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ADOLESCENT DEVELOPMENT

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■ **Abstract** This chapter identifies the most robust conclusions and ideas about adolescent development and psychological functioning that have emerged since Petersen's 1988 review. We begin with a discussion of topics that have dominated recent research, including adolescent problem behavior, parent-adolescent relations, puberty, the development of the self, and peer relations. We then identify and examine what seem to us to be the most important new directions that have come to the fore in the last decade, including research on diverse populations, contextual influences on development, behavioral genetics, and siblings. We conclude with a series of recommendations for future research on adolescence.

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INTRODUCTION

Research on growth and development during adolescence expanded at a remarkable rate during the past 13 years, since the last time a comprehensive review of the literature on adolescent development appeared in this series (Petersen

1988). [Although two other contributions to the *Annual Review of Psychology* published during the last decade focused on adolescence (Compas et al 1995, Lerner & Galambos 1998), neither of these were intended to provide a broad overview of the literature.] The flood of interest in adolescence during the past decade sparked the appearance of numerous new journals devoted to the publication of theoretical and empirical articles on this age period (e.g. the *Journal of Research on Adolescence*), as well as a substantial increase in the number of pages devoted to adolescence in established outlets within the subfield of developmental psychology (e.g. *Child Development, Developmental Psychology*) and within psychology as a whole (e.g. *American Psychologist, Psychological Bulletin*). The Society for Research on Adolescence, the major association of social and behavioral scientists interested in adolescent development, which met for the first time in 1986, grew from a fledgling organization of a few hundred individuals to an association with some 1000 members. In view of the fact that the empirical study of adolescence barely existed as recently as 25 years ago, the remarkable rise of interest in the second decade of life merits some explanation.

Four broad trends were likely responsible for the growth of this interest area. First, the increased influence of the "ecological perspective on human development" (Bronfenbrenner 1979) during the late 1980s and early 1990s within the field of developmental psychology drew researchers' attention toward periods of the lifespan characterized by dramatic changes in the context, and not simply the content, of development, making adolescence a natural magnet for researchers interested in contextual variations and their impact. Second, methodological improvements in the study of puberty enabled researchers interested in "biosocial" models of development to test these models within a developmental period characterized by wide, but easily documented, variation in both biology and context. Third, the shift in research funding priorities toward more applied areas of study, and toward the study of social problems in particular, encouraged many scholars to turn their attention to such issues as antisocial behavior, drug use, nonmarital pregnancy, and depression—problems that typically emerge for the first time during adolescence. Finally, many of the important longitudinal studies of development launched during the 1980s shifted their focus toward adolescence as the study samples matured into preadolescence and beyond.

These general trends are reflected in the specific topic areas that have dominated the adolescence literature over the past decade or so. Our informal content analysis of several journals (*Child Development, Developmental Psychology*, and the *Journal of Research on Adolescence*) revealed that the most popular areas of inquiry were adolescent development in the family context, problem behavior, and, to a lesser extent, puberty and its impact. Although other topics did receive concerted, if not sustained, attention during this same period of time—the study of changes in self-image and of adolescents' peer relations were well-represented—the family-puberty-problem behavior triumvirate accounted for about two-thirds of the published articles on adolescence during the past decade. Indeed, if a visitor

from another planet were to peruse the recent literature, he or she would likely conclude that teenagers' lives revolve around three things: parents, problems, and hormones. We suspect that this characterization is only partially true.

NEW RESEARCH ON OLD TOPICS

The Causes and Correlates of Problem Behavior

From its beginnings at the turn of the century, the scientific study of adolescent development has always had as part of its implicit and explicit agendas the goal of describing, explaining, predicting, and ameliorating problematic behavior. Despite oft-repeated pleas to "de-dramatize" adolescence (e.g. Dornbusch et al 1991), frequent reminders that adolescence is not a period of "normative disturbance," and accumulating evidence that the majority of teenagers weather the challenges of the period without developing significant social, emotional, or behavioral difficulties (Steinberg 1999), the study of problem behavior continued to dominate the literature on adolescent development during the 1980s and 1990s. Indeed, one recent article (Arnett 1999) suggested that scholars might reconsider the fashionable assertion that the "storm and stress" view is incorrect and acknowledge that the early writers on the subject may have been onto something.

The notions that adolescence is inherently a period of difficulty, that during this phase of the life-cycle problematic development is more interesting than normative development, and that healthy adolescent development is more about the avoidance of problems than about the growth of competencies have persisted virtually unabated since the publication of Hall's treatise on the topic, nearly a century ago (Hall 1904). Thus, whereas there continue to exist overarching frameworks to explain dysfunction and maladaptation in adolescence (Jessor's "Problem Behavior Theory," perhaps the most influential of these, continued to dominate research during the past decade), no attempt to develop a general theory of normative adolescent development has met with widespread acceptance, and theories of normative adolescent development that had once been popular have declined considerably in their influence. Erikson's (1968) theory of adolescent identity development, for example, once a dominant force in adolescence research, endures in undergraduate textbooks but has all but disappeared from the empirical landscape. Piaget's theory of formal operations, the chief organizing framework for adolescence research during the 1970s and early 1980s, was more or less abandoned, as the study of cognitive development became more and more dominated by information-processing and computational models, and as empirical studies cast increasing doubt on many of Piaget's fundamental propositions about cognitive development during adolescence (Keating 1990).

Although one may bemoan the relative lack of attention paid to normative adolescent development in recent decades, the field's concerted focus on adolescent problem behavior has paid off with a wealth of information based on solid research.

