

ASSOCIATIONS BETWEEN ADOLESCENT HEALTH RISK BEHAVIORS OR
PROTECTIVE FACTORS AND SCHOOL ATTENDANCE IN THREE SOUTH
AMERICAN NATIONS

by

WILLIAM H. POTTS-DATEMA

(Under the Direction of Nathan Hansen)

ABSTRACT

Around the world, health and education outcomes are recognized by the field of public health as two of the most important measures of the development of nations and the well-being of their populations. Risk and protective factors can have important influences on school attendance and resulting completion of studies. The purpose of this exploratory study is to determine associations between health risk behaviors and protective factors and student attendance in school in nations where these relationships have not yet been well described. The countries of interest include Argentina, Bolivia, and Peru. The data sources are the Global School-based Student Health Survey (GSHS) administrations held in 2010 (Peru) and 2012 (Argentina and Bolivia). The outcome variable is missing school without permission 3 or more days during the past 30 days. Seventeen independent risk factors and 11 protective factors met analysis criteria. Phi coefficient correlations and logistic regression were employed to determine associations. Data analyses for each country revealed important associations between risk and protective factors and missing

school 3 or more times during the past 30 days. While individual independent variables were not strongly correlated with the outcome variable when measured with the Phi coefficient correlation method, a large majority displayed some relationship. These relationships were typically oriented in expected directions, as risk variables appeared to contribute to missing school 3 or more times during the past 30 days while protective factors negatively influenced absences. Logistic regression analyses for Argentina and Peru revealed a large number of risk and protective factors that independently affected the outcome variable. Bolivia's data yielded only three risk factors and two protective variables that met both tests of significance. Results offer numerous options for policy and practice intervention and further research. Leveraging the school (institutions and organizations), community, and structures and systems levels of the Social Ecological Model can provide opportunities for interventions that will positively affect individual and interpersonal outcomes measured by the GSHS. Policy and practice initiatives in school systems can be sparked by an understanding of the importance and influence of risk and protective factors with youth.

INDEX WORDS: Health and student attendance, health and academic performance, school health, school attendance, adolescent health, adolescent risk behaviors, healthy schools, schools in Argentina, schools in Bolivia, schools in Peru.

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B.S.Ed., Missouri State University, 1981

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A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial
Fulfillment of the Requirements for the Degree

DOCTOR OF PUBLIC HEALTH

ATHENS, GEORGIA

2018

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DEDICATION

This work is dedicated to my wife, Susan Potts-Datema, and my children, Daniel Datema, Timothy Datema, Benjamin Datema, and Alexandra Broadstone. You are my favorite people, and life is only important with you in it.

This work is also dedicated to my parents. My father, Peter Datema, taught me the perseverance necessary to see this academic journey through to completion. My mother, Jo Anne Datema, instilled in me a value for education and self-improvement that continues to this day.

Finally, I wish to honor my in-laws, Rev. Earle and Ms. Joyce Potts, who have steadfastly supported my pursuit of this degree and my love of their daughter.

ACKNOWLEDGMENTS

I wish to acknowledge a number of individuals who have made important contributions to this work, my academic career, and my career in general.

First and foremost, my deepest gratitude to my dissertation committee members, without whom I could not successfully complete this process. Dr. Nathan Hansen, committee chair, has provided sage counsel, continuous support, and constructive criticism, all with a kind and generous approach. Dr. Joel Lee has been an inspiration and source of wisdom throughout my time in the Dr.P.H. program, and I am ever thankful for his guidance and friendship. Dr. Juliet Sekandi has blessed me with her kind spirit, insight of global health, and warm approach to strengthening my work. Finally, Dr. Trina Anglin continues to be a highly valued mentor and dear friend as she has been for the past 20 years of my career. Her insightful guidance continues to be a vital source of inspiration. I could not have found a better chair or committee.

My understanding of the fields of public health and education has been immeasurably strengthened by each of my professors. Many thanks to faculty members who presented and supervised courses in which I participated: From the University of Georgia College of Public Health, Dr. Amanda Abraham, Dr. Neil Chumbler, Dr. Phaedra Corso, Dr. Carol Cotton, Dr. Karen Hilyard, Dr. Hanwen Huang, Dr. Jayani Jayawardhana, Dr. Joel Lee, Dr. Changwei Li, Dr. Donald Lloyd, Mr. Mike Martin, and Dr. Ye Shen; from the University of Georgia College of Education, Dr. John Dayton, Dr. Elizabeth DeBray, and Dr. Sheneka Williams; and from Georgia State University, Dr.

Stuart Shalat and Dr. Colin Smith. I am thankful for the knowledge, skill, and wisdom each of you brought to class. Many thanks also to my CDC colleague Dr. Patricia Dietz for her terrific advice and guidance during my residency project and to Ms. Nina Cleveland for her invaluable assistance with the residency process.

Colleague students have steadfastly supported me through the program and this work. My Dr.P.H. cohort colleagues, Dr. Chryston Jones, Dr. Robert Kakaire, Dr. Nolana Woolfork, and soon-to-be-Dr. Sherri Livingstone have been sources of camaraderie, insight, laughter, and friendship throughout. Soon-to-be-Dr. Leticia Davila has been an important study partner and friend. Dr. George Khalil continues to provide wise counsel as a valued colleague at CDC. Other fellow students have contributed in large and small ways to my pursuit of this degree, and I am deeply thankful to and for each of you.

I greatly appreciate the support of my current and previous supervisors at CDC, including Dr. Kathleen Ethier, Dr. John Moore, Dr. Howell Wechsler, and Dr. Stephanie Zaza, for their flexibility with my work schedule and support of my drive to continuously improve my skills. Dr. Wechsler's counsel, encouragement, and friendship were particularly important as I considered the opportunity to reenter graduate school. I am especially grateful for my management team, including Mr. John Canfield, Ms. Elizabeth Haller, Ms. Malaika Washington, and previously, Ms. Carmen Ashley, and the other members of our branch for their support, assistance, and flexibility. In my previous position at the Harvard School of Public Health and in the years since, Dr. Charles Deutsch has been a cherished mentor and friend. His guidance, wisdom, and support were critical to my pursuit of this degree.

I also wish to thank many other mentors, supporters, and cheerleaders throughout my career for their continued support, including Dr. Diane Allensworth, Dr. John Allensworth, Ms. Elaine Auld, Dr. Kymm Ballard, Dr. David Birch, Mr. Jim Bogden, Dr. Kelli McCormack Brown, the late Mr. George Buckler, Mr. David Byrum, Ms. Roberta Byrum, Mr. David Caffey, Dr. Bill Cheek, Ms. Deborah Christopher, Dr. Jeff Clark, Ms. Karen Cottrell, Dr. Randy Cottrell, Dr. Thomas Davis, Dr. Hazel Dean, Dr. Dixie Dennis, Dr. Steve Dorman, Ms. Mary Doyen, Ms. Donna Duffy, Dr. Bonnie Edmondson, the late Dr. Mildred Fortner, Dr. Susan Wooley Goekler, Dr. Steven Gortmaker, the late Ms. Brenda Z. Greene, Ms. Darcy Steinberg Hastings, Mr. Russ Henke, Ms. Nora Howley, Ms. Holly Hunt, Mr. Pete Hunt, Dr. Everett Isaacs, the late Dr. Aaron Josephson, Dr. Laura Kann, Dr. Lloyd Kolbe, Mme. Marie-Claude Lamarre, Ms. Mary Sue Lancaster, Ms. Theresa Lewallen, Dr. David Lohrmann, Dr. Adrian Lyde, Ms. Linda Lysoby, Ms. Rose Marie Matulionis, the late Ms. Sandy Nichols Mazzocco, Mr. Douglas McCall, the late Mr. Simon McNeely, Dr. Fran Meyer, Ms. Mae Morris, Ms. Linda Morse, Ms. Hazel Morton, Ms. Sharon Murray, Ms. Beth Patterson, Dr. Ernest Purkey, Ms. Janet Ray, Mr. John Ray, Ms. Marilyn Rice, Ms. Dolores Richardson, Ms. Elizabeth Walker Romero, Mr. Joe Rozell, Dr. David Satcher, Dr. Rob Simmons, Dr. Becky Smith, Mr. Ralph Smith, Dr. Caile Spear, Ms. Beth Stevenson, Dr. John Stevenson, Dr. Howard Taras, Dr. Susan Telljohann, the late Dr. Mark Temple, Dr. Donna Videto, Ms. Anna Weselak, Dr. Margo Wootan, Mr. Ian Young, and Dr. Judy Young. I continue to learn from each of you every day.

Finally, I most wish to acknowledge my wife, companion, study partner, research associate, and chief constructive critic Susan Potts-Datema, who has served in all of those

roles while pursuing her own Doctor of Education degree. You're the best, and I could not ask for more.

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CHAPTER 1

INTRODUCTION

Around the world, health and education outcomes are recognized by the field of public health as two of the most important measures of the development of nations and the well-being of their populations. Member nations of the United Nations recognize health and education as critical Sustainable Development Goals (SDG) to achieve the Sustainable Development Agenda by 2030 (United Nations, 2017):

- Goal 3: Good health and well-being: Ensure healthy lives and promote well-being for all at all ages.
- Goal 4: Quality education: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

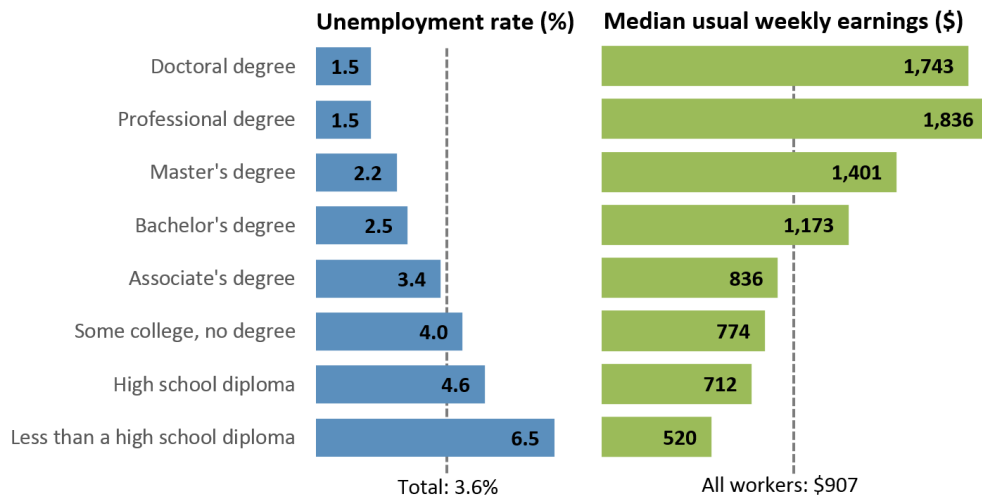
Wide acceptance of education as a social determinant of health provides opportunities to engage the education community as partners. The World Health Organization (WHO) views partnerships with education as an opportunity to “leverag(e) intersectoral action to improve health and achieve multiple other SDG targets” (World Health Organization, 2017d).

Education levels in societies have a profound effect on public health. Numerous studies have described various strong effects that education can have on population health (Baker, Leon, Smith Greenaway, Collins, & Movit, 2011; Zimmerman, Woolf, & Haley, 2015). The level of added mortality within the United States’ population that can be

attributed to low education is similar in magnitude to the difference caused by individuals being current smokers rather than former smokers (Krueger, Tran, Hummer, & Chang, 2015). High school graduation is so important as a public health marker that it is included as a Social Determinants Leading Health Indicator in Healthy People 2020 (U.S. Department of Health and Human Services, 2018). As noted in Figure 1, the impact of education on an individual’s chances of unemployment and median usual weekly earnings in the United States is substantial (U.S. Bureau of Labor Statistics, 2018). Those without a high school diploma are more likely to live in poverty.

Figure 1

Unemployment rates and earnings by educational attainment, 2017



Note: Data are for persons age 25 and over. Earnings are for full-time wage and salary workers.
 Source: U.S. Bureau of Labor Statistics, Current Population Survey.

Chronic absenteeism, defined by the U.S. Department of Education as “missing at least ten percent of school days in the school year, or a month or more of school, excused or unexcused”, is highly correlated with students dropping out of school and a primary cause of low achievement (U.S. Department of Education, 2016). Chronic absenteeism

puts students at significant risk of falling behind and not graduating from high school. Analyses of freshman student records in the Chicago Public Schools system found that those students who missed a month or more of classes in a semester had less than a 10% chance of graduating, and that missing even one or two weeks during a semester led to a substantially reduced probability of graduating (Allensworth & Easton, 2007). The problem of chronic absenteeism led to the development of the “Every School, Every Day” campaign by the U.S. Department of Education in 2016.

Truancy, or missing school without permission, is an important contributor to chronic absenteeism and related negative outcomes. Researchers analyzing data from the 2009 National Survey on Drug Use and Health found that skipping school was highly associated with an increased likelihood of less parental involvement and engagement, externalizing behaviors, and lower school grades (Vaughn, Maynard, Salas-Wright, Perron, & Abdon, 2013). Truancy has been associated with a number of negative behaviors and mental health issues that can affect current and future health including delinquency, substance use, and failure to persist to graduation. Students who drop out of school are more likely to be nicotine dependent, use cigarettes daily, report suicide attempts during the past year, and be arrested compared to their counterparts who graduated (Maynard, Salas-Wright, & Vaughn, 2015).

The vast numbers of youth attending schools also make them critical settings for health promotion and disease prevention efforts. More than 50 million students are in schools in the United States for at least 6 hours a day during 13 highly important years of their social, physical, and intellectual development (National Center for Education

Statistics, 2011). By comparison, among 28 countries in Europe in 2013, 28.3 million students were enrolled in primary school (European Union, February 1, 2016) and 41.6 million students were enrolled in secondary school (European Union, February 26, 2016). In 2009, almost 90% of 17-year-old Europeans were still in education, and post-compulsory participation rates in education have improved or remained stable during the last ten years (Education, Audiovisual, and Culture Executive Agency of the European Union, 2012). After the family home, schools are one of the primary entities responsible for the development of young people.

Adolescence is a critical period for public health intervention. It is far easier and more effective to establish healthy behaviors during childhood and adolescence than it is to change unhealthy behaviors during adulthood (Institute of Medicine, 1997). Risk and protective factors have been shown to have critically important links to health outcomes. For example, the risk for substance abuse and other adverse behaviors increases as the number of risk factors increases, and protective factors may reduce the risk of youth engaging in substance use that can lead to substance abuse (United States Government, 2018a). Environmental protective factors such as family support and monitoring; caring adults; positive peer groups; strong sense of self, self-esteem, and future aspirations; and engagement in school and community activities contribute to “resiliency,” the ability of young people to overcome adversity (United States Government, 2018b). Schools can influence students’ likelihood of risk of a multitude of conditions through a variety of approaches, including health education and physical education, nutrition services, physical and mental health services, and creating safe and supportive environments that

provide social and emotional support to young people, among other initiatives (Allensworth D. D., 1987; Marx, Wooley, & Northrop, 1998).

Identifying associations between public health and education outcomes can strengthen efforts to positively impact the development of adolescents and foster partnerships between the fields. Subsequent collective action could lead to multiplicative positive effects for children and adolescents and intensify the impact of both fields.

Purpose of This Study

Broadly, the purpose of this study is to determine associations between health risk behaviors and protective factors and student attendance in school in nations where these relationships have not yet been well described. My original research interest focused on similar health-related factors and their association to academic performance in school. However, data are highly limited regarding health factors and academic performance outside of the United States, Canada, and Western Europe. The data source for this work, the Global School-based Student Health Survey (GSHS), includes data on both academic performance and student attendance. However, the set of standard GSHS questions that countries use to gather academic achievement data are seldom administered. For example, Indonesia used these questions during its 2015 GSHS administration, however, data are not yet available.

School attendance and chronic absenteeism are good surrogate measures for academic performance and interesting in their own right. Education policymakers and school administrators are often influenced by research indicating relationships among health-related risk and protective factors and attendance and chronic absenteeism. As

previously noted, the United States Department of Education defines chronic absenteeism as missing 10% or 15 or more school days during an academic year and notes that students that do so are at serious risk of falling behind in school (U.S. Department of Education, 2016). The United States Departments of Education, Health and Human Services, Housing and Urban Development, and Justice joined together to support the “Every Student, Every Day” initiative to stem chronic absenteeism and developed joint resources to help communities address these issues (U.S. Departments of Education, Health and Human Services, Housing and Urban Development, and Justice, 2015). Data are available from the GSHS in some countries that may be utilized to quantify associations to absenteeism.

Background on Data Source

The World Health Organization conducts the GSHS in collaboration with UNICEF, UNESCO, and UNAIDS of the United Nations with technical assistance provided by CDC (CDC, 2016). The purpose of the GSHS (World Health Organization, 2017b) is to “provide accurate data on health behaviours and protective factors among students to:

- Help countries develop priorities, establish programmes, and advocate for resources for school health and youth health programmes and policies;
- Allow international agencies, countries, and others to make comparisons across countries regarding the prevalence of health behaviours and protective factors, and

- Establish trends in the prevalence of health behaviours and protective factors by country for use in evaluation of school health and youth health promotion.”

