# Understanding the Relationship Between Education and Health: A Review of the Evidence and an Examination of Community Perspectives

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# Abstract

Education is critical to social and economic development and has a profound impact on population health. We review evidence for the health benefits associated with education in the context of a socioecological model of health. The health benefits of education accrue at the individual level (e.g., skill development and access to resources); the community level (e.g., the health-related characteristics of the environments in which people live); and the larger social/ cultural context (e.g., social policies, residential segregation, and unequal access to educational resources). All of these upstream factors may contribute to health outcomes, while factors such as ability to navigate the health care system, educational disparities in personal health behaviors, and exposure to chronic stress act as more proximate factors. It is also important to consider the impact of health on educational attainment and the conditions that occur throughout the life course that can impact both health and education, such as early childhood experiences. After exploring the literature linking health and education, we describe a project to engage residents of a low-income, urban community in a process of creating causal models to try to identify new links between education and health and help refine our understanding of the complex phenomena that shape this relationship. We asked community researchers to map out the pathways linking education and health in an effort to explore the possibility that people outside of academia might be able to help refine our understanding of complex phenomena by positing factors and relationships from their lived experience.

# Introduction

It is now widely recognized that health outcomes are deeply influenced by a variety of social factors outside of health care. The dramatic differences in morbidity, mortality, and risk factors that researchers have documented within and between countries are patterned after classic social determinants of health, such as education and income,<sup>1,2</sup> as well as place-based characteristics of the physical and social environment in which people live and the macrostructural policies that shape them.

A 2013 report from the National Research Council and Institute of Medicine cited these socioecological factors, along with unhealthy behaviors and deficiencies in the health care system,

as leading explanations for the "health disadvantage" of the United States. In a comparison of 17 high-income countries, age-adjusted all-cause mortality rates for 2008 ranged from 378.0 per 100,000 in Australia to 504.9 in the United States. The report documented a pervasive pattern of health disadvantages across diverse categories of illness and injury that existed across age groups, sexes, racial and ethnic groups, and social class.<sup>3</sup>

Recent attention has focused on the substantial health disparities that exist within the United States, where life expectancy varies at the State level by 7.0 years for males and 6.7 years for females,<sup>3</sup> but mortality and life expectancy vary even more substantially across smaller geographic areas such as counties<sup>4,5</sup> and census tracts. In many U.S. cities, life expectancy can vary by as much as 25 years across neighborhoods.<sup>6</sup> The same dramatic geographic disparities can be seen for other outcomes, such as infant mortality, obesity, and the prevalence of diabetes and other chronic diseases.

Of the various social determinants of health that explain health disparities by geography or demographic characteristics (e.g., age, gender, race-ethnicity), the literature has always pointed prominently to education. Research based on decades of experience in the developing world has identified educational status (especially of the mother) as a major predictor of health outcomes, and economic trends in the industrialized world have intensified the relationship between education and health. In the United States, the gradient in health outcomes by educational attainment has steepened over the last four decades<sup>7,8</sup> in all regions of the United States,<sup>9</sup> producing a larger gap in health status between Americans with high and low education. Among white Americans without a high school diploma, especially women,<sup>10</sup> life expectancy has decreased since the 1990s, whereas it has increased for others.<sup>8</sup> Death rates are declining among the most educated Americans, accompanied by steady or increasing death rates among the least educated.<sup>11</sup> The statistics comparing the health of Americans based on education are striking:

- At age 25, U.S. adults without a high school diploma can expect to die 9 years sooner than college graduates.<sup>12</sup>
- According to one study, college graduates with only a Bachelor's degree were 26 percent more likely to die during a 5-year study followup period than those with a professional degree. Americans with less than a high school education were almost twice as likely to die in the next 5 years compared to those with a professional degree.<sup>13</sup>
- Among whites with less than 12 years of education, life expectancy at age 25 fell by more than 3 years for men and by more than 5 years for women between 1990 and 2008.<sup>8</sup>
- By 2011, the prevalence of diabetes had reached 15 percent for adults without a high school education, compared with 7 percent for college graduates.<sup>14</sup>

What accounts for the growing health disadvantages that exist among people with lower educational attainment? Is it what they learn in school, such as how to live a healthy lifestyle, or the socioeconomic advantages that come from an education? Or is the cross-sectional association between education and health more complex, involving nuanced contextual covariables in our society that provide a fuller back story?

This chapter explores the relationship between education and health from the perspective of the peer-reviewed literature and that of community members, engaged through a research exercise, to

blend insights from lived experience with the empirical data accumulated from scholarly research. Unpacking the reasons for the connection between education and health is not just an exercise in scientific inquiry, it is also essential to setting policy priorities. As increasing attention is focused on the need to address social inequity in order to address health inequities, understanding the links between broad upstream factors such as education and health outcomes becomes a critical challenge. Awareness of the importance of education might help drive investment in education and improvements in education and educational policy.

# **Conceptual Framework**

An overarching theoretical framework for the impact of social determinants on health is provided by an ecological model in which individuals and their behavior are embedded, across the lifespan, within a framework of nested institutional contexts (Figure 1).<sup>15</sup> The individual and his or her characteristics are situated within and affected by the family and household, the community and its institutions (e.g., school, workplace, civil institutions), and policies of the larger society. Each level brings access to opportunities, as well as constraints on actions and opportunities. Furthermore, these levels interact with one another, such that family resources, for example, may mediate or moderate the resources available within the community. Social scientists widely agree that unequal social status creates unequal access to resources and rewards. Social structure, as embodied in social position, structures individual behaviors and values and therefore affects many of the mediators in the relationship between education and health.



#### Figure 1. The Socioecological Model

Source: Kaplan GA, Everson SA, Lynch JW. The contribution of social and behavioral research to an understanding of the distribution of disease: a multilevel approach. In Smedley BD, Syme SL (eds), Promoting health: intervention strategies from social and behavioral research. Washington, DC: National Academies Press; 2000. Used with permission.

Note: Figure depicts a multilevel approach to epidemiology.

Education is one of the key filtering mechanisms that situate individuals within particular ecological contexts. Education is a driving force at each ecological level, from our choice of partner to our social position in the status hierarchy. The ecological model can therefore provide a context for the numerous ways in which education is linked to our life experiences, including health outcomes. It also provides a framework for understanding the ways in which educational outcomes themselves are conditioned on the many social and environmental contexts in which we live and how these, in turn, interact with our individual endowments and experiences.

Within this rich contextual framework, educational attainment (the number of years of schooling completed) is important but is far from the whole story. Educational attainment is often a key indicator in research studies, not least because it is often measured and recorded; life expectancy is compared by educational attainment because it is the only information about education recorded on death certificates. Besides obvious measures of the quality of education such as proficiency scores and understanding of mathematics, reading, science, and other core content, other dimensions of education are clearly important in the ecological context as well; cognitive development, character development, knowledge, critical thinking, and problem solving are a few examples.

Additionally, the relationship between years of education and health is not a purely linear function. As part of a literature attempting to clarify the functional form of the relationship between education and health, Montez et al. have documented a negative relationship between years of education and mortality risk for attainment less than high school graduation, a steep decline for high school graduates (with reduction of risk five times greater than attributable to other years of education), and a continued yet steeper negative relationship for additional years of schooling (Figure 2).<sup>16</sup> The drop at high school graduation points to the importance of obtaining credentials in addition to other benefits of educational attainment.



Figure 2. Log-odds coefficients for semi-nonparametric levels of educational attainment (functional form 1) by race-gender-age

Source: Montez JK, Hummer RA, Hayward MD. Educational attainment and adult mortality in the United States: a systematic assessment of functional form. Demography 2012;45:315-36. Used with permission.

In order to present a nuanced picture of the relationship between education and health, this chapter is presented in two parts. First, we review the health benefits associated with education, focusing on the primary mechanisms, both distal and proximate, by which education may be considered a driving force in health outcomes. We take a socioecological approach by presenting these concepts in a hierarchy, moving from the level of the person to the community/institution and then the larger social/policy context. Next, we turn to issues of causality that can make it difficult to draw conclusions about the relationship between education and health. These include reverse causality and selection, in which education may actually be impacted by ill health, and confounding, where both education and health are affected by some other causal factor(s) that may also provide important clues about the root causes of poor education and poor health.

Finally, this chapter moves beyond abstract academic models to discuss alternate ways of understanding and prioritizing these mechanisms. We look at preliminary results from a project to garner a "view from the inner city" based on the lived experiences of residents of a disadvantaged neighborhood and how their insights may highlight, broaden, or reinterpret our understanding of the mechanisms presented earlier in the chapter. Our goal is not to settle the question of which are the most important mechanisms by which education and health are related, but rather to call attention to the value of engaging people within communities in enabling researchers and policymakers to better understand and operationalize the importance of education in everyday life and the meaning of empirical evidence from the literature. Our work is part of a larger trend in community-based participatory research (CBPR) that is invigorating a dialogue that incorporates community engagement into the important discussions surrounding social and health inequalities.<sup>17</sup>

Readers are cautioned that this chapter touches on a diverse spectrum of factors—all linked to education—that vary from urban design to psychosocial characteristics, access to health care, air pollution, and economic policy. These very diverse domains are each the subject of large literatures that cannot be systematically catalogued in this space. Rather than offering a systematic review, our goal is to draw attention to these factors as part of the education-health relationship and to cite representative sources where readers can explore these topics in more detail; we encourage this research because the quality of evidence linking these factors to health outcomes is uneven and in some cases speculative. Education is linked to established health determinants supported by extensive evidence, such as tobacco use and poverty, but also to factors with less developed evidence, such as allostatic load and social cohesion. Research on methods for improving educational outcomes and learning is not catalogued here due to space constraints but is of vital importance. Finally, the individual elements of the socioecological model exist in a context, and disciplinary and transdisciplinary research is highly relevant in understanding the interplay of contextual factors in a complex systems relationship.<sup>18,19</sup>

# **Health Benefits Associated with Education**

Among the most obvious explanations for the association between education and health is that education itself produces benefits that later predispose the recipient to better health outcomes. We may think of these returns from education, such as higher earnings, as subsequent "downstream"

benefits of education (later in the chapter we will discuss "upstream" factors that may influence both education and health throughout the life course, especially before children ever reach school age). Following the socioecological framework presented in the introduction, we describe a range of potential downstream impacts of education on health, starting with the ways individuals experience health benefits from education, but then going on to discuss the health-related community (or placebased) characteristics that often surround people with high or low education, and closing with the larger role of social context and public policy.

## **Impact at the Individual Level**

Education can impart a variety of benefits that improve the health trajectory of the recipient. Below we discuss its role in enhancing non-cognitive and cognitive skills and access to economic resources, and we highlight the impacts of these on health behaviors and health care usage. Although this section focuses specifically on the health benefits of education, we do so in full knowledge that education is impacted by health, development, and a host of personal, community, and contextual factors.

#### Education Impacts a Range of Skills

Education contributes to human capital by developing a range of skills and traits, such as cognitive skills, problem solving ability, learned effectiveness, and personal control.<sup>20</sup> These various forms of human capital may all mediate the relationship between education and health. Personality traits (also known as "soft" or non-cognitive skills) are associated with success in later life, including employment and health. The 'Big Five' personality factors include conscientiousness, openness to experience, extraversion, agreeableness, and neuroticism/emotional stability.<sup>21</sup> Roberts et al. postulate three pathways whereby personality traits may impact mortality: through disease processes (e.g., response to stress), health-related behaviors, and reactions to illness. They suggest that the strength of association between the 'Big Five' personality traits and mortality is comparable to that of IQ and stronger than socioeconomic status.<sup>22</sup> Although enduring, these skills are also mutable, and research indicates that educational interventions to strengthen these skills can be important, especially among children in disadvantaged areas, who may find it more difficult to refine these skills at home and in their social environments.

Personal control, also described in the literature in terms of locus of control, personal efficacy, personal autonomy, self-directedness, mastery, and instrumentalism,<sup>23</sup> is another soft skill associated with educational attainment. According to Ross and Wu (p. 723), "Because education develops one's ability to gather and interpret information and to solve problems on many levels, it increases one's potential to control events and outcomes in life. Moreover, through education one encounters and solves problems that are progressively more difficult, complex, and subtle, which builds problem-solving skills and confidence in the ability to solve problems."<sup>23</sup>

Personal control can impact individuals' attitudes and behaviors, potentially including health behaviors. Furthermore, an individual's sense of mastery and control may mediate stress, possibly by facilitating better coping mechanisms. Lack of personal control, on the other hand, may provoke physiological responses, leading to suppression of the immune system.<sup>23</sup>

#### Box 1. Impact of Education on the Ability to Navigate Health Care

Achieving positive health outcomes in today's health care environment requires a variety of factors to come together that may be affected by educational attainment and a combination of soft and hard skills. Patients benefit from the ability to understand their health needs, follow or read instructions, advocate for themselves and their families, and communicate effectively with health providers. A systematic review of health literacy and health outcomes found that individuals with lower health literacy had poorer health-related knowledge and comprehension, ability to demonstrate taking medications properly, and ability to interpret medication labels and health messages. They also had increased hospitalizations and emergency care, decreased preventive care, and, among the elderly, poorer overall health status and higher mortality.<sup>26</sup> For example, low literacy and low levels of other basic skills such as listening and numeracy have been associated with greater difficulty in asthma care in adults.

In a review of the impact of patient socioeconomic status on patient-physician communication, Willems et al.<sup>28</sup> concluded that communication is influenced in part by patients' communicative ability and style, which depend largely on education and other personal attributes. Education contributes to more active communication, such as expressiveness and asking questions. In response, physicians tend to communicate less to patients who seem less educated and to provide care that is more directive and less participatory.

In addition to its impact on soft skills, education has the potential to impart skills in reading, mathematics, and science/health literacy that could contribute to an individual's health. Learners of English as a second language are helped to overcome language barriers that can interfere with understanding of health needs. Education may also improve a range of other skills, such as cognitive ability, literacy, reaction time, and problem solving. Pathways from these skills to health outcomes may be indirect, via attainment of better socioeconomic circumstances or behavior, but they may also apply directly in clarifying the increasingly complex choices individuals face in understanding health priorities and medical care needs. Skills such as higher cognitive ability and health literacy may also lead directly to improved health outcomes because of an enhanced "ability to comprehend and execute complex treatment regimens," and better disease self-management.<sup>24</sup> A strong education may be important in both navigating health care (see Box 1) and making choices about lifestyle and personal health behaviors (see Box 2). Cutler and Lleras-Muney report that increased cognitive ability resulting from education contributes significantly to the education gradient in health behaviors.<sup>25</sup>

#### Education Increases Economic and Social Resources

A large part of the impact of education on health flows through the attainment of economic resources, such as earnings and wealth, as well social resources such as access to social networks and support.<sup>36</sup> Adults with more education are less likely to experience unemployment and economic hardship and will have greater access to a variety of important material, financial, and social resources (see Box 3). Link and Phelan (p. 87) point out that the specific mechanisms linking socioeconomic status (SES) to health have changed over time but that SES remains a fundamental social cause of disease because it involves "access to resources that can be used to avoid risks or to minimize the consequences of disease once it occurs."<sup>1</sup>

#### Box 2. Impact of Education on Personal Health Behaviors

Adults with higher levels of education are less likely to engage in risky behaviors, such as smoking and drinking, and are more likely to have healthy behaviors related to diet and exercise. Data from the National Survey on Drug Use and Health (NSDUH) indicate that in 2009-10, 35 percent of adults who did not graduate high school were smokers, compared to 30 percent of high school graduates and 13 percent of college graduates.<sup>29</sup> The impact of education on health behaviors likely stems from education's impact on skills as well as socioeconomic status. Examining competing explanations for the education gradient in health behaviors, Cutler and Lleras-Muney find evidence for the importance of resources, cognitive ability (especially how one processes information), and social integration.<sup>25</sup>

Education offers opportunities to learn more about health and health risks, both in the form of health education in the school curriculum and also by giving individuals the health literacy to draw on, later in life, and absorb messages about important lifestyle choices to prevent or manage diseases. For example, people with more education are more likely to have healthy diets and exercise regularly. Analysis of several waves of data from the National Health and Nutrition Examination Survey (NHANES) found that intake of specific nutrients (e.g., vitamins A and C, potassium, calcium), as well as overall diet quality, are associated with education.<sup>30</sup> In addition, Behavioral Risk Factor Surveillance System (BRFSS) data for 2010 indicate that only 61 percent of adults with less than a high school education and 68 percent of high school graduates said that they exercised in the past 30 days, compared to 85 percent of college graduates.<sup>31</sup> It must be noted, however, that not all behavioral risk factors are higher among those with the lowest educational attainment. BRFSS data for 2011 indicate that the prevalence of binge drinking increases with higher levels of education.<sup>32</sup>

Finally, adults with higher levels of education tend to have lower exposure to stress related to economic deprivation or relative deprivation,<sup>33</sup> and may therefore be less inclined than those with lower levels of education to adopt unhealthy coping behaviors for stress. Individuals with more education tend to have greater socioeconomic resources for a healthy lifestyle and a greater relative ability to live and work in environments with the resources and built designs for healthy living.<sup>34,35</sup>

#### **Economic Resources**

Adults with a higher education—especially in today's knowledge economy—have conspicuous advantages in gaining employment and finding desirable jobs (Figure 3). Advanced degrees give workers an advantage in obtaining rewarding jobs that offer not only higher salaries and job satisfaction but other health-related benefits such as health insurance coverage. For example, adults with health insurance in the United States use more physician services and have better health outcomes compared to uninsured or inconsistently insured adults.<sup>37-39</sup> Worksite health promotion programs and policies that protect occupational safety also play a role. An inadequate education markedly increases the risk of unemployment. In 2012, unemployment was 12.4 percent among adults who did not graduate high school, compared to 8.3 percent among adults with a high school diploma and 4.5 percent among college graduates.<sup>40</sup> A body of evidence links unemployment to adverse health outcomes. For example, a higher percentage of employed persons reported in 2010 that they were in excellent or very good health (62.7 percent) than did individuals who were unemployed for less than 1 year (49.2 percent) or unemployed for more than 1 year (39.7 percent). The unemployed also reported more physically and mentally unhealthy days in the past 30 days.<sup>41</sup>

#### Education, Work Status, and Median Annual Earnings



#### Figure 3. Education, work status, and median annual earnings

Source: Education and Synthetic Work-Life Earnings Estimates. American Community Survey Reports, United States Census Bureau. September 2011. Used with permission.

The income and wealth that come from a good education are leading predictors of health status,<sup>2,42</sup> and accumulated financial strain has been shown to impact health above and beyond the effects of income and wealth.<sup>43</sup> In today's society, economic resources are inextricably linked to education. In 2012, the median wage for college graduates was more than twice that of high school dropouts and more than one and a half times that of high school graduates.<sup>40</sup> Weekly earnings are dramatically higher for Americans with a college or advanced degree. A higher education has an even greater effect on lifetime earnings (Figure 4), a pattern that is true for men and women, for blacks and whites, and for Hispanics and non-Hispanics. According to 2006-2008 data, the lifetime earnings of a Hispanic male are \$870,275 for those with less than a 9<sup>th</sup> grade education but \$2,777,200 for those with a doctoral degree. The corresponding lifetime earnings for a non-Hispanic white male are \$1,056,523 and \$3,403,123.<sup>44</sup>

The economic vulnerability that can arise from an inadequate education can affect health through a cascade effect on the ability to acquire resources that are important to health (e.g., food, stable housing, transportation, insurance, and health care).<sup>45</sup> People with low income are more likely to be uninsured and to be vulnerable to the rising costs of health care, which insurance carriers are increasingly shifting to patients through higher copayments, deductibles, and premiums. In 2012, one-fourth (24.9 percent) of people in households with an annual income less than \$25,000 had no health insurance coverage, compared to 21.4 percent of people in households with incomes ranging from \$25,000 to \$49,999; 15.0 percent in households with income ranging from \$50,000 to \$74,999; and 7.9 percent with incomes of \$75,000 or more.<sup>46</sup>

356



# Median Synthetic Work-Life Earnings by Education, Race/Ethnicity, and Gender: Full-Time, Year-Round Workers

Figure 4. Median synthetic work-life earnings by education, race/ethnicity, and gender: full-time, year-round workers

Source: Reprinted with permission of the Center on Society and Health, Virginia Commonwealth University.

Individuals with the higher incomes that accompany education have more resources to purchase healthy foods, afford the time and expenses associated with regular physical activity, have easy transportation to health care facilities or work locations, and afford health care expenses. According to 2010 BRFSS data, 27 percent of adults with less than a high school education reported not being able to see a physician due to cost, compared to 18 percent and 8 percent of high school and college graduates, respectively.<sup>47</sup> Accordingly, the costs of a healthy lifestyle pose more of a barrier for people with less education. The health implications of these financial barriers to health care are well documented: the uninsured are less likely to receive preventive care or help with disease management,<sup>48</sup> and they have a higher risk of mortality.<sup>49</sup>

#### Box 3. Stress and Allostatic Load

Allostatic load results in an individual's inability to adapt to long-term stress, leading to chronic illness. Individuals with lower levels of educational attainment are at greater risk of exposure to stress, such as chronic occupational stress or unemployment, and they may be less likely to have buffers that reduce the impact of stress (e.g., social support, sense of control or mastery over life, and high selfesteem).<sup>55</sup> Effects of stressors vary depending on factors such as genetic makeup, development, early experiences, the availability of coping mechanisms, and responses to threats.<sup>56</sup>

A growing body of research is documenting that life changes, traumas, chronic strain, and discrimination—all of which can accompany an inadequate education—can be harmful to both physical and psychological health. Chronic stressors can be related to a wide variety of circumstances, such as social roles, interpersonal conflict, and the environment or living conditions. Stressful events may interact with the experience of chronic stress to affect outcomes, and these stressors are, in turn, influenced by one's personal traits and values and mediated by factors such as coping mechanisms and social support.<sup>57</sup> For those confronting life without a good education, individual stressors can accumulate over time and may, in turn, heighten exposure to further stressors.