In addition, much of what we learn about atypical development in adolescence informs our understanding of normal adolescent development. The influence of the discipline of developmental psychopathology on the study of dysfunction in adolescence has been especially important, as have the many longitudinal studies that have been carried out within this framework (e.g. Farrington 1995, Henry et al 1993, Rutter 1989). As a consequence, a number of general conclusions about adolescent problem behavior have begun to emerge, and they have shaped, and will continue to shape, research on the topic.

First, one needs to distinguish between occasional experimentation and enduring patterns of dangerous or troublesome behavior. Many prevalence studies indicate that rates of occasional, usually harmless, experimentation far exceed rates of enduring problems (Johnston et al 1997). For example, the majority of adolescents experiment with alcohol sometime before high school graduation, and the majority will have been drunk at least once; but relatively few teenagers will develop drinking problems or will permit alcohol to adversely affect their school or personal relationships (Hughs et al 1992, Johnston et al 1997). Similarly, although the vast majority of teenagers do something during adolescence that is against the law, very few young people develop criminal careers (Farrington 1995).

Second, one must distinguish between problems that have their origins and onset during adolescence and those that have their roots in earlier periods. It is true, for example, that some teenagers fall into patterns of criminal or delinquent behavior during adolescence, and for this reason we tend to associate delinquency with the adolescent years. However, most teenagers who have recurrent problems with the law had problems at home and at school from an early age; in some samples of delinquents, the problems were evident as early as preschool (Moffitt 1993). Likewise, longitudinal studies indicate that many individuals who develop depression and other sorts of internalizing problems during adolescence suffered from one or another form of psychological distress, such as excessive anxiety, as children (Zahn-Waxler et al 2000, Rubin et al 1995). We now understand that simply because a problem may be displayed during adolescence does not mean that it is a problem of adolescence.

Third, many of the problems experienced by adolescents are relatively transitory in nature and are resolved by the beginning of adulthood, with few long-term repercussions. Substance abuse, unemployment, and delinquency are three examples: Rates of drug and alcohol use, unemployment, and delinquency are all higher within the adolescent and youth population than among adults, but most individuals who have abused drugs and alcohol, been unemployed, or committed delinquent acts as teenagers grow up to be sober, employed, law-abiding adults (Steinberg 1999). Unfortunately, little is known about the mechanisms through which individuals "age out" of certain types of problems, although it has been suggested that much of this phenomenon is due to the settling-down effects of marriage and full-time work (e.g. Sampson & Laub 1995). Nevertheless, many researchers have begun to search for ways of distinguishing, during adolescence, between so-called "adolescence-limited" problems and those that are "life-course

persistent" (Moffitt 1993). Ironically, the predictors that discriminate between adolescents who persist versus those who do not are best assessed prior to, not during, adolescence (e.g. attention deficit disorder, neurological insult, conduct problems in preschool). This finding reminds us that development during adolescence cannot be understood without considering development prior to adolescence.

Far less is known about the developmental course of internalizing problems than externalizing problems, but it appears that the inverted U-shaped developmental curve of externalizing in adolescence, with prevalence rates peaking during the middle adolescent years and then declining, does not characterize age changes in internalizing problems. The prevalence of depression, for example, increases during early adolescence and continues to increase, albeit less dramatically, during adulthood (Avenevoli & Steinberg 2000). Perhaps more interestingly, the widely-reported gender difference in rates of adult depression, with women far more likely than men to suffer from this disorder, does not emerge until adolescence (Nolen-Hoeksema & Girgus 1994). Indeed, at least one analysis indicates that the gender difference in rates of adult depression can be accounted for entirely by gender differences in adolescent-onset depression; gender differences in rates of adult-onset depression are not significant (Kessler et al 1993).

Although the spike in prevalence rates of depression at adolescence and the emergence of gender differences in depression in adolescence are both well-established, surprisingly little is known about the underlying mechanisms for either phenomenon; interesting theories abound, but definitive data that differentiate among alternative hypotheses are surprisingly scarce. Among the most frequently offered explanations are those that point to developmental and gender differences in (*a*) hormonal changes at puberty (e.g. Cyranowski & Frank 2000), (*b*) the prevalence and nature of stressful life events (e.g. Petersen et al 1991), and (*c*) the emergence of certain types of cognitive abilities and coping mechanisms (e.g. Nolen-Hoeksema et al 1991). The disappointing truth, though, is that we do not know why depression increases in early adolescence or why adolescent girls are more likely to manifest the disorder than adolescent boys.

Parent-Adolescent Relationships

Of the many contexts in which adolescents develop, none has received as much concerted attention as the family. Research on family relationships has focused predominantly on the parent-adolescent relationship, although there is a small but growing literature on adolescents and their siblings (see section on siblings, below).

Studies of changes in family relations during adolescence continued to focus on parent-adolescent conflict (e.g. Smetana 1995), although a number of investigations examined changes in closeness and companionship as well (e.g. Mayseless et al 1998; for a recent review, see Grotevant 1998) Much of this work continued to build on theoretical models articulated in the early and mid 1980s, which framed transformations in family relations in terms of the adolescent's need to individuate

within the context of close and harmonious parent-adolescent relations (Cooper et al 1983, Hauser et al 1984).