The GSHS is administered in schools to students ages 13-17, though the age range within those parameters varies by country. Students participate anonymously. As of December 2013, 94 countries had completed a GSHS (CDC, n.d.). Administrations are periodic and do not follow a set schedule.

Critical Variables and Countries of Interest

In the United States, health risk behaviors have been used as critical variables in national surveillance efforts for over 25 years. These critical variables have been used in data collection for the YRBS since 1991, and they influenced the development and implementation of the GSHS.

The GSHS addresses each of the health risk behaviors measured in the YRBS, adding hygiene, mental health, and protective factors. Core GSHS questions are provided in modules related to risk and protective factors (World Health Organization, 2017b). Countries may choose to select whole modules or individual questions from modules. Three optional items related to academic performance are included in the expanded core question sets, though they have been seldom used, and data are not often available. However, data are more widely available on school attendance and chronic absenteeism. These indicators are important variables that can have a critical influence on the academic performance of students.

For this study, countries were selected using the following criteria:

- The country is located in South America
- Administration of the GSHS occurred during the past ten years
- The administration was national in scope
- Data were available on health risk behaviors, protective factors, and school attendance
- Data were publicly available
- The sample size was large enough, and the response rate was high enough to allow data to be representative of the nation

Several countries' administrations were excluded. Ecuador (2007, three cities) collected relevant data, but its survey was not national in scope. Venezuela (2003, national) also collected relevant data, though its survey was administered over ten years ago. Chile (2012, national) and Colombia (2006, five cities) did not collect data on absenteeism, mental health, or protective factors. Paraguay (2017, national) collected relevant data, but they are not yet available. Data may also be available for Uruguay, though they appeared to be misplaced on the GSHS web site.

Among South American nations, Argentina (2012 national administration), Bolivia (2012 national), and Peru (2010 national) met all criteria. Each country has collected data on the following variable modules, among others, during at least one GSHS administration in the last ten years:

- Absenteeism
- Alcohol use

- Drug use
- Mental health
- Protective factors
- Sexual behaviors
- Tobacco use
- Violence and unintentional injuries

Therefore, the focus of this work is three South American nations – Argentina, Bolivia, and Peru – who have each completed an extensive and national Global School-based Student Health Survey (GSHS) assessing adolescent health risk behaviors and attendance in school.

Research Questions

Specifically, this study considers two questions:

1. What health risk factors are associated with student absenteeism in Argentina, Bolivia, and Peru?

Aim: To determine which health risk behavior factors are associated with decreased school attendance and which appear to have little or no effect.

- Hypothesis: Health risk behaviors such as those related to alcohol use, drug use, mental health, sexual behaviors, tobacco use, and violence and unintentional injury are positively associated with missing classes or school without permission on 3 or more days during the past 30 days.
2. What protective factors are associated with student attendance in school in Argentina, Bolivia, and Peru?

Aim: To determine which protective factors are associated with improved school attendance and which appear to have little or no effect.

- Hypothesis: Protective factors such as parental and fellow student support and healthy behaviors related to diet, hygiene, and physical activity are negatively associated with missing classes or school without permission on 3 or more days during the past 30 days.

Methodological approaches to examine these research questions are addressed in Chapter 3.

Innovation

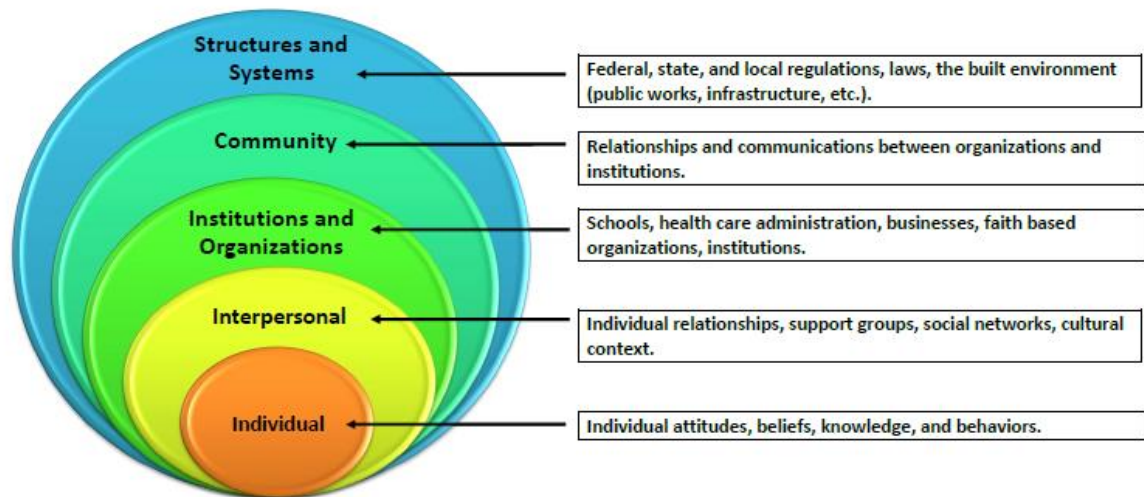
While associations between health risk behaviors and outcomes related to education have been well-described in the United States and Europe, such efforts have not been undertaken in nations in South America. WHO provides country-level reports to each nation that completes a GSHS, however, those reports provide descriptive data of question responses without analysis across variables. This study proposes to analyze associations between variables that are not available through the country-level reports or other means. Because of its innovative approach, this work is largely exploratory.

Social Context and Theoretical Framework

Social context is critical to understand when considering factors affecting health and education. The Social Ecological Model (Figure 1) organizes the many influences that affect health-related behavior into a framework that effectively communicates relationships between individuals and their environments (CDC Division of Nutrition and Physical Activity, 2017). While the focus of this study is factors at the individual and

interpersonal levels, these behaviors are manifest within the environment provided by the school (institutions and organizations), community, and structures and systems levels. Interventions at those levels provide opportunities to improve individual and interpersonal risk and protective factors.

Figure 2



The Social Ecological Model

Source: CDC, <https://www.cdc.gov/nccdphp/dnpao/state-local-programs/health-equity/pdf/toolkit.pdf>

Following are descriptions of key social contextual factors in each of the nations of interest that influence both fields and affect adolescents' ability to transition into healthy and successful adulthood.

Argentina

Argentina (Central Intelligence Agency, 2017a) is the 33rd most populous nation in the world with an estimated 2016 population of 43,886,748. However, it is the second largest country in South America, and its land mass is the 8th largest in the world. Population distribution is centered in the northern and central regions of the country, with the southern region sparsely populated. One-third of Argentina's population lives in its capital, Buenos Aires. Argentina makes up most of the southern "cone" of South America.

European immigration has largely influenced Argentina's culture. Spanish is the primary language. The population is overwhelmingly white (97%) and Roman Catholic (92%, though fewer than 20% of the population are practicing). Most migration is from other nations in the region. The education system is well developed. Argentina's literacy rate (98.1%) and primary school enrollment are very high, though secondary school completion is lower, with variations by region and socioeconomic conditions. Recent birth and death rates and life expectancy of 77.1 years are in the average range among nations. Leading causes of death are similar to other developing nations, with noncommunicable diseases exerting an ever-increasing role. Ischemic heart disease, stroke, lower respiratory infections, chronic obstructive pulmonary disease (COPD), lung and associated cancers, and diabetes are the top causes of death (in descending order) (World Health Organization, 2015a). Zika virus infection is an emerging threat in the region.

While Argentina has a democratic government, political upheaval has been relatively consistent throughout its history. Military juntas have ruled the nation at various times during the past century. Juan Peron and, later, his wife Isabel, famously ruled Argentina in parts of the 1940s, 1950s, and 1970s. The party he formed continues to be highly influential in the country's political structure. The Argentine constitution has been revised many times, though the primary document has ostensibly been in force since 1853.

The Argentine economy is well known for significant and persistent inflation (42.8% in 2016) and sporadic and sometimes erratic growth. The country suffered its most severe depression in 2001, causing a political and social crisis. However, because of a larger than usual cohort of citizens aged 15-24 – the largest in Argentina's history – the Central Intelligence Agency anticipates an economic boost in the next few decades. New President Mauricio Macri has attended to many economic and political issues in his first year that appear to be turning some economic indicators in favorable directions (O'Neil, 2017). Argentina also suffers from some environmental issues typical of industrializing economies including air and water pollution in urban areas. Education and health services have often been negatively affected by the rise of public debt and efforts to contain it.

Bolivia

Bolivia (Central Intelligence Agency, 2017b) is a landlocked nation in the west-center portion of South America. Its area is about three times the size of the U.S. state of Montana, though its population is only 10.9 million people. Therefore, population density outside of the capital of La Paz is not high. Most towns are located in the Andes

Mountains in the west of Bolivia, with little settlement in the Amazon River basin in the eastern region.

Two-thirds of Bolivians are mestizo (mixed white and Amerindian) and 20% are indigenous peoples. Spanish is the dominant language, though all indigenous languages are considered official languages as well. Roman Catholicism is the primary religion, with 76.8% of the population described as Catholic. The education system produces lower results than more developed nations in South America. While literacy is reasonably high at 95.7%, disparities exist among males and females. The average number of likely years of schooling, known as school “life expectancy,” is mediocre at 14 years. Birth and death rates are in the median range for nations, though the life expectancy rate is lower than normal at 69.2 years. Leading causes of death, in order, are ischemic heart disease, lower respiratory infections, stroke, diabetes, kidney diseases, and cirrhosis of the liver (World Health Organization, 2015b).

Political strife has marked most of Bolivia’s history since its independence from Spain in 1825. The country has maintained an unstable democracy for most years since 1982. However, current president Evo Morales has been in power since 2005, being reelected with high popular vote margins twice (2009 and 2014). Morales has continued a central policy to empower the impoverished. The political system appears to be reasonably stable for the first time in several decades.

Bolivia is one of the least well-developed countries in Latin America. Most of Bolivia’s economy is tied to the natural gas industry. Over half of its government’s budget is dependent on royalties and taxes from this industry. However, natural gas

caused Bolivia's growth rate to skyrocket to the highest in South America in 2009. Growth has continued at an average of 5.3% since that year. However, the country continues to face numerous challenges related to deep-seated poverty, continued social unrest, illegal drug production, and other important concerns. Income inequality is among the highest rates of nations of the world. Among Latin American countries, Bolivia ranks at or near the bottom for several indicators related to education, health, poverty, and general social development.

Peru

Peru's (Central Intelligence Agency, 2017c) history dates over hundreds of years to the Inca Empire. Situated in the west-central area of South America, primarily in the Andes Mountains, its area covers more than twice the size of the state of Texas. About half of the total population of 30.7 million people resides in the Andes highlands with about a third living in the coastal plains, primarily in the capital of Lima.

Peru's culture is heavily anchored to its history as the seat of the Inca Empire. The population is 45% Amerindian and 37% mestizo with other races in significant minority. Peru has experienced significant immigration from China and Japan during its history, and their descendants are influential in modern culture. Spanish is the official language with other regional languages also recognized. The education system is not strong, and achievement and dropout due to poverty are continuing concerns. Young people often leave the educational system to work and support their families. Birth and death rates and life expectancy are in the median range among nations. Leading causes of death are lower

respiratory infections, ischemic heart disease, stroke, cirrhosis of the liver, road injury, and kidney diseases (World Health Organization, 2015c)

After independence from Spain in 1821, Peru experienced several political upheavals and regime changes. Violent conflicts marred much of the 20th century. Guerrilla forces continued to destabilize many parts of the nation after democracy was restored in 1980. However, a series of democratically elected presidents have essentially stabilized the political environment. Perhaps indicative of this is the peaceful runoff election held in June 2016, won by Pedro Pablo Kuczynski (popularly known as “PPK”).

Under President Alberto Fujimori, the economy improved dramatically in the 1990s. After a period of stagnant growth in the early 2000s, Peru has rebounded to become one of the fastest growing and best-performing economies in Latin America. Urban and coastal areas are experiencing more rapid growth than the interior highlands. The past ten years have seen a lowering of the poverty rate, though it remains high at 30% overall and more than 55% in rural areas.

Contextual Influence

The three South American nations considered in this work share several cultural, political, and economic factors that influence health risk behaviors and academic performance for adolescents as well as the health of the nations at large.

All three nations have histories of unstable democracies, conflict, and social unrest during their recent histories. While political structures appear to be stabilizing in all three nations, all three countries appear to have somewhat insecure holds on sustained

democracy. In particular, the potential reappearance of armed conflict in Peru threatens to destabilize its growth and stability.

Poverty is a key issue, particularly in the Andean nations of Bolivia and Peru, though also in Argentina. Wide disparities in economic condition exist for the populations in each country, and income inequality is a consistent and perhaps, increasing concern. Educational systems are not strong in the Andean nations. Catholicism is a key cultural influence in all three nations, which may affect the ability of public health agencies to address sexual health issues.

Economic conditions appear to be improving rapidly in Bolivia and Peru, though the dependence on one primary source of industry and government financing is perhaps unsustainable. Continued high inflation drags Argentina's ability to prosper. Economic policies in all three countries appear to inhibit sustained growth.

Significance

Contributing to the evidence base that reveals and describes links between health and academic performance can have profound effects on policy and program development in nations. The growth of school health programs and support for them in the United States and Europe provide illustrative examples.

United States

As evidence began to build in the United States, health and educational leaders increasingly recognized and promoted connections between health and academic performance. A new "Comprehensive School Health" model was invented describing

how health-related initiatives could be best organized in schools (Allensworth D. D., 1987). The Centers for Disease Control and Prevention created an office to address health through schools in the early 1980's that led to the development of a formal structure, the Division of Adolescent and School Health (CDC-DASH), in 1988 (CDC, 2016). Surgeons General since Dr. Antonia Novello in the George H. W. Bush administration have recognized the importance of these links (Novello, 1992). Leading education policy organizations began releasing statements and guidance recognizing the importance of health for academic performance beginning in the early 1990s, led by publication of "Beyond the Health Room" by the Council of Chief State School Officers (Dunkle, M. C. & Nash, M. A., 1991). Many remain in force (Council of Chief State School Officers, 2004; American Association of School Administrators, 2008; ASCD, 2012; National School Boards Association, 2016).

CDC began publishing a series of influential evidence-based guidelines documents to inform the development of school health interventions, including guidelines for preventing tobacco use and addiction, promoting lifelong healthy eating and physical activity, and preventing unintentional injuries and violence (CDC, 1994; 1996; 1997; 2001). Several school-based policies and practices were recommended by the Community Preventive Services Task Force as effective in reducing risk behaviors (Elder, 2005; Community Preventive Services Task Force, 2009; 2013a; 2013b). CDC released tools to assist schools in their work to develop policies and programs, including the School Health Index (CDC, 2012; 2015; 2016). Surveillance work at CDC was expanded to include biennial School Health Profiles (CDC, 2015) and the periodic School Health Policies and Practices Study (CDC, 2015).

Momentum built from these activities, leading to the formation of two large-scale partnerships of health and education organizations (Potts-Datema, et al., 2005). The National Coordinating Committee on School Health and Safety began meeting regularly in 1997 and now includes over 80 national non-governmental organizations and six federal agencies as members. The Friends of School Health advocacy coalition formed in 1999 to advance school health programs and expand resources. Under its current name, the Student Health Advocacy Coalition, 35 national nongovernmental organizations advocate for school health programs.

Two additional influential publications sparked increasing interest in these connections. The Institute of Medicine of the National Academies of Sciences, Engineering, and Medicine released *Schools and Health: Our Nation's Investment*, which became a call to action to focus on health in schools (Institute of Medicine, 1997). Teachers College Press published *Health is Academic: A Guide to Coordinated School Health Programs* (Marx E. W., 1998), addressing the eight components of a school district program: health education; physical education; school health services; nutrition services; counseling, psychological, and social services; healthy school environment; school-site health promotion for staff; and family/community involvement. *Health is Academic* included contributions from over 70 leading health and education professional associations.

National non-governmental organizations continued their work to shed light on evidence of links between health and academic performance. The National Association of State Boards of Education published a series of policy documents directed to

policymakers and opinion leaders entitled, “Fit, Healthy, and Ready to Learn” (National Association of State Boards of Education, 2000). The Association of State and Territorial Health Officials and Society of State Directors of Health, Physical Education, and Recreation were the first organizations to gather peer-reviewed publications addressing these connections in a widely-disseminated presentation funded by CDC-DASH, “Health and Academic Achievement” (2002). The American Cancer Society accepted leadership for disseminating school health councils nationwide and developed a guide to do so (American Cancer Society, 2003).

