Why Adolescence is a Key Age **Chapter 2**

Adolescence is the transition period between childhood and adulthood during which youth become physically, cognitively, and sexually mature, while also developing social and intellectual skills in preparation for taking on adult roles. In the United States today, adolescence is often thought of as the "teenage years," but in fact many children begin puberty before the age of 10. Adolescence typically has been seen as ending when adolescents take on adult responsibilities such as supporting themselves and starting their own families, which currently in the United States may not occur until young people reach their mid-late 20s or later. Because adolescence represents a period of development that does not begin or end at the same age for everyone, we have elected in this report to focus on the period of time between the ages of 10-20 unless otherwise specified. However, since data on adolescent health is collected using a variety of age ranges, we sometimes present data using slightly differing ages.

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Adolescence is defined by both biological and social factors. There is a wide variation in the onset, timing, and pace of puberty. For girls, puberty usually begins between the ages of 8-13; for boys, puberty usually begins between the ages of 9-14. In most youth, puberty lasts for five to seven years.[1] There is no biological marker to signify the end of adolescence. In addition to biological sexual maturation, there is tremendous cognitive growth during adolescence as the brain develops and reaches full maturity. Socially, adolescence is marked by increasing autonomy within family and school and time spent with peers. One of the most obvious social changes in adolescence is the transition from elementary to secondary education. This transition often brings with it more autonomy in school, as students transition from spending most of their day with one teacher and the same set of peers to being responsible for themselves as they move among classes and teachers.

In the United States, adolescence is often separated into three distinct stages: early, middle, and late adolescence. Generally, early adolescence covers ages 10-13, middle adolescence ages 14-16, and late adolescence ages 17-21.[1] Early adolescence begins the transition from childhood into adolescence and is dominated by pubertal changes. Middle adolescence is dominated by social and intellectual maturation. Late adolescence represents the final steps in the transition to adulthood, and historically has been marked by completing school, leaving home, beginning one's career, marrying, and becoming a parent. However, in the United States today, many young people delay leaving home, marrying, and becoming parents until the third or even fourth decade of life, thus making the "end of adolescence," or beginning of adulthood not as well-defined as it was for most of the 20th century.[2]

Individual Development During Adolescence

Although the following sections discuss developmental changes as independent issues, it is important to recognize that these systems and changes are interrelated. Adolescent development is the result of a large network of interacting systems—hormones, neurotransmitters, biological/age-driven growth, and social influences. These systems affect one another as individuals enter and progress through adolescence.[3]

Physical Development

Puberty begins with increases in hormone levels which lead to physical changes that will eventually result in a mature physical appearance and reproductive capability. Physical changes are the most obvious and dramatic transitions that adolescents experience. During pubertal growth spurts, both girls and boys gain approximately 50% of their adult weight and 20% of their height. In the year of most rapid growth, boys grow approximately four inches and girls three and a half inches. Further during adolescence, muscle mass increases by 100% in boys and 50% in girls, and 60% of bone density is acquired. In addition, there are cardiovascular, pulmonary, and immune system changes.[4]

Research over the past 20 years has shown that the brain experiences dramatic changes during early adolescence and continues to develop and mature until the mid-20s.

In addition to physical growth and the development of secondary sex characteristics, such as breast development in girls, studies have also shown that puberty affects emotion processing.[5,6] Although the research in this area is still developing, there are a number of domains that have been linked to puberty-specific maturation, rather than age-specific maturation. Romantic motivation, sexual interest, emotional intensity, and increases in risk-taking and sensation-seeking have all been linked to puberty.[7] It is unclear if these changes are directly related to puberty or have just evolved to occur at the same time as puberty.

Cognitive Development

Research over the past 20 years has shown that the brain experiences dramatic changes during early adolescence and continues to develop and mature until the mid-20s. Unlike in early childhood when the brain is building mass and learning basic skills such as language, the changes during puberty are primarily focused on improving and refining existing capacities. These changes are in large part driven by age maturation, as opposed to puberty, but are influenced by both environmental and personal experiences.

