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ILLiad TN: 822078



Journal Title: Life-span perspectives on health and illness

Volume:

Issue:

Month/Year: 1999

Pages: 147-163

Article Author: Gondoli, D.M.

Article Title: Adolescent development and health

Imprint:

Call #: RA 427.8 .L54 1999

Location: LL

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Adolescent Development and Health

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ADOLESCENCE is a period in the life span with great potential for wellness. Adolescents, who have survived infancy and early childhood, are not yet vulnerable to the major killers of adulthood. As part of pubertal maturation, adolescents gain increased strength and stamina. Gains in cognitive development give adolescents a more sophisticated understanding of physiology and health, and gains in autonomy and independence set the stage for adolescents to take increasing responsibility for their well-being. From a medical perspective, great strides have been made in reducing adolescent mortality from illness and disease: As a result of improved public health practices, gains in medical technology, and better health care delivery, adolescent deaths due to natural causes dropped 90% between 1935 and 1985 (Fingerhut & Kleinman, 1989).

Given contemporary adolescents' potential for good health, it is unfortunate that they face a number of significant health problems, the most pressing of which stem from accidents, lifestyle choices, and problematic environments that undermine health. For example, the primary causes of morbidity during adolescence are injuries from the use of motor and recreational vehicles, and health problems stemming from substance abuse and sexually transmitted infections (Irwin & Millstein, 1992). Other major causes of morbidity include depression, eating disorders, oral health problems, and problems associated with adolescent pregnancy and parenting (Gans, Blyth, & Elster, 1990; Irwin, Brindis, Brodt, Bennett, & Rodriguez, 1991; U.S. Department of Health and Human Services, 1991). The primary causes of mortality in adolescence are motor vehicle accidents, homicide, and suicide (Fingerhut & Kleinman, 1989; Gans et al., 1990; Hingson & Howland, 1993; Rosenberg, Ventura, & Maurer, 1995).

Morbidity and mortality among contemporary adolescents also vary as functions of gender, race, and socioeconomic status. Males are more likely to be injured or to die from accidents, are more likely to be homicide victims, and are more likely to commit suicide than are females. Minority teens are more likely than their non-minority peers to be victims of homicide. Gender also interacts with race in accounting for adolescent deaths; White males aged 15 to 24 years have the highest suicide rates among youth, whereas non-White males aged 15 to 24 years have the highest homicide rates (National Center for Education Statistics, 1993). Adolescents in poverty (who are often minority adolescents) have the double burden of poorer health and poorer access to health care in comparison with their more advantaged peers (Lieu, Newacheck, & McManus, 1993).

Given that the major causes of morbidity and mortality in adolescence have shifted from natural to psychosocial causes, the focus of adolescent health care has shifted from the traditional medical management of disease to health promotion. Health promotion efforts for adolescents emphasize community-oriented, educational strategies designed to foster healthy behaviors and reduce unhealthy behaviors. As part of the shift to health promotion, health care providers have recognized that a life-span developmental perspective is necessary if effective interventions for adolescents are to be developed (for discussion, see Millstein, Petersen, & Nightengale, 1993).

In part, the life-span perspective encourages researchers to view adolescence as an important transitional period when health-related behaviors become established and set the stage for health outcomes that might not become apparent until later in life. For instance, atherosclerosis begins in childhood and adolescence and eventually causes more than half of all deaths (Kaplan & Stamler, 1983). Adolescents who do not have adequate calcium intake and who do not exercise are more likely to develop osteoporosis later in life (National Research Council, 1989). The age distribution of AIDS deaths also indicates a menacing sleeper effect: In 1995, AIDS was the sixth leading cause of death for adolescents and young adults aged 15 to 24 years, killing 643 individuals (Rosenberg et al., 1995). During the same year, however, AIDS was the primary cause of death for adults aged 25 to 44 years, killing 30,465. Given the long incubation period between exposure to HIV and the development of AIDS-related symptoms and eventual death, it is apparent that substantial numbers of young adults are exposed to the virus during adolescence.