In 2007, the largest education organization in the United States that is not a teachers’ union, ASCD (formerly, the Association for Supervision and Curriculum Development), created the Whole Child model to build awareness and support for approaches that address both education and health to build students’ ability to achieve (ASCD, 2015a). ASCD described its work as “an effort to change the conversation about education from a focus on narrowly defined academic achievement to one that promotes the long-term development and success of children.” ASCD is continuing to lead efforts to strengthen “whole child” approaches to education through policy and practice (ASCD, 2017a).

Finally, two important recent events have built momentum to engage education and public health as partners. First, federal education legislation was directly and substantially influenced by Congressional recognition of the importance of health and mental health for learning. The “Every Student Succeeds Act” (ESSA) became the most recent iteration of the Elementary and Secondary Education Act (ESEA) upon its passage

in December 2015 (U.S. Department of Education, 2017). As the framework for federal engagement in education, ESSA is the most important statement of national education policy in the United States. During the development of ESSA, many major national education and public health organizations pushed for an increased emphasis on learning supports, including health. This work resulted in two important outcomes: 1) inclusion of health education and physical education among 18 subjects comprising the definition of a “well-rounded education,” and 2) authorization of significant federal financial resources for subjects included in that definition, pending budget appropriations. Other provisions in ESSA focus on chronic absenteeism, which often has roots in health-related issues. State and local education agencies will collect data and report on chronic absenteeism. They will also provide professional development to faculty and staff on issues related to chronic absenteeism including management of chronic conditions such as asthma and diabetes.

Second, for the first time since the development of the Comprehensive School Health (later, Coordinated School Health) model in 1987, a new framework was developed to engage both education and public health. Released in 2014, the Whole School, Whole Community, Whole Child (WSCC) model (Figure 1) was developed through a partnership between ASCD and CDC (Lewallen, Hunt, Potts-Datema, Zaza, & Giles, 2015). The WSCC approach “responds to calls from the education, public health, and school health sectors for greater alignment, integration, and collaboration to improve each child’s cognitive, physical, social, and emotional development.” The WSCC focuses on the child to align the common goals of both sectors (ASCD, 2017b). To date, it has been adopted in 26 states and used by at least 70 school districts (ASCD, 2017a).

Education International, a major global federation of education unions based in Brussels, Belgium, recently endorsed the whole child approach as part of its promotion of education as a stand-alone goal as part of the 2030 Sustainable Development Goals (Education International, 2016).

Figure 3



The Whole School, Whole Community, Whole Child Model

Source: ASCD, <http://www.ascd.org/programs/learning-and-health/wsc-model.aspx>

Europe

The importance of the evidence documenting positive effects on youth health behaviors and outcomes and connections between health and academic performance has led to the development of “health-promoting schools” initiatives in Europe. The foundation for all of these initiatives is the Ottawa Charter for Health Promotion (World Health Organization, 1986). These programs contribute to the implementation of health strategies of the European Union (Commission of the European Communities, 2007).

In 1995, the WHO embarked on a global school health initiative designed to “mobilise and strengthen health promotion and education activities at the local, national, regional and global levels” (World Health Organization, 2016a). The goal of the initiative is to “increase the number of schools that can truly be called ‘Health-Promoting Schools’.” Four strategies are engaged: 1) research to improve school health programmes, 2) building capacity to advocate for improved school health programmes, 3) strengthening national capacities, and 4) creating networks and alliances for the development of health-promoting schools. WHO added questions related to education in its influential “Health Behaviour in School-aged Children” collaborative cross-national study (World Health Organization, 2016b). However, the data presented are descriptive of social context. Associations were not drawn with health behaviors or outcomes.

At the World Education Forum in Dakar, Senegal in 2000, an informal global partnership of NGOs and WHO, UNESCO, UNICEF, and the World Bank was formed with the mission of “promoting the educational success, health, and development of school-age children and adolescents through schools” (FRESH, 2017a). Originally named

the “Focusing Resources on Effective School Health” or FRESH partnership, it currently maintains a coordinating committee of 21 organizational partners. FRESH has released a framework and several resources designed to strengthen school health programs, including “Monitoring and Evaluation Guidance for School Health Programs.” Its work is designed to support collaboration across sectors to achieve the Sustainable Development Goals for 2030 of the United Nations (FRESH, 2017b).

Building from the work of the WHO, the International Union for Health Promotion and Education (IUHPE) established six essential elements of health-promoting schools: healthy school policies, the school’s physical environment, the school’s social environment, individual health skills and action competencies, community links, and health services (International Union for Health Promotion and Education, n.d.). IUHPE listed the following nine elements as necessary to start a health-promoting school:

- Developing a supportive government/local authority policy for health-promoting schools
- Achieving administrative and senior management support
- Creating a small group who is actively engaged in leading and coordinating actions including teachers, non-teaching staff, students, parents, and community members
- Conducting an audit of current health-promoting actions according to the six essential elements
- Establishing agreed goals and a strategy to achieve them
- Developing a Health Promoting School Charter

- Ensuring appropriate staff and community partners undertake capacity building programmes and that they have opportunities to put their skills into practice
- Celebrating milestones
- Allowing 3-4 years to complete specific goals

The IUHPE document also provides factors crucial to sustainability, issues that can inhibit development, and tips for successful implementation.

An international NGO based in Canada, the International School Health Network (ISHN), was founded in 2004 as an informal international network of organizations, researchers, government officials, and others that “shares information and promotes collaboration to support the health, safety, learning, social development, and environmental citizenship of young people through effective school-based and school-linked programs, policies and practices” (International School Health Network, 2017; McCall, 2018). Based on a review of over 25 multi-component approaches such as Health Promoting Schools, Child-Friendly Schools, and others, the ISHN has identified these principles or strategies as being common to all of these published and widely used approaches (International School Health Network, 2015):

1. Address the needs of the whole child in a positive, principled values-based approach over the life course. Truly understand the strengths/assets of young people and the health, social and economic problems that will challenge as well as the influence of the school on those assets and problems.
2. Serve all children, especially vulnerable children, families, and communities.

3. Understand the context.
4. Use multiple, evidence-based and experience-tested interventions in several domains (policy, instruction, services, social & physical environment) within a defined or coordinated set of multi-system, multi-level comprehensive approaches, coordinated agency-school programs or whole school strategies.
5. Strive towards a comprehensive multi-level, multi-system approach, a coordinated agency-school district program or whole school strategy while addressing specific problems and implementing specific programs.
6. Coordinate multiple programs, services, and policies.
7. Identify the local mechanisms (and) drivers of change, implementation, and sustainability and make use of evidence-based implementation strategies.
8. Seek congruence with (the) education mandate, constraints, customs, professional norms and essential procedures.
9. Build baseline and operational capacity at all levels in the multiple systems that need to engage with school health promotion, social development, safety and the environment.
10. Use a strategic approach to system characteristics and organizational cultures.

ISHN also partnered with ASCD and Education International (representing teachers worldwide) to develop and promote a “Statement for the Integration of Health and Education” (ASCD, 2015b), which invites health and other sectors to integrate their work more effectively within education systems by acting in four areas. One of these areas suggests that health systems adopt educational goals as part of their own mandates in a manner similar to the call from the health sector that asks all sectors to adopt "Health in

All Policies." As of January 2018, over 40 NGOs and over 40 school health leaders were listed as signatories (ASCD, 2018).

Organizational models in school health promotion have evolved in different parts of the world that reflect this broader view of health and the need for more effective partnerships with the education system. Two examples currently employed in Europe and Canada are profiled below as illustrations.

The Health Promoting Schools Model

Generally, within the European region, a health-promoting school is considered to be one that “implements a structured and systematic plan for the health, well-being and the development of social capital of all pupils and of teaching and non-teaching staff” (Schools for Health in Europe, 2013b). While the title can be used generically, within the Schools for Health in Europe (SHE) network, five core values are necessary for consideration as a health-promoting school, including equity, sustainability, inclusion, empowerment, and democracy. Five pillars are also required:

- Whole school approach to health. Combine health education in the classroom with the development of school policies, the school environment, life competencies and involving the whole school community.
- Participation. A sense of ownership by students, staff, and parent.
- School quality. Health promoting schools create better teaching and learning processes and outcomes. Healthy pupils learn better, healthy staff work better.
- Evidence. Development of new approaches and practices based on existing and emerging research.

- School and community. Schools are seen as active agents for community development.

While reliable numbers of health-promoting schools are difficult to ascertain, the most recent survey of national coordinators in the 45 member nations of SHE indicated that at least 34,000 schools met health-promoting schools requirements in 26 responding countries. The percentage of health-promoting schools by nation varied widely. Between 2 and 10% of compulsory primary and secondary schools in Croatia, Austria, the Czech Republic, Denmark, Malta, and Poland reported meeting the requirements, while all secondary schools in Iceland and all primary and secondary schools in Portugal and Wales met the standard (Schools for Health in Europe, 2013b). Sixteen nations reported formal national policies addressing health-promoting schools.

The Good, Healthy Schools Model

The “Good, Healthy Schools” model has gained acceptance in its home of origin, Germany, and several other areas of Western Europe (Paulus, Alliance for sustainable school health and education, 2009). The definition of a good, healthy school is one that focuses on educational effects and achievements, quality development in the school and the classroom, and health education. The following are principles of a good, healthy school (Paulus, 2008a):

1. Internal and external networking/cooperation
2. Self-determination, participation, and empowerment
3. Salutogenesis (focusing on factors that support human health and well-being, rather than on factors that cause disease)

4. School program focusing on “education through health”
5. Holistic, ecological concept of health and its determinants
6. Sustainable initiatives for school development

The creators of this model believe that it differs from health-promoting schools in important ways. They feel that health-promoting schools are “school in the service of health” – a health focus – while good, healthy schools promote “health in the service of the school” – an education focus. Good, healthy schools focus on achievement of health promotion goals for students as part of the school’s educational tasks (Paulus, 2008b).

Summary

With the genesis of adult health behaviors rooted in childhood and adolescence, and because of the large numbers of young people enrolled in school, a focus on developing health-promoting schools has potential to be among the most important primary prevention strategies in public health. Advances in the United States and Europe are examples of continued and sustained efforts that may be possible in other nations as evidence builds in their regions. Illuminating links between health risk behaviors and outcomes related to education in South American countries can provide an impetus for future research and accelerate development of supportive policies and programs.

This introductory chapter has provided information about the study’s purpose, country selection, research questions, innovation, social context, contextual influence, and significance of the work. The following chapter will consider evidence development in the United States and other areas of the world through a review of relevant literature.

CHAPTER 2

LITERATURE REVIEW

The first section of this literature review will consider major milestones in the development of evidence on health and academic outcomes in the United States since the late 1980s. The second section will explore the current status of similar literature in other areas of the world.

The following selection criteria were used in the development of this review:

- 1) Published research included both health behaviors and academic achievement or performance.
- 2) The research was conducted with adolescents.
- 3) For research addressing other parts of the world aside from the United States, the article was published during the past five years and was available in English.
- 4) The journal in which the article was published is well-regarded. Doubt is noted where applicable.

A limitation of this review is that all research was conducted using the University of Georgia Libraries and Google Scholar search systems. While comprehensive, these systems may not retrieve some literature published only in overseas journals.

Evidence Development in the United States

In the United States, links between health and academic performance have been discussed in the literature for at least the past 30 years. Hundreds of articles have been developed on related topics. Therefore, this chapter will focus on milestone events and large-scale reviews.

The first proposed intervention system linking health and education was the Comprehensive School Health model, later modified to the Coordinated School Health model (Allensworth D. D., 1987). This model became the foundation for school health programs designed to impact not only student health but academic performance as well. Using this model as a charge, the Centers for Disease Control and Prevention (CDC) formed a Division of Adolescent and School Health (DASH) in 1988 that began funding state, territorial, tribal, and local education agencies to impact health and maintain surveillance systems (CDC, 2016). The strategy of funding education agencies represented an unusual and unique approach for the nation's public health agency. These advances led to substantially increased surveillance and research initiatives connecting health and education.

In 1990, CDC-DASH began development of the Youth Risk Behavior Surveillance System (YRBSS), which initiated data collection on six key health risk behaviors in 1991 (CDC, 2016). These risk behaviors include:

- Behaviors that contribute to unintentional injuries and violence
- Sexual behaviors related to unintended pregnancy and sexually transmitted infections, including HIV infection

- Alcohol and other drug use
- Tobacco use
- Unhealthy dietary behaviors
- Inadequate physical activity

Data have been collected and analyzed on a biennial schedule since that time, with the most recent administration occurring in the spring of 2017. In the 2015 administration, 47 states, 21 large cities, four U.S. territories, and two tribal governments participated (CDC, 2016). YRBSS results have been influential in policy development and school health program implementation throughout the United States. Hundreds of articles have been written using YRBSS data, though most analyze health risk behavior in relation to health outcomes.

In 2004, the National Coordinating Committee on School Health and Safety commissioned the first review articles in the United States that explored these connections. These articles explored associations between:

- Childhood asthma and student performance at school (Taras & Potts-Datema, 2005a)
- Chronic health conditions and student performance at school (Taras & Potts-Datema, 2005b)
- Nutrition and student performance at school (Taras, 2005a)
- Obesity and student performance at school (Taras & Potts-Datema, 2005c)
- Physical activity and student performance at school (Taras, 2005b)
- Sleep and student performance at school (Taras & Potts-Datema, 2005d)

These reviews described several associations related to student achievement and school attendance that merited consideration for further research. In some cases, too few articles were available to draw substantial conclusions, data quality was weak, or study designs did not allow for judgment of the strength of association. However, these reviews helped to stimulate research activity that provides stronger and clearer evidence of the relationship between health and academic performance.

In 2010, CDC-DASH analyzed data from the 2009 National Youth Risk Behavior Survey to determine associations between health risk behaviors and academic achievement among high school students after controlling for sex, race/ethnicity, and grade level. This analysis demonstrated that students with higher grades were significantly less likely during the past 30 days to carry a weapon, use cigarettes, drink alcohol, be sexually active, watch television 3 or more hours per day, and be physically active at least 60 minutes per day fewer than 5 days per week (CDC, 2010).

Dr. Charles Basch of Teachers College-Columbia University, the nation's oldest college of education, argued in a systematic review of previous research that many different, previously demonstrated as failed, strategies used by the field of education to improve academic achievement are likely to continue to be futile until addressing health-related barriers to learning is included as one of the fundamental components of school reform (Basch, 2010). A comprehensive and authoritative summary of this evidence was presented in a series of articles by Basch published in a supplement to the *Journal of School Health*, which delineated the causal pathways by which specific health problems are linked to critical educational risks and poor educational outcomes (Basch, 2011).

The Campaign for Educational Equity at Teachers College-Columbia University proposed that low-income, urban schools should focus their attention on addressing health problems that are the most important barriers to student academic achievement. The Campaign used three criteria, including prevalence and extent of health disparities, evidence of causal effects on educational outcomes, and feasibility of implementing proven or promising school-based programs and policies, to identify the following 7 most critical health priorities: vision; asthma; teen pregnancy; aggression and violence; physical activity; breakfast; and inattention and hyperactivity (Basch, 2010).

In 2012, Bradley and Greene reviewed 122 publications related to health and academic achievement in peer-reviewed journals using the following criteria (Bradley, 2013):

- 1) Study subjects were school-aged (6-18 years) children in the U.S. or Canada enrolled in school;
- 2) The article was published between 1985 and before 2011 (a 25-year span) in a peer-reviewed journal;
- 3) Research included at least one of the following educational outcomes: grade point average, academic grades in specific subjects, performance on standardized tests (in a variety of subjects such as math, reading, etc.), years of schooling completed, high school graduation or passing the General Educational Development Test, and grade-level retention;
- 4) The sample size was at least 100 students;

- 5) Relationships were reported to be statistically significant; and
- 6) Meta-analyses were excluded.

The review was conducted addressing at least one variable for health risk behavior (violence, tobacco use, alcohol and other drug use, sexual behaviors contributing to unintended pregnancy and sexually transmitted diseases, inadequate physical activity, and unhealthy dietary behaviors) and at least one related to educational performance (grade point average, academic grades in specific subjects, performance on standardized tests, years of schooling completed, high school graduation or passing the General Educational Development Test, and grade-level retention). The following results were reported:

- Violence: All 19 cross-sectional studies indicated, “students with higher academic performance ...were significantly less likely to engage in or be victims of violent behaviors, compared with those with poorer academic performance.” Thirteen of 14 longitudinal studies demonstrated inverse associations between achievement and being a victim or perpetrator of violence. These results held for the five studies that considered non-consensual sexual activity and violence occurring between partners who had consented to sex.
- Tobacco use: All cross-sectional and longitudinal studies showed inverse associations between using tobacco and academic achievement.
- Alcohol and other drug use: Binge-drinking; drinking to get drunk; using inhalants, marijuana, or other illicit drugs; or misusing prescription medications were considered. All 23 cross-sectional studies and 21 longitudinal studies

indicated inverse associations with educational performance, with some showing fewer years of schooling completed.