The biological consequences of stress and allostatic load are increasingly clear, as are their effect on cognition. For example, a longitudinal study of high functioning older adults found associations between baseline measures of allostatic load and cognitive function, physical performance, and the incidence of cardiovascular disease during the study period.<sup>58</sup> A 4.5-year followup study of the same subjects found increased risk of mortality among individuals with higher baseline allostatic load scores as well as among those whose score increased.<sup>59</sup> The combination of high perceived stress and risky health behaviors has been found to be associated with increased mortality among individuals of low socioeconomic status.<sup>60</sup>

#### **Social Resources**

Educational attainment is associated with greater social support, including social networks that provide financial, psychological, and emotional support. Social support includes networks of communication and reciprocity. Individuals in a social network can relay information, define norms for behavior, and act as modeling agents. Those with higher levels of education may also have higher levels of involvement with civic groups and organizations. Conversely, low social support (i.e., not participating in organizations, having few friends, being unmarried, or having lower quality relationships) is associated with higher mortality rates and poor mental health.<sup>50,51</sup> The social integration that often accompanies education has been linked to health outcomes in a causal chain that begins with the macro-social and ends with psychobiological processes.<sup>52</sup> Berkman et al.<sup>52</sup> propose several mechanisms through which social integration affects health: social support, social influence, social engagement/attachment, and access to goods and resources. Social connection can be an

important buffer to the negative health consequences of health stressors. Marriage imparts benefits in longevity, but weaker network ties can also have important health effects, such as the effects of peers on behavior.<sup>53</sup> The effect of social networks on smoking cessation is a well-known example.<sup>54</sup>

## Impact at the Community Level

Individuals with education benefit not only from the resources that schooling brings to them and their families but also from health-related characteristics of the environments in which they tend to live, work, and study. Although there are many methodological challenges in estimating community-level effects on individuals,<sup>61,62</sup> communities appear to confer a range of benefits or risks that can impact health. In the midst of growing recognition that "place matters" to health, many studies have tried to estimate neighborhood effects on outcomes such as child/youth educational attainment, behavioral/well-being outcomes, or health status and mortality. For example, Ross and Mirowsky<sup>63</sup> used multilevel analysis of survey data from Illinois to address the question of whether community SES impacts health above and beyond the contributions of individual SES. They found that individual-level indicators of SES explained most of the variation in physical functioning (about 60 percent), but that neighborhood-level measures had a significant influence as well. Given the wide range of methodologies and data sources utilized, findings are not uniform among such studies, but there is general agreement that a relatively modest neighborhood effect exists independent of individual and family-level factors such as education or income.<sup>61,64,65</sup> Effects that appear to occur at the neighborhood level may represent aggregated individual characteristics (compositional effects), neighborhood variability (contextual effects), or local manifestations of larger scale processes (e.g., higher-level planning or regulatory decisions).<sup>66</sup> Furthermore, it is important to recognize the dynamic interaction that occurs between the individual and the environment<sup>67</sup> and conceptions of space as "relational geographies."68

At one level, community characteristics matter because access to resources that are important to health is contingent on community-level resources and institutions. Macintyre and Ellaway categorize these as physical features, services, sociocultural features, reputation, and availability of healthy environments at home, work, and play.<sup>69</sup> Theories about the mechanisms by which social environments affect the health of individuals also focus on community characteristics such as social disorganization, social control, social capital, and collective efficacy.<sup>70</sup> Kawachi et al. note that communities with higher social capital tend to be more resilient in the face of disasters and are better able to employ informal control mechanisms to prevent crime.<sup>71</sup>

People with low education tend to live in certain communities that, through a combination of resources and characteristics, expose individuals to varying levels of risk versus safety (e.g., crime, unemployment, poverty, and exposure to physical hazards) and provide different levels of resources (e.g., food supply, green space, economic resources, and health care). One notable resource that differs among communities is the quality of education itself. Low-income neighborhoods often have fewer good schools, not least because public schools tend to be poorly resourced by low property taxes and cannot offer attractive teacher salaries or properly maintain buildings, supplies, and school safety. Adverse community factors can compound the difficulty that children face in obtaining a good education while also compromising their health trajectory.

Below we touch on several additional community characteristics that have been linked to health outcomes and tend to vary with the level of education of the population. These characteristics include

food access, spaces and facilities for physical activity, access to health care, community economic resources, crime and violence, and environmental exposure to toxins.

#### **Food Access**

Unhealthy eating habits are linked to numerous acute and chronic health problems such as diabetes, hypertension, obesity, heart disease, and stroke, as well as higher mortality rates, but access to healthier foods tends to be limited in neighborhoods with lower median incomes and lower levels of educational attainment. In one study, access to healthier food outlets (defined as at least one healthier food retailer within the census tract or within 1.5 miles of tract boundaries) was 1.4 times less likely in census tracts with fewer college-educated adults (less than 27 percent of the population) as in tracts with a higher proportion of college-educated persons; these differences varied by region and were highest in the South and lowest in the West and Northeast.<sup>72</sup> Conversely, low-SES neighborhoods often have an oversupply of fast food restaurants, convenience stores, bodegas, liquor stores, and other outlets that sell little fresh produce but promote inexpensive calorie-dense foods and unhealthy beverages.

#### Spaces and Facilities for Physical Activity

People with higher education and income are more likely to live in neighborhoods that provide green space (e.g., parks), sidewalks, and other places to enable residents to walk and cycle to work and shopping, exercise, and play outside. Lower-income neighborhoods and those with higher proportions of non-white residents are also less likely to have commercial exercise facilities.<sup>73</sup> The health benefits of green space have been documented in urban environments, especially for lower income, young, and elderly populations.<sup>74</sup> A longitudinal study in Great Britain found immediate, positive mental health effects of moving to urban areas with more green space.<sup>75</sup>

#### Access to Health Care

Because of the maldistribution of health care providers in the United States,<sup>76</sup> access to clinicians and facilities tends to be in shortest supply in the rural and low-income areas populated by people with limited education. Thus, apart from whether residents have the health insurance coverage and resources to afford health care, they may struggle to find primary care providers, specialists, and hospitals in their area that provide quality health care services.

#### **Community Economic Resources**

The lack of jobs in low-income communities can exacerbate the economic hardship that is common for people with less education. Such individuals are more likely to live in communities with a weak economic base that is unattractive to businesses, employers, and investors and are thereby often caught in a self-perpetuating cycle of economic decline and marginalization.

#### **Crime and Violence**

Elevated crime rates in neighborhoods populated by people with low education can impact health through the direct effects of violent crimes on victims, such as trauma and high youth mortality rates. Crime can also affect health indirectly, such as through fear of crime or the cumulative stress of living in unsafe neighborhoods.<sup>77</sup> The high incarceration rates of residents in some low-SES communities can have deleterious effects on social networks, social capital, and social control, further compromising public health and safety.<sup>78</sup> The 2006 and 2007 rounds of the American Community Survey found that,

among young male high school drop-outs, nearly 1 in 10 was institutionalized on a given day in 2006-2007 versus less than 1 of 33 high school graduates.<sup>79</sup>

#### **Environmental Exposure to Toxins**

People of color and those with less education are more likely to live in neighborhoods that are near highways, factories, bus depots, power plants, and other sources of air and water pollution. A large body of research on environmental justice has documented the disparate exposure of low-income and minority neighborhoods to hazardous waste, pesticides, and industrial chemicals.<sup>80</sup> This exposure to toxins is perhaps the most undiscriminating place-based characteristic because residents' personal socioeconomic advantages (e.g., education, income) offer no protection against the adverse health consequences of inhalation or ingestion of such toxins.

# The Larger Social Context and Social Policy

Health inequities are driven, in large part, by the social context in which people are born, live, and work-that is, the social policies that shape resources, institutions, and laws; the economic system through which material and financial resources are created and distributed; and the social norms that govern interactions. The conditions in which people live-for example, the built environment, public transportation, urban design, crime rates, food deserts, and the location of polluting factories—are determined by macrostructural policies and the cultural values that shape them. Formulation of effective analyses and solutions to problems affecting health must address factors that go beyond the level of the individual and proximal risk factors.<sup>81</sup> These influences have been recognized by organizations concerned with health outcomes locally, nationally, and internationally. The World Health Organization calls for improved living and working conditions, social protection policy supportive of all, reduced inequality, and strengthened governance and civil society.<sup>2</sup> Healthy People 2020 has many policy objectives for health, including improved environmental conditions (e.g., air/ water quality and exposure to hazards), violence prevention, poverty reduction, and increased rates of postsecondary education.<sup>82</sup> The Place Matters team in Alameda County, CA has identified five policy areas to impact health outcomes locally: economics, education, criminal justice, housing and land use, and transportation.83

Decisions made by society, voters, and policymakers—both within and outside of government—exert deep influences on education itself, as well as on the institutions and resources that populate the socioecological framework linking education and health. For example, in other societies, the adverse health consequences of poverty are often buffered by social services that act to safeguard the health of children, young parents, and other vulnerable groups. Bradley et al. found that while most high-income countries spent more on social services than on health expenditures, the converse was true in the United States. The average ratio of social to health expenditures in OECD countries from 1995 to 2005 was 2.0; the ratio in the United States was 0.91.<sup>84</sup>

Economic policies have a large influence on the employment and wealth-building opportunities of workers and the marketability of an education. Major economic and technological shifts of the last few decades have favored "non-tradable" service jobs in sectors such as government and health care, while manufacturing jobs have moved to less developed countries in large numbers. Remaining jobs in the "tradable" sectors such as technology and finance increasingly require advanced skill sets.<sup>85</sup> These employment trends provide a critical context in the relationship between education and health—those unable to acquire the necessary education to be competitive in an increasingly restrictive job environment are vulnerable to long-term economic hardship.

Educational opportunities, however, are not equally distributed in the United States. Public school funding, largely dependent on local property taxes, varies widely both within and between States. The best funded school systems in the United States have per pupil expenditures almost four times the per pupil expenditures in the lowest spending schools.<sup>86</sup> Although early studies failed to find a strong relationship between school funding amounts and student achievement, some meta-analyses have supported the link between school funding and individual achievement.<sup>87</sup>

Inequalities by education cannot be disentangled from the backdrop of inequalities by gender, race, ethnicity, sexual orientation, and disability and their effects on both risks and opportunities. Figure 5 shows persistent gender and race disparities in earnings.<sup>88</sup> There are cultural as well as material dimensions of inequality (see Box 4), as when cultural status beliefs influence inequality primarily at the social relational level by shaping people's expectations for themselves and others.<sup>89</sup> Societies that impose social status hierarchies based on "categories" of difference solidify and perpetuate differentials in power and control of resources—thus leading to material inequalities. Income inequalities in the United States are significant and have become more pronounced, with wages at the lower or middle of the income distribution stagnating or falling while those at the top continue to rise. Income inequality persisted during the recovery from the Great Recession, during the first 3 years of which 95 percent of income gains accrued to the top 1 percent of earners.<sup>90</sup> The Gini coefficient, which measures income inequality, rose from 0.394 in 1970 to 0.469 in 2010; the share of household income earned by the bottom quintile was 3.3 percent in 2010, compared to 50.2 percent among the top quintile.<sup>91</sup>





Figure 5. Women's earnings as a percentage of men's median usual weekly earnings (full-time wage and salary workers) in current dollars, by race and ethnicity (1980-2010 annual averages)

Source: Women's earnings as a percent of men's in 2010. Bureau of Labor Statistics, U.S. Department of Labor, The Economics Daily, January 10, 2012.

Note: Data shown are from the Current Population Survey (CPS). To learn more, see Women in the Labor Force: A Databook (2011 Edition), BLS Report 1034, December 2011.

The continuing racial residential segregation and increasing economic segregation of urban landscapes affect the life chances of those living in concentrated poverty "irrespective of personal traits, individual motivations, or private achievements" and expose residents, many of whom lack adequate education, to higher levels of social problems.<sup>92</sup> These historical, economic, and cultural factors have also shaped and reinforced the racial division of labor and adverse impact on the low-wage sector.<sup>93</sup>

#### Box 4. Impact of the Cultural Context on Health Disparities and the Use of Health Care

Cultural influences can be important features of the causal web linking education and health. Experience with discrimination and racism (e.g., perceived discrimination, segregation, institutional discrimination, reduced access to goods and services), which may occur more commonly among people with less education, has a known relationship to stress and stress-related health disparities, as well as to health care seeking, treatment adherence, and risky health behaviors.<sup>94</sup> Mistrust among patients and bias among health care providers can affect the quality of care.<sup>95</sup> For example, a study of 202 African American patients with HIV in a primary care setting found that patients with higher educational attainment reported higher levels of trust, better communication with providers, and higher levels of shared treatment decisions. It also found that health outcomes were related to the belief that the health care provider should integrate culture in HIV treatment and to the perceived quality of provider communication. Trust was related to medical self-care but not to other outcomes.<sup>96</sup> Care is also affected by the cultural competency of providers—that is, their ability to recognize and appropriately respond to key cultural features that affect health care, which may include language, cultural values, patient beliefs, folk illnesses, and provider practices.<sup>97</sup>

#### **Reverse Causality and Selection**

The association between education and health may reflect not only the health benefits of education but a selection phenomenon caused by the detrimental effects of illness on educational success. Basch identifies five causal pathways by which health may impact motivation and ability to learn—sensory perceptions, cognition, school connectedness and engagement, absenteeism, and temporary or permanent dropping out.<sup>98</sup> For example, chronic health conditions can impact children's development and educational performance.<sup>99</sup> Such children are more likely to have absences for medical reasons and to be distracted by health concerns. Nonetheless, research evidence demonstrating that poor health has a causal relationship with educational outcomes is incomplete,<sup>100</sup> and findings of the overall effects range from about 1.4 years reduced educational attainment<sup>101</sup> to about half a year,<sup>7</sup> but there are notable exceptions. For example, evidence across countries and time periods demonstrates the harmful effect of low birth weight on education.<sup>100,102</sup> Disease, malnutrition, and prenatal and childhood exposures to toxins can also impact physical and cognitive development and educational achievement.<sup>103</sup>

The extent to which reverse causality contributes to the association between education and health requires further study, but longitudinal data—the most compelling evidence to resolve the controversy—tend to suggest that most of the association is attributable to the downstream benefits of education. Eide and Showalter<sup>102</sup> reviewed studies incorporating a range of methodologies that attempted to examine causal links between education and health outcomes. Studies of natural experiments in the United States (e.g., changes in compulsory school laws) generally found evidence of a causal link with mortality. Twin studies found evidence for causal links between years of schooling and self-reported health, the probability of being overweight (among men but not women),

and the effects of college attendance on preventive health care later in life.<sup>102</sup> Link and Phelan also discussed research attempting to show the direction of causality using quasi-experimental approaches, longitudinal designs, and analyses of risk factors that cannot be attributed to individual illness (e.g., plant closings). They concluded that these studies "demonstrated a substantial causal role for social conditions as causes of illness."<sup>1</sup>

# **Conditions Throughout the Life Course that Affect Both Health and Education**

A third way that education can be linked to health is when education acts as a proxy for factors throughout the life course—most notably in early childhood—that affect both education and health. For example, as noted earlier, the social and economic environment facing individuals and households and the stresses and allostatic load induced by material deprivation can affect success in school (and work) while also inducing biological changes and unhealthy behaviors that can increase the risk of disease. Although this can occur throughout the life course, increasing attention is being placed on the role of these factors on children before they ever reach school age.

## Early Childhood Experiences

The education community has long understood the connections between early life experiences and educational success. It is well-established that school readiness is enhanced by positive early childhood conditions—for example, fetal well-being and social-emotional development,<sup>104</sup> family socioeconomic status,<sup>a,100,105,106</sup> neighborhood socioeconomic status,<sup>107,108</sup> and early childhood education<sup>109</sup>—but some of these same exposures also appear to be vital to the health and development of children and their future risk of adopting unhealthy behaviors and initiating adult disease processes.

Below are several examples from the literature of early childhood experiences that influence health:

- Low birth weight affects not only educational outcomes but also health and disability.<sup>110</sup>
- Nurturing relationships beginning at birth, the quality of the home environment, and access to stimulation provide a necessary foundation for children to grow and thrive.<sup>111</sup> One example of this is the importance of child-directed speech during infancy for developing language skills.<sup>112</sup> The effects of stress can be reduced when children have a responsive and supportive caregiver available to help them cope with stress and provide a protective effect.<sup>113</sup>
- Unstable home and community life, such as economic factors, family transitions, housing instability, and school settings, can harm child development and later outcomes spanning education and health.<sup>114</sup> In one study,<sup>b</sup> homelessness and struggles with mortgage payments and foreclosure were predictive of self-rated health, and these combined with other categories (e.g., moved for cost in past 3 years, behind on rent) also predicted mental health problems.<sup>115</sup>
- Family and neighborhood socioeconomic status not only affect education but also predict developmental and health trajectories as children grow and develop.<sup>116,117</sup> The duration and timing of childhood poverty are important. Longitudinal studies indicate that the largest effects of

<sup>&</sup>lt;sup>a</sup> Children's birth weight, developmental outcomes, health status (e.g., obesity and specific health conditions), disability, and success in school are strongly linked to parents' education and family income and assets.

<sup>&</sup>lt;sup>b</sup> Data were based on research by the National Poverty Center on the basis of the Michigan Recession and Recovery Study of adults ages 19-64 in southeastern Michigan. The researchers examined the relationship between various forms of housing instability and health, controlling for prior health problems and sociodemographic characteristics.

poverty on child outcomes are during early childhood development, when children experience poverty for multiple years, and when they live in extreme poverty.<sup>118</sup> The timing of poverty during early adolescence is also important for adolescent achievement.<sup>119</sup>

# **Biological Pathways**

A growing body of research suggests that the similar root causes that lead children to poor educational outcomes and poor health outcomes may not operate via separate pathways but may relate to the biology of brain development and the pathological effects of early childhood exposure to stress and adverse childhood events (ACEs). Children in low SES households are more likely to experience multiple stressors that can harm health and development,<sup>120</sup> mediated by chronic stress.<sup>121</sup> These disruptions can thereby shape educational, economic, and health outcomes decades and generations later.<sup>122</sup>

- *Neuroanatomy and neuroplasticity*: Infants and toddlers exposed to toxic stress, social exclusion and bias, persistent poverty, and trauma may experience changes in brain architecture and development that affect cognition, the ability to learn new skills, behavioral and stress regulation, executive function, and the capacity to adapt to future adversity.<sup>123,124</sup>
- *Endocrine disruption*: Early life stressors also appear to cause physiological increases in allostatic load that promote stress-related diseases later in life.<sup>113</sup> Such stressors may, for example, disrupt the hypothalamic-pituitary-adrenal axis of the endocrine system and stimulate overproduction of stress-related hormones that are thought to adversely affect end organs and lead later in life to heart disease and other adult health problems.<sup>125</sup>
- *Immune dysregulation*: The release of interleukins and other immune reactant proteins is thought to create conditions of chronic inflammation that may increase the risk of heart disease and other chronic diseases later in life.<sup>125</sup>
- *Epigenetic changes*: Chronic stress is thought to affect methylation of DNA and cause epigenetic changes that "turn on" expression of genes that may cause cancer and other diseases.<sup>126</sup>

Enhanced understanding of these biological pathways is shedding light on research, first reported in the 1990s, that called attention to the correlation between adult disease rates and a history of childhood exposure to ACEs. In a seminal study on the subject, the Adverse Childhood Experiences Study, Felitti et al. surveyed more than 13,000 adult patients at Kaiser Permanente and asked whether they recalled childhood exposure to seven categories of ACEs: psychological, physical, or sexual abuse; violence against the mother; or living with household members who were substance abusers, mentally ill/suicidal, or had a history of imprisonment. More than half of the adults recalled ACEs as children, and those with greater trauma were more likely to report unhealthy behaviors as adults (e.g., smoking, physical inactivity, alcoholism, drug abuse, multiple sexual partners) and to have a history of depression or a suicide attempt. The researchers reported a dose-response relationship: those who recalled four categories of ACEs had significant odds ratios for adult diseases, including ischemic heart disease (2.2), cancer (1.9), stroke (2.4), chronic lung disease (3.9), and diabetes (1.6).<sup>127</sup>

The ACE study and subsequent studies with similar results relied on retrospective designs that faced the limitation of recall bias (relying on the memory of adults); recollections of ACEs were vulnerable to the criticism that sick adults might have skewed perceptions of their childhood experiences. Nevertheless, prospective studies that documented ACEs contemporaneously during childhood have also documented higher rates of disease when the children were followed into adulthood. The Centers

for Disease Control and Prevention (CDC) maintains a Web site that is cataloguing the burgeoning research on ACEs,<sup>128</sup> and increasing attention is shifting toward strategies for policy and clinical practice to help ameliorate childhood exposure to ACEs and to buffer their adverse biological and psychosocial effects (see Box 5). This work has relevance to understanding of the education-health relationship to the extent that prior exposure to ACEs affects both educational success and health trajectories.

#### Box 5. Behavioral Responses to Stress

Children exposed to stress may also be predisposed to take up unhealthy behaviors, such as smoking or unhealthy eating, during adolescence, the age when risky behaviors are often first established and then carried into adulthood. This may be an important contextual factor in understanding the higher prevalence of unhealthy behaviors among persons with limited education, especially if toxic stress affects both education and health outcomes. There is some evidence that stress affects areas of the brain associated with reward and addiction.<sup>129</sup> Dysfunctional coping skills and these changes in brain function may draw children to unhealthy behaviors (e.g., smoking, alcohol or drug use, unsafe sex, violence) as adolescents. These risk factors for disease, along with harmful stress-related physiological changes discussed above, not only increase their subsequent risk of illness and injury but also stifle success in school and employment.<sup>45,122,130</sup>

## Summary: What Accounts for the Association of Education and Health?

The building evidence that stress and other contextual factors can have effects on both education and health throughout the life course—as in the lasting effects on development, behavior, learning and health of children—adds important insights for understanding the correlation between education and health. As discussed earlier in the chapter, reverse causality plays some role in the association, and a much larger influence comes from the downstream benefits of education (e.g., greater socioeconomic resources and personal skills), but the upstream influence of adverse experiences on the young child also cannot be ignored. The effects of ACEs on the developing brain and on behavior can affect performance in school and explain setbacks in education—but they can also affect health outcomes. Thus, the correlation between reduced education and illness may have as much to do with the seeds of illness that are planted before children ever reach school age than with the consequences of education itself. The children end up with fewer years of education and greater illness, but an important way to improve their health is to address the root causes that expose children to stress in the first place.

