

Literature Review: Linking Health & Academic Achievement

A summary of selected references that demonstrate a link between health and academic achievement aligned with the coordinated school health (CSH) components:

- pg. 1 Health Education
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References	Setting/Methods	Data Sources	Key Findings
HEALTH EDUCATION			
Asthma Management			
<p>Clark NM, Brown R, Joseph CL, Anderson EW, Liu M, Valerio MA. Effects of a comprehensive school-based asthma program on symptoms, parent management, grades, and absenteeism. <i>Chest.</i> 2004;125 (5):1674- 1679.</p> <p>http://chestjournal.chestpubs.org/content/125/5/1674.full</p>	<p>Detroit, MI/randomized controlled trial of 835 children with asthma in grades 2 through 5 and their parents across 14 elementary schools in low-income neighborhoods</p> <p>Intervention: 6-part disease management health ed program</p>	<ul style="list-style-type: none"> • Parent telephone interviews – child asthma management strategies and absences due to asthma symptoms • Detroit Public Schools Office of Research and Eval data files – performance measures (reading, science, math, P.E. grades and school absences) 	<p>Follow up 2 years post-intervention yielded significant benefits, particularly for children with persistent asthma:</p> <ul style="list-style-type: none"> • Declines in daytime and nighttime symptoms (14%) • Higher academic grades in science but no significant improvement in other subject areas • Reduced school absences for asthma – 34% fewer in previous 3 months and 8% fewer in previous 12 months
Nutrition Education			
<p>Murphy JM. Findings from the Evaluation Study of the Edible Schoolyard (ESY). Center for Ecoliteracy, Berkeley, California, April 2003.</p> <p>http://api.ning.com/files/Hd3XFwJhO4N22yErOyYpmM9SWd-Hm36dOX6lIm4NE9Lp6POHI-XhaRvAjvohXmHteHQ7Z-9GxVylLYDN2Y-bgedbWuOIIDyq/EvaluationoftheEdibleSchoolyard.pdf</p>	<p>Berkeley, CA/preliminary findings re: trends found in a 2-yr evaluation focused on the experiences and learning patterns of students at Martin Luther King Jr. Middle School after each spent time learning in ESY’s garden and kitchen classroom. These experiences are contrasted with those of students from another Berkeley middle school with no garden or kitchen classroom at the</p>	<ul style="list-style-type: none"> • Qualitative and quantitative data collected during the 2001-2002 school year • Surveys and interviews – 6th grade students (n=106), school leaders and teachers (n=64), and parents • School records – grades, test scores, and attendance 	<p>ESY students who made gains in their overall ecoliteracy scores showed a significant improvement in what they ate; greater gains in the numbers of servings of fruits and vegetables they reported eating.</p> <ul style="list-style-type: none"> • Academic achievement increased, as ESY students showed significantly greater gains in overall GPA and in two of four school subjects (math and science). • Psychosocial adjustment improved significantly on a standardized student report questionnaire for ESY students than for students at the control school, which were also correlated with teachers’ independent ratings of the same students. • ESY teachers ranked teaching academics, cooperation,

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	time of research.		<ul style="list-style-type: none"> and compassion for living things as their three highest priorities on a second survey. Teachers from ESY rated their school as more conducive to learning than did control school teachers. Student's sense of place and understanding of sustainable agriculture improved.
Environment Education			
<p>Lieberman GA and Hoody LL. Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning. State Education and Environment Roundtable, San Diego, California, 1998.</p> <p>http://www.seer.org/extras/execsum.pdf</p>	<p>US/study of 40 schools that have adopted the concepts and frameworks using the environment as an integrating context for learning (EIC): 15 elementary, 13 middle, 2 high schools.</p>	<ul style="list-style-type: none"> Surveys, interviews, and site visits conducted with teachers and principals (n>250) and students (n>400) Comparative analysis of standardized achievement and behavioral data, where available 	<p>The successful programs that use the EIC design share the basic educational strategies of a multidisciplinary approach, hands-on learning experience, problem solving, team teaching, individualized design, and an emphasis on developing knowledge, understanding and appreciation for the environment. The documented impacts of the programs were found to be:</p> <ul style="list-style-type: none"> Better performance on standardized achievement tests of reading, writing, math, social studies and science; Reduced classroom management and discipline problems; Increased attention and enthusiasm for learning; and greater pride and ownership of accomplishments
Teen Pregnancy, Drug, and Violence Prevention			
<p>McManis D and Sorensen D. The Role of Comprehensive School Health Education Programs in the Link Between Health and Academic Performance: A Literature Review. Massachusetts Dept. of Education Learning Support Services, 2000.</p> <p>http://www.doe.mass.edu/cnp/health00/literaturereview.pdf</p>	<p>US/examined studies spanning 1982-1999 to evaluate role of comprehensive school health education programs in increasing academic performance. Focused on tobacco, alcohol and drug use, teen pregnancy, violence, nutrition and physical activity</p>	<p>Selected controlled studies, when possible, primarily from journals, books, Educational Resources Information Center (ERIC) documents, and government and non-profit organization reports</p>	<p>Overall, evidence shows a strong link between healthy behavior and school performance and that comprehensive health ed programs positively impact student attendance, behavior, and academic performance.</p> <ul style="list-style-type: none"> Teen Outreach Program¹ – 25 sites nationally randomly assigned to teen pregnancy prevention program; 9-mos. follow-up showed program students had substantially lower rates of teen pregnancy, school failure and academic suspension. Project Support² – 3-yr drug and gang prevention program for elementary school students in LA resulted in positive outcomes in both behavior and school performance; lower crime rates against people and property at school, increased attendance, decreased tardiness, high academic performance in reading, math, and language, and increase pro-school attitudes.
<p>¹ Allen JP, Philliber S, Herrling S, Kupermine, GP. Preventing teen</p>			

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			<p>pregnancy and academic failure: Experimental evaluation of a developmentally-based approach. <i>Child Development</i>. 1997;64:729-742.</p> <p>² Simun, P.B., Slovacek, S.P., Batie, M., Simun, M. Project Support Evaluation. Los Angeles Unified School District, report #3- Final Evaluation. 1996. ED 398 291 (re: drug and gang prevention)</p>
<p>Hawkins JD, Catalano RF, Kosterman R, Abbot R, Hill KG. Preventing adolescent health-risk behaviors by strengthening protection during childhood. <i>Arch Pediatric and Adolescent Medicine</i>. 1999; 153 (3):226-234.</p> <p>http://archpedi.jamanetwork.com/article.aspx?articleid=345607</p>	<p>Seattle, WA/follow-up from a nonrandomized controlled trial 6 yrs after intervention across 18 public elementary schools serving high-crime areas (N=598)</p> <p>Intervention: A full intervention provided in grades 1-6 of 5 days of in-service training for teachers each year, developmentally appropriate parenting classes offered to parents when children were in grades 1-3 and 5-6, and developmentally adjusted social competence training for children in grades 1 and 6. A late intervention, provided in grades 5 and 6 only, paralleled the full intervention at these grades.</p>	<ul style="list-style-type: none"> • Self-reported data – violent and nonviolent crime, substance use, sexual activity, pregnancy, bonding to school, school achievement, grade repetition and school dropout, suspension and/or expulsion, and school misbehavior • Court records – delinquency charges • School records – GPA, California Achievement Test scores, and disciplinary action reports 	<p>A package of interventions with teachers, parents, and children provided throughout the elementary grades can have enduring effects in reducing violent behavior, heavy drinking, and sexual intercourse by age 18 years among multiethnic urban children</p> <ul style="list-style-type: none"> • Fewer students receiving full intervention than control students reported: violent delinquent acts (48.3% vs 59.7%), heavy drinking (15.4% vs 25.6%), sexual intercourse (72.1% vs 83.0%), having multiple sex partners (49.7% vs 61.5%), and pregnancy or causing pregnancy (17.1% vs 26.4%) by age 18 years. • The full intervention student group reported more commitment and attachment to school, better academic achievement, and less school misbehavior than control students. <p>Late intervention in grades 5 and 6 only did not significantly affect health-risk behaviors in adolescence.</p>
<p>Eggert L, Thompson E, Hertig J, Nicholas L, Dicker B. Preventing adolescent drug abuse and high school dropout through an intensive school-based social network development program. <i>Am. Journal of Health Promotion</i>. 1994;8(3):202-215.</p>	<p>Northwest/259 youth at 4 urban at risk of dropout at Northwest high schools</p> <p>Intervention: The Personal Growth Class experimental condition was a 1-semester, 5-month elective course with integrated group support and life-skills training interventions.</p>	<ul style="list-style-type: none"> • School records – performance measures (semester GPA, class absences) • Drug Involvement Scale for Adolescents – drug use progression, drug control, and adverse consequences • High School Questionnaire: Inventory of Experiences – self-esteem, school bonding, and deviant peer bonding 	<p>After comparing school performance and drug involvement at program exit (5 months) and at follow-up (10 months), program efficacy was demonstrated for:</p> <ul style="list-style-type: none"> • Decreasing drug control problems and consequences • Increasing GPA across all classes taken (control students' GPA remained the same) and school bonding • Desired changes in self-esteem and deviant peer bonding