- Sexual behaviors contributing to unintended pregnancy and sexually transmitted diseases: All cross-sectional and longitudinal studies demonstrated an inverse relationship. Additionally, earlier sexual debut (first sex) was inversely related, and delaying first sexual intercourse was positively associated.
- Inadequate physical activity: Thirteen studies were reviewed, including 7 with longitudinal designs. Two-thirds of the cross-sectional studies demonstrated inverse relationships between physical inactivity and academic achievement. Among the longitudinal studies, 71.4% reported similar results. Conversely, being physically active was positively associated.
- Unhealthy dietary behaviors: All nine studies reported inverse relationships between inadequate nutrition and educational achievement.

Bradley and Greene wrote that “96.6% of the articles ...reported statistically significant inverse relationships between health-risk behaviors and academic achievement among school populations.” While these associations do not indicate causation, they do indicate important and significant relationships.

CDC followed up on its 2010 analysis of YRBSS data with a new study of 2015 YRBSS data (Rasberry, et al., 2017). Overall self-reported grades in school were significantly associated with each measured health risk behavior except physical education attendance. In addition to analyses of specific health risk variables, the authors divided the data set into a combined referent group of students who reported receiving

mostly D or F grades and a comparison group of those reporting mostly A, B, or C grades. The comparison student group “had significantly higher prevalence estimates for most protective health-related behaviors and significantly lower prevalence estimates for most health-related risk behaviors, including all substance use, sexual risk, violence-related, and suicide-related behaviors.” The authors noted that prevalence estimates for those students reporting receiving mostly C grades did not differ significantly from those receiving mostly D and F grades for two questions, including on vegetable consumption and a second on the amount of television watched on an average school day.

While youth risk behaviors have been a focus of a large volume of public health research, protective factors, sometimes called “assets,” are important critical variables to consider with youth as well. Parent-family connectedness is protective against many health risk behaviors (Resnick, et al., 1997). School connectedness, a belief of students that adults and peer care about them and their learning, is an important strategy to increase academic performance (Resnick, et al., 1997; Blum, 2005). CDC has developed fact sheets that synthesize the evidence and provide strategies to increase school connectedness (CDC, 2009a; 2009b; 2009c; 2009d).

Numerous studies have addressed important links between chronic absenteeism and student performance or high school graduation. In May 2012, Robert Balfanz and Vaughan Byrnes published “The Importance of Being in School: A Report on Absenteeism in the Nation’s Public Schools” (Balfanz & Byrnes, 2012). They note that the “goal of this report is to gather and analyze all available data on chronic absenteeism at the state level to begin the process of mapping its extent and characteristics, to

synthesize existing work on the consequences of missing school, to extend that work with new analysis at state and national levels, and highlight some promising practices among cities, school districts, and non-profits to combat absenteeism.” Among their most important findings:

- Achievement, especially in math, is very sensitive to attendance, and absence of even two weeks during one school year matters.
- Attendance affects standardized test scores and graduation and dropout rates.
- Chronic absenteeism is most prevalent among low-income students. There is a strong correlation between poverty and chronic absenteeism.
- Chronic absenteeism increases achievement gaps at the elementary, middle, and high school levels.
- Absenteeism is a strong predictor of dropping out of high school.

The national organization Attendance Works published a report entitled “Absences Add Up: How School Attendance Influences Student Success” in 2014 (Ginsburg, Jordan, & Chang, 2014). Key findings of the report included:

- Poor attendance is a national challenge.
- Student attendance matters for academic performance, as measured by the association between poor attendance and lower scores on the National Assessment for Educational Progress (NAEP).
- Poor attendance contributes to the achievement gap for students struggling with poverty and from communities of color.

Among research findings, the authors reported that absenteeism in preschool and kindergarten was predictive of children who would later be held back in third grade, that dropout rates could be predicted by middle and high school absenteeism, that college completion was linked similarly to high school graduation, and that closing achievement gaps could be accomplished through a strategy to improve attendance. They provide numerous recommendations for action, including policy options, data development, parent engagement programs, public awareness, early warning systems, and intervention strategies.

While this evidence does not indicate causation, these studies illuminate important and significant associations between key health risk and protective factors for adolescents and key outcomes related to education, including school attendance and achievement.

Evidence Development in Other Areas of the World

Similar to the development of the Coordinated School Health model and subsequent school health surveillance and program efforts through CDC in the United States, the World Health Organization (WHO) undertook the development of the Global School Health Initiative in 1995 (World Health Organization, 2017a). Strategies for the initiative include research to improve school health programs, building capacity to advocate for improved school health programs, strengthening national capacities, and creating networks and alliances for the development of health-promoting schools. Its Health Promoting Schools approach is flexible, focusing on encouraging schools to

“constantly (strengthen their) capacity as a healthy setting for living, learning, and working” (World Health Organization, 2017c).

As part of its work to develop surveillance initiatives, WHO, in collaboration with the United Nations’ UNICEF, UNESCO, and UNAIDS, partnered with CDC in the early 2000s to create the Global School-based Student Health Survey (GSHS) and encourage its use among member nations (World Health Organization, 2017b). The survey was patterned after the CDC YRBSS. Core questionnaire modules address similar risk behaviors as the YRBSS, with the addition of hygiene, mental health, and protective factors. As of December 2013, representatives from more than 120 countries have been trained and 94 countries have completed a GSHS (CDC, n.d.). Primary publications using GSHS data are country-specific reports that are similarly used within nations as YRBSS reports are used in the United States. Country reports typically focus on the prevalence of protective factors and health risk behaviors of interest to the nation in question. Because countries select possible questions from a core and expanded core sets, data are limited by these selections. For example, countries may choose not to select questions on sexual activity or limit the number of questions in any subject area. Countries seldom administer standard questions on academic performance.

In Europe, researchers in adolescent and school health have used these studies and other evidence while investigating links between health and education in their regions. The Schools for Health in Europe (SHE) network of 43 countries (Schools for Health in Europe, 2018a) maintains a research consortium of 62 researchers and research institutions from 20 countries in the European region (Schools for Health in Europe,

2018b). Their research suggests that health and education are closely related. Among their findings are (Schools for Health in Europe, 2013a):

- healthy young people are more likely to learn more effectively
- health promotion can help schools to meet their social aims and to improve educational attainment
- young people (who) attend school have a better chance of good health
- young people (who) feel good about their school and who are connected to school and significant adults are less likely to undertake high-risk behaviours and are likely to have better learning outcomes

In the same report, SHE noted the most important contextual factors related to the effectiveness of school health promotion, including equity, teacher education and training, understanding the culture of schools, student participation and ownership, linking health promotion to the core tasks of schools, involving parents and carers in school health promotion, and promoting staff health and well-being. They found positive evidence regarding improvements in hygiene, mental health promotion, sexual health and relationships, healthy eating, and physical activity, with weak evidence related to substance use.

Evidence linking health and academic performance outside of the United States, Canada, and Europe was difficult to find. A general search for publications since 2012 using the terms “health risk behaviors and academic performance” and “health and academic achievement” yielded over 2700 results. However, most were based in the United States, Canada, and Europe; were duplicates; or were of questionable relevance. A

targeted search of “Global School-based Student Health Survey” yielded 925 references, though a more targeted search using the terms “Global School-based Student Health Survey and academic achievement” provided two responses while “Global School-based Student Health Survey and academic performance” yielded 12 with several duplicates. An informal bibliography of publications produced using GSHS data is maintained by the CDC (2012). Its most recent iteration is from 2012, containing 36 peer-reviewed publications. None addressed academic performance or met the other criteria outlined above. Additional library searches for “school attendance and health risk behavior in Argentina”, “school absenteeism and health risk behavior in Argentina”, “school attendance and health risk behavior in Bolivia”, “school absenteeism and health risk behavior in Bolivia”, “school attendance and health risk behavior in Peru”, and “school absenteeism and health risk behavior in Peru” yielded no relevant studies.

Understanding these limitations, some articles were discovered that met most criteria. Those articles are discussed below.

The Cochrane Collaboration undertook a systematic review of the WHO Health Promoting School (HPS) framework, considering its effects on several health-related issues and academic achievement (Langford, 2014). Investigators found 67 trials including 1345 schools and 98 districts that qualified for review. Interventions using the HPS framework “were able to reduce students’ body mass index (BMI), increase physical activity and fitness levels, improve fruit and vegetable consumption, decrease cigarette use, and reduce reports of being bullied.” Little evidence was found related to BMI reduction after adjusting for age and gender. No evidence was found of effect on fat

intake, alcohol and drug use, mental health, violence, and bullying others. Not enough data existed to draw conclusions about several other outcomes, including academic outcomes.

Working with Teachers College at Columbia University, Sigfusdottir and colleagues considered health behavior and academic achievement in Icelandic school children (Sigfusdottir, Kristjansson, & Allegrante, 2007). They reviewed cross-sectional survey data from 5810 school children, finding academic achievement effects related to BMI, diet, and physical activity when controlling for gender, parental education, family structure, and absenteeism. Potential confounding variables included mental health concerns including depressed mood and self-esteem.

Chung and Joung considered risk factors for smoking behavior, including academic achievement in Korea using results from the 2010 Korean Youth Health Data (Chung, 2014). Investigators found a relationship between attending vocational high school or worse academic performance and smoking behavior. They also note that adolescents who were low academic achievers tended to progress to more advanced smoking. They did not find stress as a risk factor for smoking behavior, though they noted the high level of stress experienced by Korean students and the competitiveness of Korean society.

Norwegian investigators used a self-report questionnaire of 2432 Norwegian adolescents aged 15-17 to assess a variety of lifestyle habits and academic achievement (Stea & Torstveit, 2014). High academic achievement was positively associated with several dietary behaviors including regular consumption of breakfast and lunch for girls

and boys and regular consumption of dinner for boys. High academic achievement was also positively associated with high leisure-time physical activity levels and negatively associated with smoking and using snuff, again for both girls and boys. It should be noted that these results were published in a source that requires payment for publication.

Stea and colleagues also investigated sleep duration and its relevance to health risk behaviors and academic achievement (2014). Data were analyzed from the same large school-based cluster randomized study as the previous review of lifestyle habits. Short time in bed (<8 hours/night) was associated with higher odds of poor academic achievement and several health outcomes, including not participating in 60 minutes per day of daily physical activity, using television or computers more than 2 hours per day, being a current smoker, and having an irregular intake of breakfast, lunch, dinner, and evening meals. Some variations among boys and girls were observed.

A rare study of sexual debut (first sex) and performance on required examinations was published by Romanian researchers (Degi, 2015). In the Romanian educational system, Baccalaureate examinations are given as a degree qualification test upon completion of high school. The study revealed two subgroups related to students' sexual lives. One had a low risk of failing the final examination, which was associated with starting sexual life later and with a steady partner. The other was at greater risk, associated with earlier debut and occasional or transient relationships. It should be noted that it was difficult to ascertain the quality of the journal in which the article was published.

Scottish researchers using data from the 2010 Scottish Health Behaviour in School-aged Children Survey of 1834 adolescents considered whether anticipation of university attendance was associated with health-protective behaviors (Whitehead, 2015). After adjusting for a number of factors including life history, pupil level, and school level variables, they found those who were anticipating college attendance exhibited higher levels of fruit and vegetable consumption, exercise, and tooth brushing and lower risk of snack, soft drink, and alcohol consumption; tobacco and cannabis use; fighting; and sexual intercourse. They theorize that merely encouraging adolescents to consider higher education may contribute to positive health benefits.

A study from Saudi researchers reviewed cross-sectional data from students enrolled in secondary school in Almajadah, Saudi Arabia (Al Mojamad, 2015). Four hundred forty-two male secondary students participated in the study. Academic achievement was negatively influenced by all of the studied health risk behaviors, including a history of quarrel (defined as violence), carrying a weapon, smoking, drinking alcohol, or taking addictive substances (usually hashish and sedatives). The journal in which this article was published is a relatively new open access journal based in India that expects payment for publication, though the payment amount is modest (US\$150).

While each of the previous studies aside from the Cochrane review employed surveys and analyzed cross-sectional data, the following two projects employed more robust study designs.

Researchers in Finland attempted to determine the direction of associations between substance use and academic achievement (Latvala, 2014). They employed a longitudinal population-based cohort study design involving 4761 students, collecting data at four time points: ages 12, 14, 17, and 19-27 years of age. Educational achievement was assessed through teacher-reported grades at ages 12 and 14 and self-reported completed education at age 17. Health risk behaviors were reported by questionnaire. The investigators found that alcohol use and smoking at the ages of 12 and 14 predicted lower academic achievement at later times after adjusting for confounders. Lower academic performance also predicted smoking. Early substance use was also associated with a higher likelihood of poorer academic outcomes.

The single randomized controlled trial described in this review is being conducted in Norway (Resaland, et al., 2015). This paper outlined the rationale and methodology of a rigorously-designed school health physical activity and educational program. While results are not yet available, this methodology offers the most promise of demonstrating substantial and strong effects.

Sixty schools including 1202 fifth-graders represented 86.2% percent of the population of the county in question's 10-year-olds and 95.2% of the total possible students of that age group. Schools were separated randomly by a neutral party in higher education into control and experimental groups, with 30 in each. Three schools later withdrew, including one from the control group and two from the intervention group. Students in the intervention group received a three-part program including 1) educational lessons in Norwegian, mathematics, and English delivered in an active way in the school

playground (three times for 30 minutes each), 2) physical activity breaks during regular lessons (five times per week for five days each week), and 3) “homework” to be physically active ten minutes daily for five days each week. Control schools performed the usual required 135 minutes of physical activity each week. Therefore, intervention schools more than doubled the amount of physical activity of control schools (300 vs. 135 minutes per week).

Academic performance is being measured in reading, numeracy, and English using standardized Norwegian National tests developed by the Norwegian government. Some fitness variables are measured by performance tests. Blood pressures and blood samples are taken from the children. Questionnaires of children, teachers, and parents and adherence observations are also employed. This study design offers the opportunity to determine significant educational results of a school physical activity program using a rigorous research protocol.

Summary

While many more studies on associations between health and academic performance have been accomplished in the United States, including large-scale reviews of the literature, some studies have been undertaken in other areas of the world. Results of these studies are consistent with findings in the United States, Canada, and Western Europe, demonstrating important associations among protective and risk behaviors and academic achievement. However, the amount of studies and number of high-quality investigations is far lower.

With the exception of the Resaland methodology review from Norway, the studies above are representative of the types of articles one commonly finds in studies of health risk behavior and academic performance. Most are survey-based, retrospective, cross-sectional analyses of self-reported data. Their strengths include the ease of gathering and assessing data and the low costs to conduct them, and they provide a good picture of the prevalence of exposure and outcome. In the examples above, the number of students involved appeared appropriate for the areas for which conclusions were drawn. Results and limitations appeared to be fairly stated.

These cross-sectional studies are subject to limitations. They cannot be used to claim causation. Temporal relationships between exposures and outcomes cannot be established. Their self-reported nature leads to speculation among some researchers as to whether their results are valid. Even highly reliable and valid studies such as the YRBSS encounter this criticism.

Numerous gaps exist in research related to health and academic performance. Because the vast majority of existing studies employ cross-sectional retrospective designs, little is understood about how health risk behaviors affect academic performance and in what ways they do so. Few attempts have been made at determining the directionality of these effects. Behaviors may have effects in clusters that have not yet been demonstrated. Culture and context are likely to play large roles that are seldom described. Once clear intervention channels appear, it may be difficult to generalize them to populations in other areas.

Similar to the Resaland study, more efforts are underway to implement robust study designs to demonstrate effect and, potentially, causation. These appear to be most common in the fields of nutrition and physical activity. The obesity epidemic in Western nations appears to have increased interest in school-based prevention programs in these areas, and funders appear to be more likely to consider higher-cost studies that could yield stronger results.

The studies presented in this chapter provide a strong case for associations between health and education and the effects of chronic absenteeism. The following chapter will discuss the methodology used in this study to contribute additional understanding of related associations in each country.

CHAPTER 3

METHODS

This chapter is dedicated to describing the methods used in this study. It addresses research questions, data sources, study design, measures, data analysis, and limitations.

Research Questions

As presented in Chapter 1, the following are the research questions for this study:

1. What health risk factors are associated with student absenteeism in Argentina, Bolivia, and Peru?

Aim: To determine which health risk behavior factors are associated with decreased school attendance and which appear to have little or no effect.

- Hypothesis: Health risk behaviors such as those related to alcohol use, drug use, mental health, sexual behaviors, tobacco use, and violence and unintentional injury are positively associated with missing classes or school without permission on 3 or more days during the past 30 days.

2. What protective factors are associated with student attendance in school in Argentina, Bolivia, and Peru?

Aim: To determine which protective factors are associated with improved school attendance and which appear to have little or no effect.

- Hypothesis: Protective factors such as parental and fellow student support and healthy behaviors related to diet, hygiene, and physical activity are

negatively associated with missing classes or school without permission on 3 or more days during the past 30 days.