#### **Exploring the Lived Experience**

The above conclusions spring from the pages of published research and the theoretical models of scholars in social science, economics, and social epidemiology, but an overlooked perspective is the lived experience of those who contend daily with these living conditions. Our research team at the Center on Society and Health has become increasingly interested in eliciting this perspective and blending the more nuanced insights from community members who face conditions on the ground with the more abstract empirical findings published by academia. In the work described in the second part of this chapter, as well as other recent pilot studies,<sup>131</sup> we have demonstrated that this fresh perspective helps transform causal models emanating from the literature to more sophisticated frameworks that incorporate mediators, moderators, and outcomes that are unfamiliar to academics. Although empirical evidence may be lacking to scientifically document the association between these new elements and health outcomes, we believe the insights are powerful tools to help define a research agenda that outlines testable hypotheses that future research can explore.

The recent focus on patient and stakeholder engagement stimulated by the Patient-Centered Outcomes Research Institute (PCORI)<sup>132,133</sup> has merged with the established discipline of CBPR to bring new energy and interest in community engagement in research and greater respect among academia in studying how insights gathered through engagement affect the design and results of studies. With support from our university's Clinical and Translational Science Awards (CTSA) grant, we have been working since 2011 to engage community members in sharing their perspectives about the influence of social determinants of health. Using an approach we had previously tested to engage community members in developing a causal model *de novo* without knowledge of published research findings, we asked residents of a low-income urban community to map out the pathways linking education and health, and we compared the results with the empirical findings discussed above.

# **Stakeholder Engagement in Modeling Health Outcomes**

## Background

The research community increasingly seeks to involve stakeholders in health research, both to enhance accountability and to improve the quality of the research, including increased validity, relevance, acceptance, and sustainability.<sup>134-138</sup> Until recently, lay explanations of health and disease have been denied a "place at the etiological table"<sup>139</sup> and have rarely been used to generate new conceptualizations of the link between social conditions, behavior, and health outcomes. The problem with this has been recognized for two decades: "If research in the field of public health is to develop more robust and holistic explanations for patterns of health and illness in contemporary society, then it must utilize and build on lay knowledge—the meanings that health, illness, disability, and risk have for people"<sup>135</sup> (p. 760).

Participatory research methods have become an important framework for including stakeholders in understanding and addressing health disparities.<sup>17,140-143</sup> The principles of CBPR can provide entrée into more meaningful lay engagement in understanding health outcomes. CBPR "aims to make research more democratic, ensure the poor and people of color are not excluded from decisions that impact their lives, and incorporate local knowledge and lived experience into research and action."<sup>144</sup> CBPR partnerships have engaged in diverse topics, interventions, and study designs that have strengthened methodology in areas such as research design, recruitment, and cultural appropriateness.<sup>140</sup>

# **Community Engagement in Causal Modeling**

CBPR efforts aimed at conceptualization and causal modeling have been uncommon. As long ago as the late 1970s, causal modeling by stakeholders, including community participants, was utilized in development projects, particularly on nutrition. For example, in Zaire a participatory causal modeling approach was used in 1987 to address nutritional problems by engaging a multidisciplinary group that included two international nutrition consultants and diverse local participants. The resulting causal model was used in research design, education, intervention, and community development.<sup>145</sup> This participatory causal modeling approach was described by Beghin et al. in a 1988 publication by the World Health Organization.<sup>146</sup> Lefèvre et al. described a focus-group causal modeling approach as a component of a participatory action research project in Bolivia

More recently, The Dan River Partnership for a Healthy Community, composed of community stakeholders and researchers from the Department of Human Nutrition, Foods and Exercise at Virginia Tech, used the Comprehensive Participatory Planning and Evaluation (CPPE) process within a CBPR framework to focus on obesity in the region.<sup>148</sup> The problem-assessment phase of the project included a causal analysis workshop to explore potential mechanisms and root causes of obesity. "CPPE causal models do not necessarily have to portray a hierarchal structure or infer causation, rather they are meant to uncover the complexity of problems and encourage participants to discuss potential solutions"<sup>148</sup> (p. 49). The models were used to prioritize community interventions. Such exercises in causal modeling, as done in the CPPE process, are meant to build consensus among stakeholders on the factors affecting an identified problem, working backward from problems to root causes, with the goal of identifying appropriate solutions (and potential research hypotheses to study).<sup>149</sup>

Another participatory modeling approach, applied in the field of systems dynamics, is group model building (GMB). GMB "is a participatory method for involving people in a modeling process" that focuses on understanding and solving systems problems. Community-based system dynamics explicitly includes community members in the process.<sup>150</sup> Stave describes using a participatory model building process to involve stakeholders in environmental decisions.<sup>151</sup>

In the study we present here, our specific aim was to explore whether community stakeholders would develop a causal model that added to the pathways and mechanisms already hypothesized in the academic literature (and reviewed earlier in this chapter). Secondarily, we sought to explore whether the lived experiences of participants would elucidate new descriptions and nuances about pathways that are already recognized but are not fully understood. Although the theoretical model and empirical work involved in elaborating the relationship between education and health have evolved since health disparities first garnered wide attention,<sup>152</sup> we believe this participatory approach provides a unique framework for testing and expanding the theoretical model.

### **Engaging Richmond**

The CBPR partnership that conducted this exercise, known as Engaging Richmond, is an ongoing program that involves community researchers<sup>e</sup> who are residents of the East End, a low-income African American neighborhood in Richmond City and faculty and staff of Virginia Commonwealth University. The Engaging Richmond community researchers have received Institutional Review Board (IRB)-certified research training, conducted and analyzed focus group and interview data,<sup>153</sup> successfully recruited participants for research, and disseminated findings in the community.<sup>154,155</sup> The idea of engaging stakeholders in crafting conceptual models arose from the initial successes of the Engaging Richmond team in modeling various health-related outcomes for proposed ideas and a report on the potential connections between food stamp benefits and health.<sup>131</sup>

<sup>&</sup>lt;sup>c</sup> The community researchers on the CBPR team are residents of Richmond City's East End who have an ongoing role on the research team and have received training in various aspects of the research process. The community researchers who collaborated in the process described here included two men and six women who received training in social determinants of health research and have experience living in communities with low educational attainment and poor health outcomes.

## **Methods**

Members of the CBPR team worked together in a facilitated concept mapping exercise designed to tap into stakeholders' experiences of how education is related to health outcomes. The goal was to develop a conceptual model of the social, behavioral, environmental, biological, and other factors that link education and health and to place their lived experience—and their understanding of the cultural and social context—into an analytical framework. The process was not about attaining consensus but instead tapping stakeholders' experiences to generate new insights and ideas to inform the causal model.

The group's tasks were to list the potential factors influencing the relationship between health and education and, following some training, to sketch a diagrammatic model of how determinants are interrelated on an upstream-downstream (distal-proximate) continuum. The process was facilitated by a faculty member (E.B.Z.) who had worked with the team for more than 2 years. The venue for the meeting was a community center in the residents' neighborhood that was regularly used for team meetings. The facilitator introduced the goal of the exercise as follows:

"We are here to talk about how education affects health. We want to draw on the experiences of everyone here. The purpose of this exercise is to find new ways of looking at this relationship between education and health, and we are going to focus on various factors that you think might affect the relationship."

In the first part of the exercise, the community researchers followed a series of facilitated steps to individually brainstorm, identify, and record a broad list of factors that they believed might be influential in the relationship between education and health. The facilitator encouraged them to list "everything that comes to your mind that you think might be part of this relationship between education and health... anything you can think of... that impacts how one's own education might affect their health." Participants were encouraged to draw on a range of experiences in thinking through the topics. The community researchers then reviewed a prepared list of many potential factors, grouped into domains (social, behavioral, family/community, physical/mental, demographic, health care, genetic, environmental, and attitudes/beliefs), and were given the opportunity to expand or change their initial list of factors, as well as to eliminate any factors that they did not consider influential. They were then asked to highlight the factors they had selected which they perceived to be most important.

In the next step, the group discussed the factors they had highlighted, indicated which factors to include in the model and which to exclude, and decided how to group factors. Participants provided examples to illustrate why specific factors were important. As they began listing behavioral factors, the facilitator instructed them that, "You need to kind of think through: How does this happen? How does education affect diet?... Whatever it is, you've got to think these things through." Box 6 shows two examples of how this process unfolded. After listing and discussing factors across the various domains, the group agreed on a final list of factors.

Training in conceptual modeling was provided by the facilitator. Although this team had been exposed to causal path diagrams on previous projects,<sup>131</sup> the training was useful to present key terminology and review the purpose and structure of path diagrams.

In the final step, the facilitator worked with the team to sketch a causal path diagram of the factors listed in step one. Team members took turns presenting particular factors from the list and discussing where, in relation to other elements of the diagram, they might be important and elaborating through examples. In the process of sketching the path diagram, the group was asked to decide whether each factor added to the model was exogenous (a variable that influences the value of other variables in the model, but whose own value is determined outside of the model<sup>156</sup>) or a mediator (a variable that lies intermediate between independent causal factors and a final outcome).<sup>157</sup> Sketching the model was informed by encouraging the participants to consider how the factors interrelated (see example in Box 7), which in many cases pointed to the bi-directional linkages that make these relationships so complex. For instance, there was extensive discussion about the many factors that affect educational achievement.

Factors were iteratively added to the model as time permitted, and the group then reviewed the diagrammed relationships, adding or removing arrows between factors to more accurately reflect the participants' sense of the causal pathways.

The modeling session was transcribed, and the data were compared to the key elements identified in the literature for explaining the linkages between education and health (see results section below). The community researchers reviewed and provided feedback on the draft models, as well as the findings presented here.

#### Box 6. Identifying Relevant Indicators

#### Example 1: Social Skills and Sleep

Participant: "I have social skills, sleep habits, exercise."

Facilitator: "Social skills - any example?...

**Participant:** "For instance, when I think of social skills I think of the ability to interact with people, the ability to mingle with strangers, you know, go into environments that you are unfamiliar with... [continues]"

**Facilitator:** "And what about sleep habits? How would you describe that in terms of education and health?"

**Participant:** "From my experience, and my friends,' when exam time comes, and the pressure and all of that, those poor sleep habits or not being able to get enough sleep, leads to drug abuse..."

The discussion continued, and reflected the bi-directional nature of education and health, as many of the examples illustrated how behavioral and health issues impact education.

#### Example 2: Accessing Information and the Internet

**Participant:** "By us having Internet now, people that wouldn't have access to certain information can access it. When I was growing up and we used to have to do things that involved the encyclopedia, we never had the whole volume of the encyclopedia, so I would have to go to the library. But there was no libraries near where I was, so I had to wait 'til I got to school to do my projects. Whereas now my kids can go on the Internet and pull up whatever they need to pull up for anything." **Facilitator:** "What about health information?"

**Participant:** "That's what I was getting to next. Over the past 3 months I was changing my health, as far as eating vegetables and things like that. A lot of the diets and the juices that I made, I found it on the Internet."

# **Results**

The community researchers on the CBPR team focused on numerous mediators in the link between education and health, many of which mirror the predominant frameworks in the existing literature. For example, Adler and Stewart<sup>152</sup> have already articulated important components of the causal pathway. Here we focus on residents' insights that added new perspectives or emphasized different aspects of those causal factors, while highlighting certain specific aspects of the experiences of low income and minority groups. We present these in the next section, following the same structure as the first half of this chapter for consistency.

#### Box 7. Hypothesizing Pathways

Facilitator: "So, where else is school going to take us, besides just what you learned about health?" Participant: "The workplace."...

Participant: "My income is going to help work with my motivation and outlook, because I may be able to go to the gym. Possibly, I may do it; possibly not. My income is going to help my health behavior." Participant: "My word was lifestyle."... [discussion moves on to the community environment] Facilitator: "Does environment affect this [points to indicator] or does it go straight to health?" Participants: "It affects your lifestyle too."

#### Impact at the Individual Level

The first half of the chapter noted that an important pathway by which education impacts health is through the development of a range of skills and traits, including cognitive skills, problem solving, and diverse personality traits. The community researchers focused on the types of opportunities that help to develop non-cognitive skills, particularly social skills, as well as the reasons why social skills are important to health. They particularly focused on the development of effective social skills as a function not only of formal education but also the informal educational exposure that can occur outside the classroom. Some examples of educational opportunities leading to enhanced soft skills cited by the community researchers included opportunities they had experienced while young to attend art performances or read literature. They also mentioned the importance of community programs, such as summer camps and youth development programs, which provided the opportunity to engage young people in new experiences and interactions:

"Kids that participate in extra-curricular, the summer camps and things like that, they learn those social skills. They learn the environmental skills. They get exercise. They learn to... their attitudes and personalities tend to be a little better than the kid that stays locked up in the house playing video games. So it's like, it's a positive that goes to it."

Opportunities to develop non-cognitive skills at school, community programs, and even daily activities such as getting to and from school, were discussed within a larger framework that highlighted the many possible repercussions that these skills can offer throughout the life course. For example, they described situations in which social skills are an important precursor to other dispositions and behaviors that are important to good health. Strong social skills lay the foundation for opportunities to embrace new situations and get along with others:

"When I think of social skills I think of the ability to interact with people, the ability to mingle with strangers, go into environments that you are unfamiliar with."

To gain new information:

"I'm sure there's probably some preventive measures I could have learned to strengthen or to help with that [medical condition], but at that point in time I wasn't that social, literate person.

And, to reduce conflict:

"... you have to know how to deal with people. We don't always agree, but we also know how to just disagree and part ways. And everybody doesn't know how to do that. Sometimes they want to argue about it, and it's not even that serious..."

Ultimately, the development of social skills and other non-cognitive skills was linked to a cascade of possible effects throughout life, impacting social networks and isolation, attitudes, ability to obtain and utilize health-related information, personal health behaviors, and the ability to navigate the health care system. This issue is salient to community researchers from low-income, segregated neighborhoods because despite the importance of participating in enriching activities, youth from lower income families are less likely to participate in most contexts, with the exception of tutoring. Participation rates also vary by ethnicity and race, with Latino youth particularly underrepresented.<sup>158</sup> Children who reside in poor urban neighborhoods and isolated rural areas tend to have reduced access to programs and greater barriers to participation.<sup>159</sup>

The academic literature provides evidence that youth participation in organized activities affects educational attainment and achievement, behavioral problems (including substance abuse), and psychosocial competence (e.g., emotions, motivation, initiative, and self-esteem).<sup>159</sup> Literature that relates youth development opportunities to health outcomes is less extensive. A recent review of the impact of Positive Youth Development (PYD) programs failed to find evidence for improved health outcomes for youth with chronic illness due to a lack of rigorous evaluation.<sup>160</sup> Gavin et al. identified PYD programs associated with sexual and reproductive health, but the findings were still relatively weak.<sup>161</sup> Studies tend to show a positive association between alcohol use and sports participation (as least for some types of sports) and a negative association with illicit drug use.<sup>162</sup> These studies, which tend to focus on sports or formal youth programs, examine some health outcome measures but do not focus on the mechanism by which such opportunities may ultimately impact health. The community researchers point to possibilities such as reduction of anxiety, stress, isolation, and conflict and access to new forms of information and new opportunities.

As noted in Part I, education can impact health through its effects on personal health behaviors, including engagement in risky behaviors, opportunities to learn about health, and availability of resources to make healthy choices. The community researchers described the potential impact of a range of factors (e.g., knowledge, health beliefs, and mental status) on personal health behaviors. They also discussed the potential influence of traits and attitudes on health behaviors and how they may be affected directly by formal and informal education.

Through the modeling exercise, the community researchers noted a number of ways that attitudes can impact health, but much is unknown about whether these attitudes are impacted by education and how important the attitudes are to health outcomes. They provided a number of examples about how such attitudes could have an effect on health behaviors, including setting priorities, facilitating

or hindering access to information, and ability or willingness to seek help. Attitudes they felt might impact health behaviors included materialism, hostility, anger, and pessimism and willingness to change.

Materialism, or the importance attached to material possessions, was perceived by the community researchers as a barrier to effective decisionmaking and the setting of healthy priorities, especially for young people. They noted that materialism has "warped reality for a lot of people" and can have negative effects on resource allocation. Although likely an underexplored causal link in the education/health literature, materialism has been linked to subjective well-being, self-esteem, and stress<sup>163,164</sup> and risky behavior.<sup>165</sup>

Hostility, anger, and pessimism were other attitudes identified as potentially important. Although there are many possible mechanisms whereby hostility may impact health,<sup>166</sup> these community researchers focused on mistrust and its effects on receiving needed information or help:

"The hostility comes when a lot of times you talk to people and they think you're talking against them or belittling them, and really you're just trying to get them to go or just trying to educate them."

As discussed previously, the cognitive and non-cognitive skills developed through education can also impact individuals' ability to navigate the health care process.<sup>26</sup> This topic came up during the community researchers' model development as well. They noted that education can improve access to quality health care by enhancing communication skills and the ability to advocate for quality care. They added that challenges in diverse skill domains may mean that individuals with less education do not benefit as much from the information that is available:

"The information is there. You see a lot of pamphlets getting dust on them, and they also have little things that they have around the community. Barely anyone shows up other than the service providers and who's with them. And I'm just saying it's like the information's there, it's a matter of going to get the information and participating and just being involved enough to find out about what is out there, what is going on."

Or, they are less able to deal with the complexity of the health system:

"Bureaucracy of applying for health care, and not understanding all that whole co-pay, how it's gonna affect your paycheck, when you apply for health care, when you have employment."

Referrals for specialty and followup care seemed to be particularly difficult to navigate without the communication skills and cognitive skills necessary to engage in the interaction with health professionals:

"...you don't know exactly why you're being sent to another doctor, because it wasn't worded so that you could relay that information when you were making your own appointment, if you needed to make that appointment yourself."

Disparities in health care quality and access are well documented by socioeconomic status, race and ethnicity, and even while health care overall may improve, reducing disparities has proven to be quite difficult.<sup>167</sup> Attention to disparities in skills, communication, and access to resources (and how those play out in lived experience) that have their roots in educational disparities may prove a promising route to reducing otherwise intractable disparities in access, quality, and outcomes. This brief exercise has highlighted a few of these.

Another important set of factors at the individual level, discussed earlier in this chapter, includes access to economic and social resources. The community researchers, echoing the fundamental importance of the pathway between education and health via employment, discussed multiple pathways by which employment may impact health, including exposure to work-related stress, effects on motivation and outlook, ability to build social networks, and economic impact on the environment where one lives.

An important pathway runs from lower educational attainment to lower-status occupations and employment-related stress. The community researchers added nuance about the stresses of a poor education related to job insecurity, long work hours, work/family conflicts, and conflicts with co-workers.

"A father in a company misses a whole lot of plays, a whole lot of educational programs, a whole lot of PTA meetings."

"[work-related stress] depends on your job. Depends on what you see and what you encounter that can lead to those sleepless nights or whatever..."

At a more fundamental level, the community researchers noted that the income resulting from one's education can affect motivation, outlook, and lifestyle, which in turn may affect health behaviors.

"My income is going to help work with my motivation and outlook, because I may be able to afford to go to the gym. Possibly, I may do it. Possibly not. My income is going to help my health behavior."

Social networks and peer groups play an important role in health.<sup>53</sup> The community researchers linked the development of social skills to effects throughout the life course on social integration and isolation. Many studies of the effects of social isolation on health focus on the elderly, whereas the community researchers felt that people who experience social marginalization due to behavior or various other reasons may suffer isolation that leads to ill health. In one example, their causal model connects lack of education to stress and anxiety, which may cause social isolation. They described the potentially negative impacts of social isolation, such as stress, impaired communication with others, and inability to solicit help.

"Living apart from others to the point where you can't even get the help you need because you're so isolated. People don't know how to communicate with you because you keep yourself so isolated."

## Impact at the Community Level

The community researchers mentioned the role of place-based determinants of health, such as access to healthy food outlets and the greater risk of exposure to toxins and environmental risks in disadvantaged neighborhoods that are populated by people with limited education. Many of the deficiencies they noted in access to and the quality of health care transcended individual-level resources and abilities and related to the service environment in the community, such as the availability of treatments, appropriateness of care, coordination of care, cultural competency, and barriers to health care. Lack of access to services such as transportation has a significant effect on residents' ability to access opportunities, including health care:

"That referral that you might have also, and I'm continuously saying, are you listening to me? I don't have transportation. And they say you can go through the insurance to get this set up... I call transportation it's like, I don't fall short. I'm there. My transportation is 2 hours late."

Unequal treatment was also a concern, including inadequate availability of preventive care. The community researchers felt that their community was less likely to receive the type of preventive health information that would be more accessible in the more affluent communities populated by people with higher education.

"...when you look at most things that are being done in our community, it's always from that intervention side. Very little prevention is being offered to us. How do we prevent? Very little."

"In certain places, there is certain information that they will give to this group of people that they wouldn't give this group of people. So they will know how to prevent high blood pressure, as our information would be more so what to do after you get it. Cause you're going to get it."

Finally, children and adults in disadvantaged communities may be more likely to experience chronic stress or trauma, and community researchers were concerned about the appropriateness of their diagnostic evaluations and treatments:

"What would it be as far as misdiagnosis, as far as it could be a learning disability but it could be something else that's preventing the child from being able to function in the classroom or preventing the adult from being able to function at work. And it could be a health problem or it could be a learning problem. It could be environmental. It could be literacy, or whatever. But if you don't have the [resources] ..., it could be you don't have the right kind of insurance to be able to find this. You don't have the right kind of doctors available to your call. You could have that doctor that's just doing enough to get you in and get you out."