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Chronic Disease Prevention			
<p>Franks AL, Kelder SH, Dino GA, Horn KA, Gortmaker SL, Wiecha JL, Simoes EJ. School-based Programs: Lessons Learned from CATCH, Planet Health, and Not-on-Tobacco. <i>Preventing Chronic Disease.</i> 2007;4(2):1-9.</p> <p>http://www.cdc.gov/pcd/issues/2007/apr/06_0105.htm</p>	<p>US/lessons learned from three school health promotion programs including two focused on physical activity and good nutrition for elementary and middle school children — Coordinated Approach to Child Health (CATCH) and Planet Health — and one focused on smoking cessation among adolescents — Not-On-Tobacco (N-O-T)</p>	<ul style="list-style-type: none"> • CATCH - From 1991-1994, researchers conducted a 3-year randomized controlled trial evaluating the program in CA, Louisiana, Minnesota, and Texas. The evaluation involved ethnically and racially diverse groups of students from 96 elementary schools. • Planet Health - 21-month randomized controlled study of Planet Health in Boston between 1995 and 1997 in 10 public middle schools 	<ul style="list-style-type: none"> • Study results showed that as a result of the CATCH program, students in the intervention schools significantly increased time spent in moderate to vigorous physical activity within physical education classes (from 40% to 50%) and considerably decreased their consumption of fat in school meals (from 39% to 32%) • Study results of Planet Health showed 1) a reduction in television watching for both girls and boys enrolled in Planet Health compared with controls, 2) a significant decrease in prevalence of obesity among girls in the study, 3) an increase in fruit and vegetable consumption among girl participants, and 4) less of an increase in daily calories consumed by girls enrolled in Planet Health
<p>Resnicow K, Robinson TN. School-based cardiovascular disease prevention studies: Review and synthesis. <i>Annals of Epidemiology.</i> 1997;7(7 SUPPL.)</p> <p>http://www.annalsofepidemiology.org/article/S1047-2797(97)80005-1/abstract</p>	<p>US/ reviews 16 major school-based cardiovascular disease (CVD) prevention trials, and synthesizes results through semi-quantitative meta-evaluation</p>	<p>Studies since the late 1970's were identified through the Medline database, bibliographies of published studies, and colleague referral. Only studies that used a comparison group, and assessed at least one major CVD physiologic risk factor or two non-physiologic CVD risk factors were considered</p>	<ul style="list-style-type: none"> • Across the 16 studies, significant positive effects were observed for 158 of the 502 comparisons reported between treatment and comparison groups. • Positive effects were observed more frequently for smoking, cognitive, and fitness outcomes with lower rates observed for blood pressure and adiposity measures.
Health risk behaviors			
<p>Symons CW, Cinelli B, James TC, Groff P. Bridging student health risks and academic achievement through comprehensive school health programs. <i>Journal of School Health.</i> 1997;67(6):220-227.</p> <p>http://onlinelibrary.wiley.com/store/10.1111/j.1746-1561.1997.tb06309.x/asset/j.1746-1561.1997.tb06309.x.pdf?v=1&t=h4pty9sj&s=982c8c61d451584234a906eba6373e52e341a5b2</p>	<p>Reviews barriers to comprehensive school health programs and synthesizes the relationship between academic outcomes and selected health risk behavioral categories of intentional injuries; tobacco, alcohol, and other drugs; dietary, physical activity, and sexual risk behaviors</p>	<p>Review of 25 key articles in education and health promotion from 1989-1991 confirming the link between student health risk behavior and education outcomes (grad rates, class grades, standardized test scores); education behaviors (attendance, dropout rates, behavioral problems at school, and degree of involvement in school activities); and student attitudes about education (aspirations for postsecondary education and feelings about safety on school property, and personal attitudes such as self-esteem and locus of control)</p>	<p>Selected references that show an impact on the highest number of school performance measures within each risk behavior category (see quick reference tables in article):</p> <ul style="list-style-type: none"> • Intentional injuries: <ul style="list-style-type: none"> ○ Shore R. How one high school improved school climate. <i>Educ Leadership.</i> 1995;52:76-78. • Tobacco, alcohol, and other drugs: <ul style="list-style-type: none"> ○ US Dept of Education. <i>What Works: Schools Without Drugs.</i> Rockville, MD: National Clearinghouse for Alcohol and Drug Information; 1992 ○ Mensch BS, Kandel DB. Dropping out of high school and drug involvement. <i>Sociol Educ.</i> 1988;61:95-113. • Dietary behaviors:

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			<ul style="list-style-type: none"> ○ Tseng RYL. <i>The Relationship Between Nutrition and Student Achievement, Behavior, and Health-A Review of the Literature</i>. Sacramento, Calif State Dept of Education; 1980 • Physical activity behaviors: <ul style="list-style-type: none"> ○ Bouchard C, et al. <i>Exercise, Fitness, and Health: A Consensus of Current Knowledge</i>. Champaign, Ill: Human Kinetics Books; 1990. ○ Kolbe LJ, et al. Appropriate functions of health education in schools: improving health and cognitive performance. In: Krairweger N, Arasteli J, Cataldo M, eds. <i>Child Health Behavior: A Behavioral Pediatrics Perspective</i>. New York, NY: John Wiley; 1986 • Sexual behaviors: <ul style="list-style-type: none"> ○ Mott FL, Marsiglio W. Early childbearing and completion of high school. <i>Fam Plann Perspect</i>. 1985;17(5):234-237.
Social and Emotional Learning			
<p>Durlak JA, Weissberg RP, Schellinger KB, Dymnicki AB & Taylor RD. The Impact of Enhancing Students’ Social and Emotional Learning: A Meta-Analysis of School-Based Universal Interventions. <i>Child Development</i>. 2011;82(1):405-432.</p>	<p>Meta-analysis of 213 school-based, universal SEL programs involving 270,034 kindergarten through high school students</p>	<p>Relevant studies (with control group) identified through searches in PsycInfo, Medline, and Dissertation Abstracts, as well as manual searches conducted in 11 journals from 1970-2007</p> <p>Examined impact of SEL programming across multiple outcomes: social and emotional skills; attitudes toward self and others; positive social behaviors; conduct problems; emotional distress; and academic performance</p>	<ul style="list-style-type: none"> • Under half of the studies were conducted in urban schools (47%) and the majority of SEL programs were classroom based. • Compared to controls, SEL participants demonstrated significantly improved social and emotional skills, attitudes, behavior, and academic performance that reflected an 11-percentile-point gain in achievement. Student academic performance significantly improved only when teacher (in the classroom) or school personnel or conducted the intervention. • The use of 4 recommended practices for developing skills (SAFE) and the presence of implementation problems moderated program outcomes
<p>Snyder FJ, et al. Impact of a Social-Emotional and Character Development Program on Academic Achievement, Absenteeism, and Disciplinary Outcomes. <i>Journal of Research on Educational Effectiveness</i>. 2010; 3(1):26-55.</p>	<p>HI/randomized control study examining the effects of a comprehensive elementary school-based social-emotional and character education program (<i>Positive Action</i>) on</p>	<ul style="list-style-type: none"> • Trial included 20 racially/ethnically diverse schools (mean enrollment = 544) and was conducted from the 2002-03 through the 2005-06 academic years. Using school-level archival data, analyses compared 	<p>Intervention schools scored 9.8% better on the TerraNova (2nd ed.) test for reading and 8.8% on math; 20.7% better in Hawai'i Content and Performance Standards scores for reading and 51.4% better in math; and that intervention schools reported 15.2% lower absenteeism and fewer suspensions (72.6%) and retentions (72.7%)</p>

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<p>http://www.positiveaction.net/content/pdfs/prepub_ms_hawaii_outcomes.pdf</p>	<p>school-level achievement, absenteeism, and disciplinary outcomes</p>	<p>change from baseline (2002) to one-year post trial (2007).</p>	
<p>Nelson, J. R., Martella, R. M., & Marchand-Martella, N. (2002). Maximizing student learning: The effects of a comprehensive school-based program for preventing problem behaviors. <i>Journal of Emotional and Behavior Disorders</i>, 10, 136–148.</p>	<p>Pacific NW/evaluation of a comprehensive school-wide program based on an effective behavioral support approach for preventing disruptive behaviors at 7 elementary schools, including a cohort of target students who exhibited problem behaviors and a criterion group of children who did not exhibit problem behaviors were also followed over Years 2 and 3 of the project</p> <p>The program consists of 5 main elements: a school-wide discipline program, 1:1 tutoring in reading, conflict resolution, a video-based family mgmt program, and an individualized, function-based behavior intervention plan</p>	<p>Three sets of dependent measures were used to assess the overall effects of the program elements:</p> <ul style="list-style-type: none"> • <i>School climate and achievement</i> (Student Safety Survey, Comprehensive Test of Basic Skills, Washington Assessment of Learning Outcomes) • <i>Academic achievement and social competence</i> (Woodcock-Johnson–Revised Tests of Achievement and Behavioral and Emotional Rating Scale) • <i>Consumer satisfaction</i> (3-item survey was used to assess the satisfaction of teachers with the project) 	<p>School climate and achievement</p> <ul style="list-style-type: none"> • No statistically significant differences in the pretest–posttest gain scores in all cases. There were no changes in the responses of students in either the participating or the nonparticipating district schools. • Statistically significant differences in the pretest–posttest mean percentile gain scores of the participating schools on the CBTS Grade 4 Reading, Language Arts, Spelling, Science, and Social Studies subtests. No statistically significant difference was found for Mathematics. <p>Academic achievement and social competence</p> <ul style="list-style-type: none"> • Academic achievement and social competence of target students improved substantially <p>Consumer satisfaction</p> <ul style="list-style-type: none"> • Teachers reported overall satisfaction—that the techniques and strategies were easy to use, the project addressed the educational needs of all students, and they would recommend the project to other teachers
<p>PHYSICAL EDUCATION & ACTIVITY</p>			
<p>Singh A, Uijtdewilligen L, Twisk JW, Mechelen WV, Chinapaw MJ. Physical Activity and Performance at School: A Systematic Review of the Literature Including a Methodological Quality Assessment. <i>Arch Pediatr Adolesc Med</i>. 2012;166(1):49-55</p> <p>http://archpedi.jamanetwork.com/article.aspx?volume=166&issue=1&page=49#ref-pra110004-17</p>	<p>US, Canada, South Africa/reviewed studies from 1990-2010. Screened titles and abstracts for eligibility, rated the methodological quality, and extracted data</p>	<ul style="list-style-type: none"> • Prospective studies identified from searches in PubMed, PsychINFO, Cochrane Central, and Sportdiscus • Studies had to report at least 1 physical activity or physical fitness measurement and at least 1 academic performance or cognition measure during childhood or adolescence 	<p>14 articles were identified as relevant. The findings of 1 high-quality intervention study¹ and 1 high-quality observational study² (both US studies) suggest that being more physically active is positively related to improved academic performance in children</p> <p>¹Donnelly JE, Greene JL, Gibson CA, et al. Physical Activity Across the Curriculum (PAAC): a randomized controlled trial to promote physical activity and diminish overweight and obesity in elementary school children. <i>Prev Med</i>. 2009;49(4):336-341</p> <p>²Nelson MC, Gordon-Larsen P. Physical activity and sedentary behavior patterns are associated with selected adolescent health risk behaviors. <i>Pediatrics</i>. 2006;117(4):1281-1290</p>