Data Source

As previously mentioned in Chapter 1, the data source for this study is the Global School-based Student Health Survey (GSHS). The World Health Organization conducts the GSHS in collaboration with UNICEF, UNESCO, and UNAIDS of the United Nations with technical assistance provided by CDC (CDC, 2016). The GSHS is administered in schools to students ages 13-17, though the age range within those parameters varies by country. Students participate anonymously, ensuring the protection of student rights. Data are publicly available on the CDC and WHO websites.

The GSHS addresses each of the health risk behaviors measured in the CDC Youth Risk Behavior Survey, adding hygiene, mental health, and protective factors. Core GSHS questions are provided in modules related to risk and protective factors (World Health Organization, 2017b). Countries may choose to select whole modules or individual questions from modules.

Similar to the CDC Youth Risk Behavior Surveillance System, the GSHS employs a two-stage cluster sample design to produce data that are representative of all students in the subject country (Brener, et al., 2013). Schools are selected during the first stage, with probability of selection determined by enrollment size. Classes are randomly selected within schools during the second stage. All students in those classes are eligible. Data are weighted for those countries that produce a response rate high enough to allow weighting.

Samples

Each nation considered in this study achieved a response rate sufficient to allow weighting and, therefore, nationally representative data:

- Argentina: 28,368 students participated; overall response rate, 71% (school response rate, 91%; student response rate, 79%) (World Health Organization, 2012a)
- Bolivia: 3696 students participated; overall response rate, 88% (school response rate, 99%; student response rate, 89%) (World Health Organization, 2012b)
- Peru: 2882 students participated; overall response rate, 85% (school response rate, 100%; student response rate, 85%) (World Health Organization, 2010a)

The GSHS questionnaires for Argentina, Bolivia, and Peru all ask three common demographic questions: age (options are 11 years of age or younger to 16 years of age or older, with intervals by year), sex (male/female), and grade in school (varies by country; United States equivalents are shown). The following table displays these data for all three countries by country.

Table 3.1
Demographics Summary

	Country		
	Argentina	Bolivia	Peru
Total number of students responding	28,368	3696	2882
Overall response rate	71%	88%	85%

Age	Freq	Pct	Freq	Pct	Freq	Pct
11 years old or younger	79	0.4	47	1.2	14	0.4
12 years old	638	5.0	126	3.6	42	1.6
13 years old	4989	20.6	697	18.3	513	19.6
14 years old	8177	29.5	1001	27.3	848	30.3
15 years old	7724	25.4	980	29.0	956	31.9
16 years old or older	6527	19.2	693	20.6	494	16.2
Missing	234	N/A	152	N/A	15	N/A
Sex	Freq	Pct	Freq	Pct	Freq	Pct
Male	13,364	48.3	1792	51.0	1402	50.6
Female	14,624	51.7	1743	49.0	1462	49.4
Missing	380	N/A	161	N/A	18	N/A
Grade in School *	Freq	Pct	Freq	Pct	Freq	Pct
6 th grade	0	0.0	6	0.2	0	0.0
7 th grade	0	0.0	136	4.1	0	0.0
8 th grade	9288	37.2	1337	33.9	937	36.6
9 th grade	9972	33.5	1207	32.1	931	33.3
10 th grade	8287	29.3	928	28.7	993	30.1
11 th grade	0	0.0	32	0.9	0	0.0
12 th grade	0	0.0	0	0.0	0	0.0
Missing	821	N/A	50	N/A	21	N/A

* United States equivalent. Sources: Argentina (UNESCO International Bureau of Education, 2010a), Bolivia (UNESCO International Bureau of Education, 2010b), Peru (UNESCO International Bureau of Education, 2010c).

Note: Age, sex, and grade in school frequencies are unweighted. Percentages are weighted by country. Percentages may not equal 100% due to rounding.

Design

This study employs a retrospective non-experimental design using cross-sectional data. For each country, variables were selected from standard GSHS questions.

The dependent outcome variable is student attendance at school. Student attendance is measured through a standard GSHS question that is asked the same way on the questionnaires for Argentina, Bolivia, and Peru (World Health Organization, 2010b; 2012c; 2012d):

“During the past 30 days, on how many days did you miss classes or school without permission?”

- A. 0 days
- B. 1 or 2 days
- C. 3 to 5 days
- D. 6 to 9 days
- E. 10 or more days”

Independent experimental variables were selected in two categories, health risk and protective factors. Similar to the student attendance question above, each was measured through standard GSHS questions that are asked the same way or closely similar ways on questionnaires for each country. The following criteria were used to select independent variables:

- Variables addressed health risk or protective factors related to the research questions
- The standard question used to measure each variable was included in questionnaires administered in all three countries
- The standard question was not confounded with attendance at school (e.g., attendance at physical education classes or students being helpful at school)
- The standard question was not dependent on another question (i.e., among those responding positively to a previous question, those that reported another risk or protective factor)

- If two questions addressed similar health risk or protective factors using different time frames (i.e., lifetime, during the past 12 months, during the past 30 days), the question using “during the past 30 days” was selected to mirror the outcome objective

Seventeen health risk factor questions and 11 protective factor questions met these criteria, as shown in the following tables.

Table 3.2
Risk Factor Questions Meeting Selection Criteria

Category	Question(s)
Nutrition	<ul style="list-style-type: none"> • During the past 30 days, how often did you go hungry because there was not enough food in your home?
Injury and Violence	<ul style="list-style-type: none"> • During the past 12 months, how many times were you physically attacked? • During the past 12 months, how many times were you in a physical fight? • During the past 12 months, how many times were you seriously injured? • During the past 30 days, on how many days were you bullied?
Mental Health	<ul style="list-style-type: none"> • During the past 12 months, how often have you felt lonely? • During the past 12 months, how often have you been so worried about something that you could not sleep at night? • During the past 12 months, did you ever seriously consider attempting suicide? • During the past 12 months, how many times did you actually attempt suicide?

Tobacco Use	<ul style="list-style-type: none"> • During the past 30 days, on how many days did you smoke cigarettes? • During the past 30 days, on how many days did you use any tobacco products other than cigarettes, such as cigars, shisha or water pipes, pipes, or kretek?
Alcohol Use	<ul style="list-style-type: none"> • During the past 30 days, on how many days did you have at least one drink containing alcohol? • During your life, how many times did you drink so much alcohol that you were really drunk?
Drug Use	<ul style="list-style-type: none"> • During the past 30 days, how many times have you used marijuana (also called cannabis, weed, ganja, or grass)? • During your life, how many times have you used amphetamines or methamphetamines (also called pills or seeds)?
Sexual Behavior	<ul style="list-style-type: none"> • During your life, with how many people have you had sexual intercourse?
Sedentary Behavior	<ul style="list-style-type: none"> • How much time do you spend during a typical or usual day sitting and watching television, playing computer games, talking with friends, or doing other sitting activities such as playing with Play Station, Xbox, Wii, or Nintendo?

Table 3.3

Protective Factor Questions Meeting Selection Criteria

Category	Question(s)
Nutrition	<ul style="list-style-type: none"> • During the past 30 days, how many times per day did you usually eat fruit, such as oranges, tangerines, bananas, strawberries, papaya, pineapple, melon, apple, pear, grapes, kiwi, mango, or limes? • During the past 30 days, how many times per day did you usually eat vegetables, such as lettuce, radishes, carrots, cucumbers, spinach, chard, squash, cegolla, cauliflower, or broccoli?

Hygiene	<ul style="list-style-type: none"> • During the past 30 days, how many times per day did you usually clean or brush your teeth? • During the past 30 days, how often did you wash your hands before eating? • During the past 30 days, how often did you wash your hands after using the toilet or latrine? • During the past 30 days, how often did you use soap when washing your hands?
Mental Health	<ul style="list-style-type: none"> • How many close friends do you have?
Physical Activity	<ul style="list-style-type: none"> • During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day?
Parental Monitoring	<ul style="list-style-type: none"> • During the past 30 days, how often did your parents or guardians check to see if your homework was done? • During the past 30 days, how often did your parents or guardians understand our problems and worries? • During the past 30 days, how often did your parents or guardians really know what you were doing with your free time?

Response options for each question are presented in Appendices A and B. Definitions that were provided to respondents are included where they exist within the questionnaires (World Health Organization, 2010b; 2012c; 2012d).

Statistical Analysis

Each country's GSHS data set was analyzed separately using the same procedures, as follows:

1. Nominal GSHS data were recoded as ordinal.
2. The outcome variable of missed school days was dichotomized, with options of 0-2 days missed and 3 or more days missed during the past 30 days. [Rationale:

Several cities and states in the United States use a marker of 10% of days missed as a definition of chronic absenteeism. The U.S. Department of Education defines chronic absenteeism as missing 10% or 15 or more school days during an academic year (U.S. Department of Education, 2016).]

3. Independent variable health risk factors were analyzed:
 - Categorical health risk factor data were recoded to produce dichotomous data.
 - Frequencies were obtained for the set of dichotomous ordinal health risk factors.
 - Chi-square analyses were conducted using the set of dichotomous health risk factors. Each factor was considered independently.
 - Binary logistic regression was conducted using the set of dichotomized health risk factors collectively.

4. Independent variable protective factors were analyzed:
 - Categorical protective factor data were recoded to produce dichotomous data.
 - Frequencies were obtained for the set of dichotomous ordinal protective factors.
 - Chi-square analyses were conducted using the set of dichotomous protective factors. Each factor was considered independently.
 - Binary logistic regression was conducted using the set of dichotomized protective factor variables collectively.

SPSS was employed for data analysis. For the chi-square analysis, the Phi coefficient correlation method was used to measure the strength and direction of the association between the dependent ordinal variable and each independent ordinal variable. For the regression analysis, Wald statistics were used to determine the predictive significance of each independent variable using an alpha of $p < .05$.

Preliminary analyses of each country's data were accomplished with categorical variables and compared to similar analyses of dichotomized variables. No significant differences were observed in patterns of results. Therefore, factor results were dichotomized as noted above for consistency and ease of analysis. Variables were dichotomized as follows:

- Where response options were originally ordinal, “always” and “most of the time” were considered positive responses, and all others negative.
- Where response options were originally continuous, generally “1 or more” was considered a positive response, and “0,” “None,” “Less than 1,” and similar response options were negative. Exceptions to that rule include the fruit consumption question (“2 or more” was considered positive and anything less than 2 negative), vegetable consumption question (“3 or more” was considered positive and anything less than 3 negative), sexual activity question (“2 or more partners” was considered positive and anything less than 2 negative), and sitting activity question (“3 or more hours” was considered positive and anything less than 3 negative).

Limitations

Generally, studies using cross-sectional data are subject to limitations. They cannot be used to claim causation. Temporal relationships between exposures and outcomes cannot be established.

Analyses of GSHS data are subject to additional limitations. These surveys are administered in schools, so data from them do not include out-of-school youth or students who were absent on the day of the survey administration. Because this study's outcome variable is related to attendance, some confounding could occur. These analyses also cannot address other possible confounding variables such as social factors and family conditions. The self-reported method of survey collection leads to speculation among some researchers as to whether their results are valid. Even highly reliable and valid studies such as the YRBSS encounter this criticism. However, good test-retest reliability has been reported for individual question items of the YRBSS (CDC, 2013).

While each GSHS dataset uses standard questions, there are minor differences in the content of some questions to address cultural differences unique to each country. For example, different jargon is employed to explain the term "marijuana" across the three surveys. Because the stem questions are not changed, and because of the purpose of the use of jargon was to increase the accuracy of students' answers, the impact of these minor differences as limitations may be inconsequential. Data analyzed in this study are from two different administration periods, 2010 (Peru) and 2012 (Argentina and Bolivia). However, because of the use of standard questions and relatively short time frame between administrations, deleterious effects may be minor.

Data analysis results will be discussed in the next chapter. The final chapter will consider discussion, recommendations for future research, and conclusions.

CHAPTER 4

RESULTS

This chapter is dedicated to reviewing the results of this study. It addresses outcomes of the data analysis and related investigations. Results are presented by country, including demographic breakdowns, frequencies, and associations. The review of results will focus on the research aims, to determine which health risk and protective factors are associated with school attendance and which appear to have little or no effect.

Argentina

Summary tables including demographic breakdowns, frequencies, and observed associations for the 2012 GSHS administration in Argentina are presented below.

Demographics

As shown in Table 4.1 below, the large total number of students responding led to an overall response rate sufficient to allow for weighting of data. Therefore, results are generalizable to the nation.

Similar to other GSHS and U.S. Youth Risk Behavior Survey administrations, most participants were aged 13-16 years. Gender distribution was nearly even (Male, 48.3%, Female, 51.7%), which is consistent with school enrollment. The relatively small number of missing responses did not affect the ability to weight data.

Table 4.1

Demographics for Argentina 2012 GSHS Administration

Response	Value	
Total number of students responding	28,368	
Overall response rate	71%	
Age	Freq	Pct
11 years old or younger	79	0.4
12 years old	638	5.0
13 years old	4989	20.6
14 years old	8177	29.5
15 years old	7724	25.4
16 years old or older	6527	19.2
Missing	234	N/A
Sex	Freq	Pct
Male	13,364	48.3
Female	14,624	51.7
Missing	380	N/A

Frequencies

Frequencies for risk factors are described in Table 4.2. Response rates were strong for all items, and missing data did not significantly affect data analysis. The highest number of respondents indicated “yes” to alcohol risks, including drinking 1 or more times in the past 30 days and being drunk 1 or more times during the respondent’s lifetime. Sedentary behavior (sitting activities 3 or more hours per day on a usual day) and injury and violence indicators (in a fight 1 or more times in the past 12 months and being seriously injured 1 or more times in the past 12 months) were also high. Frequencies below 10% were observed for worry preventing sleep most times or always during the past 12 months, using marijuana 1 or more times in the past 30 days, using other tobacco 1 or more times during the past 30 days. Very low frequencies were noted

for being hungry most or all of the time during the past 30 days and for amphetamine use 1 or more times during the respondent's lifetime.

Table 4.2
Summary Frequencies for Argentina 2012 GSHS – Risk Factors

Risk Factor	Yes		No		Missing	
	Freq	Pct	Freq	Pct	Freq	Pct
Went hungry most or time/always past 30 days	1070	3.8	26,951	95.0	347	1.2
Attacked 1+ times past 12 months	6787	23.9	21,100	74.4	481	1.7
In fight 1+ times past 12 months	9548	33.7	18,708	65.9	112	0.4
Seriously injured 1+ times past 12 months	8643	30.5	16,171	57.0	3554	12.5
Bullied 1+ times past 30 days	6749	23.8	20,239	71.3	1380	4.9
Lonely most times/always past 12 months	2896	10.2	24,810	87.5	662	2.3
Worry prevented sleep most time/always past 12 months	2628	9.3	25,536	90.0	204	0.7
Considered suicide past 12 months	5032	17.7	22,541	79.5	795	2.8
1+ times attempt suicide past 12 months	4518	15.9	23,367	82.4	483	1.7
Smoked cigarettes 1+ of past 30 days	6576	23.2	21,256	74.9	536	1.9
Used other tobacco 1+ of past 30 days	2139	7.5	25,937	91.4	292	1.0
Drank 1+ of past 30 days	14,338	50.5	12,490	44.0	1540	5.4
1+ times drunk in lifetime	9117	32.1	18,423	64.9	828	2.9
Marijuana 1+ times past 30 days	2381	8.4	25,140	88.6	847	3.0
Amphetamines 1+ times lifetime	814	2.9	26,690	94.1	864	3.0

2+ sex partners lifetime	5582	19.7	21,551	76.0	1235	4.4
Sitting activities 3+ hours/day of usual day	12,993	45.8	14,303	50.4	1072	3.8
Note: Frequencies are unweighted. Percentages may not equal 100% due to rounding.						

Table 4.3 presents summary frequencies for protective factors. Strong positive responses were observed for hygiene questions, including always or usually washing hands after using the toilet during the past 30 days, usually cleaning or brushing teeth one or more times per day in the past 30 days, always or usually using soap when washing hands during the past 30 days, and always or usually washing hands before eating during the past 30 days. A large percentage of respondents also reported having 1 or more close friends. The lowest response rate noted was related to eating vegetables 3 or more times per day during the past 30 days, though no factors were observed with less than a 10% positive response rate.

Table 4.3
Summary Frequencies for Argentina 2012 GSHS – Protective Factors

Protective Factor	Yes		No		Missing	
	Freq	Pct	Freq	Pct	Freq	Pct
Ate fruit 2+ times per day past 30 days	10,355	36.5	17,751	62.6	262	0.9
Ate vegetables 3+ times per day past 30 days	3641	12.8	24,380	85.9	347	1.2
Active 60+ mins/day for 5+ of past 7 days	8176	28.8	19,375	68.3	817	2.9
Parents most/always check homework	8348	29.4	18,903	66.6	1117	3.9
Parents most/always understand problems	12,787	45.1	14,277	50.3	1304	4.6
Parents most/always know about free time	14,154	49.9	12,713	44.8	1501	5.3

Usually clean or brush teeth one or more times per day past 30 days	26,140	92.1	1992	7.0	236	0.8
Always or usually wash hands before eating past 30 days	24,884	87.7	3078	10.9	406	1.4
Always or usually wash hands after using toilet past 30 days	26,539	93.6	1582	5.6	247	0.9
Always or usually use soap when washing hands past 30 days	26,127	92.1	1890	6.7	351	1.2
One or more close friends	26,108	92.0	1471	5.2	789	2.8

Note: Frequencies are unweighted. Percentages may not equal 100% due to rounding.