Several broad conclusions have emerged from this research. First, there is a genuine increase in bickering and squabbling between parents and teenagers during the early adolescent years, although there is no clear consensus as to why this occurs when it does; psychoanalytic (Holmbeck 1996), cognitive (Smetana et al 1991), social-psychological (Laursen 1995), and evolutionary (Steinberg 1988) explanations all have been offered. Second, this increase in mild conflict is accompanied by a decline in reported closeness, and especially, in the amount of time adolescents and parents spend together (Larson & Richards 1991). Third, the transformations that take place in parent-adolescent relationships have implications for the mental health of parents as well as for the psychological development of teenagers, with a substantial number of parents reporting difficulties adjusting to the adolescent's individuation and autonomy-striving (Silverberg & Steinberg 1990). Finally, the process of disequilibration in early adolescence is typically followed by the establishment of a parent-adolescent relationship that is less contentious, more egalitarian, and less volatile (Steinberg 1990).

The study of adolescent socialization in the family context was an exceptionally popular topic of inquiry during the past decade or so (Darling & Steinberg 1993). Most of the work in this area derived in one form or another from Baumrind's (1978) seminal studies of parental influences on the development of competence in childhood, which demonstrated that children whose parents were "authoritative"—warm and firm—showed higher levels of competence and psychosocial maturity than their peers who had been raised by parents who were permissive, authoritarian, or indifferent. Dozens of studies of adolescents and their parents conducted during the last 12 years, using different methods, measures, and samples, have reached the same conclusion—namely, that authoritative parenting is associated with a wide range of psychological and social advantages in adolescence, just as it is in early and middle childhood. Although various researchers have labeled and operationalized authoritativeness in different ways (e.g. "effective parenting," "positive parenting"), the combination of parental responsiveness and demandingness is consistently related to adolescent adjustment, school performance, and psychosocial maturity (Steinberg 2000).

The notion that authoritativeness influences, rather than merely accompanies, or perhaps even follows from, adolescent adjustment was challenged on several fronts during the 1990s, however. Some writers argued that the link between parental authoritativeness and adolescent adjustment was due to the genetic transmission of certain traits from parents to children (see Behavioral Genetics, below). Others argued that parents' influence on adolescent behavior and development was insignificant and far less important than the influence of peers and the mass media (Harris 1995). These claims were countered by researchers who pointed to conceptual problems in the behavioral genetics analyses that led to the overestimation of shared genetic variance, the success of experimental interventions designed to

enhance parental effectiveness and children's adjustment, and longitudinal studies indicating that parental influence during childhood affects adolescents' choices of peers (Collins et al 2000). It seems safe to say that adolescent development is affected by an interplay of genetic, familial, and nonfamilial influences, and that efforts to partition the variability in adolescent adjustment into genetic and various environmental components fail to capture the complexity of socialization processes.

The generally consistent pattern of results concerning parenting and adolescent adjustment prompted many researchers to investigate how factors external to the parent-child relationship moderate the link between parental authoritativeness and adolescent adjustment. These studies have examined the moderating roles of ethnicity (Steinberg et al 1991), interparental consistency (Fletcher et al 1999), social networks (Fletcher et al 1995), neighborhood influences (Furstenberg et al 1999), family structure (Hetherington et al 1992), and peer groups (Steinberg et al 1992). Whereas the general relation between authoritativeness and adjustment is found across a variety of contextual conditions, the strength of the relation between authoritativeness and adolescent adjustment varies across samples, contexts, and the specific outcome measures in question (Steinberg 2000).

Puberty and Its Impact

Advances in methodological techniques for assessing pubertal maturation sparked an increase in the amount of research devoted to this topic during the past two decades. Much of this research has focused on the ways in which puberty affects adolescents' relationships with their parents. Studies indicate that pubertal maturation leads to a more egalitarian relationship between adolescents and their parents, with adolescents having more autonomy and influence in family decision-making. There is also evidence that conflict between adolescents and parents, especially mothers, increases around the onset of puberty. It was once believed that this conflict subsided as adolescents matured; however, there is now less certainty that parent-child conflict declines in later adolescence (Laursen et al 1998, Sagrestano et al 1999). Although negativity may increase between parents and adolescents during puberty, positive affect and emotional closeness likely remain unchanged (e.g. Holmbeck & Hill 1991, Montemayor et al 1993).

One interesting controversy to emerge in the recent study of puberty concerns the causal direction of the link between pubertal development and relational transformation in the family (Steinberg 1988). Several studies have indicated that the quality of family relationships may affect the timing and course of puberty, with earlier and faster maturation observed among adolescents raised in homes characterized by less closeness and more conflict (Graber et al 1995, Kim & Smith 1998) and among girls from homes in which their biological father is not present (Surbey 1990). Although the underlying mechanism for this is not understood, the general observation that reproductive development in adolescence can be influenced by

close relationships has been documented in studies of menstrual synchrony (e.g. McClintock 1980) and is well established in studies of nonhuman primates and other mammals (see Steinberg 1988).

Recent studies of early versus late maturation have confirmed earlier findings, indicating that the impact of pubertal timing differs between boys and girls. Late-maturing boys have relatively lower self-esteem and stronger feelings of inadequacy, whereas early-maturing boys are more popular and have a more positive self-image (Petersen 1985). At the same time, however, early-maturing boys are at greater risk for delinquency and are more likely than their peers to engage in antisocial behaviors, including drug and alcohol use, truancy, and precocious sexual activity (e.g. Williams & Dunlop 1999). This increase in risky behavior is likely due to early-maturers' friendships with older peers (Silbereisen et al 1989).