The life-span perspective also encourages recognition that adolescence is more than just a transitional period. Adolescence is a unique developmental period during which youngsters experience changes in multiple overlapping domains (Hill, 1983). Adolescents experience puberty, show gains in cognitive development, make a number of important social transitions (e.g., the move from elementary school to junior high school), and experience changes in their relationships with parents and peers. Although important throughout the life span, several psychosocial issues become especially prominent during adolescence, including the expression of sexuality and the development of identity.

From a life-span perspective, a contextual approach is likely to benefit research and intervention efforts (see Lerner, Ostrom, & Freel, 1997; Schulenberg, Maggs, & Hurrelman, 1997). According to the contextual approach, the health effects of biological, cognitive, and socioemotional development during adolescence depend on the environments in which these changes take place. More specifically, adolescent well-being is the product of interactions among individual characteristics and environmental conditions. Applying the contextual approach to adolescent development and health, Schulenberg et al. (1997) noted the following:

In thinking about how developmental transitions may be linked with health risks and opportunities, we believe it is more productive to focus on "interactions" rather than "main effects" (cf. Bronfenbrenner, 1979). That is, rather than questioning whether a given developmental transition contributes to health risks or opportunities, a more illuminating question would be: What are the individual and contextual conditions under which a given developmental transition contributes to a given health risk or health opportunity? (p. 7)

This chapter provides an overview of pubertal, cognitive, and social development during adolescence, and links development in each of these domains to health-related behaviors and health outcomes. The chapter concludes with suggestions for future research and intervention efforts.

PUBERTAL DEVELOPMENT

Broadly, the term *puberty* refers to a series of hormonal and somatic changes that adolescents experience as they attain reproductive capacity. Increases in the sex hormones (androgens and estrogens) and increases in thyroid and growth hormones lead to the development of reproductive capability, rapid body growth, and the development of an adult appearance. In girls, key changes of puberty include breast development, pubic and axillary hair growth, and menarche. In boys, key changes include genital development, pubic and axillary hair growth, deepening of the voice, and the emergence of facial hair. Both girls and boys experience a "growth spurt" in height and weight. Gender differences in the distribution of fat and muscle emerge such that boys put on relatively less fat and more muscle than do girls. For both genders, however, muscle development and growth of the heart and lungs lead to greater strength, stamina, and tolerance for exercise (for a detailed discussion of pubertal development, see Brooks-Gunn & Reiter, 1990, and Tanner, 1972).

Although all normal adolescents go through puberty, there is great variation among individuals in terms of when they begin puberty (pubertal timing) and the speed at which they progress through pubertal changes (pubertal tempo). Normal puberty may begin as early as 8 years in girls and 9.5 years in boys, or as late as 13 years in girls and 13.5 years in boys. Among girls, the length of time between the

onset of puberty and complete maturation can be as short as 1.5 years or as long as 6 years. Among boys, a normal interval can range from 2 to 5 years (Tanner, 1972). In concrete terms, variation in pubertal timing and tempo means that some adolescents will have completed puberty before other adolescents of the same age experience the first pubertal changes.

A large body of research has examined adolescents' adjustment to puberty, yielding information on the impact of puberty on adolescent health. Of particular relevance to this chapter are a number of studies that have examined relations between puberty and dimensions of the self-image and relations between puberty and risky behavior (e.g., Magnusson, Stattin, & Allen, 1985; Simmons & Blyth, 1987). Review of this research reveals three themes. First, puberty appears to have little direct effect on physical health. Rather, puberty affects adolescents' self-image and also affects how others in the social environment view them. In turn, these changing perceptions are linked to adolescents' health behaviors, and, ultimately, to their physical well-being. Second, adolescents' adjustment to puberty, health-related behaviors, and eventual physical well-being are more affected by pubertal timing than by the mere occurrence of puberty. Third, the social context in which puberty occurs moderates the impact of pubertal processes on adolescent emotional and behavioral health, and physical well-being.

Puberty and the Self-Image

Because puberty results in dramatic changes in one's appearance, it is reasonable to believe that adolescents' self-images would be greatly affected by pubertal development. A number of studies have focused on the connections between pubertal processes and dimensions of the self-image (e.g., global self-esteem, body image). In the main, these studies have indicated that puberty has only modest effects on global self-image or self-esteem (e.g., Simmons & Blyth, 1987).