Changes in the brain do not occur at the same time; rather, areas that are associated with more basic functions (e.g. motor and sensory areas) mature earlier than those associated with more complex functions (e.g. executive function, attention, and risk assessment).[8]

The last area of the brain to fully mature is the prefrontal cortex which involves impulse control, decision making, planning behavior, and envisioning the consequences of actions. This process begins in childhood, progresses rapidly during adolescence, and slowly tapers off as the brain reaches adult maturity

by the mid-20s.[9] As the prefrontal cortex matures and becomes integrated into decision making, adolescents and young adults are able to handle increasingly difficult cognitive and emotional challenges.

During the teenage years, as the neural circuitry of their brains is still maturing, adolescents may be more vulnerable to poor decision making. Decision making and complex reasoning require that individuals be able to process a large amount of information simultaneously, hold information in working memory, and use the information to guide plans and behavior. Exercising these skills requires using cognitive processes that are not fully mature during adolescence because the prefrontal cortex is still maturing. An immature prefrontal cortex makes it more difficult for adolescents to control impulsive behavior, inhibit inappropriate behavior, stay focused, make sound judgments about possible outcomes, and plan for the future. Adolescents can do all these things, but because the brain functions associated with these actions are not fully developed, they have more difficulty doing them than adults.[9]

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Emotional Regulation

An important task on the road to becoming an adult involves developing self-control over behavior and emotions. During adolescence, while their bodies and brains are developing, adolescents appear to be more prone to make decisions that disregard risks and consequences. Current research in this area indicates that this is due to a combination of biological and social factors. As discussed, puberty is linked to increases in emotional intensity, risk taking, and sensation seeking. Furthermore, adolescence is a critical period for the maturation of brain functions that underlie decision making and emotion and behavior control. Research indicates that during this time when adolescents are biologically at-risk for poor decision making, social and cultural factors that impact decision making are particularly influential.[9,10]

Studies have shown that adolescents' reasoning and decision making capabilities are similar to those of adults. Indeed, studies find that the logical reasoning and decision making of 16-year-olds are comparable to those of adults when assessed in laboratory settings. By mid-adolescence, youth and adults perform similarly when asked to assess risks and vulnerability to risk, the consequences of actions, and the relative costs and benefits of various choices.[7] However, in spite of the fact that teenagers can make logical, knowledgeable, accurate assessments of risky behaviors, they are more likely to engage in them.

This inconsistency points to the importance of emotions and social context in decision making. Adolescent and adult reasoning capabilities are quite similar when in a laboratory setting thinking under conditions of calm emotions, or "cool cognition" settings.[7] In the real world, however, people often need to make decisions under conditions of strong emotions, or "hot cognition." Adolescents appear to have difficulty making decisions in "hot cognition" settings when the emotional (i.e. affective) centers of the brain are highly activated.[11]

Opportunities for healthy risk taking allow youth to challenge themselves and, in the process, learn more about themselves.

Although researchers do not conclusively understand why teenagers have problems making rational decisions in such situations, studies suggest that coordination of affective and cognitive responses is required. Such coordination requires a high level of integration between various parts of the brain, which does not occur until relatively late in the maturation process.[7,12] Because the prefrontal cortex is not fully developed, the affective systems exert greater influence in decision making.[13] The ability to appropriately inhibit or modify behavior despite strong feelings is a critical developmental goal of adolescence.