The problem of childhood trauma and its relationship to conditions such as attention deficit hyperactivity disorder (ADHD) appears in the clinical literature,<sup>168</sup> but insights about this relationship from parents and service providers in communities particularly affected by high levels of trauma exposure point to sources of concern and may help identify, through further research, areas of intervention.

## **Contextual Factors**

The participants highlighted the intersections between access to health care (and other necessary social supports) and public policy. Policy decisions contribute to gaps in health insurance coverage for the underserved, and the participants discussed how this contributes to health complications.

"When people have to have major surgeries and stuff done and not having Medicaid or health insurance. And it can be life threatening and they are scared to go and get their self checked out, just checked out when they know there's something major going on with them, because they don't have health insurance or Medicaid."

Their responses underscored the ways in which individuals with lower educational attainment, low skill levels, or poor mental health would be disadvantaged by the bureaucracy and documentation

required to access social welfare programs. Individuals with limited education and their families are more vulnerable due to the burdens placed on them by bureaucratic structures and regulations.<sup>95</sup> The group pointed out that often individuals who might otherwise qualify for services and supports (e.g., Medicaid or school programs) could miss out because they cannot keep up with paperwork and rules.

One participant discussed a local program for the uninsured:

"I think about the [program] and how that lasts for a year and then you have to reapply. I get that, but that can be a hardship too. Why should you have to apply every year? First of all, they don't send you a notification asking you to reapply. So when that date comes around, oftentimes you forget. And so then you realize, oh, I don't have insurance anymore. You know, if you don't have certain documents to prove that you're financially eligible they won't accept you. So there are barriers to things that are designed for you."

In addition, populations that are disadvantaged by an inadequate education are more likely to rely on public services that may fall short of expectations because society has invested insufficient resources. For example, public transportation may be inadequate, forcing patients who lack transportation alternatives to rely on medical transportation services that may not be trustworthy. Public services are subject to budget cuts, and restrictive welfare programs may inadequately cover the needy, leading to further disadvantage.

An overarching theme in the discussion that transcended the specific elements was a narrative of exclusion. Throughout the process, the team members made links to contextual factors that, more often than not, seemed to progressively diminish the chances that individuals with little education, poor skills, and few economic resources could achieve positive health outcomes. They described a tableau of contextual factors—ranging from failing schools to complex bureaucratic structures and 'top down' decisionmaking—that distance individuals from success in education and health but are not explicitly mentioned in published causal models. The risks associated with failing schools, underresourced communities, and unequal access to quality health care are intensified when individuals with limited education and income face the additional challenges of fewer social skills and social networks, restricted access to information and the ability to use it, limited ability to advocate for quality care, and increased exposure to stress. The link between social exclusion and health has been recognized<sup>169</sup> but is not often explicitly included in the education/health model. Participatory modeling may serve to draw some attention toward the societal factors that are often overlooked in media and academic accounts of health outcomes and the recommendations and interventions subsequently developed to address disparities.<sup>170,171</sup>

Throughout the exercise, the community researchers framed the connections between education and health not just as a causal path traversed by individuals, but as one whose shape and character were dependent upon the larger social context. The resounding impact of race, class, gender, and age discrimination was the backdrop for discussions of educational opportunity, workplace experiences, health care, and policy.

# **Discussion of Engagement Exercise**

The process described in this section presents an approach that extends prior, predominantly practical, applications of participatory modeling (e.g., prioritizing community interventions) to a role in advancing theory and scholarly inquiry. It explores the possibility that people outside of

academia may be able to help refine our understanding of complex phenomena by positing factors and relationships less familiar to investigators who do not share their life circumstances. None of the observations described here are meant to stand as evidence, but they are intended to illustrate how the process (1) may provide the bases for hypotheses that can be further explored, or (2) provide deeper understanding of how the highlighted relationships may operate and why they may be important mediators or moderators of health disparities.

This small pilot has many limitations. The insights come from a limited sample of participants from one neighborhood of a southern city. Other findings would undoubtedly emerge with greater diversity and a larger number of participants. In any setting, delving into the broad expanse of variables that occupy the relationship between education and health—a web of influences noteworthy not only for its breadth but for the bi-directionality and endogeneity of the many factors involved—is not a simple task. Others may wish to continue gathering community perspectives on upstream social determinants by breaking this complex model into smaller components. Despite its limited scale and the complexity of the topic, the community researchers who participated in this exercise demonstrated not only a wealth of insight but an ability to put their personal experiences into context and breathe life into a critically important issue on which their voices are too infrequently heard.

## **Implications for Practice**

The relationships between education and health are relevant to the clinician, beginning with the patient's ability to understand diagnostic information and treatment recommendations but extending to larger issues. Health care professionals, social workers, and other service providers must consider the knowledge and literacy of clients to ensure that instructions and choices are fully understood, ranging from reading prescription bottles to understanding how to file for claims. But the education-health relationship has relevance to practitioners beyond the level of one-on-one care, because their cachet creates leverage to promote efforts in the community to improve educational opportunities and create conditions in early childhood to put youth on a path for socioeconomic success and better health. Physicians and other health care professionals can speak to the health benefits of community investments that expand opportunities for preschool and primary/secondary education. However, this chapter has also emphasized that the links between education and health are influenced by policy decisions outside of schools, including neighborhood conditions ranging from sidewalks to street violence, food security, reliable housing, job training, and safety net programs for the disadvantaged. Better grades and higher graduation rates are vital goals, but meaningful effects on population health require an integrated plan for upstream and downstream determinants.

## **Implications for Research**

As noted earlier, the factors surrounding the relationship between education and health are the subject of research in different disciplines that are of uneven quality, and closing the many holes in the evidence is a research priority. Chief among these is the reliance on cross-sectional and ecological evidence that does not adequately tease apart issues of endogeneity and leaves many unanswered questions about causal pathways. The research challenges are inherently transdisciplinary, requiring the integration of traditional population health sciences (e.g., epidemiology) with social and political science, education research, and the use of mixed methods to blend quantitative and qualitative insights. Standards of evidence used for clinical effectiveness are not always applicable to these topics.<sup>172</sup> A particular need exists to bridge the divide between research in population health and

education and to share work across the silos to achieve more integrated research paradigms. Future research should also address the role of contextual factors surrounding the individual elements of the socioecological model, and their collective behavior as complex systems, through simulation modeling and other modern tools for predictive analytics.<sup>173</sup> Finally, the research agenda must address the information needs of policymakers, stakeholders, and change agents who are positioned to make improvements in education and health.<sup>174</sup>

A criticism of social epidemiology and other efforts to identify social determinants of health has been a focus on establishing correlations between social factors and health, with comparatively little attention to the mechanisms through which these factors impact health outcomes, and in turn, inattention to promising leverage points for interventions or policy change.<sup>175</sup> While we reiterate that this pilot serves to illustrate the potential of participatory processes in extending our understanding of these mechanisms rather than providing an empirical base, by scanning the input from the community researchers one might begin to see an emergent list of possible leverage points, from greater access to youth development opportunities to changing bureaucratic processes that make participation in public benefit programs difficult for people with low levels of education or other challenges.

Our approach emphasizes respect and parity in patient/community engagement, an orientation that is gaining ascendance among health services researchers who increasingly recognize the insights and innovations in the design of studies and interpretation of results that become possible when those affected by interventions are invited to participate as research partners—not as human subjects but as coinvestigators. An approach in which patients and community members are treated as coequal partners in the research enterprise creates opportunities for scholarship that are forfeited by more traditional, and sometimes patronizing, engagement methods that examine data through a lens shaped by academics based on theoretical models rather than incorporating the perspective of those who live amid the conditions under study. The respect afforded by the new approach has the added, and important, advantage of helping to build trust with a lay public and especially with marginalized minority communities that were dubious about the sincerity of researchers who sought their input or the ability of professional investigators to truly understand real-world conditions. Communities that have historically experienced condescension rather than respect welcome such collaborative approaches.

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## Early Social-Emotional Functioning and Public Health: The Relationship Between Kindergarten Social Competence and Future Wellness

Damon E. Jones, PhD, Mark Greenberg, PhD, and Max Crowley, PhD

Understanding what early characteristics predict future outcomes could be of great value in helping children develop into healthy adults. In recent years, much research has been directed toward understanding noncognitive traits in children that may increase the likelihood of healthy personal development and eventual adult well-being.<sup>1</sup> For predicting future success in the workplace, levels of cognitive ability measured through IQ or test scores alone are less predictive than measures of educational attainment, which require not just cognitive ability but also noncognitive characteristics such as self-discipline, academic motivation, and interpersonal skills.<sup>2</sup> Future likelihood of committing crimes is greatly influenced by noncognitive processes in development, such as externalizing behavior, social empathy, and effectively regulating emotions.<sup>3</sup> A recent study found that noncognitive ability in the form of self-control in childhood was predictive of adult outcomes ranging from physical health to crime to substance abuse.<sup>4</sup> The value of noncognitive skills has also been determined through evaluation of interventions such as the landmark Perry Preschool program, in which improvements in noncognitive skills related to behavior and academic motivation were found to be central to long-term effects on crime and employment.5

Inadequate levels of social and emotional functioning are increasingly recognized as central to many public health problems (e.g., substance abuse, obesity, violence). Just as researchers study how academic achievement in a population can lift groups out of poverty, public health scientists are now studying how these noncognitive factors affect health and wellness across domains.

Classification of characteristics into complementary cognitive and noncognitive categories is a convenient way to characterize *Objectives.* We examined whether kindergarten teachers' ratings of children's prosocial skills, an indicator of noncognitive ability at school entry, predict key adolescent and adult outcomes. Our goal was to determine unique associations over and above other important child, family, and contextual characteristics.

*Methods.* Data came from the Fast Track study of low–socioeconomic status neighborhoods in 3 cities and 1 rural setting. We assessed associations between measured outcomes in kindergarten and outcomes 13 to 19 years later (1991–2000). Models included numerous control variables representing characteristics of the child, family, and context, enabling us to explore the unique contributions among predictors.

*Results.* We found statistically significant associations between measured social-emotional skills in kindergarten and key young adult outcomes across multiple domains of education, employment, criminal activity, substance use, and mental health.

*Conclusions.* A kindergarten measure of social-emotional skills may be useful for assessing whether children are at risk for deficits in noncognitive skills later in life and, thus, help identify those in need of early intervention. These results demonstrate the relevance of noncognitive skills in development for personal and public health outcomes. (*Am J Public Health.* 2015;105:2283–2290. doi:10. 2105/AJPH.2015.302630)

competencies in human development. Cognitive skills involve achievement-oriented tasks, such as problem solving, and academic abilities, which are measured by achievement tests; the noncognitive category covers everything else, such as behavioral characteristics, emotion regulation, attention, self-regulation, and social skills. Designation of cognitive versus noncognitive skills oversimplifies the complexity of skills and the role of cognition. Cognitive skills are involved not only in intelligence and achievement, but also in attention, emotion regulation, attitudes, motivation, and the conduct of social relationships (e.g., Farrington et al. provide an overview of noncognitive traits in educational research<sup>6</sup>).

Noncognitive skills interact with cognitive skills to enable success in school and the workplace.<sup>7,8</sup> This is most easily seen in an educational setting. Achievement is driven by intellectual ability as well as by the

self-regulation, positive attitudes, motivation, and conscientiousness that are required to complete educational milestones. Substantial differences in noncognitive skills have been found between those who graduate from high school on time and those who complete a general equivalency diploma, as reflected in subsequent adult and economic outcomes.<sup>9</sup> Interpersonal skills are also important for children navigating the social setting, and positive interactions with adults are essential for success in school. Success in school involves both social-emotional and cognitive skills, because social interactions, attention, and self-control affect readiness for learning.<sup>10,11</sup>

An additional feature of noncognitive competencies is that they may be more malleable than cognitive skills and thus may be appropriate targets for prevention or intervention efforts.<sup>12</sup> Of course, the degree to which this is true depends on the specific skill and on

multiple factors associated with children's characteristics and environment. Regardless, a challenge lies in effectively assessing children's competencies at an early enough age that intervention or prevention efforts might be introduced. Although an assessment at any 1 point may be inadequate for summarizing an individual's overall noncognitive competencies, it is useful to know what early competencies predict future success and avoidance of problems. This is especially relevant in light of studies showing the value of enhancing the social-behavioral and learning environment of young children,<sup>13</sup> to foster positive child development as well as to alter adult health and labor market outcomes.<sup>11,14</sup>

A key characteristic of noncognitive ability in young children is social competence. Social competence encompasses both the ability to complete tasks and manage responsibilities and effective skills for handling social and emotional experiences. Children's social competence can be assessed by their kindergarten teachers, who observe many instances in which children need to manage relations with peers and adults. The school setting provides the opportunity to observe children's abilities to interact interpersonally as they cooperate with others to complete daily tasks and resolve conflicts. Such skills are important for successful progression in early grades.

We investigated how well key late adolescent and early adult outcomes were predicted by teacher ratings of children's social competence (1 indicator of early noncognitive ability) measured many years previously in kindergarten in participants from low-socioeconomic status neighborhoods. Specifically, we examined how a measure of early prosocial skills predicted outcomes spanning important sectors of education, employment, criminal justice, substance use, and mental health domains. We used a straightforward analytic approach: modeling the link between social competence measured in kindergarten and outcomes measured 13 to 19 years later. These models did not determine causal associations, despite the temporal ordering between predictors and outcomes. However, inclusion of several control variables, representing various characteristics of the child and family context, enabled us to explore the unique contribution of featured predictors.

For predictors we focused on the earliest age for which data were available: measures obtained when children were in kindergarten. Throughout the analytic process we found it useful to consider whether other important background variables predicted future outcomes. However, our primary objective was to determine how well an inexpensive, easily obtained snapshot of social competence at formal entrance to school predicted important outcomes, after adjustment for other expected influences on development, such as family circumstances, gender, academic ability, and behavior. If such a measure can identify early noncognitive deficiencies, this could provide important information for determining potential targets for early intervention.

#### METHODS

We used data from the longitudinal, nonintervention subsample of the Fast Track Project, an intervention program designed to reduce aggression in children identified as at high risk for long-term behavioral problems and conduct disorders.<sup>15</sup> The Fast Track study design comprised an intervention group and a matched control group sample of highrisk children as well as a non-high-risk (normative) subsample of students attending control schools. We focused on the high-risk control students and the normative samplethose individuals who did not receive any Fast Track prevention services. The total sample size was 753 (high-risk control group, n=367; non-high-risk, normative group, n = 386).

Participants were recruited from the 4 study sites (3 urban, 1 rural): Durham, North Carolina; Nashville, Tennessee; Seattle, Washington; and central Pennsylvania. Further information on the Fast Track Project sample recruitment process is available in study publications.<sup>15,16</sup> In the total sample, 58% were boys, about 50% were White, 46% were African American, and 4% had other racial/ ethnic backgrounds. The study oversampled higher-risk students, and we employed sampling probability weights in all analyses. More information on the design is provided in Appendix A, which describes the screening and recruitment process (available as a supplement to the online version of this article at http:// www.ajph.org).

The project first collected data when children were attending kindergarten; initial data collection for the first cohort took place in 1991. Final follow-up data were collected 19 years later, when participants were aged approximately 25 years. Participation from the original sample was high, and we found no differential response in analyses considering a range of baseline variables. More detail on this assessment and the follow-up sample are provided in a recent study of long-term intervention effects.<sup>17</sup>

Our outcome measures concerned education, employment, public assistance, crime, mental health, and substance use. The project measured all outcomes through late adolescence or early adulthood. We included relevant background variables in the models to control for characteristics of the children at kindergarten age and their families. Most importantly, we selected control variables that would better enable identification of unique prediction attributable to early social skills. Thus, models included variables representing family demographics (gender, race, number of parents in the home, socioeconomic status), early childhood aggression (both in school and at home), early academic ability, and other contextual factors. We did not include the indicator for gender in models of justice system outcomes because of the very low rate of criminal offenses among female participants. We did not include region as a covariate in models. Initially we included 3 dummy variables to represent project site, but we removed this covariate when initial tests indicated little difference between regions on the study outcome variables.

Table 1 provides the outcomes and control variables for all analytic models, with information on the scales used and the data sources. Appendix A (available as an online supplement) provides more details on measurement sources and scale reliabilities for all variables used in analyses.

To represent social competence in kindergarten, we chose the Prosocial–Communication Skills subscale of the Social Competence Scale.<sup>32</sup> The score combined 8 items that teachers rated on a 5-point Likert scale, assessing how the child interacted socially with others. Examples

## TABLE 1—Measures and Data Sources in Study of Social-Emotional Functioning in Kindergarten as Predictor of Adolescent and Young Adult Outcomes

Variable	Survey	Source	
	Model outcomes		
Education/employment			
High school graduation on time <sup>a</sup>	National Longitudinal Surveys <sup>18</sup>	Self-report	
College graduation <sup>a</sup>		Self-report	
Currently employed full-time <sup>a</sup>		Self-report	
Stable employment <sup>a</sup>		Self-report	
Years of special education services, <sup>b</sup> no.	School Archival Records Survey <sup>19</sup> (grades 1-12)	School records	
Years of repeated grades, <sup>b</sup> no.		School records	
Public assistance			
On waiting list for public housing <sup>a</sup>	Neighborhoods and Government Programs <sup>20</sup>	Self-report	
Receiving public assistance <sup>a</sup>		Self-report	
Receiving unemployment compensation <sup>a</sup>		Self-report	
Crime			
Arrests for severe offense, <sup>a</sup> no.	Juvenile and adult court data <sup>21</sup>	Court records	
Ever arrested <sup>b</sup>	Service Assessment for Children and Adolescents <sup>22</sup>	Self-report	
Ever arrested <sup>c</sup>		Self-report	
Ever made court appearance <sup>b</sup>		Self-report	
Ever made court appearance <sup>c</sup>		Self-report	
Ever had police contact <sup>b</sup>		Self-report	
Ever stayed in detention facility <sup>b,c</sup>	Combined outcomes from self-report and criminal records <sup>21,22</sup>	Self-report, court records	
Substance abuse			
Alcohol dependence <sup>a</sup>	Self-Reported Substance Use and Dependence <sup>23</sup>	Self-report	
Drug dependence <sup>a</sup>		Self-report	
Smoked regularly in past month <sup>a</sup>	Tobacco, Alcohol and Drugs survey <sup>24</sup>	Self-report	
Days of binge drinking in past month, <sup>a</sup> no.		Self-report	
Days of marijuana use in past month, <sup>a</sup> no.		Self-report	
Mental health			
Externalizing problems <sup>a</sup>	Young Adult Self-Report <sup>25</sup>	Self-report	
Internalizing problems <sup>a</sup>		Self-report	
Years on medications, <sup>b,d</sup> no.	Life Changes <sup>20</sup>	Primary caregiver	
	Model predictors (for child at kindergarten age)		
Gender (female)	Family information form <sup>26</sup>	Primary caregiver	
Race (African American)		Primary caregiver	
Family socioeconomic status (Hollingshead code)		Primary caregiver	
Mother an adolescent at child's birth		Primary caregiver	
Neighborhood total score	Neighborhood Questionnaire <sup>27</sup>	Primary caregiver	
Life stresses total score	Life Changes <sup>20</sup>	Primary caregiver	
Letter-word identification score	Woodcock–Johnson Psycho-Educational Battery <sup>28</sup>	Administered survey	
Authority acceptance	Teacher Observation of Child Adaptation-Revised <sup>29</sup>	Teacher	
Externalizing score	Child Behavior Checklist <sup>30</sup>	Primary caregiver	
Prosocial-communication skills	Social Competence Scale <sup>31</sup>	Teacher	
	•		

<sup>a</sup>Measured at age 25 years.
 <sup>b</sup>Through high school.
 <sup>c</sup>Measured after high school (aged 19-20 years).
 <sup>d</sup>For emotional or behavioral issues.

of these items include "cooperates with peers without prompting," "is helpful to others," "very good at understanding feelings," and "resolves problems on own." Internal reliability coefficients were very high ( $\alpha$ =0.97), and univariate assessment demonstrated good distributional characteristics (unweighted mean = 1.90; SD=0.97). The subscale was highly associated with other subscales in the measure, such as the Emotion Regulation subscale (r=0.90).

A natural question in this type of research is whether associations may differ because of differing background variables. Although we did not formally investigate potential moderation of associations, we explored whether race or gender moderated links within domains. We executed a representative number of models from each domain with an interaction term entered for the cross between the potential moderator and prosocial skills. In this preliminary investigation, we found no patterns of moderation exerted by race or gender on any outcome domains. We therefore did not conduct extensive tests of moderation (to keep the number of statistical tests for overall models manageable). Follow-up research could include a more specific focus on the potential differences in linkages within a given outcome domain across key demographic distinctions.

We used separate regression models for each study outcome. We regressed dependent variables on our control variables as well as on the social competence score. We ran logistic regressions for all dichotomous outcomes and count-based regressions for the measures of amounts. The latter involved Poisson regression unless outcomes were overdispersed, in which case we used a negative binomial modeling specification.<sup>32</sup> We used a zero-inflated Poisson model for 1 count outcome (number of arrests for severe crimes by age 25 years). We conducted analyses with M-Plus software with full-information maximum likelihood estimation techniques,<sup>33</sup> which provided results representing the full sample (n = 753) at kindergarten (integrating over the missing cases). We used Monte Carlo integration techniques for parameter estimates, because of the categorical nature of the outcomes. We also specified robust standard error estimation for all models.