Associations

For the discussion of associations, chi-square results using the Phi coefficient correlation method will be considered first, followed by logistic regression outcomes. Risk factor results will be presented together, followed by protective factor results.

All 17 risk behavior measures were significant using the Phi coefficient at $p < .001$, likely due to the high response rate. All measures were positively associated with the outcome variable of missing 3 or more days of school during the past 30 days. However, no strong correlations to the outcome variable were noted. The highest moderate value, .204, was observed for smoking cigarettes 1 or more of the past 30 days, followed closely by 1 or more times drunk during lifetime, marijuana use 1 or more times during the past 30 days, using other tobacco 1 or more times during the past 30 days, and having sex with 2 or more partners lifetime. The majority of other values ranged from .086 to .154. The lowest values were for sitting activities 3 or more hours per day during

a usual day (.053), being hungry most of the time or always during the past 30 days (.061), and being bullied 1 or more times during the past 30 days (.065).

Logistic regression revealed a number of important predictive risk variables. Thirteen of 17 risk factors were significant at $p < .001$. Higher Wald values were observed for having sex with 2 or more partners lifetime, smoking cigarettes 1 or more of the past 30 days, being drunk 1 or more times lifetime, and being in a fight 1 or more times in the past 12 months. The remaining nine variables ranged in value from 6.937 to 18.628. Four variables were not significant, including being attacked 1 or more times during the past 12 months, being bullied 1 or more times during the past 30 days, considering suicide during the past 12 months, and using tobacco other than cigarettes 1 or more times during the past 30 days.

Table 4.4
Summary Associations for Argentina 2012 GSHS – Risk Factors

Risk Factor	Phi Coefficient		β	Wald (all d.f.=1)		Odds Ratio Exp(β)
	Value	Sig		Value	Sig	
Went hungry most of time/always past 30 days	.061	<.001	.426	15.953	<.001	1.531
Attacked 1+ times past 12 months	.107	<.001	.104	3.799	.051	1.109
In fight 1+ times past 12 months	.148	<.001	.333	47.174	<.001	1.395
Seriously injured 1+ times past 12 months	.102	<.001	.175	14.213	<.001	1.191
Bullied 1+ times past 30 days	.065	<.001	-.043	.683	.408	.957
Lonely most times/always past 12 months	.086	<.001	.278	15.656	<.001	1.321

Worry prevented sleep most time/always past 12 months	.087	<.001	.309	18.628	<.001	1.362
Considered suicide past 12 months	.112	<.001	.077	1.244	.265	1.080
1+ times attempt suicide past 12 months	.124	<.001	.183	6.937	.008	1.201
Smoked cigarettes 1+ of past 30 days	.204	<.001	.433	61.883	<.001	1.542
Used other tobacco 1+ of past 30 days	.182	<.001	.135	2.527	.112	1.145
Drank 1+ of past 30 days	.154	<.001	.200	13.505	<.001	1.221
1+ times drunk in lifetime	.199	<.001	.401	56.307	<.001	1.494
Marijuana 1+ times past 30 days	.183	<.001	.219	7.521	.006	1.245
Amphetamines 1+ times lifetime	.148	<.001	.435	11.267	.001	1.545
2+ sex partners lifetime	.174	<.001	.467	83.372	<.001	1.596
Sitting activities 3+ hours/day of usual day	.053	<.001	.143	10.559	.001	1.153

Note: Significant associations are bolded.

Similar to risk variables, numerous protective factors were significant at $p < .001$ using the Phi coefficient. Also similar to the risk factor analysis, none of those variables were strongly correlated with the outcome variable. With one exception, eating vegetables 3 or more times per day during the past 30 days (.029), all other variables that met the significance test were negatively associated with the outcome variable, which would be expected for protective factors. Two were not significant, eating fruit 2 or more times per day during the past 30 days, and being active 60 minutes or more for 5 of the past 7 days.

Further analysis using logistic regression resulted in discovery of six protective factors that met the $p < .05$ standard for significance, including parents most or all of the time knowing about free time, eating vegetables 3 or more times per day during the past 30 days, parents most of the time or always checking homework, usually cleaning or brushing teeth 1 or more times per day during the past 30 days, parents most of the time or always understanding problems, and eating fruit 2 or more times per day for the past 30 days. The remaining five variables did not meet the $p < .05$ significance standard.

Table 4.5
Summary Associations for Argentina 2012 GSHS – Protective Factors

Protective Factor	Phi Coefficient		β	Wald (all d.f.=1)		Odds Ratio Exp(β)
	Value	Sig		Value	Sig	
Ate fruit 2+ times per day past 30 days	.008	.174	.093	5.706	.017	1.097
Ate vegetables 3+ times per day past 30 days	.029	<.001	.207	15.164	<.001	1.230
Active 60+ mins/day for 5+ of past 7 days	-.005	.374	.029	.538	.463	1.030
Parents most/always check homework	-.058	<.001	-.173	15.081	<.001	.841
Parents most/always understand problems	-.073	<.001	-.136	11.106	.001	.873
Parents most/always know about free time	-.128	<.001	-.625	246.688	<.001	.535
Usually clean or brush teeth one or more times per day past 30 days	-.040	<.001	-.244	13.157	<.001	.783
Always or usually wash hands before eating past 30 days	-.042	<.001	-.107	3.236	.072	.898
Always or usually wash hands after using toilet past 30 days	-.037	<.001	-.031	.138	.711	.970

Always or usually use soap when washing hands past 30 days	-.041	<.001	-.127	3.150	.076	.881
One or more close friends	-.025	<.001	-.123	2.472	.116	.885
Note: Significant associations are bolded.						

In summary, 13 risk variables and six protective factors met significance standards for both Phi coefficient and Wald analyses with data from the Argentina 2012 GSHS administration. These included:

Risk factors:

- Went hungry most of the time or always during the past 30 days
- In a fight 1 or more times during the past 12 months
- Seriously injured 1 or more times during the past 12 months
- Lonely most times or always during the past 12 months
- Worry prevented sleep most times or always during the past 12 months
- Attempted suicide 1 or more times during the past 12 months
- Smoked cigarettes 1 or more of the past 30 days
- Drank 1 of more of the past 30 days
- One or more times drunk during lifetime
- Marijuana use 1 or more times during the past 30 days
- Amphetamine use 1 or more times during lifetime
- Two or more sex partners lifetime
- Sitting activities 3 or more hours per day of a usual day

Protective factors:

- Ate fruit 2 or more times per day during the past 30 days
- Ate vegetables 3 or more times per day during the past 30 days
- Parents most of the time or always checking homework
- Parents most of the time or always understanding problems
- Parents most of the time or always knowing about free time
- Usually clean or brush teeth 1 or more times per day during the past 30 days

Bolivia

Following the previous method, summary tables including demographic breakdowns, frequencies, and observed associations for the 2012 GSHS administration in Bolivia are presented below.

Demographics

Similar to Argentina, Bolivia's 2012 GSHS administration resulted in a high response rate, which allowed for weighting and data reporting that is representative of all students in the nation. Consistent with most other GSHS administrations, respondents were primarily 13 to 16 years old. Gender was balanced and representative of school populations. Data availability was strong, with a small percentage of missing values.

Table 4.6

Demographics for Bolivia 2012 GSHS Administration

Response	Value	
Total number of students responding	3696	
Overall response rate	88%	
Age	Freq	Pct
11 years old or younger	47	1.2
12 years old	126	3.6
13 years old	697	18.3
14 years old	1001	27.3
15 years old	980	29.0
16 years old or older	693	20.6
Missing	152	N/A
Sex	Freq	Pct
Male	1792	51.0
Female	1743	49.0
Missing	161	N/A

Frequencies

Table 4.7 includes summary risk factor frequencies. A strong response rate was found across all factors with little missing data. The positive responses for risk factors included all 4 injury and violence markers: being seriously injured 1 or more times during the past 12 months, being attacked 1 or more times in the past 12 months, being in a fight 1 or more times in the past 12 months, and being bullied 1 or more times in the past 30 days. Six factors were reported with frequencies of less than 10%, including being hungry most of the time or always during the past 30 days, worry preventing sleep most or all of the time during the past 12 months, using tobacco other than cigarettes 1 day or more of the past 30 days, using marijuana 1 day or more of the past 30 days, using

amphetamines 1 time or more lifetime, and having 2 or more sex partners lifetime.

Marijuana and amphetamine use reports were very low (3.1% and 1.5% respectively).

Table 4.7

Summary Frequencies for Bolivia 2012 GSHS – Risk Factors

Risk Factor	Yes		No		Missing	
	Freq	Pct	Freq	Pct	Freq	Pct
Went hungry most of time/always past 30 days	330	8.9	3317	89.7	49	1.3
Attacked 1+ times past 12 months	1288	34.8	2389	64.6	19	0.5
In fight 1+ times past 12 months	1219	33.0	2470	66.8	7	0.2
Seriously injured 1+ times past 12 months	1620	43.8	1632	44.2	444	12.0
Bullied 1+ times past 30 days	1115	30.2	2330	63.0	251	6.8
Lonely most times/always past 12 months	408	11.0	3266	88.4	22	0.6
Worry prevented sleep most time/always past 12 months	279	7.5	3350	90.6	67	1.8
Considered suicide past 12 months	686	18.6	2939	79.5	71	1.9
1+ times attempt suicide past 12 months	777	21.0	2854	77.2	65	1.8
Smoked cigarettes 1+ of past 30 days	545	14.7	3083	83.4	68	1.8
Used other tobacco 1+ of past 30 days	236	6.4	3448	93.3	12	0.3
Drank 1+ of past 30 days	650	17.6	2907	78.7	139	3.8
1+ times drunk in lifetime	516	14.0	3044	82.4	136	3.7
Marijuana 1+ times past 30 days	114	3.1	3503	94.8	79	2.1
Amphetamines 1+ times lifetime	57	1.5	3414	92.4	225	6.1

2+ sex partners lifetime	340	9.2	3234	87.5	122	3.3
Sitting activities 3+ hours/day of usual day	880	23.8	2743	74.2	73	2.0
Note: Frequencies are unweighted. Percentages may not equal 100% due to rounding.						

Positive responses for protective factors were very high for all 4 hygiene questions, including usually cleaning or brushing teeth one or more times per day during the past 30 days, always or usually washing hands after using the toilet during the past 30 days, always or usually washing hands before eating during the past 30 days, and always or usually using soap when washing hands during the past 30 days. Students also responded highly to having one or more close friends. No factors were reported at lower than 22.0% (being active 60 or more minutes per day for 5 of the past 7 days).

Table 4.8
Summary Frequencies for Bolivia 2012 GSHS – Protective Factors

Protective Factor	Yes		No		Missing	
	Freq	Pct	Freq	Pct	Freq	Pct
Ate fruit 2+ times per day past 30 days	1681	45.5	1987	53.8	28	0.8
Ate vegetables 3+ times per day past 30 days	906	24.5	2754	74.5	36	1.0
Active 60+ mins/day for 5+ of past 7 days	814	22.0	2831	76.6	51	1.4
Parents most/always check homework	1428	38.6	2184	59.1	84	2.3
Parents most/always understand problems	1171	31.7	2482	67.2	43	1.2
Parents most/always know about free time	1338	36.2	2308	62.4	50	1.4
Usually clean or brush teeth one or more times per day past 30 days	3379	91.4	293	7.9	24	0.6

Always or usually wash hands before eating past 30 days	3249	87.9	387	10.5	60	1.6
Always or usually wash hands after using toilet past 30 days	3327	90.0	303	8.2	66	1.8
Always or usually use soap when washing hands past 30 days	3089	83.6	591	16.0	16	0.4
One or more close friends	3359	90.9	308	8.3	31	0.8
Note: Frequencies are unweighted. Percentages may not equal 100% due to rounding.						

Associations

Following the previous pattern, chi-square results using the Phi coefficient will be presented first, followed by logistic regression outcomes. Risk factor results will be considered together, followed by protective factor results.

Similar to results for Argentina, with one exception (went hungry most or all of the time during the past 30 days, $p=.447$), all risk behavior measures met significance criteria. The 16 factors that met the $p<.05$ standard were all positively correlated with missing school days as might be expected for risk behaviors. Again, no strong correlations to the outcome variable were demonstrated. The strongest variable was being drunk one or more times lifetime. Only two other factors were reported above .150, including drinking 1 or more times during the past 30 days and smoking cigarettes 1 or more of the past 30 days. Several were distributed from 0.081 to 0.115. The lowest significant values included being attacked 1 or more times during the past 12 months, being seriously injured 1 or more times during the past 12 months, using amphetamines one or more times lifetime, and considering suicide during the past 12 months.

Unlike results for Argentina, only three predictor variables were observed as significant, including one or more times drunk lifetime, lonely most times or always during the past 12 months, and sitting for activities 3 or more hours per day of a usual day. No other risk factors were observed as significant.

Table 4.9
Summary Associations for Bolivia 2012 GSHS – Risk Factors

Risk Factor	Phi Coefficient		β	Wald (all d.f.=1)		Odds Ratio Exp(β)
	Value	Sig		Value	Sig	
Went hungry most of time/always past 30 days	.013	.447	-.073	.057	.812	.929
Attacked 1+ times past 12 months	.053	.001	-.013	.004	.947	.988
In fight 1+ times past 12 months	.110	<.001	.259	1.929	.165	1.296
Seriously injured 1+ times past 12 months	.064	<.001	.068	.138	.710	1.071
Bullied 1+ times past 30 days	.081	<.001	.203	1.151	.283	1.225
Lonely most times/always past 12 months	.115	<.001	.865	13.967	<.001	2.376
Worry prevented sleep most time/always past 12 months	.092	<.001	.484	3.193	.074	1.622
Considered suicide past 12 months	.069	<.001	-.123	.222	.638	.884
1+ times attempt suicide past 12 months	.086	<.001	.299	1.451	.228	1.349
Smoked cigarettes 1+ of past 30 days	.158	<.001	-.104	.163	.687	.902
Used other tobacco 1+ of past 30 days	.114	<.001	-.076	.049	.825	.927
Drank 1+ of past 30 days	.167	<.001	.186	.557	.455	1.204

1+ times drunk in lifetime	.202	<.001	1.018	18.071	<.001	2.767
Marijuana 1+ times past 30 days	.106	<.001	.806	3.407	.065	2.239
Amphetamines 1+ times lifetime	.068	<.001	.136	.052	.820	1.146
2+ sex partners lifetime	.123	<.001	.346	2.038	.153	1.413
Sitting activities 3+ hours/day of usual day	.089	<.001	.540	9.143	0.002	1.716
Note: Significant associations are bolded.						

Among protective factors, similar to Argentina, nearly all measures were negatively correlated with missing 3 or more days of school during the last 30 days. However, again, all factors were weakly or insignificantly correlated using the Phi coefficient analysis. Four were identified as meeting the significance standard, including all three parent indicators: parents most of the time or always check homework, parents most of the time or always know about free time, and parents most of the time or always understand problems. The other significant indicator was always or usually washing hands after using the toilet during the past 30 days.

Logistic regression analysis further refined the group of protective factors that met the significance standard. Two parent standards were observed at significant levels, including parents most of the time or always check homework and parents most of the time or always know about free time. No other protective factors were observed above the level of significance of $p=.05$.

Table 4.10

Summary Associations for Bolivia 2012 GSHS – Protective Factors

Protective Factor	Phi Coefficient		β	Wald (all d.f.=1)		Odds Ratio Exp(β)
	Value	Sig		Value	Sig	
Ate fruit 2+ times per day past 30 days	-.028	.097	-.192	1.908	.167	.825
Ate vegetables 3+ times per day past 30 days	-.015	.371	-.093	.315	.575	.911
Active 60+ mins/day for 5+ of past 7 days	.007	.682	.213	1.778	.182	1.237
Parents most/always check homework	-.072	<.001	-.475	8.370	.004	.622
Parents most/always understand problems	-.046	.005	-.029	.030	.863	.971
Parents most/always know about free time	-.068	<.001	-.380	5.184	.023	.684
Usually clean or brush teeth one or more times per day past 30 days	-.003	.839	.105	.184	.668	1.111
Always or usually wash hands before eating past 30 days	-.029	.083	-.132	.376	.540	.876
Always or usually wash hands after using toilet past 30 days	-.039	.018	-.310	1.879	.170	.734
Always or usually use soap when washing hands past 30 days	-.020	.226	-.015	.006	.936	.986
One or more close friends	-.008	.608	-.069	.088	.766	.934

Note: Significant associations are bolded.