Social and Emotional Development

During adolescence youth begin to explore and examine their own psychological characteristics as part of discovering who they are and how they fit in the world around them. Developing a healthy, stable self-image is the major psychological goal of adolescence. Current research indicates that during early adolescence, youth focus less on developing their individual identity and more on group formation and cohesion. Priority is placed on being a part of a group and the identity of that group (including social status and group norms and values). During later adolescence, youth focus more on developing their own unique sense of identity and less on being a part of a well-defined social group.[14]

As part of trying to establish their identities, older adolescents typically seek more autonomy and independence. At the same time, maintaining close familial ties is important to self-identity and well-being. Successfully negotiating some level of independence, while maintaining strong attachments to family and friends, is a central goal of identity formation.[15]

Experimentation and risk taking also play an important role in identity formation. Opportunities for *healthy* risk taking allow youth to challenge themselves and, in the process, learn more about themselves. *Healthy* risk-taking opportunities allow youth to engage in new activities that may push their comfort levels in safe, supportive ways (e.g. participating in sports, volunteering, developing creative abilities, learning a new skill). Risk taking becomes *unhealthy* when the potential risks outweigh the benefits (e.g. using alcohol and other drugs, running away, or engaging in unprotected sexual activity). Adults can help youth avoid unhealthy risk behaviors during this time by setting limits on unsafe behaviors, encouraging adolescents to experiment in safer ways, and ensuring that there are ample opportunities for healthy risk taking.[14]

Social and Environmental Influences on Adolescent Development

Adolescent development must be considered a process that occurs within a network of social and cultural systems. In addition to being influenced by a complex set of systems within the body, adolescent development is influenced by social and environmental factors. The individual is at the center of this network, but is influenced by interpersonal networks (e.g. family, friends), communities and environments (e.g. schools, churches, YMCAs, neighborhoods, towns), and public policies (e.g. national, state, and local laws). These relationships are

reciprocal: interactions between an individual and other people and systems influence one another. Similarly, the systems described do not function in isolation, rather, they are influenced by one another.

Interpersonal Influences

Parents

During adolescence, relationships with parents slowly evolve from the parent-child relationship model towards a less hierarchical relationship in adulthood. During childhood, parents typically control almost everything in their children's world including how and with whom they spend their time, what they wear, and what they eat. Adolescence is a time of renegotiation of roles, rules, and expectations between parents and adolescents. As adolescents mature, the parent-child relationship changes as parents cede some control and adolescents seek more autonomy and independence. Doing so allows adolescents to slowly take on more adult-like responsibilities in preparation for adulthood. Developmentally it is important for adolescents to have the opportunity to practice decision making, try things on their own, and develop competence and self-efficacy within the kind of safe, supportive environment that a family can provide.

Research shows that parents remain highly influential in the lives of their teenagers, contrary to the widespread perception that parent-child relationships decline in quality and influence during the teenage years. Although the amount of time adolescents and their parents spend together declines, as do self-reported levels of closeness, research shows that parents continue to be the most influential people in their teenagers' lives. This is particularly true when it comes to important decision making.[16] Adolescents care deeply about the values expressed by close role models, especially parents. Therefore it is important that parents discuss values and model behaviors they want their children to learn and/or exhibit.[14] Additionally, parent-adolescent relationships further contribute to adolescent development by modifying the impact of other sources of influence.[16]

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Peers

Peer relationships become much more important and influential in the lives of youth during adolescence. Changes occur in the structure and size of peer groups as well as in the types of friendship youth have. As they enter adolescence, youth spend more and more time with their peers, often with less supervision from adults. Youth begin to place more importance on intimacy—the sharing of private thoughts and feelings—as the basis for friendship. This change contributes to the shift from neighborhood-based friendships in childhood to friendships characterized more by similarities in background, tastes, values, and interests. [17]

Although adolescents increasingly choose to surround themselves with similar peers, this does not make peer relationships simple. Instead, during adolescence complex friendship networks and cliques develop, and romantic relationships

emerge. Adding to the complexity, individuals' friendship networks are relatively unstable during adolescence. These changes in peer relationships can dramatically influence adolescents' attitudes, activities, and emotional well-being; youth who have good social skills and youth who are socially accepted by their peers are better adjusted.[18,19]