Rates of missing data varied by outcome (Table 2). Attrition was lower for outcomes

obtained prior to the end of high school. Missing data rates also were lower for outcomes obtained through public criminal records at early adulthood. Accommodation of missing data through full-information maximum likelihood procedures assumes that missing data are conditionally missing at random, with all measured covariates in the analytic model considered.<sup>34</sup>

#### RESULTS

Table 2 provides the means and standard deviations for predictors in all analytic models and for the separate adolescent and adult outcomes that we examined. Results from regression models are presented in Table 3 for the estimate on prosocial skills. Odds ratios (ORs) are provided for results from logistic regression models; incidence rate ratios (IRRs) are provided for results from count-based regression models. We considered results significant at P < .05. Appendix B (available as a supplement to the online version of this article at http://www.ajph.org) shows statistical significance results for all model covariates and details on joint prediction among all variables; estimates are indicated in terms of direction of association.

Our analyses included 4 education and employment outcomes representing attainment through age 25 years. Kindergarten prosocial skills were significantly and uniquely predictive of all 4 outcomes: whether participants graduated from high school on time (OR = 1.54; 95% confidence interval [CI] = 1.09, 2.19; P < .05; Table 3), completed a college degree (OR = 2.00; 95% CI = 1.07, 3.75; P < .05),obtained stable employment in young adulthood (OR = 1.66; 95% CI = 1.13, 2.43; P < .01), and were employed full time in young adulthood (OR = 1.46; 95% CI = 1.02, 2.08; P < .05). For the 2 outcomes spanning school ages, we observed a negative association for number of years of special education services (IRR = 0.54; 95% CI = 0.44, 0.67; P < .001)and number of years of repeated grades through high school (IRR = 0.79; 95%) CI = 0.65, 0.97; P < .05).

Two of the 3 outcomes representing public assistance in young adulthood were significantly linked to early social competence. Early prosocial skills were negatively related to the likelihood of living in or being on a waiting list for public housing (OR = 0.55; 95% CI = 0.36, 0.85; P<.01; Table 3) and of receiving public assistance (OR = 0.63; 95% CI = 0.43, 0.91; P<.05). We found no significant association for receiving unemployment compensation in young adulthood.

Results for justice system outcomes demonstrated consistent patterns across different ages and variables. Early prosocial skills were significantly inversely predictive of any involvement with police before adulthood (OR = 0.65; 95% CI = 0.45, 0.94; P < .05)and ever being in a detention facility (OR = 0.61; 95% CI = 0.40, 0.94; P < .05).Although juveniles' self-report of whether they had been arrested and or had appeared in court followed the same pattern, the estimates were not statistically significant at conventional levels. In young adulthood, early social competence was significantly and uniquely linked to being arrested (OR = 0.60; 95% CI = 0.44, 0.90; P<.05) and appearing in court (OR = 0.63; 95% CI = 0.43, 0.91; P < .05). Finally, early social competence significantly predicted the number of arrests for a severe offense by age 25 years (IRR = 0.68; 95% CI = 0.49, 0.94; P<.05), as determined through public records.

Although early social competence was not associated with alcohol and drug dependence diagnoses in early adulthood, our models showed that it correlated with substance abuse behavior. We found statistically significant associations in separate models of the number of days of binge drinking in the past month (IRR = 0.66; 95% CI = 0.44, 0.97; P < .05) and the number of days marijuana was used (IRR = 0.55; 95% CI = 0.35, 0.87; P < .01). An association with regular tobacco use was not significant.

Results were mixed on associations between early prosocial skills and future mental health outcomes, although patterns were consistent with findings in other domains. Links between kindergarten prosocial skills and future internalizing and externalizing problems were nonsignificant at conventional levels. Finally, early prosocial skills significantly predicted number of years on medication for emotional or behavioral issues through high school (OR = 0.54; 95% CI = 0.40, 0.75; P < .001).

# TABLE 2—Model Predictors and Adolescent and Young Adult Outcomes AssociatedWith Social-Emotional Functioning in Kindergarten: Fast Track Project, United States,1991–2010

Variable	No.	Mean (SD)			
Model predictors					
Gender (female)	753	0.42 (0.49)			
Race (African American)	753	0.46 (0.50)			
Family socioeconomic status (Hollingshead code)	753	25.65 (12.90)			
Mother an adolescent at child's birth	636	0.16 (0.37)			
Neighborhood total score	752	0.03 (0.61)			
Life stresses total score	745	1.51 (0.75)			
Woodcock-Johnson letter-word identification score	752	12.83 (4.22)			
Authority acceptance (teacher-rated behavior)	749	57.34 (11.57)			
Child Behavior Checklist externalizing score (parent-rated behavior)	746	57.57 (10.20)			
Prosocial-communication skills	686	1.90 (0.97)			
Model outcomes					
Education/employment					
High school graduation on time <sup>a</sup>	620	0.63 (0.48)			
College graduation <sup>a</sup>	620	0.11 (0.32)			
Currently employed full-time <sup>a</sup>	621	0.49 (0.50)			
Stable employment <sup>a</sup>	611	0.32 (0.47)			
Years of special education services, <sup>b</sup> no.	736	2.19 (3.56)			
Years of repeated grades, <sup>b</sup> no.	751	0.66 (0.90)			
Public assistance					
On waiting list for public housing <sup>a</sup>	615	0.16 (0.37)			
Receiving public assistance <sup>a</sup>	603	0.34 (0.47)			
Receiving unemployment compensation <sup>a</sup>	603	0.18 (0.38)			
Crime					
Arrests for severe offense, <sup>a</sup> no.	753	0.12 (0.33)			
Ever arrested <sup>b</sup>	516	0.34 (0.47)			
Ever arrested <sup>c</sup>	525	0.26 (0.44)			
Ever made court appearance <sup>b</sup>	519	0.35 (0.48)			
Ever made court appearance <sup>c</sup>	534	0.33 (0.47)			
Ever had police contact <sup>b</sup>	562	0.60 (0.49)			
Ever stayed in detention facility <sup>b,c</sup>	526	0.22 (0.42)			
Substance abuse					
Alcohol dependence <sup>a</sup>	556	0.26 (0.44)			
Drug dependence <sup>a</sup>	550	0.10 (0.30)			
Smoked regularly in past month <sup>a</sup>	575	0.38 (0.49)			
Days of binge drinking in past month, <sup>a</sup> no.	602	1.69 (4.65)			
Days of marijuana use in past month, <sup>a</sup> no.	607	3.60 (8.94)			
Mental health					
Externalizing problems <sup>a</sup>	620	0.21 (0.41)			
Internalizing problems <sup>a</sup>	620	0.29 (0.46)			
Years on medications, <sup>b,d</sup> no.	720	0.93 (2.14)			

Note. Participants were recruited from 4 study sites (3 urban, 1 rural): Durham, NC; Nashville, TN; Seattle, WA; and central Pennsylvania.

<sup>c</sup>Measured after high school (aged 19-20 years).

<sup>d</sup>For emotional or behavioral issues.

#### DISCUSSION

We examined whether early childhood social competence predicted outcomes measured up to 2 decades later. We evaluated outcomes that broadly represented personal well-being, covering domains of education, employment, crime, substance use, and mental health. Such outcomes are markers of personal success or avoidance of problems. These outcomes are also economically relevant to both individual and public resources. Overall, results indicated statistically significant and unique associations between teacher-assessed prosocial skills and outcomes in all domains examined.

We used a rich database that combined a long time frame of data collection with coverage of various domains of human development and adult outcomes. Such data provided the unique opportunity to investigate the importance of early social-emotional characteristics. An additional strength of these data was that they involved multiple sources of information: teachers, parents, self-reports, and public records.

Our results support previous research that examined long-term prediction from noncognitive skills, most by notably Moffitt et al., who found that self-control across early childhood was a significant predictor of outcomes in multiple domains of early adult functioning.<sup>4</sup> Other important research has shown that noncognitive skills are not as reliable predictors for some outcomes (e.g., achievement), as other, more strictly cognitive characteristics, such as academic achievement at school entry.<sup>10,35</sup> Results across studies likely differ because of variation in predictors used, quality of measurement of study constructs, outcome domains, age at baseline and follow-up, and other characteristics of the population studied.

Our results demonstrate the predictive power of teacher-measured prosocial skills independent of child, family, and contextual factors that typically predict adult outcomes, because we controlled for socioeconomic status, family risk status, neighborhood quality, and children's characteristics (notably behavioral traits and early academic ability). Our results confirm that these control variables are indeed predictive of some adult outcomes but

<sup>&</sup>lt;sup>a</sup>At age 25 years.

<sup>&</sup>lt;sup>b</sup>Through high school.

TABLE 3—Logistic Regression and Negative Binomial Regression Results for Associations of Social-Emotional Functioning in Kindergarten With Adolescent and Young Adult Outcomes: Fast Track Project, United States, 1991–2010

Outcome	OR (95% CI)	IRR (95% CI)
Education/employment		
High school graduation on time <sup>a</sup>	1.54* (1.09, 2.19)	
College graduation <sup>a</sup>	2.00* (1.07, 3.75)	
Currently employed full-time <sup>a</sup>	1.46* (1.02, 2.08)	
Stable employment <sup>a</sup>	1.66** (1.13, 2.43)	
Years of special education services, <sup>b</sup> no.		0.54*** (0.44, 0.67)
Years of repeated grades, <sup>b</sup> no.		0.79* (0.65, 0.97)
Public assistance		
Living in/on waiting list for public housing <sup>a</sup>	0.55** (0.36, 0.85)	
Receiving public assistance <sup>a</sup>	0.63* (0.43, 0.91)	
Receiving unemployment compensation <sup>a</sup>	0.89 (0.55, 1.45)	
Crime		
Arrests for severe offense, <sup>a</sup> no.		0.68* (0.49, 0.94)
Ever arrested <sup>b</sup>	0.67 (0.44, 1.02)	
Ever arrested <sup>c</sup>	0.60* (0.40, 0.90)	
Ever made court appearance <sup>b</sup>	0.70 (0.47, 1.03)	
Ever made court appearance <sup>c</sup>	0.63* (0.43, 0.91)	
Ever had police contact <sup>b</sup>	0.65* (0.45, 0.94)	
Ever stayed in detention facility <sup>b,c</sup>	0.61* (0.40, 0.94)	
Substance abuse		
Alcohol dependence <sup>a</sup>	0.89 (0.59, 1.35)	
Drug dependence <sup>a</sup>	0.86 (0.45, 1.65)	
Smoked regularly in past month <sup>a</sup>	0.71 (0.48, 1.04)	
Days of binge drinking in past month, <sup>a</sup> no.		0.66* (0.44, 0.97)
Days of marijuana use in past month, <sup>a</sup> no.		0.55** (0.35, 0.84)
Mental health		
Externalizing problems <sup>a</sup>	0.61 (0.36, 1.02)	
Internalizing problems <sup>a</sup>	0.70 (0.48, 1.03)	
Years on medications, <sup>b,d</sup> no.		0.54*** (0.40, 0.75)

*Note.* CI = confidence interval; IRR = incidence rate ratio; OR = odds ratio. Participants were recruited from 4 study sites (3 urban, 1 rural): Durham, NC; Nashville, TN; Seattle, WA; and central Pennsylvania. Control variables were gender, race (African American), family socioeconomic status, neighborhood quality, family life stressors, whether mother was an adolescent, early academic skill, teacher-rated aggression, and parent-rated aggression.

<sup>c</sup>Measured after high school (aged 19-20 years).

<sup>d</sup>For emotional or behavioral issues. \**P* < 05; \*\**P* < .01; \*\*\**P* < .001.

1 < 03, 1 < .01, 1 < .001.

that additional, unique variance can be attributed to social competence at school entrance.

In many cases, social competence was a stronger predictor (according to statistical P values) than factors seemingly more directly aligned with the outcome. This was most striking in our comparison of associations of kindergarten teacher–rated aggression and social competence with later crime outcomes: the measure of prosocial skills was a consistent predictor of future crime outcomes, but the level of aggression observed by the same teacher was not usually significantly predictive after adjustment for other factors (including a separate measure of aggression from the primary caretaker). A partial explanation may be that aggression is a less stable characteristic among kindergarteners than is the broader domain of positive social relations. Furthermore, although a relatively small percentage of children show early aggressive behavior and, thus, skew the distribution, social competence is more normally distributed and therefore may be a better predictor across the spectrum. The 2 measures shared the same rater and were moderately correlated (roughly 0.50 in this sample), as would be expected.

#### Limitations

Focusing on a single measurement at an early age is somewhat risky because characteristics of social competence as recognized by teachers may manifest in different ways in later years. We could not determine causal associations, but our findings suggest the potential for such a measure to be used in screening for intervention at an early stage of development. Noncognitive factors such as conscientiousness, self-regulation, motivation, academic ability, and other attitudes and behaviors in later childhood years may be more important markers of long-term outcomes, but they have not yet been fully developed and thus have not been efficiently assessed in children at 5 years of age.

Our measure of social competence was a continuous composite from teacher observation that combined multiple social-behavioral scenarios for the child. This measure, although subject to measurement error, likely represents children's social competence relatively well, because the teacher has been a daily observer in the classroom setting. For the kindergarten data, we were not able to clearly distinguish between social competence and self-regulation, because the 2 scales were so highly correlated (and thus were not included in the same multiple regression). Self-regulation is likely reflected in socially competent behavior but is multidimensional and may be assessed independently through tests of executive function as children mature and take on more responsibility to progress through school.

Our measure of social competence was continuous, raising the issue of whether there may be certain cutoffs (e.g., very low competence) where this characteristic might be especially predictive of later outcomes. In addition, with the available data, we were not able to assess the validity of the measure for prosocial skills. We focused on what was measured at

<sup>&</sup>lt;sup>a</sup>At age 25 years.

<sup>&</sup>lt;sup>D</sup>Through high school.

school entry and likely fell well short of completely understanding noncognitive ability and what it might entail throughout development.

#### Conclusions

Our goal was to examine what can be assessed at school entrance when plans for addressing problems or enhancing skills may best be initiated. Our results suggest that perceived early social competence at least serves as a marker for important long-term outcomes and at most is instrumental in influencing other developmental factors that collectively affect the life course. Evaluating such characteristics in children could be important in planning interventions and curricula to improve these social competencies. Although "softer" skills can be more malleable and, thus, possibly better candidates for intervention, they are also less likely to be captured in a single measurement at a single time than are variables such as IQ.36 Certainly, interventionists are challenged not only by what specific skills to focus on, but also by what ages to assess, how to consider the likely interactions with other traits (including cognitive skills), the role of contextual factors, and how best to measure (what sources, whether to combine measures, etc.).<sup>6</sup>

The growing body of literature that demonstrates the importance of noncognitive skills in development should motivate policymakers and program developers to target efforts to improve these skills to young children. Much evidence has shown how effective intervention in preschool and the early elementary years can improve childhood noncognitive skills in a lasting way.<sup>9,37-40</sup> Enhancing these skills can have an impact in multiple areas and therefore has potential for positively affecting individuals as well as community public health substantially.

Our study demonstrates the unique predictive nature of early social competence on important outcomes in late adolescence and early adulthood. Our results showed that teacher-rated prosocial skills in kindergarten were a consistently significant predictor across all outcome domains studied; thus, a measure such as this may be a good candidate for assessing whether children are at risk for deficits in noncognitive skills at school entry. We look forward to further research on the importance of social-emotional competencies in early development, especially among individuals more at risk for problems or less prepared to succeed in school or (eventually) the labor force. Such research ideally will advance understanding of the appropriate constructs and measures to focus on, with consideration of the age and context of the individual.

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#### Contributors

D. E. Jones analyzed the data and was primary writer of the article. M. Greenberg helped plan data analysis and write the article. M. Crowley helped with analytic strategy and writing.

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#### **Human Participant Protection**

The Pennsylvania State University Institutional Review Board determined that no protocol approval was required because the study used secondary, de-identified data.

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# Present, Engaged, and Accounted For

The Critical Importance of Addressing Chronic Absence in the Early Grades

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#### PRESENT, ENGAGED AND ACCOUNTED FOR The Critical Importance of Addressing Chronic Absence in the Early Grades Hedy N. Chang with Mariajosé Romero, PhD

#### **AUTHORS**

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The Annie E. Casey Foundation is a private charitable organization dedicated to helping build better futures for disadvantaged children in the United States. It was established in 1948 by Jim Casey, one of the founders of UPS, and his siblings, who named the Foundation in honor of their mother. The primary mission of the Foundation is to foster public policies, human-service reforms, and community supports that more effectively meet the needs of today's vulnerable children and families. In pursuit of this goal, the Foundation makes grants that help states, cities, and neighborhoods fashion more innovative, cost-effective responses to these needs. For more information, visit the Foundation's website at www.aecf.org.

# Present, Engaged, and Accounted For

*The Critical Importance of Addressing Chronic Absence in the Early Grades* 

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## Introduction

At the core of school improvement and education reform is an assumption so widely understood that it is rarely invoked: students have to be present and engaged in order to learn. That is why the discovery that thousands of our youngest students are academically at-risk because of extended absences when they first embark upon their school careers is as remarkable as it is consequential. Schools and communities have a choice: we can work together early on to ensure families get their children to class consistently or we can pay later for failing to intervene before problems are more difficult and costly to ameliorate.

Schools have served our country well as gateways to more opportunity for children. What happens when children first enter school deeply affects whether this opportunity is realized. During the early elementary years, children are gaining basic social and academic skills critical to ongoing academic success. Unless students attain these essential skills by third grade, they require extra help to catch up and are at grave risk for eventually dropping out of school.

Common sense and research suggest that being in school consistently is important to ensuring children gain a strong foundation for subsequent learning. Research shows that children, regardless of gender, socioeconomic status or ethnicity, lose out when they are chronically absent (that is, they miss nearly a month of school or more over the course of a year). Children chronically absent in kindergarten show lower levels of achievement in math, reading and general knowledge during first grade. Going to school regularly in the early years is especially critical for children from families living in poverty, who

#### What do we mean by chronic early absence?

Chronic absence refers to students missing an extended period of school when both excused and unexcused absences are taken into account. Given the critical importance of time devoted to learning, especially in the early years, we believe it is important to count *all* absences. We intentionally use the term "chronic absence," because the more frequently used term, "truancy," only refers to unexcused absences and connotes inappropriate student behavior requiring a punitive response. Rather than blaming children, we want to broaden awareness that missing extended periods of school could be an early sign of distress in school, community or home that could respond to appropriate early intervention. Moreover, when children are 5, 6 or 7 years of age, they are not likely to be absent from school without their parents' knowledge.

We recommend defining chronic absence as missing 10 percent or more of the school year (equivalent to 18 days out of a 180 day school year) regardless of whether absences are excused or unexcused. If children miss this much school while in grades K-3, it is chronic *early* absence. Although local and state definitions can vary, we propose this common definition since research by the National Center for Children in Poverty found that this level of school absence in the first years of school was associated with lower academic performance in subsequent grades.

are less likely to have the resources to help children make up for lost time in the classroom. Among poor children, chronic absence in kindergarten predicts the lowest levels of educational achievement at the end of fifth grade.

When chronic early absence occurs, everyone pays. The educational experiences of children who attend school regularly can be diminished when teachers must divert their attention to meet the learning and social needs of children who miss substantial amounts of school. By working together to ensure all children attend school consistently, schools and communities make it more possible for teachers to teach and children to learn.

School attendance reflects the degree to which schools, communities and families adequately address the needs of young children. Attendance is higher when schools provide a rich, engaging learning experience, have stable, experienced and skilled teachers and actively engage parents in their children's education. Chronic absence decreases when schools and communities actively communicate consistently to all students and their parents, and reach out to families when their children begin to show patterns of excessive absence. Attendance suffers when families are struggling to keep up with the routine of school despite the lack of reliable transportation, long work hours in poorly paid jobs with little flexibility, unstable and unaffordable housing, inadequate health care and escalating community violence. At the same time, communities can help lower chronic absence by providing early childhood experiences that help prepare children and families for the entry into formal education.

Variations in these school, neighborhood and family conditions are reflected in tremendous differences in the prevalence of chronic early absence across communities. While national data show that chronic early absence affects an estimated one out of every 10 children during their first two years of school, data collected from nine urban localities (eight school districts and one region within a larger

#### How Can Elementary School Daily Attendance Rates Mask Significant Levels of Chronic Absence?

Chronic absence is easily masked by school attendance statistics, even when average daily attendance appears relatively high. Suppose, for example, a school has 200 students and an average daily attendance rate of 95%. At this rate, 10 students are absent on any given day while 190 are present. The same 10 students, however, are not absent for all 180 days or they would be disenrolled. Rather, it is quite possible that the 10 students missing each day occurs because the school is serving 60 students who are taking turns being absent but when their absences are added together, miss a month or more of school over the course of the school year. In summary, even in a school with 95% daily attendance, 30% of the student population could be chronically absent. school district) revealed significant variations. Across the districts, chronic early absence ranged from affecting only about one out of 20 children to nearly one out of four students in grades K-3. Ranges can be even greater within districts. For example, in one locality, prevalence at individual schools ranged from one to more than 50 percent of K through third graders.

Although chronic early absence can be a significant issue for particular schools and even entire school districts, it has largely been overlooked. The United States does not have a mechanism in place to ensure that schools across the country monitor and report on levels of chronic early absence. The Federal No Child Left Behind Act began requiring states to define and report data on truancy in 2006, but there is no provision regarding chronic early absence. Elementary schools often track average daily attendance or unexcused absences (truancy), but few monitor the combination of excused and unexcused absence for individual students. High overall school wide attendance rates can easily mask significant numbers of chronically absent students. While a growing interest in state data systems with universal student identifiers creates an opportunity to collect such data systematically, many districts have yet to develop the data capacity for tracking absences for individual students. As a result, many school districts do not know the extent to which chronic early absence is a problem in any or all of their schools.

This report seeks to raise awareness of the critical importance of chronic early absence, synthesize available data on the scope of the challenge, and share emerging insights about how schools and communities can use chronic early absence to identify and address challenges affecting the social, educational and physical well-being of children and their families before problems become intractable. While parents are responsible for getting their children to school every day, schools and communities need to recognize and address the barriers and challenges that may inhibit them from doing so, especially when they are living in poverty. Large numbers of chronically absent students could indicate systemic problems that affect the quality of the educational experience and/or the healthy functioning of the entire community.