Robust relations, however, have been found between pubertal processes and specific aspects of the self-image, such as body image. It is important to consider body image at adolescence because of the connection between low body image and eating disorders (Attie & Brooks-Gunn, 1989). Several studies have indicated that girls maturing early have lower body image than on-time and late-maturing girls (Simmons & Blyth, 1987; Smolak, Levine, & Gralen, 1993). The dissatisfaction that early maturing girls feel about their bodies appears to stem from their unhappiness with their weight (Simmons & Blyth, 1987). Just prior to puberty, girls' body fat increases rapidly. As a result of this body fat increase, many girls become overly concerned with their weight, even if their weight is normal for their height and age (Smolak et al., 1993). Early maturing girls appear to be especially concerned with this body fat increase, most likely because they experience the increase while their on-time and late-maturing peers maintain much leaner physiques (Smolak et al., 1993). Although dieting is common among adolescent girls, early maturing girls

are especially likely to diet and to show patterns of disordered eating (Smolak et al., 1993). Thus, early maturing girls appear to be at heightened risk for the development of eating disorders such as anorexia and bulimia.

In contrast, early maturing boys appear more satisfied with aspects of their appearance than their later maturing peers (Simmons & Blyth, 1987). Early maturing boys feel positive about their height and muscle development, although they also might show some concerns about their weight (Simmons & Blyth, 1987). In accounting for the body image differences between early adolescent girls and boys, Simmons and Blyth (1987) suggested that early puberty might rush youngsters into adolescence before they are emotionally ready to cope with this transition. These authors further note that early maturing girls might be especially rushed, as they mature so much sooner than their peers, including early maturing boys. On the average, early maturing boys reach puberty about 1 year after early maturing girls, giving them more time to get ready for the change.

Simmons and Blyth (1987) also noted, however, that cultural values about the ideal body types for women and men might lead early maturing girls to feel unhappy about their development, while leading early maturing boys to feel happy about their development. These authors have noted that with pubertal development, girls are moving away from a body type that is culturally valued (i.e., the skinny fashion model), whereas boys are moving toward a body type that is culturally valued (i.e., the tall and muscular hunk; see also Brooks-Gunn & Reiter, 1990).

In addition to the effect of the larger culture, smaller cultures, or *microsystems* in Bronfenbrenner's (1979) terms, might moderate the effect of pubertal development on body image and associated risks of eating disorders. Richards, Boxer, Petersen, and Albrecht (1990), for example, compared body image and satisfaction with weight among pubertal adolescents from two school districts that served middle-class, suburban youngsters. Consistent with previous research, Richards et al. (1990) found that boys were more satisfied with their bodies than were girls. In addition, boys in the two school districts did not differ in regard to body image. In contrast, girls in one district reported greater satisfaction with their bodies. The differences in girls' satisfaction between the districts appeared to be the result of differences in school climate. Specifically, the more satisfied girls described their schools as less "cliquish" and also described themselves as more involved in school activities, including sports. When the school climate differences were controlled in multivariate analyses, school district differences in body and weight satisfaction were eliminated or substantially reduced. In interpreting these patterns of findings, the authors suggested that participation in sports and other activities helps girls feel more competent and more positive about their bodies. The authors also suggested that when peer acceptance is perceived as uncertain or unstable (as in very cliquish schools), girls might become preoccupied with controlling other aspects of their lives, including their weight.

Puberty and High-Risk Behaviors

Another focus of the literature on puberty and adjustment has been on the connections between pubertal processes and adolescent's involvement in high-risk behaviors. Similar to the less favorable relations between early puberty and body image, it appears that early maturing youngsters show greater involvement than their on-time and late-maturing peers in risky behaviors that often compromise health, including delinquency, truancy, conduct problems in school, and use of alcohol and other drugs (e.g., Caspi & Moffitt, 1991; Magnusson et al., 1985). The higher rates of problem behavior among early maturing youngsters appears to arise because early maturers tend to develop friendships with older peers (especially older boys) who expose them to behaviors more common in an older crowd, such as alcohol and drug use and minor delinquency. The negative effects of engaging in such behaviors are heightened for young adolescents, who lack the maturity to experiment with these behaviors in a safer manner, or in moderation. Engaging in behaviors that are more normative for older adolescents also appears to have the effect of "hurrying" young teens through adolescence, making it difficult for them to negotiate this period successfully (Baumrind & Moselle, 1985; Newcomb & Bentler, 1988).