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<p>Chomitz, V.R., Slining, M.M., McGowan, R.J., Mitchell, S.E., Dawson, G.F., & Hacker, K.A. Is there a relationship between physical fitness and academic achievement? Positive results from public school children in the Northeastern United States. <i>Journal of School Health</i>. 2009;79(1):30-37.</p>	<p>Massachusetts/cross-sectional study of diverse, urban public school youth grades 4 through 8.</p>	<ul style="list-style-type: none"> Massachusetts Comprehensive Assessment System (MCAS) achievement tests 2004-2005 in Math (fourth, sixth and eighth grade; n= 1103) and English (fourth and seventh grade; n=744) Fitness achievement was assessed as number of physical fitness tests passed during P.E. 	<ul style="list-style-type: none"> Study found that a student's odds of passing the Math portion of the MCAS increased by 38% for every increase in fitness units achieved with the Fitnessgram Found a 24% increase in the odds of passing the English MCAS portion for each fitness unit achieved
<p>Carlson SA, Fulton JE, Lee SM, Maynard LM, Brown DR, Kohl HW, & Dietz WH. Physical education and academic achievement in elementary school: data from the early childhood longitudinal study. <i>Am Journal of Public Health</i>. 2008;98:721-727.</p> <p>http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2377002/</p>	<p>US/examined association between time spent in P.E. and academic achievement in a longitudinal study of students in K - 5th grade. (nationally representative sample; n = 5316).</p>	<ul style="list-style-type: none"> Early Childhood Longitudinal Study, Longitudinal Kindergarten–Fifth Grade Public-Use Data File (ECLS-K) Time spent in physical education (minutes per week) collected from classroom teachers and academic achievement (mathematics and reading) was scored on an item response theory scale 	<p>Overall, P.E. did not appear to negatively affect academic achievement in elementary school students.</p> <ul style="list-style-type: none"> A small but significant benefit for academic achievement in mathematics and reading was observed for girls enrolled in higher amounts (70-300 minutes per week) of physical education (referent: 0-35 minutes per week). Higher amounts of physical education were not positively or negatively associated with academic achievement among boys.
<p>Castelli DM, Hillman CH, Buck SM, and Erwin HE. Physical Fitness and Academic Achievement in Third- and Fifth-Grade Students. University of Illinois at Urbana-Champaign, <i>Journal of Sport & Exercise Psychology</i>. 2007;29:239-25.</p> <p>http://www.kapoleims.k12.hi.us/campuslife/depts/electives/dance/Physical%20Fitness%20and%20Academic%20Achievement.2.pdf</p>	<p>Illinois/examined 259 public school students in third and fifth grades</p>	<ul style="list-style-type: none"> P.E. Fitnessgram – assessments used to identify muscle fitness, aerobic capacity, and body composition (BMI) Illinois Standards Achievement Test (ISAT) – performance in math and reading 	<p>Study found that field tests of physical fitness were positively related to academic achievement.</p> <ul style="list-style-type: none"> Aerobic capacity was positively associated with achievement, whereas BMI was inversely related. Associations were demonstrated in total academic achievement, mathematics achievement, and reading achievement, thus suggesting that aspects of physical fitness may be globally related to academic performance in preadolescents.

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<p>Coe DP, Pivarnik JM, Womack CJ, Reeves MJ, and Malina RM. Effect of Physical Education and Activity Levels on Academic Achievement in Children. <i>Medicine and Science in Sports and Exercise.</i> 2006;38(8):1515-1519.</p> <p>http://www.kapoleims.k12.hi.us/campuslife/depts/electives/dance/Effects%20of%20Physical%20Education%20and%20Activity%20levels%20on%20Academic%20Achievement%20in%20Children.pdf</p>	<p>Michigan/214 6th grade students were randomly assigned to physical education during either first or second semesters</p>	<ul style="list-style-type: none"> • 3-d physical activity recall (3DPAR) – measure for moderate and vigorous physical activity (MVPA) (number of 30-min time blocks) outside of school. 3DPAR time blocks were converted to ordinal data with scores of 1 (no activity), 2 (some activity), or 3 (activity meeting Healthy People 2010 guidelines) • School records – grades from four core academic classes and standardized test scores (Terra Nova percentiles) 	<p>Study found that although academic achievement was not significantly related to physical education enrollment, higher grades were associated with vigorous physical activity, particularly activity meeting recommended Healthy People 2010 levels.</p> <ul style="list-style-type: none"> • Grades were similar regardless of whether students were enrolled in P.E. during first or second semesters. • Students who either performed some or met Healthy People 2010 guidelines for vigorous activity (intense P.A.) had significantly higher grades than students who performed no vigorous activity in both semesters. • Moderate physical activity did not affect grades. • Standardized test scores were not significantly related to P.E. class enrollment or P.A. levels.
<p>California Department of Education. A study of the relationship between physical fitness and academic achievement in California using 2004 test results. Sacramento, CA: California Department of Education; 2005.</p> <p>www.cde.ca.gov/ta/tg/pf/documents/2004pftresults.doc</p>	<p>US/evaluation of >1 million children's scores on a standardized tests of physical fitness and language arts and mathematics proficiency</p>	<p>2004 Physical Fitness Test (scores from the 6 aspects of the Fitnessgram) and the California Standards Tests (measures of academic achievement in English-language arts and mathematics)</p>	<p>Physical activity scores of children in grades 5, 7, and 9 were strongly positively correlated with both measures of academic achievement, with girls evidencing a stronger relation than boys. The relationship between fitness and achievement was also stronger for higher SES students than for lower SES students.</p>
<p>Sallis JF, McKenzie TL, Kolody B, Lewis M, Marshall S, Rosengard P. Effects of health-related physical education on academic achievement: Project SPARK. <i>Research Quarterly for Exercise and Sport.</i> 1999;70:127-134.</p> <p>http://corepe.pbworks.com/w/file/48098428/resultsSallis.pdf</p> <p>**note: study pop represents high achieving district in relatively affluent suburb</p>	<p>Southern CA/randomized control study of 759 public school students in 4th and 5th grades</p> <p>Intervention: SPARK (Sports, Play, and Active Recreation for Kids) curriculum and professional development program for teachers to promote physical activity and self-management in and out of school</p>	<ul style="list-style-type: none"> • Metropolitan Achievement Tests (MAT6 and MAT) – performance in math, reading and language • Direct observations of P.E. and self-management classes – time spent per week 	<p>Spending more time on physical education does not interfere with academic performance</p> <ul style="list-style-type: none"> • Study found that students' scores on standardized achievement test were not adversely affected by an intensive P.E. program that doubled or tripled P.E. time. On several test scores, students with enhanced P.E. performed better than students in control groups.
<p>Barros RM, Silver EJ, Stein R. School recess and group classroom behavior. <i>Pediatrics.</i> 2009;123:431-436.</p> <p>http://www.pediatricsdigest.mobi/content/123/2/431.full.pdf+html</p>	<p>US/study examines the amount of recess that children 8 to 9 years of age receive comparing the group classroom behavior of children receiving daily recess with that of children not receiving daily</p>	<ul style="list-style-type: none"> • Early Childhood Longitudinal Study, Kindergarten Class of 1998-1999, third-grade data set • Group classroom behavior was assessed by using the teacher's rating of class behavior 	<ul style="list-style-type: none"> • Among 8- to 9-year-old children, having ≥1 daily recess period of >15 minutes in length was associated with better teacher's rating of class behavior scores • Children exposed to none/minimal break (30%) were much more likely to be black, to be from families with lower incomes and lower levels of education, to live in large cities, to be from the Northeast or South, and to attend

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	recess		public school, compared with those with recess
<p>Schwimmer JB, Burwinkle TM, Varni, JW. Health-related quality of life of severely obese children and adolescents. <i>JAMA</i>. 2003;289(14):1813-9.</p> <p>http://jama.jamanetwork.com/data/Journals/JAMA/4875/JOC21985.pdf</p>	<p>US/cross-sectional study examining the health-related quality of life (QOL) of obese children and adolescents (n=106) compared with children and adolescents who are healthy or diagnosed as having cancer</p>	<p>Child self-report and parent proxy using a pediatric QOL inventory generic core scale (range, 0-100) re: physical functioning (8 items), emotional functioning (5 items), social functioning (5 items), and school functioning (5 items)</p>	<p>Compared with healthy children and adolescents, obese children and adolescents reported significantly lower health-related QOL in all domains with a mean total score of 67 for obese children and adolescents and 83 for healthy children and adolescents.</p> <ul style="list-style-type: none"> • Obese children and adolescents were 4 times more likely to report impaired school function, and missed a mean of 4.2 days vs. 0.7 days in one month
<p>Mahar MT, Murphy SK, Rowe DA, Golden J, Shields AT, Raedeke TD. Effects of a classroom-based program on physical activity and on-task behavior. <i>Med Sci Sports Exerc</i>. 2006;38(12):2086-94.</p> <p>http://www.nemours.org/filebox/service/preventive/nhps/pep/paon-taskbehavior.pdf</p>	<p>North Carolina/study of 243 K-4th grade students to evaluate the effects of a classroom-based physical activity program <i>Energizers</i> on in-school physical activity levels and on-task behavior during academic instruction compared to control group</p> <p>Intervention: Daily 10-min activity breaks over 12 weeks. Energizers activities can be downloaded at no charge from www.ncpe4me.com/energizers.html</p>	<ul style="list-style-type: none"> • Physical activity levels were assessed with Yamax pedometers • Primary and two secondary observers were trained to assess on-task and off-task behavior coded as on task, motor off-task, noise off-task, or passive/other off-task; described below 	<p>A break without physical activity physical activity decreased on-task behavior, but a daily physical activity break significantly increased on-task behavior by an average of 8%. Among the least on-task students, activity breaks improved on-task behavior by 20%.</p>
NUTRITION SERVICES			
<p>Murphy JM, et al. The Relationship of School Breakfast to Psychosocial and Academic Functioning: Cross-sectional and Longitudinal Observations in an Inner-city School Sample. <i>Arch Pediatric Adolescent Medicine</i>. 1998;152:899-907.</p> <p>http://archpedi.jamanetwork.com/article.aspx?volume=152&issue=9&page=899</p>	<p>PA, MD/examined relationship between participation in a school breakfast program (pre- and post-implementation) and measures of psychosocial and academic functioning in school-aged children grades 3-8 (3 inner-city public schools; n=133)</p> <p>Demographics: all 3 schools had >70% of the students eligible for free or reduced-price meals, and all had >70% African American students</p>	<p>Information on participation in a school breakfast program, school record data, and in-depth interviews with parents and children</p>	<p>Higher rates of participation in school breakfast programs are associated in the short-term with improved student functioning on a broad range of psychosocial and academic measures</p> <ul style="list-style-type: none"> • Students who increased their participation in the school breakfast program had significantly greater increases in their math grades and significantly greater decreases in the rates of school absence and tardiness than children whose participation remained the same or decreased. • Child and teacher ratings of psychosocial problems (on measures of depression, anxiety, hyperactivity) also decreased to a significantly greater degree for children with increased participation in the school breakfast program.