This report is based upon the findings of applied research carried out with support from the Annie E. Casey Foundation. Activities included secondary analyses of data from the Early Childhood Longitudinal Study, Kindergarten Cohort (ECLS-K) conducted by the National Center for Children in Poverty (NCCP), analysis of local data on student attendance patterns, a review of relevant literature, and information offered by practitioners, researchers, and funders about promising practices and programs. After describing the key components of this applied research project, this report addresses what is known to date from this inquiry about the following key questions:

- What is the impact and prevalence of chronic early absence? Chronic absence in kindergarten has an immediate impact on academic performance for all children, especially Latino students. The long-term consequences are most significant for poor children. While not an issue in all communities, chronic early absence can reach high levels district-wide as well as within schools, even when levels are relatively low district-wide.
- What contributes to chronic early absence? When chronic early absence occurs, we propose considering the extent to which schools, families and communities might play a contributing role. Often more than one factor is at play simultaneously. Since conditions can vary substantially, the particular factors

contributing to chronic early absence should be assessed for each school and community. Gaining clarity about the factors that lead to chronic absence is critical to developing effective solutions. Open deliberation and exploration about the relevant risk factors can help lay a stronger foundation for the development of appropriate solutions.

What are implications for action? School districts throughout the United States need to be able to monitor whether and to what extent chronic early absence is a relevant problem in any or all schools based upon a common definition. If levels are significant, schools should partner with community agencies and families to understand and address the factors contributing to early absence in particular schools or populations. Strong, ongoing partnerships among schools, families and community agencies to implement comprehensive approaches over time are critical to ensuring all children have the opportunity to attend school every day.

We hope that a wide variety of readers working in related fields – including, for example, early childhood education, education reform, drop-out prevention, family support, and child and community health – will find this information meaningful and relevant. We invite policymakers, practitioners, researchers, and funders to consider integrating attention to chronic early absence into research, policy and practices related to their own agendas.

### How Did We Study Chronic Early Absence?

To deepen our understanding of the consequences, risk factors and potential strategies for addressing chronic early absence, this project, which started in the fall of 2006, has engaged in a mix of research activities. These included: (a) a new analysis of national data; (b) an examination of local attendance patterns in nine school districts; (c) a literature review; and (d) telephone interviews as well as electronic exchanges with practitioners and researchers with past experience addressing chronic early absence.

#### National Data Analysis

To paint a national picture of how this issue plays out across the country, the National Center for Children in Poverty (NCCP) examined data on chronic early absence from the Early Childhood Longitudinal Study, Kindergarten Cohort (ECLS-K). The ECLS-K, which is conducted by the National Center for Educational Statistics, U.S. Department of Education, includes data on children's development, family characteristics and functioning, as well as their school environments, collected from a national sample of 21,260 children from the time they entered kindergarten in 1998 until they reached fifth grade.<sup>1</sup> ECLS-K data were collected in kindergarten, first, third, and fifth grade. Data on school attendance in the ECLS-K were gathered from school administrative records. For the purposes of this study, only children with complete absenteeism data (that is, number of days absent in all grades) were selected. Using this longitudinal data set, NCCP examined characteristics and academic performance for students with different levels of absences in a school year: 0-<3.3%; 3.3-<6.6%; 6.6-<10.0%; and  $\geq 10.0\%$ . In addition, this study explored the impact of children's health on school absences. Data on children's health status were collected from parents. Only children with complete health data were included in theses analyses.

The national data analysis was carried out by Mariajosé Romero, PhD, with technical support from Young Sun Lee, PhD. For more detail on these results, see A National Portrait of Chronic Absenteeism in the Early Grades; The Influence of Maternal and Family Risk on Chronic Absenteeism in Early Schooling; How Maternal, Family and Cumulative Risk Affect Absenteeism in Early Schooling: Facts for Policymakers, and other publications available on the NCCP website (www.nccp.org).

#### **Examination of Local Attendance Patterns**

To further our understanding of how this issue plays out across communities, Casey staff and consultants worked with the Urban Institute, the National Neighborhood Indicators Partnership, the National Center for School Engagement, and Metis Associates to gather and analyze data from nine localities. All localities were school districts, except for one which was a geographic region within a large school district. The school districts, which varied in enrollment, were primarily located in urban settings and spanned pre-K through 12th grade. These sites were selected because district leadership allowed the researchers involved access to their data and all had data systems that tracked attendance for students even when they changed schools. (See Appendix A for demographic characteristics of the nine localities.) The names of particular communities and school districts are not included in this report; instead each locality has been labeled with a number.

Drawing upon the 20-day definition of extended absences (equivalent to 11% of an 180 day school year) used by the Maryland Department of Education, researchers involved in the local study agreed upon categories of absence to use for analysis: low (0-5.5%), moderate (5.5% -11%) and chronic (>11%) absence. Because the length of the school year differs across districts, it was necessary to use percentages (as opposed to number of days) to make comparisons across localities. If the NCCP definition (see above) had been applied to the local data, it is likely that local rates would be slightly higher than those calculated through this analysis, since it uses a slightly lower threshold (10 versus 11 percent or 18 versus 20 days of an 180 day school year). We recommend use of the NCCP definition in any future studies.

This research examined attendance patterns over time (when possible) for children in grades K-3 including differences in absence for children by grade, family income level, and special populations (including ethnicity, gender, English Language Learners [ELLs] and students with disabilities). Since access to data varied across localities, some analyses could only be conducted for a subset of the total group. Initially, we also sought to compare differences in patterns for children with excused versus unexcused absences, but the data were too unreliable, especially for comparison across localities.

In general, while the patterns found among these localities are useful for further understanding the national findings or suggesting further areas of research, we believe generalizing from patterns found only through the local data is premature since the localities were not selected as a representative sample of school districts throughout the country. Little is still known about the prevalence and nature of chronic absence in suburban and rural communities, although one study does suggest chronic absence may be more problematic in urban areas.<sup>2</sup>

#### Literature Review

A search was conducted to identify relevant literature from related fields. Through this search, we sought to identify: (a) literature documenting the impact of poor attendance in early elementary school on social and academic outcomes; (b) studies exploring the connection between chronic absence and a host of possible risk factors (for instance, chronic health problems, early childhood experiences, involvement in child welfare, participation in public assistance, etc.); and (c) studies or program evaluations describing effective strategies for improving attendance or reducing chronic absence. In addition to seeking out evaluations of programs or practices explicitly designed to affect chronic absence, we also sought out research examining the impact on school attendance of other types of programs (early home visiting, preschool, afterschool programs, asthma management, etc.).

#### Information Exchanges with Practitioners, Researchers and Funders

In order to ensure that this work was informed by available research and grounded by the experiences

of existing programs, the project manager, Hedy Chang, contacted more than 100 practitioners, trainers, researchers and funders working in related fields (for instance, early care and education, K-12 education, children's health, welfare reform, child welfare, substance abuse) to find out if they were familiar with the issue of chronic early absence, relevant research or promising programs and practices for improving attendance. Group e-mail inquiries were also sent out to Head Start Directors, Public Education Network members, grantmakers funding in Early Childhood and statewide family support organizations. In addition to supporting the literature review, these contacts led to the identification of relevant program models for which in-depth interviews were held. Descriptions of several promising programs appear in Appendix B.

### What is the impact and prevalence of chronic early absence?

Chronic early absence matters because regular school attendance is important for academic performance and extended absenteeism can affect significant numbers of young children during their earliest years of school.

**Chronic early absence affects substantial numbers of children nationwide and is even more problematic in some districts and schools.** According to the analysis by NCCP, over 11 percent of children in kindergarten and almost nine percent in first grade are chronically absent. Chronic absence fell to six percent among third graders.<sup>3</sup> Researchers note, however, that these estimates are probably conservative, since attendance data are missing more often from schools serving low-income and minority students than from those serving more affluent students in the ECLS-K study, and low income students tend to have more absences.

Prevalence of chronic early absence varied markedly across the nine localities studied, ranging from affecting one out of 20 to almost one out of four students enrolled in grades K-3.<sup>4</sup> Chronic early absence can be much higher in particular schools than district-wide. For example, the incidence of chronic early absence ranged from one percent to 54.5 percent across schools in a district where prevalence was 13.8 percent overall.

Especially when chronic absence reaches high levels, it is also important to consider the likely detrimental impact caused by the constant disruption to the learning environment for regularly attending peers, and the impact of unpredictable classroom dynamics on teachers' working conditions. For several localities, high levels of chronic absence existed in one or a handful of schools despite generally low levels of chronic early absence district-wide.





NCCP's national data analysis found that chronic absence in kindergarten is associated with lower academic performance in first grade, especially for Latino children. This negative correlation held true for all children regardless of gender, ethnicity or socioeconomic status. Participation in full-day as opposed to half-day kindergarten seems to lessen the negative impact of chronic absence in kindergarten among poor children.

The impact of early chronic absence appears to be most pronounced for Latino children. Reading scores for chronically absent Latino kindergartners were significantly lower than for their peers of other ethnicities even though they had missed similar amounts of school. This finding is especially notable given that Latinos, who are the largest and fastest growing minority group, now make up one out of four children under five.

Going to school regularly in the early years is especially critical for children from families living in poverty who are less likely to have the resources to help children make up for lost time in the classroom. Among poor children, chronic absence in kindergarten predicts the lowest levels of educational achievement at the end of fifth grade.

The following chart offers more specific guidance about how to calculate prevalence of chronic early absence. This guidance reflects insights gained by the researchers involved in conducting the analysis of national and local data for this report about how to best calculate prevalence and what type of data challenges are likely to emerge.

## *Figure 2*: Chronic absentees in kindergarten have the lowest academic performance in first grade



# *Figure 3:* Chronic absence in kindergarten was especially detrimental to the reading performance of Latino children in first grade



#### *Figure 4:* Poor children who were chronic absentees in kindergarten had the lowest performance in reading and math in fifth grade



#### Steps for Analyzing the Prevalence of Chronic Absence During the Early Grades

A major implication of these findings is that school districts should invest resources in determining whether and to what extent chronic early absence is a relevant problem for any or all of their schools. To ensure comparisons can be made across schools and communities, schools should engage in the analysis using a common definition of chronic early absence (missing 10% or more of the school year regardless of whether an absence is excused or unex- cused). Below are suggested steps for such an analysis.	STEP 1	Find out if your school district has a universal identifier (U.S.I) and if so, whether it is used to track attendance data. If it is not, begin discussions about how to include attendance data in the information tracked using the U.S.I.
	STEP 2	Find out if student attendance data are regularly and accurately reported every day for each student in every school and submitted to the school district. At the school level, care needs to be taken to ensure data are coded and stored in a consistent manner over time and across schools. Find out about agreements and policies regarding the treatment of suspensions, absences due to school transfers, disenrollment due to extended absence, etc. Understanding these policies will be essential to understanding how to interpret the results of an analysis of chronic early absence levels.
	STEP 3	Assuming a U.S.I is in place and data are regularly and consistently collected in schools, identify whether the district has capacity to engage in a thorough data analysis. If it does not, identify a data partner with the capacity to analyze the attendance data and work with the data partner to negotiate a release of attendance data (as well as other student characteristics) for analysis.
	STEP 4	Use district data to identify schools and populations with the highest prevalence of chronic early absence as well as levels of moderate and excessive absence. These additional levels are suggested because moderate absence offers insight into the number of children potentially at risk for chronic absence while excessive absence could help reveal whether the category of chronic early absence includes some children and families at even greater levels of risk.

#### Calculating Prevalence of Chronic Early Absence

Question	Method	Potential Data Issues
<ol> <li>What is the prevalence of chronic, moderate and excessive levels of early absence for the district as a whole?</li> </ol>	Calculate the percent of students who are: (a) chronically absent (defined as missing 10 percent or more of the school year; (b) moderately absence (defined as missing between five and less than 10 percent of the school year); and (c) excessive (defined as missing 20 percent or more of the school year). Calculate the number of days absent over the school year divided by the number of days enrolled for the school year.	If your school system does not track the number of days enrolled for each student, you might consider using the length of the school year as a proxy. Such an approach is not ideal, however, since it would undercount the level of absence among mobile children who leave the district before the end of the school year.
2. What is the prevalence of chronic, moderate and excessive absence by grade?	Code students by grade level. For students at each grade level, calculate the percent who are moderately, chronically and excessively absent. Please note while the applied research study examined K through third grades; you may find it helpful to look at trends K through fifth grades.	It may be important, beforehand, to determine how to code the grade level of students who have been held back or skipped a grade. If possible, conduct a special run to analyze absence levels for the children who have been retained.
3. What is the prevalence of chronic, excessive, and moderate absence for each elementary school?	Code students by their elementary school. For students attending each elementary school, calculate the percent who are moderately, chronically and excessively absent. Once this has been completed, identify the range, median and mean incidence at each school. Consider producing a list rank ordering schools by their level of absence and examining what percent of schools have more than 5 percent, 10 percent, and 20 percent of their students who are chronically or excessively absent.	
4. What is the prevalence of chronic, excessive and moderate absence by ethnicity?	Code students by the major ethnic groups in your school district, typically Hispanic/Latino, Non-Hispanic Black/ African American, Non-Hispanic White, Asian Pacific Islander, and Other. If you have a large Native American population, create a separate code from "other." For each ethnic group, calculate the percent who are moder- ately, chronically, and excessively absent.	If the numbers of an ethnic population are very small, you might consider noting the small sample size but keep the data available on a disaggregated basis.

#### Calculating Prevalence of Chronic Early Absence (cont.)

Question	Method	Potential Data Issues
5. What is the prevalence of chronic, excessive and moderate absence by special education?	Code students by whether they are identified special education or not. For each population (special education versus general education), calculate the percent who are moderately, chronically and excessively absent.	Agree beforehand around what types of categories should be coded special education for the purpose of this analysis.
6. What is the prevalence of chronic, excessive and moderate absence for English Language Learners versus English Language Speakers?	Code students by whether they are identified English Language Learners (ELL) or not. For each population (ELL versus not ELL), calculate the percent who are moderately and chronically absent.	If your population of ELL students is highly mobile and spends part of the year in another community, this calculation may seriously undercount chronic absence since students may end up dis-enrolled by the district before they end up counted chronically absent. This issue can be examined by calculating what percent of the ELL population leaves the school district before the end of a single school year and also reviewing district policies governing when a child is dis-enrolled.
7. What is the prevalence of chronic, excessive and moderate absence among poor and low income children as well as among those living in poor neighborhoods?	Calculate chronic, moderate and excessive absence levels for children who are poor versus non-poor. Depending upon available data, this calculation could be derived using different methods. A comparison could be made between students receiving free and reduced price lunch data versus those who do not. <sup>5</sup> If there is capacity to geo-code, student address infor- mation can be used to determine and code whether a student lives in a census tract where 30 percent or more of the residents live at or below the Federal Poverty line. A comparison can then be made between children living in high poverty census tracts versus all other census tracts.	Several challenges exist with using Free & Reduced Lunch. Reliability suffers given the challenges of getting students to apply every year for the free lunch program. In schools with high levels of low-income students, some districts have waivers in place to serve the entire student population and do not maintain data for individual students. Geocoding can be problematic if there are errors in the student addresses which prevent a portion of the students from being geo-coded. A manual (interactive) geocoding method might be needed to resolve problematic addresses and attain a 95 percent or higher match rate. It would also be important to deter- mine whether unmatched addresses represent a data bias. In addition, if the district is in an area in which there a number of new commu- nities/ subdivisions/ developments, geocoding may be hampered by the age of the data used to geocode.
8. What is the prevalence of chronic, excessive and moderate absence for children living in poverty by ethnicity, special education, and ELL status?	For each sub-population (for instance, ethnic group, special education versus general education, ELL versus Non-ELL), calculate prevalence of chronic and moderate absence for poor versus non poor students.	

## What Contributes to Chronic Early Absence?

An ecological perspective suggests that children's development and educational outcomes take place in the context of multiple, ongoing influences among children themselves, their immediate environments (family, school, peer group), and the larger environments (neighborhood, community, culture, society at large). Whether children attend school regularly reflects whether children's environments - including family, schools, community, culture, and society - adequately address their needs. While parents are responsible for getting their children to school every day, schools and communities need to recognize and address the barriers and challenges that may inhibit them from doing so, especially when they are living in poverty. Large numbers of chronically absent students could indicate systemic problems that affect the quality of the educational experience and/or the healthy functioning of an entire community.

Identified through our applied research, these contributing factors are offered below as questions to explore. Each would benefit from further research to ascertain the extent to which they hold true, especially in different localities. Gaining clarity about the factors that lead to chronic absence is critical to developing effective solutions.

#### **School-Related Issues**

Schools themselves can contribute to high levels of absence among young children.

Is chronic absence an indication that schools do not communicate the importance of regular attendance to parents in their home language and in culturally appropriate ways? Schools play an essential role in promoting attendance by helping parents understand that coming to school, especially in the early years, is important to a child's academic success. Effective and clear communications to diverse families was found by Epstein and Sheldon<sup>6</sup> to have a significant impact on improving attendance and reducing chronic absence. Because teachers are respected authority figures in many communities, their guidance can be very influential, especially for immigrant parents who are unfamiliar with the norms of U.S. educational institutions and perhaps even lack experience with formal education in their home country. The lack of Spanish-speaking school personnel who can reach out and communicate with a growing population of Latino families about educational matters, including attendance, appeared to be a major issue in the school district with the second highest level of chronic early absence in our local research.

Is chronic absence a sign that schools do not monitor absences or contact families when children miss extended periods of time to identify and, where feasible, address barriers to getting to school? Personal contact and outreach from schools can help families understand that attendance, even in the early grades, is important to children's academic success. When schools take a supportive and personal approach to contacting families about absences, they demonstrate that staff are concerned about the well-being of their children, and encourage parents to send their young children to school. Epstein and Sheldon also found that the presence of a school contact person to discuss attendance and related issues, along with home visits, reduce chronic absence.7 Our local research appears to affirm this finding: a defining characteristic of locality #9, which had the lowest rates of chronic absence, is its ongoing and intentional approach to monitoring attendance and contacting parents as soon as troubling patterns of absences begin to appear.

The willingness of schools and districts to actively monitor absences may, in part, reflect the extent to which state school funding policies create incentives to invest in increased student attendance. Currently, only a handful of states base funding on average daily attendance (ADA). Most states allocate funding based upon student enrollment counted once or twice during the year, often in conjunction with a formula to provide extra funding for students with greater needs. At least one state has no consistent funding formula based on student enrollment; instead, allocations are determined through the political process. The locality in our study with the second highest level of chronic absence was located in this state.

### Is chronic absence a sign that schools do not effectively engage parents in their children's

education? Schools create an important foundation for parents to see themselves as active partners in their children's education. Schools and teachers that build strong personal relationships to parents and offer a variety of opportunities for involvement can make a tremendous difference. Research shows that the more schools reach out and engage parents, the more they experience gains in attendance.<sup>8</sup> Parents actively involved in their children's education are more likely to ensure children attend school on a regular basis.

Schools' efforts to involve families are frequently haphazard and uncoordinated with teachers' individual outreach to families, with little support from the larger school community. Typically, limited or no training is available to help educators learn how to form strong school, family and community partnerships. Outreach is often based upon trial and error rather than upon a coherent strategy informed by an understanding of the most effective practices.9 Too often, schools focus parent involvement on activities (like fundraising or volunteering in the classroom) that fail to recognize and build upon the multitude of ways parents, especially from minority or less affluent backgrounds, can and do contribute to their children's education. Research shows that schools are more likely to increase attendance if they are able to engage parents of all backgrounds, including those who speak languages other than English.<sup>10</sup> Parents who are not involved in school have a much harder time seeing how their children are adversely affected when they miss school.

#### Is chronic absence a sign that schools do not offer a high quality, engaging and safe educational

**experience?** Early attendance problems, especially if they occur at high rates throughout a school, could signify that children and their families are ambivalent about or even alienated from school. Repeated absences could be a response to ineffective teaching, high rates of staff turnover or teacher absenteeism, chaos in the classroom or bullying in school premises. Although most of the existing research documenting the detrimental impact of poor quality education on attendance focuses on older students,<sup>11</sup> it is likely this situation also applies to younger children, especially if their parents are aware of the problems in the classroom.

An issue worth further exploration is whether the high levels of chronic absence found among children in need of special education reflects, at least in part, the lack of a high quality, engaging educational experience. Across all nine localities, higher levels of absence occurred among children with Individualized Educational Programs (IEPs).<sup>12</sup>

#### Family-Related Issues

While what happens in school matters, school attendance is deeply affected by family circumstances. Young children depend upon their primary caregivers to ensure they arrive at school every day.

Is chronic early absence an indication that families are unaware of the adverse impact of chronic early absence? Especially when children are entering kindergarten, families may not realize that attendance in kindergarten matters. Kindergarten has historically been viewed as a transition into formal education rather than the beginning of formal schooling. Many parents may not be aware of the changes that have occurred in schooling, especially with the onset of No Child Left Behind. This perception of kindergarten as optional is reflected by state compulsory education laws, which typically do not start until children are older, as well as the continued practice of only offering half-day kindergarten in many places. Nationally and across all of the localities studied, the incidence of chronic absence was consistently highest in kindergarten and then declined with each subsequent school year through third grade.

Is chronic early absence an indication that families are poor and lack the resources (transportation, food, clothing, etc.) to ensure their children regularly attend school? When families are poor, they lack resources (often taken for granted by many middle class families) that make regular school attendance much easier. Poverty and the lack of stable, affordable housing are clearly associated with the mobility issue described above. Barriers also include the lack of reliable transportation, nutritious food and limited access to health care. Sometimes, parents are simply too exhausted to wake up in the morning in time to get their children dressed, fed and to school because they are working night shifts and even multiple jobs to pay bills. Programs addressing chronic absenteeism have also

found that children were too embarrassed to go to school because they lacked clean, suitable clothing or did not have appropriate shoes or coats to endure rain or snow.