Again, however, the social context appears to moderate the connection between early pubertal timing and behavioral problems. What seems important for the link to occur between early maturation and health-risking behaviors is that youngsters are exposed to environments that provide opportunities to engage in problem behavior. Caspi, Lynam, Moffitt, and Silva (1993), for example, found that early maturing girls had higher levels of behavior problems than on-time or late-maturing girls only when they attended mixed-sex schools. In all-girls schools, early maturing girls did not have higher levels of problem behavior than their on-time or late-maturing peers. In addition, this longitudinal study found that problem behavior was more stable among girls who attended mixed-sex schools. These patterns of findings led the authors to conclude that problem behavior among girls is much more likely if pubertal maturation occurs in settings that provide opportunities and reinforcements for deviance (i.e., settings that contain boys).

The link between early pubertal maturation and risky behaviors also appears to be moderated by the presence or absence of behavioral problems during childhood. Consistent with prior studies, Caspi and Moffitt (1991) found that early maturation among girls was associated with higher levels of problem behavior, such as aggression. However, when the early maturing girls in their sample were grouped according to degree of problem behavior shown during childhood, an interesting pattern emerged: Early maturation was associated with increased problem behavior only among girls with high levels of problem behavior during childhood. Early maturing girls without childhood behavior problems were no more likely than on-time and late-maturing girls to show problem behaviors during adolescence.

COGNITIVE DEVELOPMENT

In addition to the biological changes of puberty, adolescents experience a number of changes in cognitive skills. Compared to children, adolescents think in ways that are more sophisticated, efficient, and effective. Most adolescents become increasingly able to understand abstract concepts, use formal logic, think hypothetically, and consider several sides of a problem or situation simultaneously. Adolescents are also more self-reflective than are children and are more likely than children to see issues and situations as relative, rather than absolute (Keating, 1990).

The cognitive gains of adolescence have implications for health-related behaviors and health status. Compared to children, most adolescents are better able to understand mechanisms of illness and disease as well as the mechanisms of health-promoting behaviors, such as good nutrition and exercise. In addition, adolescents have a much more sophisticated set of cognitive tools for making health-related decisions. Because many of the most serious health problems among adolescents stem from the lifestyle choices that they make, it is important to consider adolescent decision-making skills in more detail.

Why do many adolescents decide to engage in health-risking behaviors? One possibility is that despite their relative cognitive sophistication, adolescents lack decision-making competence. A number of studies, however, have indicated that at least by age 15 or 16, most youngsters do not differ from adults on various indicators of competence (e.g., understanding of the relevant facts, using a reasonable decision-making process; for review, see Melton, 1983). Adolescents also appear to use the same basic cognitive processes in decision making as do adults, such as identifying alternative choices and the consequences that follow each choice (Fischhoff, 1992).

A second and frequently discussed explanation for the high levels of adolescent risk-taking is that adolescents are more likely than adults to believe in the personal fable, that is, to hold the erroneous belief that they are unique and therefore will not be harmed by behaviors and experiences that are potentially harmful (see Elkind, 1967). There is little empirical support, however, for the idea that adolescents believe they are particularly invulnerable to harm. Quadrel, Fischhoff, and Davis (1993), for example, compared adolescents and adults on perceived invulnerability across a range of events, including events that reflected some of the primary sources of mortality and morbidity for teens (e.g., auto accident injury, unplanned pregnancy). Results from this effort indicated that although adolescents and adults tended to underestimate their own risks, adolescents actually viewed themselves as more vulnerable than did adults.