Recent research on the timing of puberty among females also has corroborated earlier studies indicating that early-maturing girls have more emotional problems, a lower self-image, and higher rates of depression, anxiety, and disordered eating than their peers (e.g. Ge et al 1996b). These effects are particularly strong in Western countries where cultural beliefs about attractiveness emphasize thinness, consistent with other research indicating that the effects of early or late maturation vary across social contexts. Interestingly, girls' perceptions of their maturational timing relative to peers may be more influential than their actual physical maturation (Dubas et al 1991). Like early-maturing boys, early-maturing girls are more popular, but they are also more likely to become involved in delinquent activities, use drugs and alcohol, have problems in school, and experience early sexual intercourse (e.g. Flannery et al 1993), although there is some suggestion that early maturation may be associated with an increase in problem behavior only among girls who have had a history of difficulties prior to adolescence (Caspi & Moffitt 1991). It also has been found that early-maturing females spend more time with older adolescents, particularly older boys, and that these relations have a negative influence on their adjustment (Silbereisen et al 1989). Indeed, early-maturing girls are more vulnerable to psychological difficulties and problem behavior when they have more opposite sex friendships, and when they attend co-educational, rather than single-sex, schools (Caspi et al 1993).

Another area of recent study concerns the effects of puberty on adolescent moodiness, and the role of hormonal changes in emotional development more generally. On the whole, evidence for hormonally driven moodiness in adolescence is weaker than popular stereotypes would suggest, although few studies have examined moodiness per se (as opposed to negative affect) (Buchanan et al 1992). Richards & Larson (1993) found no association of average mood or mood variability with puberty among girls, and among boys they found that more advanced pubertal status was associated with positive, not negative, feelings. Also, whereas moodiness may be more characteristic of adolescence than adulthood, it is no more characteristic of adolescence than childhood (Buchanan et al 1992).

There was a surge of research in the late 1980s and early 1990s on the direct and indirect effects of hormones on psychosocial functioning in adolescence. Studies

indicate that puberty is not characterized by "raging" hormones, and that the turmoil once associated with puberty was exaggerated (Brooks-Gunn & Reiter 1990, Petersen 1985). When studies do find a connection between hormones and mood it is typically in early adolescence, where fluctuations in hormones are associated with greater irritability and aggression among males and depression among females (Buchanan et al 1992). Nevertheless, variation in hormone levels account for only a tiny percentage of the variance in adolescents' negative affect, and social influences account for considerably more (Brooks-Gunn et al 1994).

Although there is little evidence that psychological difficulties stem directly from hormonal changes at puberty, it is likely that the bodily changes of adolescence play a role in the development of depression and disordered eating among girls (Wichstrom 1999). As body mass increases during puberty, adolescent females may develop a more negative body image and, in turn, disordered eating and depression (Archibald et al 1999, Keel et al 1997). This phenomenon may be accentuated among girls who are especially interested in dating. There is evidence that the combination of puberty and involvement in romantic relationships may place girls at special risk for the development of eating problems (Cauffman & Steinberg 1996).

The Development of the Self

Adolescence has long been characterized as a time when individuals begin to explore and examine psychological characteristics of the self in order to discover who they really are, and how they fit in the social world in which they live. Especially since Erkison's (1968) theory of the adolescent identity crisis was introduced, scholars have viewed adolescence as a time of self-exploration. In general, research has supported Erikson's model, with one important exception: the timetable. It now appears that, at least in contemporary society, the bulk of identity "work" occurs late in adolescence, and perhaps not even until young adulthood. As a consequence, research on adolescent identity development came to focus less on identity development in the Eriksonian sense (for exceptions, see Meeus et al 1999), and more on the development of self-conceptions.

In the transition from childhood to adolescence, individuals begin to develop more abstract characterizations of themselves, and self-concepts become more differentiated and better organized. Adolescents begin to view themselves in terms of personal beliefs and standards, and less in terms of social comparisons (Harter 1998). Middle adolescence is marked by individuals describing themselves in ways that are occasionally discrepant (e.g. shy with friends, outgoing at home), but these discrepancies tend to decline in later years, with adolescents forming a more consonant view of themselves (Harter & Monsour 1992). We also know that adolescents evaluate themselves both globally and along several distinct dimensions—academics, athletics, appearance, social relations, and moral conduct (Masten et al 1995)—and that the link between specific dimensions of the self-concept and global self-worth varies across domains. For example, appearance is

most important for overall self-esteem, especially so among females (Usmiani & Daniluk 1997). There is also evidence that adolescents' self-conceptions differ across contexts, and that teenagers see themselves differently when they are with peers compared with parents and teachers (Harter et al 1998). Research has shown that adolescents often engage in false self behavior (acting in ways that are not the true self), particularly when among classmates and in romantic relationships. The impact of false self behavior on adolescents' mental health depends on the reasons for it: Adolescents who engage in false self behavior because they devalue their true self suffer from depression and hopelessness; adolescents who engage in false self behavior to please others or just for experimentation do not (Harter et al 1996).

In general, global self-esteem is stable during adolescence and increases slightly over the period (Harter 1998). Early adolescents report more daily fluctuations in self-esteem than younger or older individuals, but self-esteem becomes stable with age (Alasker & Olweus 1992). Research also indicates that some adolescents show high levels of stability in self-esteem, whereas others do not (e.g. Deihl et al 1997), and that self-esteem varies according to ethnicity and gender. For example, recent meta-analyses have indicated that Black adolescents have higher self-esteem than whites (Gray-Little & Hafdahl 2000) and that males have slightly higher self-esteem than females (Kling et al 1999). Across all groups, however, high self-esteem is related to parental approval, peer support, adjustment, and success in school (e.g. DuBois et al 1998, Luster & McAdoo 1995).