During adolescence youth begin to place more importance on the opinions and expectations of their peers. Peer influence can be positive or negative and can influence both prosocial and antisocial behaviors. Peer influence is reciprocal, that is, youth influence their peers and their peers influence them.[18,19]

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Clinical Health Care

The nature of health concerns facing adolescents is very different from that of younger children. Adolescent death and disability are primarily caused by personal behaviors. Because behaviors can change, many adolescent health problems are preventable. These risk-related behaviors (i.e. tobacco use, poor nutrition and lack of physical activity, risky sexual behaviors, alcohol and other drug use, and behaviors that increase risk of injury and violence) become the focus of adolescent clinical care. Accordingly, as children age, visits with health care providers often change both in structure and content. Providers shift away from spending the visit primarily telling parents what to expect and instead begin spending increasing amounts of time interacting directly with their adolescent patients. Health care providers provide preventive health services during adolescence by focusing on understanding where an individual patient is in the developmental process followed by tailored anticipatory guidance on how to keep an adolescent on track in their lives and avoid behaviors that may cause harm to their health. Visits typically expand to include screening for specific health risk behaviors and, when necessary, counseling and referral to specialty services. Overall, visits with youth and young adults place more emphasis on supporting healthy lifestyle behaviors and providing interventions for unhealthy behaviors.[20-22] The content of adolescent health care visits is discussed in more detail in Chapter 4.

Additionally, it is important that youth begin developing skills to have effective relationships with health care providers and begin to take on some responsibilities for their own health and well-being. Although parents typically continue to arrange health care visits, they typically do not join the adolescent and health care provider during the entire visit. This allows health care providers to discuss sensitive topics with adolescents, while also allowing adolescents to begin building relationships with a provider independent of their parent. All adolescents, and particularly those with chronic health conditions, need to establish independent relationships with providers as they grow older and develop an understanding of the health care system so that they can manage their health effectively as they transition into adulthood.[22]

Community and Environment

School

Adolescence is typically accompanied by a dramatic change in school environment. Most elementary aged children spend the majority of their day with one teacher and one set of peers in small, nurturing environments. In contrast, students in secondary school find themselves in larger schools, with multiple teachers, and larger, and often more diverse, student bodies. [23] Although the primary mission of schools is to prepare students academically, schools also fill a broader role in the development of youth into young adults.

Schools are tremendously influential as both a context for and as direct influences on adolescent development. This is not surprising as children and adolescents spend more time in school than they spend in any place outside their homes. Because of the amount of time youth spend in school, schools provide the context, or environment, in which adolescents develop. Schools, and the policies and practices that are a part of them, also shape adolescents' development through the experiences students have while in school. The various levels of school organization—classrooms, school buildings, school districts, and schools as part of the larger community—all impact adolescent development by interacting to shape the experiences of adolescents.

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The classroom impact on youth is most obvious; interactions with teachers and peers in classrooms on a day-to-day basis clearly have a strong impact on development. What is less obvious, but equally important, are school-level factors such as school climate and size, academic tracking, and extracurricular opportunities. School district factors such as school assignment and transition policies are also important. These factors influence the composition of adolescent peer groups and the opportunities adolescents have for academic and extracurricular enrichment. For example, although academic tracking has been shown to have some educational benefits for students in high track classes, students in lower level classes have shown slowed academic growth, perceive school as less valuable, and feel less connected to school.[24] Additionally, tracking impacts student peer groups, with students of similar levels of achievement and engagement in school grouped together. While this may benefit those in high tracks, for those in lower tracks, tracking facilitates friendships among students who are less engaged in school and more likely to engage in risky behaviors. Finally, evidence shows that youth are often incorrectly assigned to tracks, with poor, minority, and students with limited English proficiency being more likely to be assigned incorrectly to lower tracks. Further removed from individual students, but just as influential, are factors related to schools as part of the larger community such as school resource levels and state and national school policies.[24]

Public Policy

American society promotes adolescence as a distinct stage of life through a variety of mechanisms, including laws and regulations that gradually grant adolescents adult rights and duties. At the same time, these laws and regulations convey uncertainty about adolescent capabilities and present a mixed message to youth in terms of when they are considered adults in the eyes of society and the law.