Thus, adolescents do not appear to differ appreciably from adults in regard to decision-making competence, the process of decision making, or perceptions of personal vulnerability. Nevertheless, many adolescents do engage in risky behaviors that are likely to compromise physical health. Surveys have found that many sexu-

ally active teens use contraceptives inconsistently, if at all (e.g., Hayes, 1987). Binge drinking (defined as having more than five drinks in a row) is common among adolescents (Johnston, Bachman, & O'Malley, 1993), as are risky driving practices such as speeding, lack of seat belt use, and driving while intoxicated (Hingson, Howland, Schiavone, & Damiata, 1991). Teens also take risks while engaging in exercise, turning a potentially health-promoting activity into a health-compromising one; one recent study found that nearly 80% of boys and 60% of girls take unnecessary risks while skateboarding or riding bikes (Millstein et al., 1992).

If adolescents have the potential to be competent decision makers, why do they often behave in excessively risky ways? One likely possibility is that risky behavior often serves important developmental needs and goals. As discussed by Maggs, Schulenberg, and Hurrelmann (1997), risky behaviors such as smoking and drinking can help fulfill goals such as having fun, admission to and acceptance by the peer group, identity exploration, assertion of autonomy from adult influence, and demonstration of a more adultlike social status. A short-term longitudinal study focused on college students' drinking, for example, found that students were more likely to binge drink if they believed that drinking was fun, felt accepted by their peers, and ranked social goals, such as making new friends, as important (Maggs, 1997). Similarly, Silbereisen and Noack (1988) found that cigarette smoking helped adolescents approach potential friends (e.g., going over and asking for a light; offering a match or a smoke).

PARENT-ADOLESCENT RELATIONSHIPS

In addition to biological and cognitive changes, adolescents also experience changes in their relationships with parents. These relationship changes have implications for health behaviors, and, ultimately, for physical health.

Influenced by the psychoanalytic tradition (e.g., Blos, 1970; Freud, 1958) the parent-adolescent relationship was once viewed as inevitably stormy. Over time, empirical studies have accumulated that indicate that during adolescence, most families do not experience severe conflict, rebellion, or deterioration in the parent-adolescent relationship. In the main, adolescents continue to feel close to their parents, and feel that they can turn to their parents for advice and help (for review, see Silverberg, Tennenbaum, & Jacob, 1992).

At the same time, however, most families do experience increased parent-adolescent conflict, notably around the apex of pubertal change—or the time at which pubertal change is most rapid (Hill, Holmbeck, Marlow, Green, & Lynch, 1985a, 1985b). Most conflict revolves around mundane issues, such as chores and matters of style rather than around serious ideological differences. Conflict between parents and adolescents diminishes as teens progress beyond the apex of puberty, perhaps because parents and teens have adjusted to changes in both the teen and the family system. For example, with pubertal and cognitive maturation, ado-

lescents might come to see themselves as more mature and as more deserving of a say in family decisions and household rules. Conflict might increase temporarily, as parents learn to deal with the newly assertive adolescent. Once the family system has adjusted (e.g., the adolescent is now consulted about the details surrounding a family vacation; parents now knock on the teen's bedroom door before coming in), conflict diminishes.

In addition to experiencing more conflict with parents, most adolescents also experience a decrease in parental supervision. During adolescence, youngsters spend progressively more time in activities that take them away from their parents, whether these activities are extracurricular activities, part-time work, or socializing with friends. Increases in single-parent families and maternal employment have also resulted in more adolescents' being responsible for their own care before and after school. As contact with parents has decreased, time spent with peers has increased; contemporary adolescents spend twice as much time each week with peers as with parents or other adults, even considering time spent in the company of teachers at school (Brown, 1990). Much of this time spent with peers is spent away from direct adult supervision.

Many studies have examined the connections between aspects of the parent-adolescent relationship and adolescent emotional and behavioral adjustment. Although this research has not explicitly compared direct versus indirect effects of the parent-adolescent relationship on adolescent health, the research base does suggest that the parent-adolescent relationship has a largely indirect effect on adolescent physical health; that is, aspects of this relationship affect adolescents' emotional well-being and health-related behaviors, which, in turn, affect adolescent physical health.

