15(1):44–52. [PubMed: 20064883]
47. Wills T, Isasi C, Mendoza D, Ainette M. Self-control constructs related to measures of dietary intake and physical activity in adolescents. *J Adolesc Health.* 2007; 41(6):551–558. [PubMed: 18023783]
48. Brody GH, Stoneman Z, Flor D, McCrary C, Hastings L, Conyers O. Financial resources, parent psychological functioning, parent co-caregiving, and early adolescent competence in rural two-parent African-American families. *Child Dev.* 1994; 65(2):590–605. [PubMed: 8013241]
49. Bandura A. Social cognitive theory in cultural context. *Appl Psychol.* 2002; 51(2):269–290.
50. Deci EL. Notes on the theory and metatheory of intrinsic motivation. *Organ Behav Hum Perform.* 1976; 15(1):130–145.
51. Harter S. A new self-report scale of intrinsic versus extrinsic orientation in the classroom: motivational and informational components. *Dev Psychol.* 1981; 17(3):300–312.

52. Kitzman-Ulrich H, Wilson DK, St. George SM, Peterson MS, Schneider E, Kugler KA. Preliminary test of a weight loss program integrating motivational and parenting factors in underserved adolescents. *Child Obes.* 2011; 7:379–384.
53. St. George SM, Wilson DK, Schneider EM, Alia KA. Project SHINE: effects of parent-adolescent communication on sedentary behavior in African American adolescents. *J Pediatr Psychol.* 2013; 38(9):997–1009. [PubMed: 23685450]
54. Alia KA, Wilson DK, St. George SM, Schneider E, Kitzman-Ulrich H. Effects of parenting style and parent-related weight and diet on adolescent weight status. *J Pediatr Psychol.* 2013; 38(3): 321–329. [PubMed: 23248345]
55. McPhie ML, Rawana JS. Unravelling the relation between PA, self-esteem, and depressive symptoms among early and late adolescents: a mediation analysis. *Ment Health PA.* 2012; 5:43–49.
56. Petty KH, Davis CL, Tkacz J, Young-Hyman D, Waller JL. Exercise effects on depressive symptoms and self-worth in overweight children: a randomized controlled trial. *J Pediatr Psychol.* 2009; 34(9):929–939. [PubMed: 19223278]
57. Kuczmarski RJ, Ogden CL, Guo SS, et al. 2000 CDC growth charts for the United States: methods and development. *Vital Health Stat* 11. 2002; 246:1–190. [PubMed: 12043359]
58. Darling N, Steinberg L. Parenting style as context: an integrative model. *Psychol Bull.* 1993; 113(3):487–496.
59. Schaeffer, C.; Weist, MD.; McGrath, J. Children with special health care needs in school: responding to the challenge through comprehensive school-based health care.. In: Weist, MD.; Evans, SW.; Lever, NA., editors. *Handbook of School Mental Health: Advancing Practice and Research.* Kluwer Academic/Plenum Publishers; New York, NY: 2003. p. 223-236.

Figure 1.
Difference in adolescent weight (lb) from pre- to postprogram as a function of parent-child communication about health.

Table 1

Demographic Characteristics for Families Receiving the CLIMB Program in School Mental Health Services

	<i>M (SD) or N (%)</i>
Adolescent age (years; range 11-15)	13.28 (1.14)
Adolescent gender (females)	4(40%)
Adolescent race/ethnicity	
African American	5 (50%)
White	5 (50%)
Adolescent weight status	
Healthy weight (5%-85%)	7 (70%)
Obese (>95%)	3 (30%)
Caregiver relationship	
Biological	7 (70%)
Adoptive	1 (10%)
Grandmother	2 (20%)
Family structure	
Married	5 (50%)
Single/separated	3 (30%)
Widowed	2 (20%)
Receives free/reduced lunch	9 (90%)
Caregiver age (years)	42.20 (9.81)
Caregiver gender (females)	10 (100%)
Caregiver race/ethnicity	
African American	4 (40%)
White	4 (40%)
American Indian/Alaskan Native	1 (10%)
Other	1 (10%)
Caregiver education level	
High school	3 (30%)
Some college	6 (60%)
Associate's degree	1 (10%)
Caregiver employment	
Full-time	3 (30%)
Homemaker	4 (40%)
Retired/unemployed/unable to work	3 (30%)