The data analysis carried out by this project found a correlation between chronic early absence and poverty. According to NCCP, absence in kindergarten and first grade increased when family income was lower. In kindergarten, children from families living in poverty were four times more likely to be chronically absent than were their peers from families earning at least 300 percent of the federal poverty level. In first grade, children from families in poverty were still 3.6 times more likely to be chronically absent than were their most affluent peers. While this disparity decreased slightly in third grade, it began to climb again in fifth grade.

Is chronic early absence an indication that families are highly mobile? According to the U.S. Government Accountability Office, one of six children has attended three or more schools by the time he/she completes third grade.<sup>13</sup> Mobility is highly correlated with poor attendance.<sup>14</sup> When children move, they miss school while they are in the process of finding a new home and a new school. Mobility can continue to affect attendance even after a child has been enrolled in a new school. Children who are subject to multiple moves may actively avoid going to school because of the challenges of constantly adjusting to a new school where they lack relationships to adults or peers and may need to adapt to a new curriculum and teaching methods. To reduce the impact of mobility, some districts have sought to standardize the curriculum used by their elementary schools. While some families change schools because of educational concerns, the majority of changes are caused by shifts in the family's residence. Families who move frequently are often coping with serious life events including job loss, divorce, domestic abuse, foster care placement and poor housing.15

Especially in communities with large immigrant populations, mobility can occur when families move back temporarily to their country of origin for extended periods. Immigrant parents may not be aware of the detrimental impact of extended absences or that these can result in their child being dis-enrolled from their school. Among families living in the United States without documentation, frequent moves could also occur in an effort to avoid detection by the U.S. Citizenship and Immigration Services or if parents are detained in immigration enforcement operations.16 Frequent movement back and forth between communities is not, however, limited to immigrant populations, but, for example, also can occur among young Native American students, when they move on and off reservation lands. It is also important to recognize, however, that absenteeism among highly mobile children is not always reflected in a child's school record especially if attendance is not tracked for individual students. In addition, when children move, they may be dis-enrolled before being identified as chronically absent.

Is chronic early absence a sign that families have difficulty addressing and managing illness, especially chronic disease among children? Especially when families are poor, they also may lack access to medical care that helps to ensure being sick does not result in missing school. If families, for example, lack access to health care, their children can miss school because they do not get immunized in time or because an ear infection only gets treated after a long night in the emergency room. The presence of a chronic disease, like asthma, can make the situation even more difficult. Coping with asthma can be a tall order for most parents; it is an even greater challenge for those who are struggling to make ends meet and may not have access to medication or preventive health care that can help to avoid asthmatic attacks. Lower-income families are also more likely to live in communities affected by environmental toxins and air pollution, which lead to a greater prevalence of chronic disease and can trigger continued symptoms such as asthma attacks.17

NCCP's research revealed that among children rated by their parents as being in poor health, absenteeism significantly increased at 200-300% of poverty for children in poor health.

One possible explanation is that, at this income level, families earn enough to lose public health benefits, but too little to pay for private health insurance or the uncovered costs of health care.

## *Figure 5:* Middle income children with poor health missed school more often than healthy children



#### Does Race/Ethnicity Matter for Chronic Early Absence?

According to the NCCP analysis, nonwhite kindergartners, except for Asian Americans, are on average, absent more days than whites. Absenteeism was markedly higher among Native American children and somewhat lower among Asians.

Such national results, however, were not always consistent with what occurred in the nine localities studied. In the one site with a large enough population of Native Americans (1.1% of the population) to include in the analysis, Native American youngsters also had the highest incidence of chronic early absence. But in four of the remaining sites, whites had the worst attendance patterns. African American students had the highest levels in three districts; Latino children in one. Although these local analyses also showed Asian American students were the least likely to be chronically absent in the early grades, it is important to recognize that this category, which encompasses a broad array of ethnic groups, can mask substantial differences between ethnicities.

This data suggest that while race/ethnicity does matter, how it matters may depend upon a number of variables. Poverty, for example, certainly is a key factor. Local data suggest chronic absence was higher among both white and black children who lived in high poverty neighborhoods. Differences in prevalence across racial/ethnic groups also reflect whether the current or historical treatment of the members of a particular ethnic group has an impact on the factors contributing to chronic absence. Chronic absence may increase, for example, if schools do not have the cultural or linguistic competence to communicate with and build relationships to families of particular language or ethnic backgrounds or address the learning needs of their children.

The local variations demonstrate the importance of avoiding assumptions about who will be chronically absent based upon their race/ethnicity and, instead, examine variations in attendance patterns and contributing factors by racial/ethnic groups. Once families are more affluent, they can afford more expensive high quality care but are also more likely to have the knowledge and skills that support prevention and help handle medical crises such as asthma attacks. In addition, for families at the very lowest income levels, it may be difficult to distinguish whether absence is caused by a health issue or other challenges that make it more likely for children to miss school or some combination.

Is chronic early absence a sign that families have a history of negative experiences with education and may not feel welcome in schools? Although parents want their children to be successful, some parents may not have developed the skills, knowledge or beliefs that help them to support their children's education, especially if they experienced school failure themselves. Parents may feel reluctant to send their children to school if their own personal experience with formal education was negative. They may find that schools evoke memories of failure and alienation rather give rise to feelings of possibility and hope for a better future for their children. If a whole population of students demonstrates a consistent pattern of absenteeism, it may be important to explore whether this behavior reflects the existence of policies and practices causing wide spread alienation from formal education.

Is chronic early absence an indication that families face multiple risks (for instance, living in poverty, teen motherhood, single motherhood, low maternal education, welfare, unemployment, food insecurity, poor maternal health and multiple siblings)? NCCP found that chronic early absence was affected by a number of maternal and family risks, including living in poverty, teenage motherhood, single motherhood, low maternal education, welfare, maternal unemployment, food insecurity, poor maternal health and multiple siblings. While each one, by itself, had some impact on chronic absence, rates jumped significantly once families were confronted with three or more risks. As children continue in elementary school careers the impact of cumulative risk lessens briefly only to increase again in fifth grade.<sup>18</sup> Multiple risks were most commonly found among children living in poverty, from a racial/ethnic minority group or in poor health.

#### Is chronic early absence a sign of serious problems that make school attendance difficult because family life has been disrupted and public agencies and schools lack a coordinated response?

Among some families, chronic early absence could be a sign that they are grappling with serious problems such as such as substance abuse, mental illness (including maternal depression), domestic violence, child abuse, and involvement in the criminal justice system. These challenges can deeply impair the healthy functioning of the family and interfere with the psychological and physical ability of parents to provide their children with the guidance, nurturing and skill building they need. Substance abuse seriously interferes with parents' ability to meet their children's basic needs, often creating high levels of chaos, neglect and isolation in the home.<sup>19</sup> The impact of adults' mental illness on parenting behavior, as well as the challenges of recovery and treatment, can seriously affect family functioning.<sup>20</sup> Recent research suggests that maternal depression is much more common than previously suspected, and can seriously impair the parent-child relationship.21

When domestic violence or child abuse occurs, school attendance and academic performance frequently decline. Children not only suffer from resulting psychological, and in some cases, physical, trauma but also experience instability in their living situations as victims seek out safe places to stay. If children enter the child welfare system, they may be subject to multiple placements. Often, the foster care situations are not coordinated to ensure that they can remain in the same elementary school. If parents become incarcerated, maintaining a stable and nurturing living situation can be even more problematic.<sup>22</sup> Violence in the home, substance abuse and parental incarceration often result in young children being placed in the care of relatives, typically grandparents, who may themselves be in precarious positions to assume parenting roles because they often are living on fixed incomes and coping with significant health issues.

#### **Community-Related Issues**

In addition to being affected by what happens in their own home, children's regular school attendance can also reflect community conditions. A community rich in supports for children and families can help make up for limited resources and educational opportunities in the home. If an entire community is economically distressed and plagued by violence, the impact of these conditions and a lack of positive social norms can make it difficult for even the strongest of families to ensure their children stay on track for school success.

Does chronic absence occur when communities do not provide adequate supports to help children and families make a positive transition into elementary school? Children's entry into kindergarten can be a major shift for families as well as children. While children must adjust to being in a large group, often with only a single teacher, parents must develop a relationship with their child's teacher and gain an understanding of the norms and expectations of elementary school. Both children and their families must also develop the daily routines that will support consistent attendance at school. Chronic early absenteeism could reflect the absence of needed supports in the community to help children and their families make this shift to a formal learning environment.

According to the NCCP study, children who spent the year prior to kindergarten in the care of family members were more often absent than peers who attended a center-based program or were under the care of non-relatives. This finding held true above and beyond differences in family income and race. One explanation is that children in the care of centers and non-family members may have an advantage because they have already developed the routine of getting to "school" on a regular basis. An additional advantage of spending time in a center or other non-relative care is providing children with prior experience in making the transition to being with someone who is not a member of the family. Children unaccustomed to this transition can become so anxious about attending school that they refuse to attend school, even complaining about physical symptoms. This situation is best resolved by ensuring the child attends regularly while also providing the child with reassurance to address his

or her fears. If not resolved quickly, these school refusal behaviors can result in more ongoing attendance challenges.<sup>23</sup> When children are in early childhood settings, teachers typically are working with fewer children and can more easily work with parents to allay children's anxieties about school and separation from their families.

Finally, chronic absence could reflect the lack of high quality early education experiences that help children gain the social and cognitive skills that make school a more positive experience. Given greater emphasis on formal instruction and skill acquisition in kindergarten, children must increasingly enter school already able to pay attention, exercise self-control and sit still for longer periods of time.<sup>24</sup> NCCP found that children had higher absenteeism if they were less socio-emotionally mature, according to their teachers' perceptions of the child's approaches to learning, interpersonal relations, self control, as well as externalizing or internalizing problem behaviors.<sup>25</sup> One argument for the expansion of preschool is that it helps children, especially the least advantaged children, gain these types of skills so they can be successful in school.<sup>26</sup>

Participation in more formal early care and education programs is heavily influenced by economic status as well as by ethnicity. Affluent children are much more likely to attend preschool and their families have the resources to cover the cost of high quality programs. Latino children are less likely than any other ethnic group to attend preschool.<sup>27</sup> The lack of preschool participation among Latino children could help explain why chronic absence in kindergarten has an even greater effect on this population of children.

Is chronic early absence a sign that the community is severely distressed and suffers from a dearth of formal or informal supports to promote children's positive development, including regular school attendance? The number of children living in severely distressed neighborhoods has significantly increased between 1990 and 2000. A community is considered severely distressed when its population shares at least three of the four following characteristics: high poverty rate (24.5% or more), a large percent (>37.15) of single mothers, a high concentration of high school drop outs (>23%) and a high percentage of unemployed working-age males (34% or more).<sup>28</sup> In neighborhoods, just as within families, these characteristics interact with each other to create an even more challenging environment than would be predicted by the presence of only one measure. Such neighborhoods also often suffer from a dearth of strong community institutions that can help support children and their families. When children grow up in these types of neighborhoods, they may be less likely to see positive role models or have access to community programs (such as mentoring programs or afterschool programs) that could encourage their attendance at school.

Is chronic early absence an indication that a community is experiencing high levels of violence that adversely affect family functioning and getting children to school safely? Ongoing exposure to community violence can have extremely troubling and powerful effects on the behavior and perception of those who have experienced it, and early chronic absenteeism could reflect the impact of high levels of community violence on children and their parents. Among a range of impacts, victims can lose their ability to trust other people and institutions, and can also become less likely to take initiative because they no longer believe they can get what they want, have less ability to distinguish between the impact of their own actions versus others and lack confidence in the validity of their own perception.<sup>29</sup> In such a situation, parents may be unable to provide children with the positive support they need to attend school on regular basis and achieve in school. As a practical matter, high rates of violence and community crime could also affect the ability of families to get their children to school, especially if the route involves crossing over gang territories.

In locality #1, data were available to compare differences between selected indicators of community well-being for the 10 percent of census tracts with the highest rates of chronic absent K through third graders versus the city as whole. This study found that rates for infant mortality, child/adolescent deaths, and juvenile violent deaths were each approximately 140% higher in the areas with chronic absenteeism than the city as a whole. Child abuse rates were 93% higher.



#### High Performance School

Although community violence matters, chronic absence might be, at least partially, remedied by a high quality educational program. Drawing from data for locality #1, the chart suggests that when school quality was high, children were less likely to be chronically absent in the early grades despite living in a high risk neighborhood in which many of their peers are missing extended periods of school. One possibility is families are even more inclined to ensure their children regularly attend a well run school since it also serves as a safe haven from community violence.

In summary, the extent to which any of these contributing factors can vary depends upon the specific local context or particular circumstances surrounding a particular child or family. In addition, it is likely that the array of major factors preventing children from going to school is associated with the overall level of chronic absenteeism. When chronic early absenteeism is relatively low (for example, between 0-8 percent), it is more likely to be related to economic and social challenges affecting the ability of individual families to ensure their children attend school regularly. When a large percentage of children are affected by chronic early absence (more than 20% of the population), it is likely indicative of systemic issues related to schools or communities.

If chronic early absence is a significant issue, schools and communities would benefit from a deeper understanding of the extent to which any of the factors outlined in this brief are relevant. The box below describes how schools and communities can gather qualitative and quantitative information to identify key contributing factors. As communities engage in this more comprehensive assessment, they can also combine research with action by piloting interventions targeting a group of children with high levels of absence. Below, Charlie Bruner describes how communities could use a technique adapted from health care to engage in such action research.

#### Identifying Factors Contributing to Chronic Early Absence in Your School or Community

Once you have been able to collect data on the prevalence of chronic early absence for your school (and ideally district-wide), it is important to unpack the factors that appear to lead to children missing school for extended periods of time. Such factors can vary across schools, communities and different kinds of families. Generating a more informed picture of the story behind the statistics on prevalence is critical to developing effective interventions. Below are suggested activities to help you identify what is occurring in your school and community.

1) Examine Data on Chronic Early Absence. Step back and reflect upon the results of your school and district data on chronic early absence. Below are some issues to discuss.

- Does the level of chronic early absence affect a significant proportion of the student population (10% or more)? Is it higher or lower than the rest of the school district? (High levels throughout a district suggest the existence of systemic challenges related to school policy or practice and/or problematic community-wide social or economic issues.)
- Does the level of chronic early absence differ by different kinds of students and their families? By grade level? By race/ethnicity? Language background? Neighborhood of residence?
- What percent of the population of children who are chronically absent is excessively absent (missing 20% or more of the school year) and if data are available, persistently absent (consistently missing school for extended periods of times for several years in a row)?

2) Obtain background information on basic school

and community conditions. Key sources of information include an interview with the principal, a review of any school or district or state attendance policies, school data (available on the Internet through the school district or such other websites as GreatSchools.net), and community data (Census data on family economics, structure, educational levels, language and ethnic background, data on child care supply and demand, statistics on crime, child welfare data, health data, etc.). **3)** Contact students and families when they are absent. When children are absent, especially for an extended period of time, contact their families to show concern about their child's well-being and begin obtaining information about the challenges faced to attending school.

4) Conduct Early School Success Focus Groups. Focus groups should be conducted with a variety of stakeholders, including parents, students, school staff (both teachers, support personnel, social workers, and school nurses) and staff of community agencies to learn more about early school experiences. Rather than limit the discussions to barriers to attendance, it may be more helpful to frame the discussions around early academic success in order to look at the overall situation and avoid feelings of stigma. Focus groups can explore barriers and challenges to academic achievement and school attendance, and can be used to learn what resources are available or missing to support students and their families. Ideally, focus groups should be organized in homogenous groupings by type of stakeholder, as well as by ethnic or linguistic background, to create opportunities for participants to discuss their experiences and to learn about common concerns and hopes that emerge across the different perspectives.

5) Develop Parent Surveys. To obtain input from a broader array of families, consider using the results of the focus groups to solicit input from an even broader array of parents about their early school experiences, including the regular school attendance. Remember to translate surveys if your school serves large numbers of families who speak languages other than English. Consider developing a team of parents of different backgrounds to help develop, disseminate and collect surveys as well as interpret the results

## Combining Research and Action: Using the Plan, Do, Study, Act (PDSA) Test Cycle to Develop Strategies to Address Early Grade Absenteeism

by Charles Bruner, executive director, Child and Family Policy Center

The Plan, Do, Study, Act (PDSA) Test Cycle is a way to quickly assess a change in practice to determine its promise, get immediate feedback that can help revise and refine strategies, and learn as work proceeds. It is particularly useful in supporting real-world activities in ways that do not involve long-term commitments or detailed work plans and protocols for action. The four stages of the test cycle are:

Plan – develop the change to be tested or implemented

Do - carry out the test or change

Study – gather data before and after the change and reflect on what was learned

Act – plan the next change cycle or expanded implementation, building on what was learned.

Frequently, PDSA test cycles involve a small number of cases for a change that is implemented over a short period of time. PDSA test cycles have been employed in health care settings for such varied purposes as trying new techniques to remind patients of appointments (to reduce missed appointments), adopting new screening tools within well-child practices, and developing referral patterns with other allied health professionals (such as early intervention programs under Part C of IDEA).

PDSA test cycles also place practitioners who have identified or been made aware of a potential problem in current practice in a partnering role in developing and testing a solution. The short-term nature of PDSAs lowers their cost at seeking a solution, and encourages practitioners to promote, rather than resist, potential changes. It helps to build a practitioner constituency base for change. PDSA test cycles could be a way to move from the identification of early elementary absenteeism as a school concern to taking action to address it. Examples of types of PDSAs that might be done include:

- A school with a high percentage of students who are absent more than 10% of the time decide to call parents of children who have missed at least five days of school during the first two months of school and ask them to come to the school to develop a school attendance plan for their children. The school will followup with parents over the next month at any time there is an absence, and assess the results in reducing subsequent absences.
- A school district has found that students often miss substantial numbers of days of school when they transfer during the middle of a year, due to a family move. The district will work to meet with the next 15 families whose children move schools within the school year and have missed at least a week of school in the process. In the interviews, the district will seek to determine what actions might have prevented the delay in enrollment, whether there were options for the child to remain in the original school at least during the time of the move, and what subsequent PDSA could be put in place to address this issue.
- A school with a high proportion of African American elementary students with high rates of absence could recruit African American parents to conduct an absentee watch for a month, contacting all parents whose children miss school to identify reasons the children missed school and develop plans for addressing those reasons.

## What Are Implications for Action?

Paying attention to early absenteeism can be an effective strategy for identifying and addressing educational and familial issues early on. To realize this potential, this brief suggests four major areas of action.

#### Monitor Chronic Absence

Action starts with school districts throughout the United States determining whether and to what extent chronic absence is a relevant problem. School districts should:

- Improve the accuracy and consistency of local data on attendance maintained by individual schools and district-wide.
- Include absences among the data elements tracked with a universal student identifier, including among elementary school children and if possible, even among students attending pre-kindergarten programs. Including children when they enter pre-kindergarten programs could allow districts to identify if attendance is problematic prior to elementary school and to track whether participation in prekindergarten is helping to reduce chronic early absence in Kindergarten.
- Adopt a common definition of chronic absence (missing 10% or more of the school year school year regardless of whether absences are excused or unexcused).
- Regularly calculate and report on the number of children chronically absent including excused and unexcused absences by type of school (elementary, middle, secondary) and by grade. Data should be made available to the public.
- Examine whether chronic early absence is higher among particular student populations as defined, for example, by ethnicity, English Language Learner (ELL) status, home language, participation in special education, gender, risk exposure, etc.
- Maintain chronically absent students on school enrollment files until the district can verify that students have transferred or moved out of district.

Additional data collection in school districts throughout the United States is especially important for understanding the prevalence of chronic early absence in rural and suburban areas as well as other urban school districts.

These data collection reforms can be supported with action at the district, state and federal levels. School districts can adopt these reforms as they improve their local data systems. State policy makers can encourage monitoring and reporting on chronic absence through legislation as well as administrative regulations. The federal government can also promote these improvements through technical assistance as well as public investments in education data systems.

## Improve Attendance through Strong School and Community Partnerships

If chronic absence levels are significant for particular schools, neighborhoods or populations of students, schools should partner with community agencies, including early childhood agencies, and families to understand the factors contributing to early absence to develop appropriate responses tailored to their realities.

#### **Characteristics of Promising Programs**

Available research combined with the experience of pioneering programs, suggest that schools and communities can make a significant difference when they:

- address issues contributing to chronic early absence in their community;
- take comprehensive approaches involving students, families and community agencies;
- maintain a sustained focus on attendance over time;
- begin early upon entry to school or even earlier;
- combine strategies helping to improve attendance among all children with interventions targeting those who are chronically absent;

- take into account and build upon the languages and cultures of students and their families; and
- offer positive supports to promote school attendance instead of (or before resorting to) punitive responses or legal action.

A comprehensive and intentional approach characterizes the school district that had the lowest level of chronic early absence (5.4 percent) among the nine localities examined. Each school has an attendance team. Families are contacted as soon as students miss three days of school. Home visits occur after five days. This district has a strong track record of collaborating with public agencies and health providers as well as community-based agencies. It is located in one of the few states providing universal preschool education. Over the past four years, chronic early absence fell from 10 percent to 5 percent among young students living in high poverty neighborhoods. In this district, unlike all other localities examined, students from high poverty neighborhoods had better attendance than their peers living in other parts of town.

#### A Proposed Comprehensive Response

The pyramid illustrates what could be encompassed within a comprehensive response.

The universal strategies lie at the base of the pyramid while the most targeted interventions appear at the top. Based upon an assessment of their own strengths and challenges, each school community can identify which strategies need to be put in place to reduce chronic absence. A school community might find, for example, that some of these potential strategies are already in place so it can focus its attention on the missing elements. Each of these possible strategies is discussed in more depth below along with references to existing models and promising practices.