During the 1990s, many researchers studied the development of ethnic identity. In general, a strong ethnic identity is associated with higher self-esteem and self-efficacy among minority adolescents (e.g. Phinney et al 1997). Most studies on ethnic identity have focused on Black adolescents (e.g. Marshall 1995), although recently there have been a number of studies examining ethnic identity among Latino, Native American, and Asian youth (e.g. Lysne & Levy 1997, Spencer & Markstrom-Adams 1990). There may be different pathways in the process of ethnic identity development as a function of recency of immigration, differences in parents' ethnic identities and ethnic socialization, and the ethnic make-up of the school the adolescent attends (Quintana et al 1999, Rumbaut 1996).

Phinney and colleagues (e.g. Phinney & Alipuria 1990) suggest that minority adolescents' associations with mainstream culture can take on a variety of forms. Adolescents can assimilate into the majority culture by rejecting their own culture, can live in the majority culture but feel estranged, can reject the majority culture, or can maintain ties to both majority and minority cultures. Research suggests that maintaining ties to both cultures, or biculturalism, is associated with better psychological adjustment (e.g. DeBerry et al 1996, Phinney & Devich-Navarro 1997).

Adolescents and Their Peers

Popular images of adolescence have long emphasized an adolescent peer culture characterized as a separate society whose values are opposed to those of adults. In reality, there are many peer cultures, and little evidence exists to support

the existence of a substantial "generation gap" between parents and adolescents (Brown 1990). During the transition into adolescence, however, adolescents spend increasing amounts of time alone and with friends, and there is a dramatic drop in time adolescents spend with their parents (Larson & Richards 1991). Despite these changes in time allocation, research indicates that adolescents' relationships with their parents influence their interactions with peers (e.g. Brown et al 1993). Indeed, adolescents bring many qualities to their peer relationships that develop early in life as a result of socialization experiences in the family. Studies find that adolescents from warm, supportive families are more socially competent and report more positive friendships (e.g. Lieberman et al 1999). Further, there is evidence that authoritative parenting lessens the effects of negative peer influences (Bogenschneider et al 1998, Mounts & Steinberg 1995). Research also suggests that adolescents without close friends are more influenced by families than peers, and that adolescents in less cohesive and less adaptive families are more influenced by peers than parents (Gauze et al 1996).

In examining the ways in which peers influence adolescent development, there are several important findings from recent work to consider. First, peers influence adolescents in both positive and negative ways. Peers influence academic achievement and prosocial behaviors (Mounts & Steinberg 1995, Wentzel & Caldwell 1997), as well as problem behaviors such as drug and alcohol use, cigarette smoking, and delinquency (Urberg et al 1997). Second, peers do not influence one another during adolescence through coercive pressures; most adolescents are influenced by peers because they admire them and respect their opinions (Susman et al 1994). Third, adolescents and their friends are often similar, but not simply because they influence each other (Hartup 1996). Adolescents choose friends with similar behaviors, attitudes, and identities (Akers et al 1998, Hogue & Steinberg 1995). Finally, susceptibility to peer influence is not uniform among adolescents. Factors such as adolescents' age, personality, socialization history, and perceptions of peers are all important to consider. Adolescents are most influenced by peers in middle adolescence, compared to early and late adolescence (Brown 1990). Research also suggests that peer contact may only predict problem behavior among adolescents who have a history of externalizing problems (Pettit et al 1999).

Prior to Brown's seminal work on adolescent peer groups (Brown et al 1994), most researchers assumed that the key distinction between peer crowds and cliques was in their size. Brown pointed out, however, that crowds and cliques are different from each other in structure and function. Crowds emerge during early adolescence and are large collections of peers defined by reputations and stereotypes (e.g. jocks, nerds, brains, populars, druggies). Crowds place adolescents in a social network and contribute to identity development by influencing the ways in which adolescents view themselves and others. They influence adolescents' behavior by establishing norms for their members (Susman et al 1994). Crowds affect adolescents' self-esteem as well, and adolescents feel better about themselves when they are a member of a crowd with higher status (Brown & Lohr 1987). There is some evidence that crowds divide across ethnic lines (Brown &

Mounts 1989), and that the meaning of crowd membership may differ across ethnic groups (Fordham & Ogbu 1986). Despite these cultural differences, however, for most adolescents crowds become less important, less hierarchical, and more permeable between middle and late adolescence (e.g. Gavin & Furman 1989).

Cliques are much smaller groups of peers that are based on friendship and shared activities. Members of a clique tend to be similar in terms of age, race, socioeconomic status, behaviors, and attitudes. Clique memberships seems to be somewhat stable over time in terms of the defining characteristics of the group (Hogue & Steinberg 1995), but there is evidence that actual membership is more fluid than was once believed, and that many adolescents are not members of a clique or may interact with more than one clique (Cairns et al 1995, Ennett & Bauman 1996, Urberg et al 1995). During middle adolescence, cliques change from being single-sexed to mixed-sexed, and in late adolescence cliques are often transformed into groups of dating couples (Brown 1990).