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<p>Murphy, J.M. et al. Classroom Breakfast Scores High in Maryland: Findings from Year III of the Maryland Meals for Achievement Classroom Breakfast Pilot Program, December 2001.</p> <p>http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED460784</p>	<p>MD/evaluated effects of classroom breakfast program on student achievement and nutrition, as well as staff, parent and student satisfaction with the program across 6 school districts from 1998-2000, with comparison schools selected from the same district</p>	<p>Surveys, school records (attendance, tardiness, disciplinary incidents, visits to the school nurse, standardized test scores – Comprehensive Test of Basic Skills and Maryland School Performance Assessment Program), and individual interviews with administrators, teachers and other school staff, parents, and students</p>	<p>A number of statistically significant associations between participation in the MMFA program and student learning, behavior and nutrition were found, as were higher levels of student, parent, and staff satisfaction with the school breakfast program.</p> <ul style="list-style-type: none"> • (1) tardiness declines; (2) suspensions decrease; (3) results of the Maryland School Performance Assessment Program (MSPAP) improved significantly more in MMFA schools than in a matched group of comparison schools; and (4) improved student performance in individual subject areas, although not statistically significant. • Staff of MMFA schools also report the following positive changes: (1) improved learning environment; (2) improved student behavior; (3) improved student attentiveness; and (4) continued improvement each year of participation
<p>Kleinman RE, Hall S, Green H, Korsec-Ramirez D, Patton K, Pagano ME, Murphy JM. Diet, breakfast, and academic performance in children. <i>Ann Nutr Metab.</i> 2002;46(suppl 1):S24-S30.</p> <p>http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3275817/pdf/nihms353049.pdf</p>	<p>Boston, MA/examined whether nutrient intake and academic and psychosocial functioning improve after the start of a universal-free school breakfast program (USBP) across three inner city schools, grades 4-6 (n=97)</p>	<ul style="list-style-type: none"> • Parent and student interviews and questionnaires (Community Childhood Hunger Identification Project) prior to the start of a USBP and post-6 months. Students who had total energy intakes of <50% of the recommended daily allowance (RDA) and/or 2 or more micronutrients of <50% of RDA were considered to be at nutritional risk. • School records – school breakfast participation; students grades for Math, Reading, Science, and Social Studies; absence and tardiness rates 	<p>Six months after the start of the free school breakfast programs, students who decreased their nutritional risk showed significantly greater: improvements in attendance and school breakfast participation, decreases in hunger, and improvements in math grades and behavior than children who did not decrease their nutritional risk.</p>
<p>Alaimo, K, Olson CM, Frongillo EA. Food insufficiency and American school-aged children's cognitive, academic and psychosocial development. <i>Pediatrics.</i> 2001;108(1):44-53.</p>	<p>US/examine associations between food insufficiency and cognitive, academic and psychosocial outcomes for nationally representative sample of children and teenagers ages 6-11 and 12-16 years.</p>	<ul style="list-style-type: none"> • Food insufficiency measured by 3rd National Health and Nutrition Examination Survey (NHANES III) • Cognitive functioning assessed using Weschler Intelligence Scale for Children – Revised (WISC-R) • Academic scores assessed using Wide Range Achievement Test – Revised (WRAT-R) for Reading and Arithmetic • Psychosocial outcomes included 	<ul style="list-style-type: none"> • 6-11 year old food insufficient children had significantly lower arithmetic scores and were more likely to have seen a psychologist, and have had difficulty getting along with other children. • Results support hypothesis that each additional risk increases the likelihood that a child will have poorer outcomes.

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			number of days absent in previous year, psychologist visit for any emotional or behavioral problems, suspension from school, number of good friends, difficulty getting along with others.
<p>Halterman JS, Kaczorowski JM, Aligne CA, Auinger P, Szilagyi PG. Iron deficiency and cognitive achievement among school-aged children and adolescents in the United States. <i>Pediatrics</i>. 2001;107:1381-1386.</p> <p>http://pediatrics.aappublications.org/content/107/6/1381.full</p>	<p>US/examine relationship between iron deficiency and cognitive test scores among a nationally representative sample of school-aged children and adolescents ages 6-16 years (n=5398)</p>	<ul style="list-style-type: none"> • National Health and Nutrition Examination Survey III 1988-1994 • Cognitive tests included Wechsler Intelligence Scale for Children-Revised and the Wide Range Achievement Test-Revised 	<p>Average math scores were lower for children with iron deficiency with and without anemia, and had greater than twice the risk of scoring below average, compared with children with normal iron status.</p>
HEALTH SERVICES			
<p>Walker S, Kerns S, Lyon A, Bruns E, Cosgrove T. Impact of School-Based Health Center Use on Academic Outcomes. <i>Journal of Adolescent Health</i>. 2010;46:251-257.</p>	<p>Seattle/retrospective longitudinal study, 2005-2007, to examine whether SBHC medical and mental health service use differentially impacts academic outcomes among 9th graders across 13 high schools (n=2,306)</p>	<p>Linked school system-SBHC database to collect array of information on demographics, school performance indicators and SBHC use</p>	<p>A significant increase in school attendance for SBHC medical users compared to nonusers and a grade point increase over time for mental health users when compared to nonusers. Overall, the SBHC was associated with academic improvements over time.</p>
<p>Vinciullo, F, Bradley A. A Correlational Study of the Relationship Between a Coordinated School Health Program and School Achievement: A Case for School Health. <i>Journal of School Nursing</i>. 2009; 35(6):466-77.</p>	<p>US/study to determine whether there is an association between the rate of implementation of a coordinated school health program (CSHP) in a state and the academic achievement of the students in that state, controlling for the state-level rate of poverty</p>	<ul style="list-style-type: none"> • Data extracted from 3 national databases – the School Health Policies and Programs Survey (SHPPS), the National Assessment of Educational Progress (NAEP), and the U.S. Census 2000 Profile were used to study the relationships among three parameters: (1) CSHP intervention (2) Student achievement; and (3) Rate of poverty in each state • Student achievement measures included: 4th and 8th grade level math and reading; 8th grade level writing and science; high school dropout rate; advanced placement performance at the 12th grade level; 	<p>Components of a CSHP had statistically significant relationships with academic achievement. Students in states that have policies supporting regular participation in physical education (in both elementary and high school), appropriate nutritional practices (such as prohibiting junk food, prohibiting using food as a reward), services to address student health needs (both physical or mental), and the prevention of harassment at school generally were found to have higher test scores and lower dropout rates than students in states that have not implemented such health-promoting policies.</p>

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<p>Geierstanger SP, et al. School-Based Health Centers and Academic Performance: Research, Challenges and Recommendations. <i>Journal of School Health</i>. 2004;74(9),347-352.</p>	<p>US/review of research on the relationship between SBHCs and academic performance, discussing the methods, findings, and limitations of reviewed studies</p>	<p>and high school completion rate</p> <ul style="list-style-type: none"> Articles identified through PubMed searches, research bibliographies from the National Assembly on School-Based Health Care and the Center for Health and Health Care in Schools, and consultation with school health experts across the country. Data analyzed from 7 studies 1993-2003 that examined a diverse selection of settings and utilized multiple methodologies. Research included if it employed an experimental or quasi-experimental design, and if it was from peer-reviewed journals or evaluation reports. 	<p>Of the 7 studies that met the criteria for inclusion in this review, 6 studies found a positive relationship between at least one academic performance indicator and SBHCs. Overall, the research reviewed suggests that SBHCs can play a role in creating a better learning environment, but that more needs to be done to develop specific and proven links between SBHCs and academic performance.</p> <p>(See Appendix A for list of 6 studies and associations found between SBHC participation and academic outcomes)</p>
<p>Kerns SEU, Pullmann M, Walker SC, Lyon AR, Cosgrove TJ, Burns EJ. Adolescent Use of School-Based Health Centers and High School Dropout. <i>Archives of Pediatrics and Adolescent Medicine</i>. 2011;165:617-623</p>	<p>Seattle/analysis of retrospective students cohort in urban public school district to examine association between SBHC use and school dropout rates from 2005-2009 (9th graders; n=3334)</p>	<p>Integrated database from school district (academic outcomes) and department of public health (frequency of SBHC use from 2005-2009)</p>	<p>Low to moderate SBHC use was associated with a 33 percent reduction in dropout compared to non-SBHC users. The association was greatest for students at high risk of dropping out.</p>
<p>http://archpedi.jamanetwork.com/data/Journals/PEDS/22554/poa15001_617_623.pdf</p>	<p>N. Carolina/ followed 322 students in a single alternative high school grades 6-12 to examine the impact of SBHC use on absenteeism, suspension, grade advancement, and graduation</p> <p>78% of the students are minorities, and most are economically disadvantaged</p>	<p>Archival data from school records about school enrollment, attendance, suspension, drop out, graduation/promotion for all students during the 1990-1991 academic year; and from the school health center and the Guilford County Health Department about clinic registration and utilization data, as well as additional demographic info</p>	<p>The overall school attendance rate was 56%, suspension rate 24%, and 26% advanced to the next grade level or graduated. Actual SBHC users (49% of the student body) were just as likely to be absent or suspended, but more likely to advance through grade levels and to graduate (when compared to non-SBHC users).</p>
<p>Baisch MJ, Lundeen SP, Murphy MK. Evidence-Based Research on the Value of School Nurses in an Urban School System. <i>Journal of School Health</i>. 2011;81(2):74-80.</p>	<p>Midwestern US city/evaluation of the impact of school nurses at a large urban school district on indicators of student health and achievement for the 2006-</p>	<ul style="list-style-type: none"> Anonymous surveys of administrative and academic staff from elementary, middle and high schools with Title I-funded school nurse program 	<p>School nurses positively influenced immunization rates, the accuracy of student health records, and management of student health concerns</p> <ul style="list-style-type: none"> Principals and teachers reported that the school nurse helped to keep children in school