Adolescence—this "in-between" period of transition from childhood to adulthood —is not recognized in the legal system; an offender is classified as either a child or an adult according to age and the issue. Lawmakers generally see children as being dependent, unable to make competent decisions, and thus not legally allowed to participate in many adult behaviors. Nor are they held legally accountable for their behavior in the same way that adults are. In contrast, adults are seen as fully competent to make decisions and thus are held accountable for their behaviors. Adolescents developmentally are not children or adults. Legally, adolescents are treated as children in some cases and as adults in others.[25] In North Carolina, youth can seek employment and drop out of school at age 16; can marry (without parental permission), register to vote, purchase tobacco products, give medical consent, and enlist in the armed forces at age 18; but cannot legally purchase alcohol until age 21.[a] Further complicating this picture, North Carolina treats all youthful offenders ages 16 and 17 as adults in the criminal justice system, regardless of their crime, and allows youth as young as 13 to be tried as adults. This gradual granting of adult rights and duties at different ages effectively creates a legal transition to adulthood, but also presents adolescents with conflicting views of the onset of adulthood.

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Emergence of Health Risk Behaviors

Other than the first few years of life, at no other period do individuals experience so much change in such a short time. During the second decade of life, adolescents are constantly adapting to rapid biological, cognitive, and emotional changes, as well as the restructuring of social contexts. Given all the changes that adolescents must cope with, it is no surprise that they face challenges—including opportunities to engage in activities that can positively or negatively impact health and well-being. Providing appropriate support at home, school, and in the community are critical to help adolescents navigate these challenges successfully.

Although adolescence is typically a time of robust physical health, death and serious health problems increase dramatically during adolescence. Unlike other age groups, adolescent death and serious health problems are most often due to preventable behaviors. The Centers for Disease Control and Prevention has identified six critical types of adolescent health behaviors as the leading causes of death and serious health problems for youth:

a These are the general ages to participate in these activities in North Carolina, however, there are exceptions for younger youth in certain cases.

1. Alcohol and drug use
2. Behaviors that increase the risk of injury and violence
3. Tobacco use
4. Poor nutrition
5. Physical inactivity
6. Risky sexual behaviors.[26]

Motor vehicle crashes, other unintentional injuries, homicide, and suicide are the leading causes of mortality for youth ages 15-24 in North Carolina, accounting for 80% of deaths in this age group.[27] Unintended pregnancies and STDs result in substantial health and social problems for adolescents. Tobacco use, nutrition, and physical activity are all related to the two leading causes of death among adults in the United States: cardiovascular disease and cancer.[28] These behaviors are usually established during adolescence and often persist into adulthood. (See Table 2.1.) Since these health problems are all linked to behavior, which can be influenced, they are preventable. This explains the critical importance of focusing on health-related behaviors during adolescence.

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Health Risk Behaviors Cluster

Research over the past thirty years has documented that adolescent health risk behaviors are interrelated. Many health risk behaviors occur together. For example, sex and drug use or substance use and violence often happen together.[29,30] The way behaviors cluster varies by gender, race and ethnicity, age, and risk and protective factors. Generally, these studies have found:

- Males are more likely than females to engage in any specific risk behavior and are more likely to engage in multiple risk behaviors.
- The likelihood of engaging in multiple risk behaviors does not vary significantly by race and ethnicity, but the specific behaviors may.
- Older youth are more likely to engage in risky behaviors.
- Youth with higher levels of protective factors and/or lower levels of risk factors are less likely to engage in risky health behaviors.