Little has changed over the past two decades in researchers' descriptions of popular and rejected adolescents. Popular adolescents have close friendships and tend to be friendly, humorous, and intelligent (e.g. Wentzel & Erdley 1993). In contrast, rejected adolescents are often aggressive, irritable, withdrawn, anxious, and socially awkward (e.g. Pope & Bierman 1999). It is important to distinguish among unpopular adolescents who are aggressive, withdrawn, or both aggressive and withdrawn, because the causes, correlates, and consequences of rejection differ across these groups. Aggressive adolescents are typically part of antisocial peer groups and are at risk for conduct problems (e.g. Underwood et al 1996). In contrast, rejected adolescents who are withdrawn tend to be lonely, have low self-esteem, and suffer from depression (e.g. Rubin et al 1995); aggressive-withdrawn teens display a range of psychological problems (e.g. Parkhurst & Asher 1992). Research also indicates that there are some adolescents who are aggressive and also popular, who are described by their peers as aggressive but "cool," and who are often athletic leaders (Rodkin et al 2000).

Some adolescents are not only unpopular, but are also victimized by their peers. Not surprisingly, peer victimization leads to the development of poor self-conceptions as well as internalizing and externalizing problems (Egan & Perry 1998, Graham & Juvonen 1998). Although adolescents who are victimized tend to have few friends (Hodges et al 1997), having a best friend or a friend who is strong and protective weakens the effects of victimization (Hodges et al 1999).

Despite the harmful effects of peer rejection and victimization, there is evidence that unpopular adolescents in middle school can become more popular and accepted in later adolescence, as adolescents become less rigid in their expectations for "normal" behavior and more tolerant of individual differences among their peers (Kinney 1993). Further, interventions designed to improve social competence and social skills have been found to improve adolescents' abilities to get along with peers (e.g. Kelly & de Arma 1989).

As children move into adolescence, friendships evolve into more intimate, supportive, communicative relationships (Buhrmester 1990, Levitt et al 1993). Close

friendships begin typically within same sex pairs, but as adolescents mature, many become intimate friends with members of the opposite sex, usually around the time that they start dating (Richards et al 1998). Social competencies such as initiating interactions, self-disclosure, and provision of support increase as preadolescents mature into early adolescents, and are related to quality of friendship (Buhrmester 1996). In general, during early adolescence friends begin to value loyalty and intimacy more, becoming more trusting and self-disclosing. There is some evidence that among girls, friendship intimacy is fostered by conversation, whereas among boys it is gained through shared activities (McNelles & Connolly 1999). Research also indicates that the tolerance of individuality between close friends increases with age, whereas friends' emphasis on control and conformity decreases (Shulman et al 1997).

One final note about the study of adolescents and their peers: Researchers interested in adolescent development have paid shockingly little attention to the nature and function of teenagers' romantic relationships, despite the well-documented fact that, by middle adolescence, most adolescents have had a boyfriend or girlfriend, and despite the well-founded suspicion that concerns over the presence, absence, and quality of romance in one's life are paramount during this age period (Steinberg 1999). There has been a modest increase recently in theoretical and conceptual writings on adolescent romance (e.g. Furman et al 1999), but this has not been matched by a comparable increase in systematic empirical research. When studies of romance during the second decade of life are to be found, they tend to focus on college undergraduates (e.g. Feldman & Cauffman 1999); seldom do they examine individuals at the beginning stages of experimentation with intimate, sexual relationships. We know virtually nothing about the ways in which romantic relationships change over the course of adolescence, about the antecedents of individual differences in romantic relationships in adolescence, or about the impact of romantic involvement on adolescents' mental health and well-being. This is an area much in need of empirical attention.

NEW DIRECTIONS DURING THE PAST DECADE

A decade ago, Dornbusch, Hetherington, and Petersen—at the time the incoming, current, and outgoing Presidents of the Society for Research on Adolescence, respectively—published an article that described the state of the scientific literature on adolescence and suggested some future directions for the field (1991). In retrospect, this article was either remarkably influential or remarkably prescient, because much of what these three scholars recommended, in fact, came to be. Two of their suggestions, in particular, were dominant themes in the study of adolescence during the 1990s: an increased focus on diverse populations of adolescents (and especially on ethnic diversity within North America) and an increased concern for the context in which contemporary adolescents come of age. Additional foci that reflected new, or at least substantially enhanced, interest were studies

of behavior genetics in populations of adolescents and studies of adolescents and their siblings.

Increasing Focus on Diverse Populations

Calls for the research community to expand its focus beyond population of white, middle-class, and suburban teenagers were heeded by many during the past decade. Although there is certainly a long distance to travel before we can say that our knowledge about nonwhite and poor youth is as well-developed as our knowledge about their white and affluent counterparts, there is no question that the field made significant progress in closing this knowledge gap.

Despite broad agreement among social scientists that the field can no longer ignore the ethnic and socioeconomic diversity of the adolescent population, however, many issues remain unresolved about how best to incorporate these factors into empirical research (see McLoyd & Steinberg 1998). First, much of the focus in research on ethnic-minority and poor youth continues to overemphasize problematic aspects of adolescence (e.g. drug use, delinquency, nonmarital pregnancy, school failure, unemployment) and underemphasize the study of normative development within these populations. Whereas it is true that a disproportionate share of many social problems touch the lives of poor and nonwhite youth, the majority of adolescents from these backgrounds develop in psychologically healthy ways, and it makes little sense to focus the study of these youth on adolescent malady.

Second, there is little agreement about the guiding principles or theoretical frameworks that would best advance the knowledge base about the development of ethnic-minority and poor youth (McLoyd & Steinberg 1998). Among the issues that have been discussed are the use and misuse of comparative models; whether constructs and measures are equivalent across different study samples; the relative importance of qualitative versus quantitative methods in studies of different subgroups of youth; and the difficulties one encounters in disentangling the effects of race, ethnicity, immigration status, and social class. Furthermore, much of the work that incorporates diversity into its research designs is not developmental in nature.