The clearest finding in the literature is that when parents can maintain a warm and involved relationship with their children during the teenage years, adolescent health is promoted. More specifically, an authoritative parenting style, reflecting high levels of warmth, reasonably democratic decision making, and firmness, is associated with emotional and behavioral well-being in adolescents (for review, see Silverberg et al., 1992). Adolescents with authoritative parents tend to have high self-esteem, low levels of depression and anxiety, and low levels of problem behavior such as substance abuse. Focus on the components of authoritativeness suggest, not surprisingly, that warmth, affection, and democratic family management practices help adolescents to develop a positive sense of self and positive emotional tone, both of which are important for reducing the risk of depression, and the physical health risks that accompany depression, such as the risk of suicide and eating disorders. In contrast, parental firmness, which includes limit setting and monitoring, helps teens to avoid high levels of health-risking behaviors. Indeed, monitoring is the single most effective way for parents to help minimize their child's involvement in risky behavior, including substance use, early sexual behavior, and aggression (e.g., Blum & Rinehart, 1997; Patterson & Stouthamer-Loeber, 1984).

PEER RELATIONSHIPS

In addition to changes in relationships with parents, adolescents' relationships with peers also undergo a number of important transitions that have implications for health-related behaviors and for emotional and physical health. This section focuses on three features of adolescent peer relations that have particular relevance for adolescent health: the development of emotionally supportive friendships, the initiation of romantic relationships, and the emergence of peer crowds.

Childhood friendships are based on shared activities, with *friends* defined as individuals that one likes to play with. Adolescent friendships are also based on shared interests, but they emphasize affective characteristics, such as perceived emotional supportiveness. During adolescence, *friends* are defined as people who are fun to be with, and who are supportive, trustworthy, and loyal (Hartup, 1983).

Although platonic, opposite-sex friendships occur in adolescence, most best friends are still same-sex friends. Added to these same-sex chumships, however, are new romantic relationships. Heterosexual romantic relationships develop slowly across adolescence, moving from a burgeoning interest in the opposite sex during early adolescence to the active pursuit of romantic relationships in middle and late adolescence (Blyth, Hill, & Thiel, 1982; Furman & Wehner, 1994).

While experiencing changes in the nature of their close friendships, adolescents also experience the emergence of peer crowds. During high school, adolescents begin to classify themselves and other students as belonging to crowds, or groups of adolescents who share similar appearance, attitude, and behavior. Crowds help adolescents to organize the often large peer system that exists in high schools; contemporary U.S. high schools typically contain crowds such as "jocks," "brains," "nerds," "druggies," and so on. Assignment to a particular crowd is often based on reputation and stereotype rather than on actual interaction. In other words, adolescents may be classified as belonging to a particular crowd because they look and act like the stereotypical representation of that crowd and not because they have close relationships with other members of their crowd (Brown, 1990).

A number of studies have examined connections between the features of adolescent peer relations and adolescent well-being. Interestingly, this body of research indicates that adolescents' friends can both promote and undermine health. First, evidence shows that friend support can bolster emotional well-being yet undermine behavioral well-being. Caucé, Mason, Gonzales, Hiraga, and Liu (1994), reported that perceived social support from friends was associated with lower depression among adolescents, and Windle (1992) reported that the absence of friend support was associated with higher depression among adolescents. Windle (1992) also found, however, that high friend support was positively associated with adolescent girls' alcohol problems (e.g., drinking until passing out, having legal and school problems as a result of drinking). Chassin, Presson, Sherman, Montello, and McGrew (1986) reported that adolescents who had tried cigarettes and

had supportive friends were more likely to become regular smokers than those who had unsupportive friends.

Involvement in romantic relationships also appears to have positive and negative effects on adolescent health. On the one hand, adolescents may gain social status from dating which can benefit self-esteem. In addition, the development of romantic relationships might afford adolescents new contexts in which intimacy can be expressed. On the other hand, involvement in romantic relationships can expose adolescents to new sources of anxiety and disappointment, which can undermine emotional well-being. Larson and Asmussen (1991) reported that from preadolescence to adolescence, girls and boys experienced increases in negative emotions (e.g., worry, sadness, or anger) stemming from their interactions with friends. Additional analyses revealed that almost all of the increase in negative emotions stemming from friend interactions actually derived from opposite-sex interactions.