Table 2

Measurement Information for All Study Variables Assessed Before and After

Construct	Measure	Reporting	Response	Psychometrics
Parenting Support for Youth Psychosocial Needs	Parenting Practices Scale	Parent	0 = <i>nonauthoritative</i> to 3 = <i>authoritative</i>	Internal consistency for factors $\alpha = .72-.82$; factor structure confirmed across samples; current sample: $\alpha = .62$
Parenting Support for Health	Parenting Eating and Activity Scale	Parent	0 = <i>never</i> to 4 = <i>always</i>	Internal consistency for factors $\alpha = .73-.87$; current sample: $\alpha = .94$
Adolescent Perception of Family Support for Health	Support for Exercise and Diet Scales	Adolescent	0 = <i>none</i> to 4 = <i>everyday</i>	Adequate test-retest reliability, internal consistency, validity in family health interventions; current sample: $\alpha = .81$
Parent Communication about Health	Parent-Adolescent Communication around Health Behaviors Scale	Parent	How often: 0 = <i>never</i> to 3 = <i>many times</i> ; how did it go: 0 = <i>do not discuss</i> to 3 = <i>talk openly</i>	Adequate reliability in other family health interventions; current sample: $\alpha = .80$
Adolescent Self-Efficacy for Emotional Regulation	Affective Self-regulatory Efficacy Scale	Adolescent	1 = <i>not well at all</i> to 5 = <i>very well</i>	Internal consistency at $\alpha = .75$; factor analysis supports separate factor from overall efficacy; current sample: $\alpha = .88$
Adolescent Self-Efficacy for Health	Self-Efficacy for Exercise and Diet Behavior Scale	Adolescent	1 = <i>a little sure</i> to 3 = <i>very sure</i>	Modest test-retest reliabilities $\alpha = .43-.65$; internal consistency $\alpha = .85-.93$; current sample: $\alpha = .97$
Adolescent Mental Health Difficulties	Strengths and Difficulties Questionnaire	Parent	0 = <i>not true</i> to 2 = <i>certainly true</i>	Parent report reliability for this scale is $\alpha = 0.73$; current sample $\alpha = .61$
Adolescent Daily Fruit and Vegetable Intake	Fruit & Vegetable Intake Screening	Adolescent	0 = <i>no servings</i> to 4 = <i>4 or more servings</i>	Test-retest reliability ICC = .68, kappa = 56%; validity with food record Spearman's $r = 0.23$, $P < .01$

Table 3

Descriptive Statistics for Paired Samples *t* tests of Family and Adolescent Change Across the CLIMB Program

Change Variable	Pre	Post
Parenting support for psychosocial needs	1.88 (0.99)	2.25 (0.89)
Parenting support for health ^a	47.88 (13.85)	53.88 (6.01)
Adolescent perception of family support ^a	18.14 (6.99)	21.86 (6.36)
Parent-child communication about health	17.14 (5.61)	19.57 (2.51)
Adolescent self-efficacy for emotional regulation	40.14 (12.01)	41.57 (7.50)
Adolescent self-efficacy for health ^a	35.14 (14.26)	44.43 (11.86)
Adolescent mental health difficulties ^a	18.88 (4.91)	16.13 (3.48)
Adolescent daily fruit and vegetable consumption ^a	2.63 (0.92)	3.88 (1.46)

^a $P < .05$; 1-tailed *t*-test.

Table 4

Feasibility, Acceptability, and Effectiveness Themes From Clinician Interviews About the CLIMB Program

Theme	Description
Feasible	Easily integrated into service delivery Consistent with service delivery
Acceptable	Strategies matched up with existing services Made it easier to engage families Enabled deeper relationships with clients
Effective	Afforded tangible goals for changing behavior Made it easier for adolescents to see improvements in self-efficacy
Recommendations	More training on physical health and strategies for family engagement Provide materials via the Internet Modify program materials to ensure developmentally appropriate Increase modules to reduce program materials in each Build in peer-support component Continue providing program over the summer months