Socioeconomic characteristics (such as family income and parent education) have not been found to be very good predictors of risk behaviors. Further, increasing protective factors alone is not the answer, as many youth who engage in risky behaviors also report protective factors such as being physically active, engaging in hobbies, being connected to school and parents, and having a positive outlook.[29-34]

Approximately 30% of high school students engage in multiple health risk behaviors at moderate to high levels.

Table 2.1
Many North Carolina High School Students* Engage in Health Risk Behaviors and Have Mental Health Problems

Substance Abuse and Mental Health	**2007**
Used in the past 30 days:	
Marijuana	19.1%
Alcohol (beer included)	37.7%
Binge Drinking (5 or more drinks within a couple of hours)	21.1%
Depressed**	26.9%
Seriously considered attempting suicide during the past 12 months	12.5%
Mental Health	**2006**
Parent told by doctor/nurse/school representative, child (14-17) has ADD or ADHD	17.3%
Parent told by doctor/health professional, child (14-17) has depression/anxiety	10.2%
Violence	**2007**
In a physical fight one or more times during the past 12 months	30.1%
Carried a weapon (i.e. gun, knife, club) on one or more of past 30 days	21.2%
Homicide Deaths (ages 10-20)	87
Firearm Deaths (ages 10-20)	70
Unintentional Injury	**2007**
Never or rarely used a seat belt	7.9%
Rode in a car driven by someone who had been drinking alcohol one or more times in the past 30 days	24.7%
Motor Vehicle Deaths (Ages 10-20)	197
Sexual Health	**2007**
Ever Had Sex	52.1%
Currently Sexually Active	37.5%
Chronic Illness	**2007**
Used tobacco products in the past 30 days	26.6%
Were not physically active for a total of 60 minutes or more per day on five or more of the past seven days	55.7%
Low-income children (12-18) who are overweight	29.6%

* Data are for students in grades 9-12 unless otherwise noted.

** Felt so sad or hopeless almost every day for two weeks or more in a row that they stopped doing usual activities (during past 12 months)

Data Sources: Parent report data: State Center for Health Statistics. Child Health Assessment and Monitoring Program, 2006; Death data: Scott K. Proescholdbell, MPH; Head, Injury Epidemiology and Surveillance Unit, Injury and Violence Prevention Branch, Chronic Disease and Injury Section, Division of Public Health, NC DHHS. Written (email) communication. October 23, 2009; Tobacco data: Tobacco Prevention and Control Branch, NC DHHS. North Carolina Youth Tobacco Survey, 2007; Obesity data: Eat Smart Move More North Carolina. North Carolina-Nutrition and Physical Activity Surveillance System (NC-NPASS). Includes data on children seen in North Carolina Public Health Sponsored WIC and Child Health Clinics and some School Based Health Centers; All other data: North Carolina Department of Public Instruction. Youth Risk Behavior Survey, 2007.

A study examining eight risk behaviors found that the vast majority (~60%) of high school students have low-risk profiles at any specific point in time. The typical low-risk profile individual is sexually active but has significantly lower

levels of risk on nearly every measure, including alcohol use, binge drinking, cigarette use, marijuana use, illicit drug use, fighting, and suicide ideation. Approximately 30% of high school students engage in multiple health risk behaviors at moderate to high levels. A minority of high school students (8%-12%) are in the highest risk profile. Youth in the highest risk profile were more likely than their peers to engage in every risk behavior and to do so at higher levels. [31]

These findings as well as those from other studies show that, although youth risk behaviors cluster together, there are distinct risk patterns of adolescent health behaviors. For example, a study looking only at the most common risk behaviors among youth, substance use and sexual behavior, found 16 different risk profiles with different patterns of drug use and sexual activity and variations in the frequency of these behaviors.[30] The existence of distinct risk patterns indicates that there are likely different pathways leading to these behaviors; there is not one single problem behavior that leads to involvement in other risky behaviors. Instead, a variety of factors—including risk and protective factors, gender, and race and ethnicity—influence the type and frequency of engagement in risky behavior.[29-31,35] This research also suggests that there is likely fluidity in behavioral patterns, so that the pattern of risk behavior any one individual adolescent engages in may vary over time.