In summary, three risk variables and two protective factors met significance standards for both Phi coefficient and Wald analyses with data from the Bolivia 2012 GSHS administration. These included:

Risk factors:

- Lonely most times or always during the past 12 months
- One or more times drunk during lifetime
- Sitting activities 3 or more hours per day of a usual day

Protective factors:

- Parents most of the time or always checking homework
- Parents most of the time or always knowing about free time

Peru

Consistent with reporting for the other two countries, summary tables including demographic breakdowns, frequencies, and observed associations for the 2010 GSHS administration in Peru are presented below.

Demographics

Peru's 2010 GSHS administration resulted in a high response rate similar to the 2012 administrations in Argentina and Bolivia. Data were capable of being weighted, and results are representative of all students in the nation. Respondents were again primarily 13 to 16 years old, with balanced gender representation consistent with school populations in Peru at the time. The total number of missing values was very low and not significant.

Table 4.11

Demographics for Peru 2010 GSHS Administration

Response	Value	
Total number of students responding	2882	
Overall response rate	85%	
Age	Freq	Pct
11 years old or younger	14	0.4
12 years old	42	1.6
13 years old	513	19.6
14 years old	848	30.3
15 years old	956	31.9
16 years old or older	494	16.2
Missing	15	N/A
Sex	Freq	Pct
Male	1402	50.6
Female	1462	49.4
Missing	18	N/A

Frequencies

Summary risk factor frequencies are presented in Table 4.12. All factors display strong response rates with insignificant levels of missing data. Positive responses were highest for risk factors included all 4 injury and violence markers: being seriously injured 1 or more times during the past 12 months, being attacked 1 or more times in the past 12 months, being in a fight 1 or more times in the past 12 months, and being bullied 1 or more times in the past 30 days. Positive responses were also high for drinking 1 or more times during the past 30 days and sitting 3 or more hours per day on a usual day. Frequencies of less than 10% were reported on six factors, including being hungry most of the time or always during the past 30 days, worry preventing sleep most or all of the time during the past 12 months, using tobacco other than cigarettes 1 day or more of the

past 30 days, using marijuana 1 day or more of the past 30 days, using amphetamines 1 time or more lifetime, and having 2 or more sex partners lifetime. Marijuana and amphetamine use reports were very low. Being hungry most or all of the time during the past 30 days was also reported as low. These frequencies were largely consistent with results from Bolivia.

Table 4.12

Summary Frequencies for Peru 2010 GSHS Administration – Risk Factors

Risk Factor	Yes		No		Missing	
	Freq	Pct	Freq	Pct	Freq	Pct
Went hungry most of time/always past 30 days	88	3.1	2794	96.9	0	0.0
Attacked 1+ times past 12 months	1090	37.8	1789	62.1	3	0.1
In fight 1+ times past 12 months	1066	37.0	1815	63.0	1	<0.1
Seriously injured 1+ times past 12 months	1357	47.1	1404	48.7	121	4.2
Bullied 1+ times past 30 days	1315	45.6	1456	50.5	111	3.9
Lonely most times/always past 12 months	307	10.7	2561	88.9	14	0.5
Worry prevented sleep most time/always past 12 months	262	9.1	2602	90.3	18	0.6
Considered suicide past 12 months	584	20.3	2275	78.9	23	0.8
1+ times attempt suicide past 12 months	500	17.3	2353	81.6	29	1.0
Smoked cigarettes 1+ of past 30 days	542	18.8	2313	80.3	27	0.9
Used other tobacco 1+ of past 30 days	136	4.7	2743	95.2	3	0.1
Drank 1+ of past 30 days	818	28.4	1914	66.4	150	5.2

1+ times drunk in lifetime	462	16.0	2390	82.9	30	1.0
Marijuana 1+ times past 30 days	119	4.1	2730	94.7	33	1.1
Amphetamines 1+ times lifetime	46	1.6	2783	96.6	53	1.8
2+ sex partners lifetime	265	9.2	2599	90.2	18	0.6
Sitting activities 3+ hours/day of usual day	836	29.0	2040	70.8	6	0.2
Note: Frequencies are unweighted. Percentages may not equal 100% due to rounding.						

Protective factor frequency results are reported in Table 4.13. Very high positive responses for protective factors were reported for all 4 hygiene questions, including usually cleaning or brushing teeth one or more times per day during the past 30 days, always or usually washing hands after using the toilet during the past 30 days, always or usually washing hands before eating during the past 30 days, and always or usually using soap when washing hands during the past 30 days. Student responses were also highly positive for having one or more close friends. All protective factor positive responses were reported above 25.0% except eating vegetables 3 or more times per day during the past 30 days. Protective factor frequencies were similar to both Argentina and Bolivia.

Table 4.13
Summary Frequencies for Peru 2010 GSHS Administration – Protective Factors

Protective Factor	Yes		No		Missing	
	Freq	Pct	Freq	Pct	Freq	Pct
Ate fruit 2+ times per day past 30 days	930	32.3	1951	67.7	1	<0.1
Ate vegetables 3+ times per day past 30 days	256	8.9	2621	90.9	5	0.2
Active 60+ mins/day for 5+ of past 7 days	720	25.0	2147	74.5	15	0.5

Parents most/always check homework	1265	43.9	1598	55.4	19	0.6
Parents most/always understand problems	1028	35.7	1831	63.5	23	0.8
Parents most/always know about free time	1055	36.6	1817	63.0	10	0.3
Usually clean or brush teeth one or more times per day past 30 days	2752	95.5	126	4.4	4	0.1
Always or usually wash hands before eating past 30 days	2306	80.0	563	19.5	13	0.5
Always or usually wash hands after using toilet past 30 days	2357	81.8	501	17.4	24	0.8
Always or usually use soap when washing hands past 30 days	2156	74.8	704	24.4	22	0.8
One or more close friends	2713	94.1	156	5.4	13	0.5

Note: Frequencies are unweighted. Percentages may not equal 100% due to rounding.

Associations

Phi coefficient chi-square results are presented below first, followed by logistic regression outcomes. Risk factor results are presented prior to protective factor results.

Like results for Argentina and – with one exception noted above – Bolivia, all risk behavior Phi coefficient measures met alpha significance criteria. All factors were positively correlated with missing school days as might be expected for risk behaviors. No strong correlations to the outcome variable were demonstrated, similar to results for both Argentina and Bolivia. The strongest variable was again being drunk one or more times lifetime. Several other factors were reported near .150, including having 2 or more sex partners lifetime, using marijuana 1 or more times during the past 30 days, using

amphetamines 1 or more times lifetime, drinking 1 or more times during the past 30 days, and smoking cigarettes 1 or more of the past 30 days. All other factors were reported at or below .118. The lowest significant values included being attacked 1 or more times during the past 12 months, being lonely all or most of the time, and being bullied 1 or more times during the past 30 days.

Similar to results for Argentina, but different than Bolivia, a large number of predictor variables were identified as significant through logistic regression analysis. Only two risk factors were not observed as significant, including being bullied 1 or more times during the past 30 days and being lonely all or most of the time during the past 12 months.

Table 4.14
Summary Associations for Peru 2010 GSHS Administration – Risk Factors

Risk Factor	Phi Coefficient		β	Wald (all d.f.=1)		Odds Ratio Exp(β)
	Value	Sig		Value	Sig	
Went hungry most of time/always past 30 days	.080	<.001	.847	2489.077	<.001	2.332
Attacked 1+ times past 12 months	.036	<.001	-.153	368.781	<.001	.858
In fight 1+ times past 12 months	.089	<.001	.171	443.418	<.001	1.187
Seriously injured 1+ times past 12 months	.075	<.001	.128	276.912	<.001	1.136
Bullied 1+ times past 30 days	.044	<.001	.008	1.039	.308	1.008
Lonely most times/always past 12 months	.037	<.001	-.012	.917	.338	.988
Worry prevented sleep most time/always past 12 months	.060	<.001	.193	239.354	<.001	1.213

Considered suicide past 12 months	.093	<.001	.256	541.997	<.001	1.292
1+ times attempt suicide past 12 months	.104	<.001	.176	241.163	<.001	1.192
Smoked cigarettes 1+ of past 30 days	.134	<.001	.351	1256.348	<.001	1.421
Used other tobacco 1+ of past 30 days	.088	<.001	-.354	430.478	<.001	.702
Drank 1+ of past 30 days	.138	<.001	.211	502.443	<.001	1.235
1+ times drunk in lifetime	.165	<.001	.505	2741.496	<.001	1.656
Marijuana 1+ times past 30 days	.150	<.001	.462	626.933	<.001	1.588
Amphetamines 1+ times lifetime	.130	<.001	.659	779.938	<.001	1.932
2+ sex partners lifetime	.154	<.001	.527	2494.105	<.001	1.695
Sitting activities 3+ hours/day of usual day	.118	<.001	.588	6242.446	<.001	1.801
Note: Significant associations are bolded.						

All 11 protective factors were significant at $p < .001$ using the Phi coefficient correlation method. However, similar to the risk factor analysis, none of those variables were strongly correlated with the outcome variable. With three exceptions, each with a value very near zero, all other variables that met the significance test were negatively associated with the outcome variable, consistent with the expected influence of protective factors.

Nine of 11 protective factors met the $p < .05$ standard for significance. Only two variables did not meet the $p < .05$ significance standard, including usually cleaning or brushing teeth one or more times per day during the past 30 days and always or usually

washing hands after using the toilet. The high number of significant protective factors was similar to the results of the Argentina 2012 administration.

Table 4.15

Summary Associations for Peru 2010 GSHS Administration – Protective Factors

Protective Factor	Phi Coefficient		β	Wald (all d.f.=1)		Odds Ratio Exp(β)
	Value	Sig		Value	Sig	
Ate fruit 2+ times per day past 30 days	-.028	<.001	-.243	1075.483	<.001	.784
Ate vegetables 3+ times per day past 30 days	.004	<.001	.251	513.201	<.001	1.285
Active 60+ mins/day for 5+ of past 7 days	.028	<.001	.342	2312.642	<.001	1.407
Parents most/always check homework	-.086	<.001	-.560	5657.357	<.001	.571
Parents most/always understand problems	-.038	<.001	.026	11.333	.001	1.027
Parents most/always know about free time	-.056	<.001	-.241	939.495	<.001	.786
Usually clean or brush teeth one or more times per day past 30 days	-.014	<.001	.020	1.784	.182	1.020
Always or usually wash hands before eating past 30 days	-.041	<.001	-.403	917.170	<.001	.668
Always or usually wash hands after using toilet past 30 days	-.024	<.001	.000	.001	.972	1.000
Always or usually use soap when washing hands past 30 days	.003	<.001	.207	269.087	<.001	1.230
One or more close friends	-.013	<.001	-.093	46.991	<.001	.911

Note: Significant associations are bolded.

In summary, 15 risk variables and nine protective factors met $p < .05$ significance standards for both Phi coefficient and Wald analyses with data from the Peru 2010 GSHS administration. These included:

Risk factors:

- Went hungry most of the time or always during the past 30 days
- Attacked 1 or more times during the past 12 months
- In a fight 1 or more times during the past 12 months
- Seriously injured 1 or more times during the past 12 months
- Worry prevented sleep most times or always during the past 12 months
- Considered suicide during the past 12 months
- Attempted suicide 1 or more times during the past 12 months
- Smoked cigarettes 1 or more of the past 30 days
- Used other tobacco 1 or more of the past 30 days
- Drank 1 or more of the past 30 days
- One or more times drunk during lifetime
- Marijuana use 1 or more times during the past 30 days
- Amphetamine use 1 or more times during lifetime
- Two or more sex partners lifetime
- Sitting activities 3 or more hours per day of a usual day

Protective factors:

- Ate fruit 2 or more times per day during the past 30 days
- Ate vegetables 3 or more times per day during the past 30 days
- Active 60 minutes or more on at least 5 of the past 7 days
- Parents most of the time or always checking homework
- Parents most of the time or always understanding problems
- Parents most of the time or always knowing about free time
- Always or usually washing hands before eating during the past 30 days
- Always or usually use soap when washing hands during the past 30 days
- Having 1 or more close friends

Summary

Data analyses for each country revealed important associations between risk and protective factors and missing school 3 or more times during the past 30 days. While individual independent variables were not strongly correlated with the outcome variable when measured with the Phi coefficient correlation method, a large majority displayed some relationship. These relationships were typically oriented in expected directions, as risk variables appeared to contribute to missing school 3 or more times during the past 30 days while protective factors negatively influenced absences. Logistic regression analyses for Argentina and Peru revealed a large number of risk and protective factors that independently affected the outcome variable. Bolivia's data yielded only three risk factors and two protective variables that met both tests of significance. Tables 4.16 and 4.17 display results across all three nations.

Table 4.16

Summary Results for Risk Variables across Nations

Risk Factor	Significant for Both Tests		
	Argentina	Bolivia	Peru
Went hungry most of time/always past 30 days	Yes		Yes
Attacked 1+ times past 12 months			Yes
In fight 1+ times past 12 months	Yes		Yes
Seriously injured 1+ times past 12 months	Yes		Yes
Bullied 1+ times past 30 days			
Lonely most times/always past 12 months	Yes	Yes	
Worry prevented sleep most time/always past 12 months	Yes		Yes
Considered suicide past 12 months			Yes
1+ times attempt suicide past 12 months	Yes		Yes
Smoked cigarettes 1+ of past 30 days	Yes		Yes
Used other tobacco 1+ of past 30 days			Yes
Drank 1+ of past 30 days	Yes		Yes
1+ times drunk in lifetime	Yes	Yes	Yes
Marijuana 1+ times past 30 days	Yes		Yes
Amphetamines 1+ times lifetime	Yes		Yes
2+ sex partners lifetime	Yes		Yes
Sitting activities 3+ hours/day of usual day	Yes	Yes	Yes

Table 4.17

Summary Results for Protective Variables across Nations

Protective Factor	Significant for Both Tests		
	Argentina	Bolivia	Peru
Ate fruit 2+ times per day past 30 days	Yes		Yes
Ate vegetables 3+ times per day past 30 days	Yes		Yes
Active 60+ mins/day for 5+ of past 7 days			Yes
Parents most/always check homework	Yes	Yes	Yes
Parents most/always understand problems	Yes		Yes
Parents most/always know about free time	Yes	Yes	Yes
Usually clean or brush teeth one or more times per day past 30 days	Yes		
Always or usually wash hands before eating past 30 days			Yes
Always or usually wash hands after using toilet past 30 days			
Always or usually use soap when washing hands past 30 days			Yes
One or more close friends			Yes

This chapter has addressed key findings and observations from data analysis. The following chapter will close with discussion, recommendations, and conclusions.

CHAPTER 5

DISCUSSION AND CONCLUSIONS

Three final topics will be addressed in this chapter, including a synthesis of results and related discussion, recommendations for future research, and conclusions.

Synthesis of Results

In this section, results will be reviewed in context with the original research questions and related literature. To recap, the questions of interest for this study include:

1. What health risk factors are associated with student absenteeism in Argentina, Bolivia, and Peru?

Aim: To determine which health risk behavior factors are associated with decreased school attendance and which appear to have little or no effect.

- Hypothesis: Health risk behaviors such as those related to alcohol use, drug use, mental health, sexual behaviors, tobacco use, and violence and unintentional injury are positively associated with missing classes or school without permission on 3 or more days during the past 30 days.

2. What protective factors are associated with student attendance in school in Argentina, Bolivia, and Peru?

Aim: To determine which protective factors are associated with improved school attendance and which appear to have little or no effect.

- Hypothesis: Protective factors such as parental and fellow student support and healthy behaviors related to diet, hygiene, and physical activity are

negatively associated with missing classes or school without permission on 3 or more days during the past 30 days.

Risk Factors

All risk factors were positively associated with missing 3 or more days of school during the past 30 days with one exception: “went hungry all or most of the past 30 days” was not significant in the data analysis for Bolivia. However, Phi coefficient correlation results were weak in nearly all cases. This suggests that individual factors may have limited correlational strength on their own.

Significant associations were noted through logistic regression for 13 of 17 risk factors in the data from Argentina and 15 of 17 in the Peru analysis. Each factor was positively associated with the outcome variable of missing classes 3 or more of the past 30 days. These included all measured risk factors related to alcohol use, drug use, mental health (except consideration of suicide in Argentina and feeling lonely in Peru), sexual behaviors, tobacco use (except other tobacco use in Argentina), and violence and unintentional injury (except being attacked or bullied in Argentina or being bullied in Peru). These results support the risk behavior hypothesis for Argentina and Peru GSHS administrations.