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	2007 school year	<ul style="list-style-type: none"> De-identified health records of elementary school students in 11 schools with nurses (n=9346) compared to matched control group (n=7249) 	<ul style="list-style-type: none"> Based on an average number of staff in each school, there was a reported savings of about 13 hours/day when a school nurse relieved other personnel from addressing student health concerns Total annual savings in staff time per school based on changes in time spent dealing with health concerns when a school nurse is present is estimated at >\$133,000
<p>Kerr, Jill et al., <i>Does Contact by a Family Nurse Practitioner Decrease Early School Absence?</i>, The Journal of School Nursing, September 14, 2011.</p> <p>http://www.attendanceworks.org/wordpress/wp-content/uploads/2012/10/JOSN-Does-Contact-By-A-Family-Nurse-Practitioner-Decrease-Early-School-Absence.pdf</p>	N. Carolina/describes a nursing intervention to decrease early school absence in two elementary schools K-3 (N=449) and a Head Start program (N=130).	<ul style="list-style-type: none"> The Head Start Family Nurse Practitioner (FNP) contacted families of chronically and excessively absent students by telephone, clinic visit at school, or home visit. The aggregate percentage attendance was evaluated by grades (preschool to 3rd grade), schools (Head Start, Elementary Schools 1 and 2), and grades and schools and compared with publicly available school district aggregate data. Attendance surveillance was initiated in September 2009 (Year 1) and intervention in September 2010 (Year 2) 	There were statistically significant increases in attendance from Year 1 to Year 2 at the elementary level but not at the Head Start level
<p>Weismuller, Penny C., Merry A. Grasska, Marilyn Alexander, Catherine G. White, and Pat Kramer. <i>Elementary School Nurse Interventions: Attendance and Health Outcomes</i>, The Journal of School Nursing, April 2007; vol. 23, 2: pp. 111-118.</p> <p>http://jsn.sagepub.com/content/23/2/111.full.pdf+html</p>	CA/Retrospective descriptive study of the impact of school nurse interventions on student absenteeism and student health	Review of 240 randomly selected elementary student health folders and attendance records was conducted in 2005	School nurses were involved with 75% of high-absence students as compared to 66% of low-absence students; they were also more involved with students who had previously identified health conditions
COUNSELING, PSYCHOLOGICAL & SOCIAL SERVICES			
<p>DeSocio J, Hootman J. Children's Mental Health and School Success. <i>J School Nursing</i>. 2004;20(4):190.</p> <p>http://jsn.sagepub.com/content/20/4/189.full.pdf+html</p>	US/integrative review of literature to examine the impact of children's mental health on school success, and the implications for school nursing	Search of peer-reviewed literature covering a 10-year period, 1993-2003, and websites of professional orgs and government agencies	<p>The literature provides evidence of the manifestations of common child mental health disorders as identifiable behaviors affecting and affected by school performance. (See Appendix B for full citation of references cited below)</p> <ul style="list-style-type: none"> Roderick and colleagues (1997) studied truancy in the Chicago public schools and identified mental health problems as factors contributing to poor school attendance.

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			<ul style="list-style-type: none"> • Eggert, Thompson, Randell, and Pike (2002) also identified the increased risk for depression, drug involvement, and suicidal behavior among disengaged students who drop out of school. • Lipschitz and colleagues (2000) determined that more than 90% of adolescent girls from urban settings had been exposed to at least one trauma, with witnessing of violence in their communities among the most frequent traumas reported. Girls in this study who met diagnostic criteria for PTSD were significantly more depressed and were more likely to have failed a grade or to have been suspended from school. • Houck and Perri (2002) reported positive outcomes of a nurse-facilitated support group for middle-school students with chronic patterns of school absence. The group focused on improving students' school attendance, identifying somatic symptoms, and learning about anxiety and depression. This supportive forum offered an opportunity for students to establish stronger connections with school and with each other as they developed skills in problem-solving, collaborating, and coping with school expectations.
<p>Charvat J. Research on the Relationship Between Mental Health and Academic Achievement. Bethesda, MD: National Association of School Psychologists, 2011.</p> <p>http://www.nasponline.org/advocacy/Academic-MentalHealthLinks.pdf</p>	<p>US/research summaries compiled by the National Association of School Psychologists</p>		<p>(See Appendix C for full citation of references below)</p> <ul style="list-style-type: none"> • A longitudinal study provided strong empirical evidence that interventions that strengthen students' social, emotional, and decision-making skills also positively impact their academic achievement, both in terms of higher standardized test scores and better grades (Fleming, Haggerty, Brown, Catalano, et al., 2005). • School mental health programs improve educational outcomes by decreasing absences and discipline referrals and improving test scores. Among students receiving mental health services, there was a 32% decrease in absences, a 31% decrease in failures ("failures" is not clearly defined in the article), and a 95% decrease in disciplinary referrals (Jennings, Pearson, & Harris, 2000). • Research reveals that intervening to decrease anxiety in six- to 13-year-old children with high anxiety predicts improves school performance and social functioning (Wood, 2006).
<p>Sink CA. Raising Achievement Test Scores of Early Elementary School Students through</p>	<p>Washington state/comparative study examine whether</p>	<ul style="list-style-type: none"> • Telephone surveys of school counselors/personnel 	<p>In summary, the study reveals that early elementary-age students enrolled for several years in well-established CSCP</p>

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<p>Comprehensive School Counseling Programs. <i>Professional School Counseling Journal</i>. 2003;6(5): 350-364.</p> <p>http://www.nmsca.org/uploads/3/0/3/6/3036124/raising_achievement_test_scores.pdf</p>	<p>students attending elementary schools with comprehensive school counseling programs (CSCPs) would produce higher academic achievement than those children enrolled in non-CSCP buildings for 2000-2001 school year. (n=150; randomly selected elementary schools across rural, suburban and urban areas)</p>	<ul style="list-style-type: none"> • Iowa Tests of Basic Skills-Form M for Grade 3 Vocabulary, Comprehension, Reading, and Mathematics standard scores • The Washington Assessment of Student Learning for Grade 4 Listening, Reading, Writing, and Mathematics scale scores 	<p>schools produce higher achievement test scores over and above those continuously enrolled children in non-CSCP schools.</p> <ul style="list-style-type: none"> • In their first few years of school enrollment, CSCP students largely obtained significantly lower achievement test scores than those students attending schools with no systemic school counseling program. However, the longer students remained in their CSCP schools, this achievement gap between groups significantly narrowed or disappeared altogether. • Over several years, participants who stayed in high usage CSCP schools significantly outperformed their counterparts in the comparison schools on the Grade 3 ITBS Vocabulary, Comprehension, Reading, and Mathematics, and Grade 4 WASL Listening, Reading, Writing, and Mathematics tests. • Furthermore, children benefit academically, whether they are economically disadvantaged or not, by remaining in schools for multiple years (at least 3 years) with a well-established (5 or more years of implementation) comprehensive school counseling program.
<p>Lapan RT, Gysbers NC, Petroski GF, Helping Seventh Graders Be Safe and Successful: A Statewide Study of the Impact of Comprehensive Guidance and Counseling Programs. <i>Professional School Counseling</i>. 2003;6(3)</p> <p>http://career.missouri.edu/career-educator/research/NormGysbersArticles/Helping%20Seventh%20Graders%20Be%20Safe%20and%20Successful.pdf</p>	<p>Missouri/examines the impact of more fully implemented comprehensive guidance and counseling programs on student (a) perceptions of safety in school, (b) satisfaction with their education, (c) grades, (d) perceptions of their relationships with teachers, and (e) perceptions of the importance and relevance of education to their future.</p>	<p>MSIP (Missouri Department of Elementary and Secondary Education) database generated from the statewide school district evaluation and accreditation process; MSIP 7th grade student and middle school teacher survey data collected from 1992 to 1996 were analyzed in this study; sample was representative of the diversity of schools in Missouri</p>	<p>After controlling for between-school differences in SES and enrollment size, more fully implemented school counseling programs significantly predicted (a) student perceptions of being safer in their schools, (b) better relationships between students and teachers, (c) greater satisfaction of students with the education they were receiving in their schools, (d) perceptions that one's education was more relevant and important to one's future, and (e) earning higher grades</p>
<p>Basch, C. Healthier students are better learners: a missing link in school reforms to close the achievement gap. <i>Equity Matters</i>. March 2010; Research Review No. 6.</p>	<p>Re: relationship between mental health (specifically ADHD) and academic achievement and drop out</p>		<ul style="list-style-type: none"> • Consequences of ADHD are often severe with respect to academic achievement and educational outcomes, including low reading and mathematics standardized test scores, grade retention, receipt of special education services, lower academic achievement and educational attainment (Barberesi, Katusi, Colligan, Weaver, & Jacobsen, 2007a; Currie, 2009; Currie & Stabile, 2006;

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Fletcher & Wolfe, 2008; Galera, Melcior, Chastang, Bouvard, & Fombonne, 2009; Loe & Feldman, 2007).

- Other mental health problems are associated with ADHD. For example, conduct disorder, oppositional defiant disorder (Spencer, 2006), depression (Daviss, 2008; Herman, Lambert, Jalongo, & Ostrander, 2007), and learning disabilities (DuPaul & Volpe, 2009).
- Data shows that inattention and hyperactivity problems are widespread among American youth and disproportionately affect urban minority youth from poor families, who may not only be more likely to be affected but also less likely to receive accurate diagnosis and treatment (Froehlich et al., 2007).
- Given the prevalence, severity, and educational consequences of ADHD, it is one of the most important mental health problems affecting learning, social functioning, and educational outcomes (Currie, 2009).
- In one retrospective analysis over a follow up period of more than 18 years, compared with youth who did not have ADHD, youth with diagnosed ADHD were 2.7 times as likely dropout (10.0% versus 22.9%) (Barberesi et al., 2007a).

HEALTHY & SAFE SCHOOL ENVIRONMENT

School Connectedness

Charvat J. Research on the Relationship Between Mental Health and Academic Achievement. Bethesda, MD: National Association of School Psychologists, 2008.

<http://www.nasponline.org/advocacy/Academic-MentalHealthLinks.pdf>

US/compendium of research summaries demonstrating the link between mental health and academic achievement; compiled by the Director of Research at the National Association of School Psychologists

22 studies selected from 1993-2011

- Longitudinal evaluation of a positive youth development initiative in 11 Alaska school districts revealed that not only are several aspects of school climate and connectedness related to student achievement, but positive change in school climate and school connectedness is related to significant gains in student scores on statewide achievement tests (Spier, Cai, & Osher, 2007; Spier, Cai, Osher, & Kendziora, 2007).
- Changing a school's climate and connectedness for the better is associated with increases in student performance in reading, writing, and mathematics (regardless of whether a school starts with high or low school climate and connectedness or high or low achievement scores) (Spier, Cai, & Osher, 2007; Spier, Cai, Osher, & Kendziora, 2007).
- A longitudinal study of third and fourth grade students provides support for a causal relationship between good social skills and higher academic achievement (Malecki & Elliott, 2002).