The fact that at any one point in time, most youth are low-risk and participating in no or few risky behaviors indicates that prevention and education activities work and should continue for all youth.

Research in this area has important policy implications. The fact that at any one point in time, most youth are low-risk and participating in no or few risky behaviors indicates that prevention and education activities work and should continue for all youth. However, most adolescents at some point in time do engage in one or more behaviors that can jeopardize health, and some are engaged in multiple risky behaviors. For youth who do participate in risky behaviors, remediation efforts should be used to reduce risk behaviors and their negative effects on health and well-being. These efforts should not just target single risk behaviors but should address multiple risk behaviors.[31]

Health Risk Behavior Disparities

Health disparities are gaps in access, outcomes, or quality between two or more groups. Disparities may be caused by a variety of factors. One of the goals of the Centers for Disease Control and Prevention is to “eliminate health disparities that occur by race and ethnicity, gender, education, income, geographic location, disability status, or sexual orientation.”[36] Health disparities by race and/or ethnicity, gender, and geographic location are evident for most of the health risk behaviors that the Task Force focused on, including injuries, chronic illness, tobacco use, nutrition and physical activity, substance use, sexual health, mental health and violence. Research and national data indicate that there are likely disparities for these health risk behaviors by other factors including, but not limited to, disability status, sexual orientation, language, and immigration status.[37] However, state data are not always available to measure the size and direction of disparities. Additionally, the direction of the disparity varies by indicator. (See Table 2.2 and Appendix C.)

Table 2.2
Disparities Among North Carolina High School Students' Participation in Health-Related Behaviors Varies by Indicator, 2007[i]

		Gender		Race/Ethnicity					
	Total	Male	Female	White	African American	Hispanic	American Indian	Asian	Multiple
Used alcohol (past 30 days)	37.7%	37.8%	37.6%	43.0%	27.2%*	38.7%	48.9%	39.9%	37.4%
Rode as passenger with drinking driver	24.7%	25.8%	23.6%	23.6%	24.9%	28.4%	45.4%*	27.4%	30.1%
Carried weapon on school property	21.2%	32.4%	9.8%*	22.7%	17.3%*	19.7%	15.5%	27.8%	33.2%
Threatened/injured with weapon at school	6.6%	8.2%	4.9%*	5.2%	7.2%	13.7%*	9.2%	11.2%	12.1%
Had sex with one or more people in past 3 months	37.5%	36.3%	38.5%	33.6%	46.9%*	29.3%	51.3%	35.1%	36.3%
Had check-up/physical exam during past 12 months	60.2%	60.2%	60.3%	60.9%	62.0%	48.7%*	60.2%	52.0%	60.5%
Watched 3+ hours of TV on school day	35.3%	36.5%	34.1%	23.6%	56.5%*	39.3%*	48.8%*	43.2%*	25.6%
Participate in extracurricular activities at school	62.4%	64.1%	60.9%	66.2%	58.1%	46.6%*	72.1%	47.3%*	66.3%

i For a more comprehensive table reviewing health risk behavior disparities, see Appendix C, Tables 1 and 2.

* Denotes statistically significant difference at the $p<0.05$ level for males relative to females or whites relative to specified race/ethnicity.

Source: North Carolina Institute of Medicine. Analysis of North Carolina Youth Risk Behavior Survey, High School Data, 2007.