## 1. Prepare children for entry into school through high quality early care and education experience.

Quality early care and education experiences are characterized by well-trained staff, low staff and teacher ratios, safe facilities and culturally, linguistically and developmentally appropriate curricula. Because these programs are often the first experience parents have sharing responsibility for raising their children, they can play an invaluable role in reducing chronic absence by orienting families to school norms and helping families make regular school attendance part of their daily routine. This can happen in part-day, part-week or full-day/ full-week programs as long as the time and day of participation are clearly established and maintained and programs help in general to educate parents about how they promote the development of their children through regular routines and setting appropriate limits. A growing national interest in expanding access to preschool as well as in establishing pre-K through third grade programs offer important opportunities to ensure even greater numbers of children are prepared for the transition to elementary school.



Early outreach to families with poor attendance, and as appropriate, case management to address social, medical, economic and academic needs

Offer incentives for attendance to all children Encourage families to help each other attend school Educate parents about the importance of attendance

Engage families of *all* backgrounds in their children's education Offer a high quality education responsive to diverse learning needs Ensure access to preventive health care, especially as children enter school Prepare children for school through quality early care and education experiences 2. Ensure access to preventive health care, especially as children enter school. Especially in

communities with larger numbers of low-income and working poor families, it may be important to take additional steps to ensure all children have access to preventive health care in order to prevent avoidable illnesses becoming a cause of extended absence. Such steps can involve not only expanding enrollment in children's health insurance but also providing children with immunizations and comprehensive screenings (vision, dental, hearing and assessment for developmental delays.) While ideally such activities occur long before a child begins kindergarten, schools should be equipped to address immediately the needs of children who enter their doors without prior access to such medical services. School nurses are an essential component, especially if they can operate in partnership with resources available from public health departments, community clinics, medical facilities and even local medical or dental schools.

## 3. Offer a high quality education that responds to diverse learning styles and needs of students.

When schools offer a high quality educational experience that engages the interest of children and meets their learning needs, families are much more likely to feel going to school is worthwhile. The field of education encompasses a wide variety of school reform approaches, ranging from those focused on changing practices related to teaching and learning, to the creation of smaller schools that help to build and maintain a sense of connection among teachers, students and families. Regardless of its nature, any reform effort should have a vested interest in reducing chronic early absence since curricular improvements are difficult to implement if classrooms are constantly disrupted by the reappearance of children who have missed extended periods of school. In addition to supporting curriculum improvements and professional development for teachers, education reform initiatives could encourage schools to partner with social service agencies to address family and community-related barriers to learning, including chronic absence. The implementation of Project Grad in Atlanta, in Appendix B, illustrates such an approach.

4. Engage families of *all* backgrounds in their children's education. Attendance improves when schools effectively engage parents when they create a wide variety of opportunities for families from all backgrounds to support their child's learning. Such engagement starts with building relationships between teachers and parents.

According to the work of Joyce Epstein, several different types of parent involvement are important to undertake including: (a) *parenting* – helping all families establish supportive home environments for children; (b) communicating - establishing two-way exchanges about school programs and children's progress; (c) volunteering – restructuring and organizing parent help at school, home or other locations; (d) learning at home - providing information and ideas to families about how to help students with homework and other curriculum-related materials; (e) *decision making* – having families serve as representatives and leaders on school communities.<sup>30</sup> Offering a wide variety of opportunities helps make it possible for parents from a range of backgrounds and with varying levels of availability (given work schedules) to participate, especially when outreach to families occurs in their home languages and by staff familiar with their cultural norms.

5. Educate parents about the importance of attendance. Educating parents about the importance of attending school can take a variety of forms and be incorporated into various types of parent involvement discussed earlier. It can begin with creating an opportunity during school orientation nights, typically held at the beginning of the school year, to help parents to understand why attendance is important because of its impact on the child, and to share relevant rules and regulations. Staff can use their interaction with parents throughout the year to talk with parents about avoiding long vacations while school is still in session or taking care to schedule doctor's appointments in the non-school hours. Schools can incorporate attendance into parenting workshops by, for example, offering a session on strategies for getting children to school every day, on time. Ideally, such workshops could combine advice from an expert with opportunities for sharing successful strategies and problem-solving among parents. In the PACT program in Hawaii, a series of attendance workshops were specifically designed

to meet the needs of parents of children who were chronically absent. After initially requiring parents to participate, the program shifted to a voluntary approach, which proved more successful.

#### 6. Encourage families to help each other attend

school. Schools can also facilitate and promote parents and students helping each other attend school. In Verde Involving Parents Program, for example, trained parent leaders receive the class roll lists from teachers and then called to check in with the parents of all absent students. As parents are called, the VIP parent leaders find out if families are experiencing barriers that could be overcome with the help of other parents, for example, helping each other out with drop-off and pick up. While more difficult situations should be referred to a social worker, the parent leaders can play an important role in helping their peers know that they are valued and should feel comfortable turning to each other for informal support. Relying upon informal support and guidance of friends and families has always been a critical ingredient in successfully raising children, including getting children to school regularly. As families have, however, become more mobile, often living far away from natural networks of support, schools are becoming increasingly important community institutions and places for forging and establishing relationships of mutual support.

#### 7. Offer incentives for attendance to all children.

Many schools offer incentives, both material (such as pencils, or toys) and emotional (acknowledgement in class, at morning assembly or in the school newsletter, extra recess time, opportunities to dress casually if uniforms are required) to children or sometimes parents for excellent attendance records. Whether incentives should be material is a matter of some debate: some practitioners feel the change in behavior should not be in response to an external reward, while others feel that material incentives, including financial stipends to parents, can effectively motivate participation among harder to reach families. Equally important, schools with limited budgets should be aware that if they are creative, they can engage in a wide variety of low or no cost approaches to creating incentives for attendance. Finally, as schools develop incentives, attention should be paid to rewarding attendance without encouraging the practice of sending sick children to school.

8. Conduct early outreach to families with poor attendance, and as appropriate, case management to address social, medical, economic and academic needs. Every promising program identified through this applied research project actively tracked attendance and contacted families when children are were absent. Programs varied, however, with respect to when a contact was triggered. In most programs, a more personal contact did not begin until after children had been absent for a defined period of time. Contact would often begin with the school sending a letter. It would then progress to a phone call or a home visit. Often school sites form attendance teams comprised of the administrator, teachers, attendance staff, and a school social worker and/or nurse if available, to help carry out this function.

A social worker to provide ongoing case management is often very important for helping families struggling to overcome significant barriers to school attendance. Social workers can help families to establish short-and long-term goals to ensure their child's educational success, develop an action plan as well as identify and secure social, medical, economic and educational resources needed to address the needs of their child or the family as a whole. A social worker can come from a collaborating public agency or community-based organization as well as from the school or school district. The Check & Connect Program found that working with the family over an extended period of time and staying with families even as they change schools is a key ingredient.

Family support programs, if they exist in a community, are particularly important resources for expanding capacity to provide such outreach. Voluntary in nature, family support programs use a strength based approach to fostering family resiliency and offer an array of supports such as parent education, peer support groups, assistance with basic needs (food, clothing, etc.), and referrals to other community resources. Family support programs can target resources and outreach to chronically absent families and help families understand why and how they can encourage attendance and academic success at home. Increasingly family support agencies are also beginning to expand their array of support to include economic supports (such as free tax preparation education, increased utilization of tax credits and public subsidies, and even debt counseling and financial management training) that may help families to address financial challenges.

9. Coordinate public agency and, if needed, legal response for families in crisis. When families are in crisis, coordination among public agencies seeking to address the situation is essential. Consider, for example, what happens when a child is taken into child protective custody. Too often arrangements are made without attention to ensuring that children in the child welfare system can stay in the same school and with teachers with whom they have already built a relationship of trust. Child welfare agencies can change this situation by aligning agency operations with the geographic boundaries of schools. Neighborhoods for Kids in San Diego has not only assigned social workers to schools but it has also developed "Way Station" foster homes that take children 24 hours a day near schools in the geographic areas with the highest levels of child abuse. The Way Stations continue to transport children to their home schools while in their care for up to 30 days. The child welfare agency then seeks a permanent placement that will keep the child in the same school. While the nature of the coordination needed can depend upon the nature of the situation (for instance, child abuse, mental illness, substance abuse, parental incarceration), it is clear that public agencies should be working closely with schools to minimize the extent to which involvement in their systems disrupts the ability of children to attend to school.

Such coordination should also extend to the legal system, especially if legal action is merited because extensive absences continue even after supportive positive approaches have been offered. Sometimes, the threat of arrest can motivate families to change their behavior without needing to resort to prosecution. If prosecution occurs, the Truancy Arbitration Program in Jacksonville, FL, found it helpful to tailor the court response to the attendance situation. Rather than send a parent to jail (which might exacerbate the challenges of getting children to school), a judge can, for example, require parents to attend school with their child for several days as a form of community service and require regular school attendance as a condition for parole.

## *Embed Chronic Early Absence into Relevant Initiatives*

Given the plethora of existing initiatives and interagency collaborations, the goal of this brief is not to advocate for the creation of a new reform effort focus on reduction chronic early absence. Rather the goal is encouraging researchers, policy makers, practitioners, agency administrators and existing collaboration to embed attention to chronic early absence in relevant initiatives. Opportunities to do so exist in a variety of fields. Below are just a few examples.

Recognizing the critical importance of laying a strong foundation for subsequent learning during the early years, the last few years has heralded the development of a broad array of initiatives aimed at improving school readiness and even reaching into the early grades to ensure early school success. Such initiatives, whether they involve expansion of preschool or creating a continuum of learning from pre-K to third grade, can weave in educating families about regular attendance. Often, such efforts are also accompanied by the creation of tools, like child passports and school readiness assessment aimed at improving the transition to school by ensuring schools receive information about the social, emotional, and cognitive development of incoming kindergartners from their preschools. Since preschools are likely to detect troubling attendance patterns first, such tools could be designed to help notify elementary schools when chronic absence is occurring and trigger the provision of extra supports to these children and families as they are enter kindergarten.

Similarly, school-based and linked health programs already exist to some degree in many communities. As efforts occur to strengthen or expand these services, attention could be paid to identifying which illnesses or chronic diseases cause extended absence among young children in their communities. Health practitioners could also serve as an important first line of contact with families since they can identify a variety of barriers to attendance as they assess the health situation.

Many communities are now aware that they face a drop-out crisis, especially among low-income and minority youth. The work of Robert Balfanz indicates that this crisis can be stopped if communities develop a deep understanding of when and why students cease to attend school and gather and target human resources to embark upon a comprehensive dropout prevention, intervention, and recovery system targeted at the key points when students fall off the path to graduation. In addition to focusing on the problematic transitions into middle and high school, a truly comprehensive system would also involve addressing chronic absence when it first occurs as children enter school.<sup>31</sup>

#### **Conduct Further Research**

While chronic early absence is an important issue and we know enough to take action immediately, additional research would be helpful to deepen understanding about the consequences, prevalence and effective strategies for improving attendance. Specific areas include:

- longitudinal data analysis to examine longterm academic and social outcomes for children chronically absent in the early grades;
- an assessment of the prevalence and impact of chronic early absence on children living outside of urban areas, especially in rural communities;

- further study of chronic early absence among immigrants including an analysis of differences in patterns between first and second generation immigrants and the impact of mobility; and
- analysis of the prevalence and factors contributing to chronic early absence for children with different types of disabilities.
- Inclusion of chronic early absence in evaluations of the impact of various programs serving young students and their families.
- Research examining whether children with troubling attendance patterns in the early grades can be identified even earlier in preschool.
- A multi-site study to determine how chronic early absences is affected by different family, school and community variables (including for example, poverty, proximity to school from child's home, rates of community violence, school funding formulas, age of compulsory education, educational program quality, levels of parent education as well as the availability of preschool education, afterschool and family support programs).

### Summary

Paying attention to early absenteeism provides an invaluable opportunity to identify and address social, emotional, cognitive and familial issues early on. It offers a chance to intervene before children have fallen years behind the academic performance of their peers and lost hope in ever succeeding in school. Using absenteeism as a trigger for early intervention could be especially important for closing the achievement gap for low-income families as well as for children from communities of color. Schools and communities, however, cannot take advantage of this opportunity to take an upstream approach to addressing problems unless chronic absence is tracked and monitored for each student. Ensuring every child has an equal opportunity to reach his or her potential requires making sure every child is present, engaged and accounted for as soon as they begin school.

## Appendix A: Demographic Characteristics of Participating Localities

	LOCALITIES								
	1	2	3	4	5	6	<b>7</b> <sup>32</sup>	8	9
Type of community	Urban	Urban	Urban	Urban & suburban w/ some rural	Urban and some suburban	Urban	Urban	Urban	Urban & suburban
Geographic region	Mid- Atlantic	Rocky Mountains	North Western	South Atlantic	Southern	Pacific	Mid- Atlantic	North East	South Atlantic
Funding formula	Fall enrollment	Fall enrollment	Fall enrollment	ADA	Fall enrollment	ADA	Fall enrollment	No formula	Spring/Fall enrollment
Age of compulsory attendance	5-16	7-17	6-16	6-16	6-16	6-18	8-17	6-16	6-16
Total student pop	82,381	73,399	31,598	125,504	48,025	41,467	18,623	24,800	32,842
Grades	Prek-12	Prek-12	Prek-12	Prek-12	Prek-12	Prek-12	Prek-12	Prek-12	Prek-12
Total K-3 students	24,193	29,155	9,123	41,782	29,267	13,154	5,653	7,595	11,576
% chronically absent K-3 <sup>33</sup>	17.4	12.9	6.0	13.8	8.6	12.0	26.7	22.7	5.4
% moderately absent K-3	24.6	24.1	24.0	25.7	25.1	21.9	37.3	33.4	20.2
% Latino K-3	2.80	59.80	18.00	6.38	4.50	38.70	2.10	60.30	4.30
% Black K-3	87.10	16.90	17.90	42.40	35.60	34.50	95.20	20.90	61.20
% White K-3	9.10	19.00	54.50	42.68	53.80	8.50	2.00	12.80	29.80
% API K-3	0.80	3.20	5.60	3.51	2.30	17.50	0.30	5.20	1.80
% Other K-3	0.20	1.10	4.10	4.87	2.80	3.30	0.80	0.08	2.80
% English learners K-3	2.50	NA	16.9	1.92	3.6	38.9	1.1	26.3	NA
% Special education K-3	14.30	NA	9.1	21.78	16.7	7.8	14.7	16.4	10.1
% K-3 residing in high poverty census tracts	28	NA	6.90	NA	11.8	17.1	NA	71.7	12.6
## Appendix B: Examples of Promising Programs for Reducing Chronic Early Absence

#### Check & Connect, Minneapolis, MN

Check & Connect was first developed as a truancy prevention model among urban middle and high school students and initially with a special education population. But it is now used with a general student population and has been successfully piloted with elementary age children as well. Its comprehensive approach emphasizes relationship building, routine monitoring of alterable indicators (for instance, attendance, academic performance, behavior), individual and timely intervention, problem-solving and strengthening affiliations between school and learning. A key component is a monitor or mentor who is responsible for working with students and their families to support their participation and engagement in school. Among elementary aged children, a monitor engages in family outreach and helps parents to be active partners in their children's education. Monitors are typically trained professional social workers who operate at the district level so that they can continue to work with children even if they move to a different school. An evaluation of Check & Connect's implementation in nine elementary schools showed significant increases in the percentage of students whose absences or tardies dropped below five percent of the time. School staff also reported increased engagement among students and their parents.

*Program Contact:* Sandra Christianson, professor, University of Minnesota, School of Psychology (Chris002@umn.edu)

# *Project GRAD/ Communities in Schools, Atlanta, GA*

Project GRAD Atlanta is a research-based schoolcommunity collaborative designed to improve student academic performance, and increase the numbers of young people graduating from high school and attending college. CIS implements the Family Support Component of Project GRAD. CIS staff in GRAD schools offer guidance, counseling, community outreach, and family support services to all students, especially those experiencing academic difficulties or family issues. Project GRAD Atlanta was initiated in 2000 and now impacts more than 16,000 students in 27 Atlanta schools, including 18 elementary schools, six middle schools and three high schools. The overall Project GRAD model involves working in a school feeder pattern and helping them to implementing the following elements: reading curriculum, math curriculum, parent and community involvement, social services, academic enrichment, and classroom management. Data tracked by CIS shows in schools where the program has been in place for more than tow years, the average percent of students missing 15 or more days in schools fell from 18% to 9 % from 2001-2006.

*Program Contact:* Patricia Pflum, executive director, Cities in Schools of Atlanta (Pflum@cisatlanta.org)

#### Project PACT (Partnering to Assess and Counteract Truancy), Oahu, HI

Project PACT included a school based program working with students and families of two elementary school serving low-income students on the Hawaiian island of Oahu. Each school had an attendance monitor hired from the community whose primary purpose was to work with teachers and counselors to identify and address the needs of students with attendance problems and their families. While the school retains primarily responsibility for contacting and convening meetings with parents of absent children, the attendance monitor builds relationships with parents and encourages them to help their child engage in school. They also serve as responsible caring adults for students who, unfortunately, have none at home. If absences continue, parents are encouraged to attend parenting attendance workshops helping them learn new parenting skills and understand the importance of regular school attendance. Because some parents need a "little push," the services of Child Protective Services and the courts were used as needed. A review of the data maintained on-line on program participants shows an improvement in attendance and a significant decrease in unexcused absences (from 19.55 at intake to 5.03 after six months) as well as a decline in tardies and excused absences.

*Program Contact*: Patrick Nakamura, College of Education, University of Hawaii (patrickn@hawaii. edu)

#### Savannah Chatham School District, Savannah, GA

The Savannah Chatham School District takes a very thorough and comprehensive district-wide approach to addressing chronic absenteeism. After three days of absence letters are sent home. If the child is absent five or more days, a social worker pays a home visit to find out what is happening and to help the child return to school. By the 10 days, several agencies including the police are involved in determining how to improve the situation. Within each school, the principal receives a data "dashboard" showing him or her which children have been absent and for how long. The principal convenes weekly attendance meetings with the social worker, counselor and teacher to review the situation, if appropriate with the parent as well. At the district levels, a Student Truancy Attendance Monthly Protocol Senate brings together a broad array of stakeholders including school administration, the courts, nurses, and community groups to review data on attendance and learn about best practices.

Children and families attending Savannah Chatham schools also benefit from an array of supports and resources offered in collaboration with other agencies. For example, through the support of a local businessman, a parent university was established several years ago. Held quarterly on a Saturday, this parent university brings resources and classes to parents aimed at helping them gain skills and knowledge based upon their interests. Child care is available on site. The public health department also offers resources to schools including eye assessments, health fairs and professional development for teachers on chronic diseases affecting children. Most recently the district, with support from the city manager and an array of other public agencies and non-profits, created a comprehensive assessment center. The center is available to assess the needs of children and families, link them to available community resources and then follow-up to ensure their needs are met. The district donates use of the building while other agencies provide their services on site using their own agency resources. A review of data on chronic early absence shows that prevalence is very low at 5.4% in 2006. From February 2003 to March 2006, the incidence declined from 10% to 5.0% in among children from

high poverty residential areas. For the past two years, chronic early absence has been slightly lower among children living in high poverty areas than their peers living elsewhere in the district.

Program Contact: Quentina Miller Fields, senior director of pupil personnel, Savannah Chatham School District (Quentina.Fields@savannah. chatham.k12.ga.us)

#### Truancy Arbitration Program, Jacksonville, FL

The Truancy Arbitration Program begins when elementary students continue to have attendance problems even after an attendance intervention team staffed by the school has met with them about the problem. At that point, the State Attorney's Offices summons the family to a hearing held at their offices. TAP hearings are facilitated by State Attorney volunteers who act as arbitrators for the program. School social workers also participate in the hearings. If there is a problem, the social worker and a case manager working out of the State Attorney Office attempt to rectify it. When appropriate, students are referred for counseling and tutoring. Parents are referred to parenting skills office. After each hearing the parents and the student are required to sign a performance agreement compelling school attendance. If they do not abide by this agreement, parents can be arrested on the basis of contributing to the delinquency of a minor – a first degree misdemeanor as well as a second degree misdemeanor for failure to comply with compulsory school attendance laws. If this is the first time, usually the DA requests that they do not serve jail time but serve one year probation. Typical stipulations are to require parents pay for court costs, attend parenting classes, attend school with child for three full days (so they can see what child is missing) and make sure that all children in the home attend school with no unexcused absences or tardies. Program evaluations conducted by the National Center for School Engagement found significant long-term improvement in both attendance and grades.

*Program Contact:* Shelley Grant, program director, TAP, State Attorney's Office (shelleyg@coj.net )

#### Verde Involving Parents, North Richmond, CA

Verde Involving Parents (VIP) believes that students will do better academically if students come to school regularly and have the tools and skills to manage conflict and negotiate relationships and if parents and community residents are positively involved in day-to-day life at the school. Its staff members, called Family Partners, are parents and/ or residents of the North Richmond community. Family Partners contact the families of every absent and tardy student by phone and home visit. They offer referrals and resources (for example, bus tickets, alarm clocks, raingear, etc.) to help get children back to school as soon as possible. When families face particularly intense challenges, they are connected to a multidisciplinary team of professionals from the Family Service Center. Family Partners also help teachers by working with students when they act out in class to help them get their needs met without disrupting the class and to

teach students violence prevention/conflict resolution skills. VIP also offers parents training on how to help children build empathy and solve conflicts peaceably at home, gives monthly student awards for good attendance and holds community-building activities for families. VIP reduced absences at Verde elementary school by more than 50% and tardies by 38% over four school years, and pushed monthly attendance rates from under 89% to over 93%. During that same time frame, VIP returned over \$470,000 in vitally needed Average Daily Attendance revenue to the district. Verde elementary school also experienced substantial improvements in test scores: its API rose from a base score of 315 in 2000 to a growth score of 609 in 2006. In 2007, VIP began to apply its model to the nearby Helmes middle school.

*Program Contact:* Paul Buddenhagen, program manager, Contra Costa County Service Integration program (pbuddenh@ehsd.cccounty.us)

### Endnotes

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