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<p>Osher D, Spier E, Kendziora K, Cai C. Improving Academic Achievement through Improving School Climate and Student Connectedness. Presented at the 2009 American Educational Research Association Annual Meeting, San Diego, CA.</p>	<p>Alaska/study built upon an existing survey to engage adults in creating positive changes to promote the academic progress and overall wellbeing of their young people. As one component in the longitudinal evaluation of Alaska Initiative for Community Engagement, researchers developed a school district survey for students and school staff</p>	<p>The School Climate and Connectedness Survey (SCCS) was administered to staff and students in a small number of Alaska school districts in 2005, and a larger number in 2006 and 2007.</p> <p>The Alaska Department of Education and Early Development's Standards Based Assessment (SBA) is used to measure academic achievement across the state of Alaska. The SBA is given annually to all Alaska students in grades 3 through 10, and measures student performance in three areas: Reading, Writing, and Mathematics.</p>	<p>Changes in several aspects of school climate and connectedness were positively associated with changes in student achievement in Reading, Writing and Mathematics</p> <ul style="list-style-type: none"> • Caring Adults and Overall Connectedness – significant positive relationship with Reading and Writing scores • Caring Adults, Peer Climate, and Overall Connectedness – significant positive relationship with Math scores
<p>Klem AM, Connell JP. Relationships Matter: Linking Teacher Support to Student Engagement and Achievement. <i>Journal of School Health</i>. 2004;74(7):262-274.</p> <p>http://www.fifeschools.com/fhs/documents/RelationshipsMatterLinkingTeacherSupporttoStudentEngagementandAchievement.pdf</p>	<p>US/using longitudinal data from the First Things First school reform model, this paper traces how students who feel supported by their teachers (a measure of school connectedness) are more likely to be engaged in their schooling than peers who do not experience such support.</p>	<ul style="list-style-type: none"> • Longitudinal data sets collected by the Institute for Research and Reform in Education to validate the Research Assessment Package for Schools (RAPS) on measures of teacher support and engagement. • Student records and survey data (from students and teachers) were also obtained from studies conducted in 6 elementary schools within 1 urban school district for the elementary-level analyses, and from studies conducted in 3 middle schools within 1 urban school district for the secondary-level analyses for years 1990-1995. 	<ul style="list-style-type: none"> • Elementary students reporting high levels of engagement were 44% more likely to do well and 23% less likely to do poorly on the performance (math and reading) and attendance index • Elementary students reported by teachers as highly engaged were more than twice as likely to do well on the performance and attendance index, • In contrast, elementary students reported by teachers as showing low levels of engagement were 56% less likely to demonstrate high levels of attendance and academic performance • Middle school students with high levels of engagement were 75% more likely to do well on the attendance and achievement index, • In contrast, middle school students with low levels of self-reported engagement were 27% more likely to do poorly, • Middle school students with high levels of teacher-reported engagement in school were more than twice as likely to do well on the attendance and achievement index, • This analysis offers evidence of the relationship between engagement and academic performance. However, teacher reports of student engagement are stronger predictors of student academic success than student reports
<p>Violence/Safety</p>			
<p>Wilson SJ and Lipsey MW. The Effectiveness</p>	<p>Meta-analysis of the</p>	<p>372 school-based studies selected that:</p>	<ul style="list-style-type: none"> • School violence prevention programs fell into four broad

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<p>of School-Based Violence Prevention Programs for Reducing Disruptive and Aggressive Behavior. Center for Evaluation Research and Methodology Institute for Public Policy Studies, Vanderbilt University, May 2005.</p>	<p>effectiveness of school-based programs for preventing or reducing aggressive behavior</p>	<ul style="list-style-type: none"> Involved a school-based program for children attending any grade, pre-K through 12th. Assessed intervention effects for at least one outcome variable that represented either (a) aggressive or violent behavior (e.g., fighting, bullying, person crimes); (b) disruptive behavior (e.g., behavior problems, conduct disorder, acting out); or (c) problem behavior (i.e., measures that include both internalizing and externalizing problems). Used an experimental or quasi-experimental design that compared students exposed to one or more identifiable interventions with one or more control or comparison conditions on at least one qualifying outcome variable. 	<p>categories: universal programs, selected/indicated programs, comprehensive programs, and special schools/classes.</p> <ul style="list-style-type: none"> Treatment dose (in the form of treatment duration, frequency, or implementation quality) was uniformly influential. Programs with no or few implementation difficulties or with greater duration or frequency tended to produce larger reductions in aggressive behavior. The outcomes for different treatment modalities within the universal and selected/indicated formats (e.g., social skills training, cognitively-oriented programs, behavioral programs, counseling) were not significantly different; that is, the modalities appeared to be equally effective at reducing aggressive behavior. In general, larger program effects were achieved with relatively higher risk students. School violence programs were generally effective at reducing the more common types of aggressive behavior seen in schools, including fighting, name-calling, intimidation, and other negative interpersonal behaviors, especially among higher risk students.
<p>Basch, C. Healthier students are better learners: a missing link in school reforms to close the achievement gap. <i>Equity Matters</i>. March 2010; Research Review No. 6.</p>	<p>re: relationship between aggression and violence on academic performance, absenteeism, and disruptive behavior</p>	<ul style="list-style-type: none"> Being a victim of bullying has not only been associated with concurrent and future mental and emotional well-being (Kumpulainen, 2008), but also with educationally relevant outcomes, including lower achievement, feeling unsafe at school, and lower connectedness with school (Glew, Fan, Katon, Rivara, & Kernic, 2005). Schwartz and Gorman (2003) suggest that exposure to community violence influences academic failure via two causal pathways: (1) symptoms of depression (i.e., intrusive thoughts, low energy and motivation, and poor concentration) and (2) disruptive behavior (i.e., aggression, impulsiveness, hyperactivity, and off-task behavior). 5.5% of a nationally representative sample of high school students reported being absent at least one day in the past month because of feeling unsafe at school or traveling to or from school. The experience was reported more frequently by Hispanic and black students than by whites (9.6% and 6.6%, respectively versus 4.0%). Younger children who were less victimized were more likely to attend (Ladd et al., 1997). 	

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<p>McManis D and Sorensen D. The Role of Comprehensive School Health Education Programs in the Link Between Health and Academic Performance: A Literature Review. Massachusetts Dept. of Education Learning Support Services, 2000.</p>	<p>(see Health Education - Teen Pregnancy, Drug, and Violence Prevention section above)</p>		
<p>Physical Environment/School Facilities/IAQ</p>			
<p>Simons E, Hwang SA, et al. The Impact of School Building Conditions on Student Absenteeism in Upstate New York. <i>Am J Public Health.</i> 2010;100(9):1679-1686.</p>	<p>NY/study assessing the effects of school building condition problems (with mold, moisture, ventilation, vermin, systems, and structures) on student absenteeism and performance (Grade 8 English and Math).</p>	<p>Data from 2005 Building Condition Survey of Upstate NY schools merged with 2005 NY State Education Dept student absenteeism and performance data at the individual school level</p>	<ul style="list-style-type: none"> • Student absenteeism was associated with visible mold, humidity, poor ventilation, vermin, 6 or more individual building condition problems and building system or structural problems related to these conditions. • Schools in lower socioeconomic districts and schools showed the strongest associations between poor building conditions and absenteeism. • Poor English performance was associated with ventilation, having 6 or more individual building condition problems, and building system or structural problems related to these conditions. • Poor math performance was associated with ventilation problems and having 6 or more individual building condition problems
<p>Prill R, Blake D, Hales D. <i>School Indoor Air Quality Assessment and Program Implementation.</i> Washington State University and Northwest Air Pollution Authority, 2005.</p>	<p>Washington and Idaho/examining effectiveness of a 3-step indoor air quality (IAQ) program implemented by 156 schools during the 2000-2001 school year</p>	<ul style="list-style-type: none"> • An experienced IAQ/building science specialist conducted walk-through assessments at each school. A survey of schools confirmed the program's usefulness. • Air quality measured as carbon dioxide concentrations 	<ul style="list-style-type: none"> • Poor air quality was found in 43% of all classrooms, and 66% of "portable" classrooms. • A further study (Shendell, et al., 2004) among a subset of the classrooms found that reduced outside air ventilation, indicated by elevated carbon dioxide concentrations, was associated with 10-20% increases in student absences. Notably, this association with attendance was seen in the general student population, not only among students with asthma. <ul style="list-style-type: none"> ○ Absence and CO2 data were collected from 409 traditional and 25 portable classrooms from 22 schools located in six school districts in the states of Washington and Idaho
<p>http://www.energy.wsu.edu/documents/nw_school_iaq_pgm.pdf</p>	<p>3-step IAQ program: 1) assign responsibility for IAQ; 2) assess the IAQ in their buildings; and 3) adopt good practice IAQ policies and procedures</p>		
<p>Shendell DG, Prill R, Fisk WJ, Apte MG, Blakc D, Faulkner D. Associations between classroom CO2 concentrations and student attendance in Washington and Idaho. <i>Indoor Air.</i> 2004;14:333-341.</p>			
<p>http://escholarship.org/uc/item/88r0924r</p>			
<p>Heath GA, Mendell MJ. Do Indoor Environments in Schools Influence Student</p>	<p>US/lit review assessing evidence for relationships</p>	<ul style="list-style-type: none"> • Because availability of such evidence is limited, the review includes 	<ul style="list-style-type: none"> • Authors did not identify a set of findings sufficiently persuasive to establish specific causal relationships

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<p>Performance? A Review of the Literature. In: Proceedings of Indoor Air. 2002;1:802-807.</p> <p>http://escholarship.org/uc/item/7zw1g26t</p>	<p>between IEQ within classroom environments in schools and the academic performance of students through high school</p>	<p>findings on a broader range of related environments and subjects of all ages: potential adverse effects of school, university, day-care center, office, and home environments on their occupants.</p> <ul style="list-style-type: none"> From consideration of over 500 articles or reports, 36 references were of primary relevance. Of these, 27 were peer-reviewed and 20 had findings considered to be from strong study designs. 15 articles reported studies of children in school settings, of which 8 had strong study designs (although 6 of these assessed the relation of school absence to measured outdoor pollutants). 	<p>between IEQ in schools and the performance of students, however, they did identify several strongly suggestive or suggestive lines of evidence linking IEQ factors and the performance or attendance of building occupants through connections involving pollutant exposures.</p> <ul style="list-style-type: none"> Strongly suggestive evidence linked higher concentrations of indoor nitrogen dioxide and outdoor ozone and carbon monoxide to decreased school attendance by children, and pollen concentrations to decreased office performance among allergic individuals. Suggestive evidence linked presence of (a specific) used carpet with reduced performance of office work. Inconsistent evidence linked lower outdoor air ventilation of buildings with decreased performance or attendance in offices and schools. <ul style="list-style-type: none"> A large body of evidence, much of it from studies of children, links a variety of IEQ exposures or building factors to health effects. Some of these health effects, such as respiratory infections and asthma, have demonstrated links to performance or attendance Other indirect evidence suggests a causal role of increased absence in reducing the performance of students. Decrements in teacher attendance or performance caused by poor IEQ may be an additional (but still undocumented) indirect cause of decreased performance among students.
<p>STUDENT, FAMILY & COMMUNITY INVOLVEMENT</p>			
<p>Henderson A, Mapp K. A New Wave of Evidence: The Impact of School, Family and Community Connections on Student Achievement. National Center for Family and Community Connections with Schools, 2002.</p> <p>http://www.sedl.org/connections/resources/evidence.pdf</p>	<p>US/lit review examining the growing evidence that family and community connections with schools make a difference in student success.</p>	<p>51 studies from 1995-2002, together covering children and youth of all ages, from birth through high school and into postsecondary years.</p>	<ul style="list-style-type: none"> Taken as a whole, these studies found a positive and convincing relationship between family involvement and benefits for students, including improved academic achievement. This relationship holds across families of all economic, racial/ethnic, and educational backgrounds and for students at all ages. Although there is less research on the effects of community involvement, it also suggests benefits for schools, families, and students, including improved achievement and behavior. Among the studies reviewed here, the benefits for students include: <ul style="list-style-type: none"> higher grade point averages and scores on standardized tests or rating scales