Third, the growth of interest in the study of diversity has been disproportionately focused on studies of Black adolescents. Far less is known about normative and atypical development among Hispanic and Asian youth, and virtually nothing is known about Native American adolescents. Moreover, researchers have tended to blur important distinctions within the broad categories of ethnicity typically used in research on adolescents, ignoring differences among, for example, Korean, Vietnamese, and Indian youth (all typically classified as Asian), among Mexican, Puerto Rican, and Cuban youth (all typically classified as Hispanic), or among adolescents who are recent immigrants versus their peers who are not (but see, for example, Feldman et al 1992 and Fuligni 1997 for research on adolescents from immigrant families; and Greenberger & Chen 1996 for more nuanced approaches to the study of ethnic differences among Asian and Asian-American youth). This

is all by way of saying that, whereas the 1990s marked a very good beginning in the study of diversity and adolescent development, there remain many important unstudied and understudied issues that warrant concerted research attention.

Understanding Adolescent Development in Context

Accompanying the move toward incorporating diversity into research on adolescents has been an increased interest in studying adolescent development in context. Whereas most research on adolescent development prior to the mid 1980s focused on describing individual development and functioning (e.g. logical thinking, identity development, moral reasoning, self-esteem, sexual attitudes and values, psychosocial maturity), there was a pronounced shift toward studying the contexts in which these developments take place, including the family and peer group, but also schools (e.g. Eccles & Midgely 1993) and the workplace (e.g. Mortimer et al 1996, Steinberg et al 1993). It is beyond the scope of this review to summarize the major substantive findings to emerge within such a vast literature as adolescent development in context. Rather, we point to several broad trends that deserve comment.

The first was a move away from a global conceptualization of context toward a perspective that attempts to draw finer distinctions within settings and identify the specific dimensions of context that are most important. Many scholars began to abandon the social address model of context, in which individuals are sorted into groups defined by structural variables, such as household composition (e.g. married versus divorced), peer crowd (e.g. jocks versus brains), school organization (e.g. middle school versus junior high school), and employment status (working versus not working). Instead, researchers began to identify the most important mediating processes and variables that accounted for differences between structurally-defined groups, e.g. parent-adolescent conflict in intact versus divorced homes (Hetherington & Stanley-Hagan 1995), differences in peer crowds' values regarding academic achievement (Brown 1990), the developmental appropriateness of different school organizations (Eccles & Barber 1999), and hours per week of employment (Steinberg et al 1993).

A second important development was the expansion of contextual research to include studies of neighborhoods and communities. Several large-scale research programs were launched in this area, many stimulated by the work of Coleman on functional communities (Coleman & Hoffer 1987). Generally speaking, three types of questions were asked by community researchers. First, are there direct effects of community variables on adolescent development—that is, effects of neighborhoods that are over and above those of families, schools, or peer groups (e.g. Sampson 1997)? Second, are there indirect effects of communities on adolescent development—effects that are mediated through the impact of communities on families, schools, and peer groups (e.g. Furstenberg et al 1999)? Finally, do communities moderate the impact of other settings on adolescents' development—for example, do certain parenting practices affect adolescents differently in different

sorts of neighborhoods (e.g. Darling & Steinberg 1997)? Although more research is needed, it appears that the answers to these questions vary considerably as a function of the outcome variable assessed and the way in which "neighborhood" is operationalized.

A third noteworthy trend was the broadening of studies of single contexts examined independently to studies of the interplay between multiple settings. Thus, a growing number of studies appeared that examined the family-peer group nexus (e.g. Brown et al 1993, Fuligni & Eccles 1993); links between the home and school environments (e.g. Eccles & Flanagan 1996) or between school and work (Steinberg et al 1993); the interplay between peer groups and schools (e.g. Fordham & Ogbu 1986); and interconnections among home, peer group, school, and community (Steinberg et al 1992). Several studies also looked at the interplay among hierarchically-ordered (e.g. "nested") settings, in an effort to examine how variations in a larger context (e.g. the community) moderate the influence of a smaller context contained within its sphere (e.g. the family) (e.g. Furstenberg et al 1999).

Behavioral Genetics

Growing interest in understanding the joint influence of biology and environment on adolescent development led to an increase in behavioral genetics research in recent years focused specifically on adolescents and their families. Most of this work has employed an additive statistical model, where the variance of a psychological or interpersonal characteristic is partitioned among three components: genetic influences, shared environmental influences (i.e. facets of the environment that family members, such as siblings, share in common), and nonshared environmental influences (i.e. facets of the environment that family members do not share in common; Plomin & Daniels 1987). Research over that past decade indicates that both genetic and nonshared environmental influences, such as parental differential treatment, peer relations, and school experiences, are particularly strong in adolescence. Shared environmental factors, such as socioeconomic status, neighborhood quality, and parental psychopathology, are less influential (e.g. McGue et al 1996, Pike et al 1996).

Genetic factors strongly influence aggression, antisocial behavior, and delinquency. Evidence suggests that aggressive behavior is more biologically driven than other behaviors, although shared and nonshared influences on adolescents' externalizing behaviors, including aggression, also have been found (Deater-Deckard & Plomin 1999, Jacobson & Rowe 1999). Genetic factors also have been linked to internalizing problems in adolescence, such as risk for suicide and depressed mood (Blumenthal & Kupfer 1988, Jacobson & Rowe 1999). Interestingly, sex differences in heritability estimates for adolescent adjustment indicate that female adolescents may be more influenced by genetic factors compared with male adolescents, with respect to both internalizing and externalizing problems. Rowe and colleagues (1992), for example, found no nonshared environmental influences on adolescent delinquency among sister-sister or sister-brother pairs. However,

they found that, among pairs of brothers, delinquent behaviors are significantly influenced by nonshared environmental factors.