Opposite-sex involvement has also been associated with risky behavior. One of the most important predictors of sexual intercourse among adolescents is involvement with a steady boyfriend or girlfriend (Small & Luster, 1994). To the extent that adolescents do not use contraceptives reliably, such sexual involvement exposes them to greater risk of pregnancy and sexually transmitted diseases. Dating is also associated with higher levels of delinquency and substance use, especially among younger adolescents (e.g., Brown, Dolcini, & Leventhal, 1997; Magnusson et al., 1985). One reason for this association is that young teens who date are likely to have older friends who expose them to activities such as substance use (Magnusson et al., 1985). Adolescents who date may also be especially popular, peer-oriented youngsters who spend a large amount of unsupervised time with peers and thus have more opportunities for deviance that occurs in the peer context.

Recently, authors have begun to discuss the effects of crowd affiliation on health-related behaviors and health outcomes. As noted by Brown et al. (1997), there are reciprocal connections between crowds and adolescents' health-related behaviors. Moreover, depending on an adolescent's crowd affiliation, his or her health can be promoted or undermined. For instance, an adolescent who uses drugs encourages peers to associate him or her with the drug-using crowd. Once identified with the "druggies" or "burnouts" such an adolescent is likely to experience more opportunities and reinforcements for drug use, and can also use his or her particular crowd label as a way of defining a public image or identity. Of course, more health-promoting systems may operate in other crowds such as the "brains." Because of the relations between crowd association and health, suggesting that adolescent health could be promoted by changing adolescents' crowd affiliations from less healthy to more healthy crowds is tempting. It is extremely difficult, however, for adolescents to shift their crowd affiliations. Downs, Flanagan, and Robertson (1985/1986), for example, identified a crowd whose members had high levels of drinking, had low levels of school achievement and school involvement, and who were relatively isolated from the other school crowds. Some

adolescents from the drinking/isolated crowd eventually decreased their drinking to the low or moderate levels found in some of the other crowds. However, peers from the other crowds still avoided associating with these youngsters, making it virtually impossible for them to change their drinking/isolated label, and, presumably, making it harder for them to maintain their change in lifestyle (for further discussion of crowds as barriers to health promotion see Brown et al., 1997).

DIRECTIONS FOR FUTURE RESEARCH AND INTERVENTION

Although much has been learned about adolescent development and health, much also remains to be examined. In regard to the connections between pubertal development and health, more attention needs to be directed to individual differences and contextual conditions that moderate adolescents' adjustment to puberty. In particular, more attention should be directed to early-maturing adolescents with good adjustment, that is, who are resilient in the face of this stressful, "off-time" transition. Understanding more about the personal and social resources of youngsters who are doing well despite the challenge of early puberty would help us to develop more effective intervention programs to help guide adolescents through this period of physical and social changes.

In regard to puberty and health promotion, adolescents at puberty would benefit greatly from education about proper nutrition and exercise. Young adolescents need to be educated about the problems of dieting and should be encouraged to eat well and to exercise, with emphasis placed on physical fitness rather than on weight. Health interventions in adolescence—whether focused on diet and exercise or other health behaviors—should recognize adolescents' sophisticated cognitive skills (e.g., the ability to think abstractly and hypothetically and to consider several sides of an issue simultaneously). Adolescents are likely to benefit by interventions that provide information, encourage discussion about options and values, and help youngsters to improve their interpersonal skills while focusing on specific health-related decisions, such as whether to become sexually active or use alcohol.

Interventions aimed at improving decision making, however, should also take into account that risky behavior can serve important developmental goals. For instance, adolescence is culturally defined as a time of curiosity, exploration, and experimentation, all in the service of "finding oneself." Although many adolescents experiment in ways that are health-promoting, many also explore risky behaviors, especially those behaviors defined as adult (e.g., substance use and sexual activity). Although we rightly worry about the harm that might follow risky behavior, engaging in some risk does appear to serve identity development. Furthermore, teens who explore their identities—which sometimes involves risk—appear to have better mental health than those who do not (for a review, see Maggs et al., 1997).