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			<ul style="list-style-type: none"> ○ enrollment in more challenging academic programs ○ more classes passed and credits earned ○ better attendance ○ improved behavior at home and at school ○ better social skills and adaptation to school
<p>Shaver, A. V., & Walls, R. T. (1998). Effect of Title I parent involvement on student reading and mathematics achievement. Journal of Research and Development in Education, 31(2), 90–97. EJ561992.</p>	<p>W. Virginia/looked at the impact of school-based parent work- shops on the achievement of 335 Title I students in nine schools in a West Virginia district</p> <p><i>Does offering workshops at school enhance parents’ skills to help their children?</i></p>	<ul style="list-style-type: none"> ● Parents attended sessions designed to their interests in addition to receiving learning packets in reading and math, as well as training in how to use them. ● Students’ gains were compared with pretest scores, then measured against average national gains, on the Comprehensive Test of Basic Skills. 	<p>Researchers found that:</p> <ul style="list-style-type: none"> ● students with more highly involved parents were more likely to gain in both reading and math than children with less involved parents. This finding held across all income and education levels. ● younger students (grades 2–4) made greater gains than older students (grades 5–8). ● parents were more likely to be involved when their children were in elementary school (grades 2–4) than in middle or junior high school. ● students from lower-income families made fewer gains than students from higher- income families, no matter how involved their families. However, low-income students with more involved parents made greater gains than low-income students with less involved parents. ● a family’s income level did not affect its level of involvement. Low-income families were as likely to attend regularly as higher-income families.
<p>Epstein, J. L., Clark, L., Salinas, K. C., & Sanders, M. G. (1997). Scaling up school-family-community connections in Baltimore: Effects on student achievement and attendance. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, IL.</p>	<p>Baltimore/family-school partnership program adopted by 80 Baltimore elementary schools</p> <p><i>Do school efforts to engage families make a difference in student achievement?</i></p>	<p>These schools are members of a network that receives technical assistance to develop six types of partnership, from working with children at home to being engaged in school decisions</p>	<ul style="list-style-type: none"> ● In schools with more highly rated partnership programs, students made small but significant gains on writing and math tests, compared with schools with lower-rated programs. ● Attendance also improved at the more highly rated schools.
<p>Gutman, L. M., & Midgley, C. (2000). The role of protective factors in supporting the academic achievement of poor African American students during the middle school transition. Journal of Youth and Adolescence, 29(2), 223–248.</p>	<p>Michigan/examines the effects of classroom and school characteristics on students’ psychological and academic outcomes during the transition from elementary to middle level schools; low-income African-American students from 62 families during the</p>	<p>Data from the students were collected using surveys administered at the schools during the last year of elementary school (n = 901) and then again during the first year of middle school (n = 738)</p>	<p>They found that the combined effect of parent and school support had a significant impact on middle school grades. Students reported on three key influences:</p> <ul style="list-style-type: none"> ● Parent involvement: talking to students about school, checking homework, attending events, and volunteering at school. ● Support from teachers: taking time to help students and being supportive rather than critical. ● Belonging at school: feeling accepted, respected, and

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	transition between fifth and sixth grades		included at school. Students reporting high parent involvement and a high sense of belonging, or high parent involvement and high teacher support, had higher average grades than students who reported low support at home and school.
Catsambis, S. (1998). Expanding knowledge of parental involvement in secondary education—Effects on high school academic success (CRESPAR Report 27). Baltimore, MD: Johns Hopkins University. ED426174. http://www.csos.jhu.edu/crespar/Reports/report27entire.htm	US/studied 13,500 families whose children stayed in school through 12th grade	Using NELS:88 data, measured the connection of six types of involvement with high school student achievement <ul style="list-style-type: none"> • Parenting • Communicating • Supporting school • Learning at home • Decision making • Collaborating with community 	Enhancing learning at home, she found, had the strongest effect. <ul style="list-style-type: none"> • Forms of involvement with less effect: Parenting practices, communications with school, attending school events, and contacts with other parents. • Forms of involvement with more effect: Expressing high expectations, discussing going to college, and helping students prepare for college.
Jeynes WH. A Meta-Analysis: The Effects of Parent Involvement on Minority Children's Academic Achievement. <i>Education and Urban Society</i>. 2003;35:202-218. http://eus.sagepub.com/content/35/2/202.full.pdf	US/21 studies reviewed to determine the impact of parental involvement on the academic achievement of minority children	Statistical analyses were undertaken to determine the overall effects of parental involvement obtained for each study as well as specific components of parental involvement	<ul style="list-style-type: none"> • Overall, parental involvement has a significant positive impact on children across race and across academic outcomes, however, parental involvement appeared to influence standardized test scores more than GPA • Effects of parental involvement were apparent for all the racial groups under study, it is also clear that the effects of parental involvement were greater for some groups more than for others. Parental involvement apparently benefited African Americans and Latinos more than it did Asian Americans. African American children benefited from all kinds of parental involvement. Latinos and Asian Americans combined benefited from overall parental involvement more than Asian Americans alone, indicating that Latino students apparently benefit from parental involvement more than Asian American students do.
Berner, M. Building conditions, parental involvement, and student achievement in the District of Columbia public school system. <i>Urban Education</i>. 1993;28(1):6-29.	Washington DC/examines the impact of parental involvement on the overall condition of the Washington DC public school buildings, and then looks at the impact of various variables on student achievement	Regression analysis shows the relationship among building conditions, parental involvement, and student achievement; sampling of 52 schools	Case study showing that the size of a public school's Parent-Teacher Association (PTA) budget is positively related to the school building 's condition. The condition is, in turn, shown to be statistically related to the student's academic achievement. An improvement in the school's condition by one category, say from poor to fair, is associated with a 5.5 point improvement in average academic achievement scores.
Miedel, W. T., & Reynolds, A. J. (1999). Parent involvement in early intervention for disadvantaged children: Does it matter? <i>Journal of School Psychology</i>, 37(4), 379-402.	Chicago/study investigated the association between parent involvement in early intervention and children's	(N=704) parents of children participating in the Chicago Longitudinal Study were interviewed retrospectively about their involvement in preschool and	<ul style="list-style-type: none"> • Results indicated that even after controlling for family background, the number of activities in which parents participated in preschool and kindergarten was significantly associated with higher reading achievement,

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	later school competence	kindergarten. Parents reported on the activities in which they participated and their frequency of program participation.	<p>with lower rates of grade retention at age 14 (8th grade), and with fewer years in special education placement.</p> <ul style="list-style-type: none"> • The frequency of parent involvement was only marginally associated with reading achievement but was associated with lower rates of grade retention. • A confirmatory analysis indicated that teacher ratings of parent involvement were significantly associated with higher reading achievement in 8th grade, lower grade retention rates, and lower rates of special education placement through 8th grade.
Houtenville AJ, Conway KS. Parental Effort, School Resources, and Student Achievement. <i>Journal of Human Resources</i>. 2008;43(2): 437-453.	Using data from the National Education Longitudinal Study (NELS), we estimate a value-added education production function that includes parental effort as an input.	Data from the NELS, which is a comprehensive longitudinal national survey of 24,599 eighth grade students (from 815 public schools and 237 private schools), their parents, teachers, and school administrators. Along with the survey, each student took standardized tests in reading, mathematics, science, and social studies.	Results suggest that parental effort has a strong positive effect on achievement that is large relative to the effect of school resources and is not captured by family background variables. Parents appear to reduce their effort in response to increased school resources, suggesting potential “crowding out” of school resources.
HEALTH PROMOTION FOR SCHOOL STAFF			
Hirsch, E. <i>Listening to the experts: A report on the 2004 South Carolina teacher working conditions survey</i>. Chapel Hill, NC: Southeast Center for Teaching Quality. 2005a. http://epsl.asu.edu/epru/articles/EPRU-0504-111-OWI.pdf	S. Carolina/survey of teachers in April-May 2004 to examine relationship between working conditions and student achievement and teacher retention	<ul style="list-style-type: none"> • 15,200 teachers’ responses to online Working Conditions Survey in 5 domains: time, empowerment, facilities and resources, leadership, professional development, and mentoring and induction. • Statistical models used to analyze the connection between working condition survey results and student achievement (Adequate Yearly Progress (AYP) and the Palmetto Achievement Challenge Test (PACT)) and teacher retention 	<ul style="list-style-type: none"> • Teacher working conditions are important predictors of student achievement. • AYP <ul style="list-style-type: none"> ○ For all 5 working conditions domains, there was a statistically significant difference in the school average, with the greatest difference in the area of empowerment—the area teachers identified as the most important to improving student learning. For every 1 point increase on the survey, schools are 4.75 times more likely to achieve AYP. • PACT <ul style="list-style-type: none"> ○ Schools were 1.9 times more likely to be rated good or excellent on school improvement ratings for every one point increase on the survey in the area of <i>time</i>. The effects are far greater for high schools, which are 64.6 times more likely to be rated good or excellent for every one point increase on the survey. ○ <i>Professional development</i> was by far the greatest predictor of Improvement Rating status at the middle school level, more so than the proportion