Conversely, while Phi coefficient correlation results for Bolivia corresponded with Argentina and Peru, only three risk factors were found to be significant through logistic regression, including feeling lonely all or part of the time during the past 12 months, being drunk 1 or more times lifetime, and sitting 3 or more hours per day during a usual day. Results of the other 14 risk factors do not support the risk behavior

hypothesis. Contextual factors may play a role in the disparity of outcomes, as Bolivia ranks near the bottom in relation to other countries on socioeconomic factors related to education, health, poverty, income inequality, and general social development. Further investigation is necessary to understand these results fully.

Two risk behavior factors were significant for all three countries, being drunk 1 or more times lifetime and sitting 3 or more hours per day during a usual day. Both factors could be related to mental health issues such as depression. These and other risk factors significant in Argentina and Peru could also be viewed as “self-medicating” behaviors.

Two additional items of interest were displayed in frequency data. Argentina data included a very high frequency of students reporting having used alcohol at least once during the past 30 days (50.5%), with nearly a third (32.1%) indicating having been drunk at least once during their lifetime. Bolivia and Peru both reported high frequencies of injury and violence prevalence among student respondents.

Protective Factors

Results for protective factors were negatively correlated with the outcome variable as shown in the Phi coefficient analysis. However, similar to results for risk factors, all correlations were essentially weak. Those that were not negatively correlated were close to zero. This suggests again that individual factors may have limited correlational strength on their own.

Protective factor logistic regression results followed a similar pattern as risk factor results, with Argentina and Peru demonstrating the highest numbers of significant factors (6 of 11 for Argentina, and 9 of 11 for Peru). Both nutrition, all three parental

support, and one hygiene variable (cleaning or brushing teeth at least 1 time per day most of the past 30 days) for Argentina were consistent with the hypothesis. All results for Peru except cleaning or brushing teeth and washing hands always or most of the time after using the toilet were supportive of the protective factors hypothesis.

Again, similar to risk factor results, Bolivia reported significant logistic regression results for only two protective factors, parents always or usually checking homework and parents always or usually knowing about free time. Analysis of the other factors did not support the hypothesis.

The two parental factors that were reported as significant in the Bolivia results were the only two that were consistent across all three countries. These results support the importance of parental connections for fostering school attendance, which is a known strong protective factor in the United States (Resnick, et al., 1997; Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999; Epstein & Sheldon, 2002).

Consistent frequency patterns were noted across all three countries. Each reported very high positive responses on all hygiene questions, with results around 90% for each factor. Very high positive responses were also reported for having 1 or more close friends (Argentina, 92.0%; Bolivia, 90.9%; and Peru, 94.1%). Parental support frequencies were markedly lower though moderate, ranging from 29.4 to 49.9%.

Odds ratios for protective factor results appeared counterintuitive for some variables. Rechecks were performed to ensure appropriate directionality, and no anomalies were observed. Combining variables related to parental intervention and

separately, factors related to hygiene, yielded similar results. Further investigation is warranted to understand these unexpected results fully.

General Discussion

Social context is highly likely to impact student responses on the GSHS. Each country in this study has a history of poverty and income inequality, inconsistent economies, unstable democracies, and social unrest and conflict. Education systems face numerous challenges, with a wide range of school quality in each nation. Rural areas in each country include significant impoverished populations with limited resources. Urban areas include high-resource and low-resource communities, sometimes in close proximity to each other.

Results of this study offer numerous options for policy and practice interventions. Data analysis for all three countries supports strengthening parental support and mental health initiatives in each country. Results for Argentina and Peru support interventions across a wide range of risk and protective factors.

Practitioners in education can consider strengthening ties of parents to schools and school systems through parental education, information, skills-building, and involvement. Numerous promising initiatives related to parental engagement have been undertaken in the United States and Europe that might provide some insights into effective options. If considered, they should be modified for local context and conditions. Teachers, school nurses, and other school staff can work to engage parents in instruction, student monitoring, and services. Guided by local context, targeted interventions can address specific risk and protective factors, such as education and skills-building

programs that address alcohol, tobacco, and other substance abuse or violence and unintentional injury. Parents can work with schools to guide initiative development and shape programs to increase their effectiveness. Peer support models can amplify the effects of these programs.

Generally, policymakers can investigate options related to risk and protective factors identified in this study to promote the healthy development of children and youth. Specific school-based policy and resource development options that can address multiple risk and protective factors include requiring skills-based health education, facilitating access to health services for students, fostering safe and supportive school environments, strengthening peer support, and promoting connections to parents and community resources. Policymakers, other decision makers, and opinion leaders can work with school administrators to champion and develop public resources that complement the work of educators and school systems. Parents and parent organizations can make their opinions known to policymakers, other decision makers, and opinion leaders and work in partnership to enact effective policy options.

In addition to interventions supported by this study, practitioners and policymakers can consider systems-level work that leverages the school (institutions and organizations), community, and structures and systems levels of the Social Ecological Model. These initiatives can provide opportunities that positively affect individual and interpersonal outcomes measured by the GSHS and strengthen their impact. Initiatives such as those outlined in Chapter 1 (Significance) and Chapter 2 (Evidence Development

– both sections) can be sparked by an understanding of the importance and influence of risk and protective factors with youth.

Recommendations for Future Research

Researchers will note that numerous opportunities exist for further investigation. One goal of this exploratory study is to stimulate future research using GSHS data.

A variety of possible factors are likely to be important in affecting school absenteeism. Several may underlie the results of this study, which would require additional intensive investigation to uncover. Possible examples include:

- Impact of poverty and related economic factors
- Impact of national and local policies related to specific risk and protective factors
- Urban, suburban, and rural differences
- Gender differences
- Cultural factors specific to Andean nations vs. “Southern Cone” nations
- Type of school attended
- Interactions of variables with each other or in combination with others
- Mental health and “self-medication” as an underlying factor possibly common to many positive results

Other possible research options that could provide further insight include:

- How factors change over time, which cannot be measured with these cross-sectional data

- Trends in risk and protective factors (from repeat GSHS administrations)
- Impact of specific healthy schools initiatives, such as improved health education curriculum and instruction, access to health services, environmental approaches, parent engagement, asset development and school connectedness, etc.
- Impact of systems-level approaches such as the WHO Health Promoting Schools Model or ASCD/CDC Whole School, Whole Community, Whole Child Model
- Analysis of different effects using different levels of the outcome variable. For example, this study employed 3 or more days missed during the past 30 days as a marker of possible chronic absenteeism. This reduced the number of students reporting being absent for each country:
 - Argentina: 1 or more days missed during the past 30 days, 32.4%; 3 or more days missed, 15.2%
 - Bolivia: 1 or more days missed during the past 30 days, 33.0%; 3 or more days missed, 7.5%
 - Peru: 1 or more days missed during the past 30 days, 36.9%; 3 or more days missed, 9.9%
- Analysis of different effects if the outcome variable became 10% or more days missed during an entire school year. (This would require new data collection or review of student attendance records, as the GSHS does not include a question measuring that time frame for absenteeism.)

Conclusions

Generally, the purpose of this study has been to determine associations between health risk behaviors or protective factors and student attendance in school in nations where these relationships have not yet been well described. This exploratory view has offered insight into which risk and protective factors are significant in relation to missing school without permission 3 or more days during the previous 30 days in the countries of interest, Argentina, Bolivia, and Peru. Results offer opportunities for refinement of future research and possible policy and program interventions to build stronger outcomes.

Understanding more about the strength of these associations can bring renewed energy and focus to efforts to increase school attendance and subsequent student achievement. Nations and localities can consider policy interventions related to specific significant risk behavior and protective factors that can improve student attendance, especially those that increase parent engagement and student connectedness to school. Ministries of health can work together with ministries of education to consider policy options such as national guidelines; promote systems-level approaches such as the WHO Health Promoting Schools Model and the ASCD/CDC Whole School, Whole Community, Whole Child Model; develop recommendations and resources for community interventions; and modify validated resources such as the CDC School Health Index, Health Education Curriculum Analysis Tool, and Physical Education Curriculum Analysis Tool for local use in other countries.

While the availability of resources is often mentioned as inhibiting low-resource countries, in many cases, interventions to improve health in schools are not costly.

Increasingly, high-quality curricula and teacher training to improve instruction are delivered in low-cost ways. Policy and operational changes such as those fostered by the WHO and ASCD/CDC models and related frameworks often do not cost significant amounts of money or create time burdens. A proven intervention that can address significant findings of this study, increasing parent engagement, offers low cost and high impact opportunities.

Through this exploratory study and future research initiatives, the purpose of the GSHS to “provide accurate data on health behaviours and protective factors” and its goals to “help countries develop priorities, establish programmes, and advocate for resources for school health and youth health programmes and policies; allow international agencies, countries, and others to make comparisons across countries regarding the prevalence of health behaviours and protective factors, and establish trends in the prevalence of health behaviours and protective factors by country for use in evaluation of school health and youth health promotion” may be fulfilled.

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APPENDIX A

GSHS RISK FACTOR QUESTIONS COMMON TO ALL 3 COUNTRIES
WITH POSSIBLE RESPONSES

Questions (Experimental Variables)	Possible Responses
<p>During the past 30 days, how often did you go hungry because there was not enough food in your home?</p> <p>(No definition provided to respondents.)</p>	<p>A. Never B. Rarely C. Sometimes D. Most of the time E. Always</p>
<p>During the past 12 months, how many times were you physically attacked?</p> <p>(Definition provided to respondents: A physical attack occurs when one or more people hit or strike someone, or when one or more people hurt another person with a weapon such as a stick, knife, or gun. It is not a physical attack when two students of about the same strength or power choose to fight each other.)</p>	<p>A. 0 times B. 1 time C. 2 or 3 times D. 4 or 5 times E. 6 or 7 times F. 8 or 9 times G. 10 or 11 times H. 12 or more times</p>
<p>During the past 12 months, how many times were you in a physical fight?</p> <p>(Definition provided to respondents: A physical fight occurs when two students of about the same strength or power choose to fight each other.)</p>	<p>A. 0 times B. 1 time C. 2 or 3 times D. 4 or 5 times E. 6 or 7 times F. 8 or 9 times G. 10 or 11 times H. 12 or more times</p>
<p>During the past 12 months, how many times were you seriously injured?</p> <p>(Definition provided to respondents: An injury is serious when it makes you miss at least one full day of usual activities such as school, sports, or a job, or requires treatment by a doctor or nurse.)</p>	<p>A. 0 times B. 1 time C. 2 or 3 times D. 4 or 5 times E. 6 or 7 times F. 8 or 9 times G. 10 or 11 times H. 12 or more times</p>

<p>During the past 30 days, on how many days were you bullied?</p> <p>(Definition provided to respondents: Bullying occurs when a student or group of students say or do bad and unpleasant things to another student. It is also bullying when a student is teased a lot in an unpleasant way or when a student is left out of things on purpose. It is not bullying when two students of about the same strength or power argue or fight or when teasing is done in a friendly and fun way.)</p>	<p>A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days</p>
<p>During the past 12 months, how often have you felt lonely?</p> <p>(No definition provided to respondents.)</p>	<p>A. Never B. Rarely C. Sometimes D. Most of the time E. Always</p>
<p>During the past 12 months, how often have you been so worried about something that you could not sleep at night?</p> <p>(No definition provided to respondents.)</p>	<p>A. Never B. Rarely C. Sometimes D. Most of the time E. Always</p>
<p>During the past 12 months, did you ever seriously consider attempting suicide?</p> <p>(No definition provided to respondents.)</p>	<p>A. Yes B. No</p>
<p>During the past 12 months, how many times did you actually attempt suicide?</p> <p>(No definition provided to respondents.)</p>	<p>A. 0 times B. 1 time C. 2 or 3 times D. 4 or 5 times E. 6 or more times</p>
<p>During the past 30 days, on how many days did you smoke cigarettes?</p> <p>(No definition provided to respondents.)</p>	<p>A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days</p>
<p>During the past 30 days, on how many days did you use any tobacco products other than cigarettes, such as pipes, roll your own cigarettes, or smokeless tobacco?</p> <p>(No definition provided to respondents.)</p>	<p>A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days</p>

<p>During the past 30 days, on how many days did you have at least one drink containing alcohol?</p> <p>(Definition provided to respondents: This includes drinking wine, beer, whiskey, gin, or vodka. Drinking alcohol does not include drinking a few sips of wine for religious purposes. A “drink” is a glass of wine, a bottle of beer, a small glass of liquor, or a mixed drink.)</p>	<p>A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days</p>
<p>During your life, how many times did you drink so much alcohol that you were really drunk?</p> <p>(Definition provided to respondents: Staggering when walking, not being able to speak right, and throwing up are some signs of being really drunk.)</p>	<p>A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 or more times</p>
<p>During the past 30 days, how many times have you used marijuana?</p> <p>(No definition provided to respondents.)</p>	<p>A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 or more times</p>
<p>During your life, how many times have you used amphetamines or methamphetamines?</p> <p>(No definition provided to respondents.)</p>	<p>A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 or more times</p>
<p>During your life, with how many people have you had sexual intercourse?</p> <p>(No definition provided to respondents.)</p>	<p>A. I have never had sexual intercourse B. 1 person C. 2 people D. 3 people E. 4 people F. 5 people G. 6 or more people</p>
<p>How much time do you spend during a typical or usual day sitting and watching television, playing computer games, talking with friends, or doing other sitting activities, such as reading a book or chatting?</p> <p>(No definition provided to respondents.)</p>	<p>A. Less than 1 hour per day B. 1 to 2 hours per day C. 3 to 4 hours per day D. 5 to 6 hours per day E. 7 to 8 hours per day F. More than 8 hours per day</p>

APPENDIX B

GSHS PROTECTIVE FACTOR QUESTIONS COMMON TO ALL 3 COUNTRIES
WITH POSSIBLE RESPONSES

Questions (Experimental Variables)	Possible Responses
<p>During the past 30 days, how many times <u>per day</u> did you usually eat fruit, such as apples, bananas, oranges, and mandarins?</p> <p>(No definition provided to respondents.)</p>	<p>A. I did not eat fruit during the past 30 days</p> <p>B. Less than one time per day</p> <p>C. 1 time per day</p> <p>D. 2 times per day</p> <p>E. 3 times per day</p> <p>F. 4 times per day</p> <p>G. 5 or more times per day</p>
<p>During the past 30 days, how many times <u>per day</u> did you usually eat vegetables, such as lettuce, tomatoes, carrots, or pumpkin?</p> <p>(No definition provided to respondents.)</p>	<p>A. I did not eat vegetables during the past 30 days</p> <p>B. Less than one time per day</p> <p>C. 1 time per day</p> <p>D. 2 times per day</p> <p>E. 3 times per day</p> <p>F. 4 times per day</p> <p>G. 5 or more times per day</p>
<p>During the past 30 days, how many times per day did you usually clean or brush your teeth?</p> <p>(No definition provided to respondents.)</p>	<p>A. I did not clean or brush my teeth during the past 30 days</p> <p>B. Less than 1 time per day</p> <p>C. 1 time per day</p> <p>D. 2 times per day</p> <p>E. 3 times per day</p> <p>F. 4 or more times per day</p>

<p>During the past 30 days, how often did you wash your hands before eating?</p> <p>(No definition provided to respondents.)</p>	<p>A. Never B. Rarely C. Sometimes D. Most of the time E. Always</p>
<p>During the past 30 days, how often did you wash your hands after using the toilet or latrine?</p> <p>(No definition provided to respondents.)</p>	<p>A. Never B. Rarely C. Sometimes D. Most of the time E. Always</p>
<p>During the past 30 days, how often did you use soap when washing your hands?</p> <p>(No definition provided to respondents.)</p>	<p>A. Never B. Rarely C. Sometimes D. Most of the time E. Always</p>
<p>How many close friends do you have?</p> <p>(No definition provided to respondents.)</p>	<p>A. 0 B. 1 C. 2 D. 3 or more</p>
<p>During the past 7 days, on how many days were you physically active for a total of at least 60 minutes <u>per day</u>? ADD UP ALL THE TIME YOU SPENT IN ANY KIND OF PHYSICAL ACTIVITY EACH DAY.</p> <p>(Definition provided to respondents: Physical activity is any activity that increases your heart rate and makes you get out of breath some of the time. Physical activity can be done in sports, playing with friends, or walking to school. Some examples of physical activity are running, fast walking, biking, dancing, and playing football.)</p>	<p>A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days G. 6 days H. 7 days</p>
<p>During the past 30 days, how often did your parents or guardians check to see if your homework was done?</p> <p>(No definition provided to respondents.)</p>	<p>A. Never B. Rarely C. Sometimes D. Most of the time E. Always</p>
<p>During the past 30 days, how often did your parents or guardians understand your problems and worries?</p> <p>(No definition provided to respondents.)</p>	<p>A. Never B. Rarely C. Sometimes D. Most of the time E. Always</p>

<p>During the past 30 days, how often did your parents or guardians really know what you were doing with your free time?</p> <p>(No definition provided to respondents.)</p>	<ul style="list-style-type: none">A. NeverB. RarelyC. SometimesD. Most of the timeE. Always
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