With this in mind, a prevention goal might be to reduce rather than completely eliminate risk (see Baumrind, 1987). Programs with this goal might focus on (a) helping adolescents avoid excessively risky behavior; (b) helping young adolescents delay activities such as drinking and sexual intercourse; and (c) helping adolescents meet important needs, such as peer affiliation and identity exploration through nonrisky behaviors (for a discussion of prevention and intervention programs, see Maggs et al., 1997).

In addition to physical and cognitive development, adolescents experience changes in their relationships with parents. Although adolescents gain emotional and behavioral autonomy vis-à-vis parents, and although parents and adolescents experience increases in conflict and distancing, parents continue to play very important roles in adolescent health. Parents who are able to combine warmth and firmness, and who are involved in their adolescents' lives, promote well-being. Perhaps most important for future research and intervention is to consider the individual, familial, and contextual factors that promote or impede appropriate parenting. In a recent report, the Carnegie Council on Adolescent Development (1996) stated that reengaging parents with their adolescent children should be a main priority in the United States. The report noted a number of factors that limit parents' involvement during this crucial time, including a lack of knowledge about adolescent development, job demands, rigid boundaries between home and work, and normative demands from aging parents and younger children. Recommendations to help parents with these issues included extending the family friendly workplace policies now in place for families with young children to families with adolescents (e.g., flextime, job sharing, telecommuting, and part-time work with benefits), and an extension of the child care tax credit from its current ceiling age of 10 to at least age 14, thereby providing some assistance for working parents who want to provide supervision for their adolescents after school and in the early evening hours.

Adolescents also experience substantial changes in their peer relationships. Most notably, adolescents begin to experience friendships as emotionally supportive, begin romantic relationships, and define themselves and their peers as belonging to peer crowds. More research is necessary to understand the effects of each of these changes on health. For instance, more systematic study is needed on the relative impact of friend and parent support on emotional well-being and physical health. Research to date suggests that adolescents might benefit most when they have high levels of friend and parent support, but more research evaluating this possibility is necessary. Interactions between friend and parent support also might occur. When parent support is low, for example, adolescents may benefit emotionally from high levels of friend support (Barrera & Garrison-Jones, 1992). Exclusive reliance on friend support, however, also might be associated with greater involvement in risky behavior.

More research is also needed on the health consequences of involvement in romantic relationships. Most research in this area is focused on contraceptive behav-

ior and the physical health consequences that may follow sexual involvement, such as sexually transmitted diseases and pregnancy. It is also important, however, to focus on the emotional impact of romantic involvement, especially the effect of relationship dissolution on adolescents' emotional well-being and physical health. Larson and Asmussen argued that "disappointments in love represent one of the major sources of distress, strain, and perhaps psychiatric disorder in adolescence" (p. 38; see also Brown et al., 1997). A contextual perspective would help to understand who is at most risk of emotional and physical health problems following relationship loss. The effect of relationship loss on emotional well-being, for example, might be moderated by individual coping styles, other sources of social support, and dating and relationship norms in schools and communities.

In reviewing the impact of crowds on adolescent health, Brown et al. (1997) noted several important issues for designing health intervention programs. One is to consider is that health-compromising behaviors (e.g., smoking, drinking, and recklessness) help define certain crowds. Asking crowd members to stop these behaviors is equivalent to asking them to give up their crowd membership, which may result in feelings of loneliness and alienation and decreased emotional and physical well-being. As illustrated by Downs et al. (1985/1986), adolescents who "reform" are also not likely to be accepted into a new, healthier crowd. Interventions aimed at curbing unhealthy or risky behaviors might be more successful if they also helped teens to develop the kinds of social skills and activities that would enable them to form new social identities (see Brown et al., 1997, for further discussion).

In general, research and intervention efforts are likely to be most useful and effective when they reflect a life-span, contextual approach. Adolescence is a bridge between childhood and adulthood and is a unique developmental period in its own right. Adolescent health is affected by individual development and personal behavior, yet it is also affected by features of the environment and by interactions between the individual and various social contexts. In regard to health, contemporary adolescence is the best and worst of times. The challenge for society is to build on adolescents' considerable strengths while addressing the individual and environmental factors that compromise psychological and physical well-being.

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