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			<p>of poor and minority students or AYP status. Middle schools were 44 times more likely to be rated good or excellent.</p> <ul style="list-style-type: none"> ○ <i>Leadership</i> had a significant and positive impact on student performance. For every 1 point increase in the area of leadership on the Teacher Working Conditions Survey, schools were 2.65 times more likely to receive a good or excellent absolute accountability rating. <ul style="list-style-type: none"> ● Teacher working conditions make a difference in teacher retention <ul style="list-style-type: none"> ○ Correlations between the working conditions domains and the teacher retention rate for the 2003-04 school year were statistically significant for leadership, empowerment and facilities and resources.
<p>Eaton DK, Marx E, & Bowie SE. Faculty and staff health promotion: Results from the school health policies and programs study 2006. <i>Journal of School Health</i>. 2007; 77(8): 557-566.</p> <p>http://onlinelibrary.wiley.com/doi/10.1111/j.1746-1561.2007.00235.x/pdf</p>	<p>US/ describes the characteristics of school employee wellness programs in the United States, including state-, district-, and school-level policies and programs</p>	<ul style="list-style-type: none"> ● In 2006, computer-assisted telephone interviews or self-administered mail questionnaires were completed by state education agency personnel in 49 states plus D.C. and among a nationally representative sample of school districts (n = 445). ● Computer-assisted personal interviews were conducted with personnel in a nationally representative sample of elementary, middle, and high schools (n = 873). 	<ul style="list-style-type: none"> ● 67.3% of states provided assistance to districts or schools on how to develop or implement faculty and staff health promotion activities or services. ● Although nearly all schools offered at least 1 health promotion service or activity, few schools offered coordinated activities and services within a comprehensive employee wellness program. ● During the 12 months preceding the study, none of the health screenings were offered by more than one third of schools; only a few of the health promotion activities and services were offered by more than one third of schools; about one third of schools offered physical activity programs, employee assistance programs, and subsidies or discounts for off-site health promotion activities; and only 1 in 10 schools provided health-risk appraisals for faculty and staff.
<p>Parks KM, Steelman LA. Organizational Wellness Programs: A Meta-Analysis, 2008.</p>	<p>Meta-analysis on studies that examined the effects of participation in an organizational wellness program (fitness or comprehensive) on absenteeism and job satisfaction</p>	<ul style="list-style-type: none"> ● Studies were searched from 1980 to 2005; 17 studies were included in the review (n=7,705 for absenteeism and n=2,480 for job satisfaction) ● The type of wellness programs in the included studies were mainly fitness only programs; others included education only or were comprehensive programs that appeared to include physical, 	<p>Results revealed that participation in an organizational wellness program was associated with decreased absenteeism and increased job satisfaction</p> <ul style="list-style-type: none"> ● Participation in an organizational wellness program was associated with lower levels of absenteeism; the effect size was considered low to moderate ● Participants in wellness programs were more likely to report higher job satisfaction; the effect size was considered moderate.

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		psychological and informational components	
<p>Davis, K., S.R. Collins, M.M. Doty, A. Ho and A.L. Holmgren. August 2005. <i>Health and Productivity Among U.S. Workers. The Commonwealth Fund.</i></p> <p>www.commonwealthfund.org/usr_doc/856_Davis_hlt_productivity_USworkers.pdf</p>	<p>Analysis of Commonwealth Fund survey data (2003) estimates the economic impact of health problems on worker productivity</p>	<p>Commonwealth Fund Biennial Health Insurance Survey - examines 3 major sources of lost economic productivity related to health: (1) adults who do not work because of poor health or disability; (2) workers who miss time from their jobs as a result of health problems; and (3) workers who, while working, are less productive than they could be as a result of their own health problems or worries about sick family members</p>	<ul style="list-style-type: none"> • An estimated 18 million adults ages 19 to 64 were not working and had a disability or chronic disease, or were not working because of health reasons. • 69 million workers reported missing days due to illness, for a total of 407 million days of lost time at work. • 55 million workers reported a time when they were unable to concentrate at work because of their own illness or that of a family member, accounting for another 478 million days. • Together, labor time lost due to health reasons represents lost economic output totaling \$260 billion per year. • Workers without paid time off to see a physician are more likely to report missing work or being unable to concentrate at their job.
<p>Marx E., Wooley S.F., Northrop D. (1998) <i>Health is Academic: A Guide To Coordinated School Health Programs</i>, New York, Teachers College Press, Columbia University, Page 231</p>			<p>School worksite programs have brought about changes in employee health including helping faculty and staff stop smoking, adopt healthful eating behaviors, increase physical activity and better manage emotional stress.</p>
<p>Symons CW, Cummings CD, Olds RS. <i>Healthy People 2000: An agenda for school site health promotion programming</i>. In: <i>Healthy Students 2000: An Agenda for Continuous Improvement in America's Schools</i>. Kent, OH: American School Health Association, 1994.</p>			<p>Benefits of school site health promotion programming:</p> <ul style="list-style-type: none"> • Teachers are more energetic • Teachers are absent less often • The school climate is more optimistic
<p>Blair, S.N., L. Tritsch and S. Kutsch. 1987. <i>Worksite health promotion for school faculty and staff. J Sch Health</i> 57(10):469-473.</p>			<p>Findings suggest a healthy staff does a better job of teaching and creates a better working and learning environment.</p> <ul style="list-style-type: none"> • Health promotion for staff influences productivity and absenteeism, and may even reduce health insurance costs (based on findings from other worksite initiatives) • It also influences morale and a greater personal commitment to the school's coordinated health program, which is transferred into student enthusiasm
COORDINATED SCHOOL HEALTH (overall)			
<p>Hanson TL, Austin G. Lee-Bayha J. <i>How Are Student Health Risks & Resilience Related to the Academic Progress of Schools?</i> WestEd, 2004.</p>	<p>CA/ examines how gains in test scores were related to 3 types of health-related barriers to student learning: (1) poor physical health indicators; (2)</p>	<p>Longitudinal, school-level test-score data, as well as data from the state-sponsored California Healthy Kids Survey (CHKS)</p>	<p>Physical activity, nutrition and academic performance:</p> <ul style="list-style-type: none"> • Schools with proportionately large numbers of students who engaged in some weekly physical activity and ate nutritiously had greater subsequent gains in test scores than other schools.

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<p>http://chks.wested.org/resources/EnsuringNC LB.pdf</p>	<p>alcohol, tobacco, and other drug use; and (3) violence, victimization, harassment, and lack of safety at school</p>	<ul style="list-style-type: none"> • Separate analyses found that physical activity and nutrition had equally beneficial consequences for test score gains in low- and high-performing schools. <p>Substance abuse and academic performance:</p> <ul style="list-style-type: none"> • Schools with proportionately large numbers of students who reported ever being intoxicated, who reported using substances or being intoxicated at school, and who reported being offered drugs at school exhibited smaller gains in test scores than other schools. • Analyses suggest that substance use was a greater impediment to school progress in high-performing schools than in low-performing schools. <p>Safety at school and academic performance:</p> <ul style="list-style-type: none"> • Test score gains were significantly smaller in schools with a high percentage of students who reported having their property stolen or damaged at school, who reported carrying weapons at school, and who reported feeling unsafe at school. These three factors— theft and vandalism, insecurity, and weapon possession— had equally harmful effects in low- and high-performing schools <p>External resilience assets and academic performance:</p> <ul style="list-style-type: none"> • Test scores increased more in schools where students reported (1) high levels of caring relationships at school, (2) high expectations at school, and (3) meaningful participation in the community
<p>Murray NG, Low BJ, Hollis C, Cross AW, Davis SM. Coordinated School Health Programs and Academic Achievement: A Systematic Review of the Literature. <i>Journal of School Health</i>. 2007;77:589-600.</p> <p>http://onlinelibrary.wiley.com/doi/10.1111/j.1746-1561.2007.00238.x/full</p>	<p>Systematic review of the literature to examine evidence that school health programs aligned with the Coordinated School Health Program (CSHP) model improve academic success</p>	<p>Multidisciplinary panel of health researchers searched literature related to academic achievement and elements of the CSHP model to identify scientifically rigorous studies of interventions. Study designs were classified according to the analytic framework provided in the Guide developed by the Community Preventive Services Task Force</p> <p>Scientifically rigorous evaluation of school health programs is challenging to conduct due to issues related to sample size, recruitment, random assignment to condition, implementation fidelity, costs, and adequate follow-up time. However, school health programs hold promise for improving academic outcomes for children.</p> <ul style="list-style-type: none"> • Strongest evidence from scientifically rigorous evaluations exists for a positive effect on some academic outcomes from school health programs for asthmatic children that incorporate health education and parental involvement. • Strong evidence also exists for a lack of negative effects of physical education programs on academic outcomes. • Limited evidence from scientifically rigorous

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evaluations support the effect of nutrition services, health services, and mental health programs.

- No such evidence is found in the literature to support the effect of staff health promotion programs or school environment interventions on academic outcomes.

APPENDIX

A. Geierstanger SP, et al., 2004 (re: Health Services)

Figure 2
School-Based Health Centers and Indicators of Academic Performance

Academic Indicator	BPHC (1993)	Gall et al (2000)	Kisker & Brown (1996)	McCord et al (1993)	Warren & Fancsali (2000)	Webber et al (2003)	Williams (2003)
Absence/attendance		X	O	X	O	X	O
Tardiness		X					
Promotion to next grade			O	X			O
Withdrawal/ drop out rates	X			X			
Graduation rate				X			
Disciplinary referrals					O		
Suspension rates				O	O		
Standardized test scores							X
GPA					O		
Educational motivation					O		
Receipt of failing grade					O		
Educational aspirations					X		
Credit accumulation					X		

X - A statistically significant association found between SBHC participation and/or presence of an SBHC on a school campus with the desired outcome.

O - No statistically significant association found.

(Blank) - The study did not measure this indicator.

Health Resources and

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Gall G, Pagano ME, Desmond MS, Perrin JM, Murphy JM. Utility of psychosocial screening at a school-based health center. *J Sch Health*. 2000;70:292-298.

McCord MT, Klein JD, Foy JM, Fothergill K, School-based clinic use and school performance. *J Adolesc Health*. 1993;14:91-98.

Warren C, Fancsali C, New Jersey School-Based Youth Services Program: Final Report. New York, NY: Academy for Educational Development; 2000.

Webber MP, Carpiniello KE, Oruwariye T, Lo Y, Burton WB, Appel DK. Burden of asthma in inner-city elementary schoolchildren. *Arch Pediatr Adolesc Med*. 2003;157:125-129.

Williams K. Final Evaluation of the 2002-2003 Youth and Family Centers Program. Dallas, Tex: Dallas Independent School District, Division of Evaluation and Accountability; 2003.

B. DeSocio and Hootman, 2004 (re: Counseling, Psychological and Social Services)

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