Disparities are driven by a number of factors including biological, cultural, and confounding factors. Biological factors that influence disparities are relatively limited (e.g. Sickle cell anemia).[38] Cultural differences, such as the types of food eaten and gender norms, also play a role in cultivating and impacting disparities.[39] Other factors, such as income and education, are confounding factors. Confounding factors are those that have a strong relationship with both the independent variable (i.e. the probable effecter) and the outcome variable (i.e. the outcome) and thus distort the relationship between the two. For example, taking predisposing individual elements (e.g. income, parental education) and/or enabling elements (e.g. transportation, health insurance status, clinic availability) into account can change the size of disparities between groups. While measuring confounding factors is important (so as to understand true levels of disparities), in most cases, confounding factors do not explain all disparities.[37]

While it is important to acknowledge disparities among youth, for this report, the issue of central concern is the extent to which different groups are distinct enough to warrant modifications to general health promotion programs and services. The answer varies by the behaviors, populations, and communities being targeted. Therefore, when looking at which programs and services can best meet the needs of the population being served, it is important to first consider if disparities exist.

Youth Development Framework

Although we all want our youth to grow up healthy and become productive, contributing members of society, we tend to focus on preventing problem behaviors rather than ensuring that all youth have the kinds of positive relationships, opportunities, skills, and values that research shows contribute to positive development. Traditionally, most work with adolescents has focused on *preventing* risky or negative behaviors. Although this is important work, researchers have found it is not enough to prevent poor decision making or risky behaviors.[40] The absence of negative decisions or behaviors does not necessarily lead to youth who are developing *positively* towards adulthood. Rather than only focusing on what adolescents should *not* do, parents, communities, and society as a whole need to also identify what resources youth need to succeed and then proactively work to ensure youth have those resources.

Rather than only focusing on what adolescents should not do, parents, communities, and society as a whole need to also identify what resources youth need to succeed and then proactively work to ensure youth have those resources.

Youth development is founded on the idea that all youth have strengths and the potential for positive development; in other words, youth have the ability to change and shape their own future. Research shows that youth who are surrounded by supportive families, schools, communities, programs, and policies are more likely to develop in positive ways.[40] As discussed, adolescents go through a number of transformational changes as they grow from childhood into adulthood. During this time, the job of each adolescent is to gain the skills and competencies needed to become a successful adult. The job of families and society is to provide a healthy foundation and opportunities for healthy development so that every youth has the opportunity to develop into a productive, engaged adult who is physically and psychologically healthy.

The concept of *youth development* emerged from work looking at why some youth at risk for negative outcomes develop into healthy, productive adults despite growing up in challenging conditions (e.g. poverty, family instability) while others experience negative outcomes due to risky behaviors in adolescence and adulthood. Youth who show positive outcomes in spite of risk show resilient behaviors. Although youth can become successful adults regardless of their circumstances, research has shown that risk factors make success less likely while protective factors make success more likely.[34]

Risk or vulnerability factors include elements of experiences in a child's life that increase the likelihood of poor outcomes. Research shows that the effects of risk are cumulative; the more risk factors an individual has, the less likely they are to have positive outcomes. Protective factors, or "assets," include events or experiences that increase the likelihood of positive outcomes. While protective factors do not remove risks, they can moderate the impact of risk factors and can buffer youth against involvement in risky behaviors. Risk and protective factors exist at many levels including individual, family, peers, school, and community.[41,42]

A healthy foundation is one in which protective factors outweigh the risk factors a child experiences.

Table 2.3
Risk and Protective Factors Exist at All Levels

Domain	Risk Factors	Protective Factors
Individual	Aggressive temperament	Social skills
Family	Neglectful parenting	Parental involvement in schooling
Friends	Participation in deviant culture	Prosocial norms
School	Perceived availability of drugs	School connectedness
Community	Poverty	Positive adult role models

Source: Scales PC, Leffert N. *Developmental Assets*. Second ed. Minneapolis, MN: Search Institute; 2004.

One of the principles of youth development is that in order to reach their maximum potential, children and adolescents must have a healthy foundation from which to grow. A healthy foundation is one in which protective factors outweigh the risk factors a child experiences and youth are provided opportunities to develop. Thus, policies, programs, and interventions should work not only to reduce risk behaviors but also to reduce risk factors and enhance or establish protective factors.

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