Research also has found strong genetic influences on adolescent competence, self-image, and intelligence. Adolescents' self-perceptions of scholastic competence, athletic competence, physical appearance, social competence, and general self-worth are highly heritable, with little evidence for shared environmental influences (McGuire et al 1994, 1999). Intelligence in adolescence (as indexed by IQ) is also under strong genetic control, with genetic influences compounding over time and becoming more influential than the family environment (Loehlin et al 1989). Parental education moderates the heritability of IQ, however, with genetic influences being stronger in families with highly-educated parents, consistent with the general notion that heritablities are generally higher in more favorable environments (Rowe et al 1999).

One of the most important findings to emerge in recent years is that assessments of the adolescent's family environment via adolescent or parent reports—measures previously presumed to assess the environment—may also reflect features of the adolescent's and parents' genetic make-up (which affect the ways in which individuals perceive and describe their family situations) (Plomin et al 1994). Actual and reported levels of conflict, support, and involvement in the family are significantly influenced by adolescents' genetic make-up (Neiderhiser et al 1999), in part because adolescents who display hostile and antisocial behaviors are more likely than adolescents not prone to these problems to illicit negative behaviors from their parents (Ge et al 1996a). Genetic influences on family relations become even more pronounced as adolescents mature, perhaps because older adolescents have more influence in family relationships (Elkins et al 1997).

There is also growing evidence that some of the impact of parenting on adolescent adjustment, depression, and antisocial behavior can be explained to a large extent by genetic transmission (Neiderhiser et al 1999). It is important to note, however, that a good deal of research indicates that most psychological traits and behaviors in adolescence are influenced by both nature and nurture and that, within the domain of environmental influence, it is the nonshared component of the environment that is most influential (Plomin & Daniels 1987); on average, features of the family environment that siblings share explain only 5%–10% of the variance in psychological behaviors and attitudes (Collins et al 2000). However, research also indicates that variance in the family climate (as opposed to the adolescent behavior or personality) across sibling and parent-adolescent relationships is explained more by shared than nonshared influences (Bussell et al 1999).

As noted earlier, however, many scholars find fault with some of the research methods involved in behavior genetics for several reasons (for more extensive reviews of problems with behavior genetics research designs see Collins et al 2000, Stoolmiller 1999, Turkheimer & Waldron 2000). First, behavior genetics research is nondevelopmental and does not address individual development or malleability (Gottleib 1995). Second, studies examining behavior genetics typically allow for main effects only and ignore the possibility that genes may function differently in

different environments, or that genetic and environmental influences are typically correlated (Collins et al 2000). Third, the largest effects for environmental influences on development are found in studies that employ observational methods, yet most research on behavior genetics in adolescence relies on parental and adolescent self-report (Collins et al 2000). Finally, estimates of nonshared environmental influences may be inflated because objectively shared events may have different effects on siblings, resulting in a shared event contributing to nonshared variance (Turkheimer & Waldron 2000).

Adolescents and Their Siblings

During the past 10 years, research on adolescence and the family moved beyond its traditional focus on the parent-adolescent relationship to also include studies of the family system (Rueter & Conger 1995), the extended family (e.g. Clingempeel et al 1992, Spieker & Bensley 1994), and siblings. Of these areas of study, there was a particular surge of interest in sibling relationships and the ways in which siblings influence adolescent development.

The sibling relationship in adolescence is an emotionally charged one, marked by conflict and rivalry, but also nurturance and social support (Lempers & Clark-Lempers 1992). As children mature from childhood to early adolescence, sibling conflict increases (Brody et al 1994), with adolescents reporting more negativity in their sibling relationships compared to their relationships with peers (Buhrmester & Furman 1990). High levels of conflict in early adolescence gradually diminish as adolescents move into middle and late adolescence. As siblings mature, relations become more egalitarian and supportive, and as with the parent-adolescent relationship, siblings become less influential as adolescents expand their relations outside the family (Hetherington et al 1999).

Several researchers have uncovered important interconnections among parent-child, sibling, and peer relationships in adolescence. A considerable amount of research indicates that the quality of the parent-adolescent relationship influences the quality of relations among adolescent brothers and sisters (e.g. Brody et al 1994). Harmony and cohesiveness in the parent-adolescent relationship are associated with less sibling conflict and a more positive sibling relationship (e.g. Jodl et al 1999). In contrast, adolescents who experience maternal rejection and negativity are more likely to display aggression with both siblings and peers (MacKinnon-Lewis et al 1997). By the same token, children and adolescents learn much about social relationships from sibling interactions, and they bring this knowledge and experience to friendships outside the family. The end result of these interconnections is that adolescents' relations with siblings are similar to their relations with parents and peers.

The quality of the sibling relationship affects not only adolescents' peer relations, but their adjustment in general (Seginer 1998). Positive sibling relationships contribute to adolescent school competence, sociability, autonomy, and self-worth (e.g. Jodl et al 1999). At the same time, siblings can influence the development of

problem behavior (Conger et al 1997). For example, younger sisters of childbearing adolescents are more likely to engage in early sexual activity and to become pregnant during adolescence (e.g. East 1996). Siblings also influence each other's drug use and antisocial behavior (e.g. Rowe et al 1989).

Another important area of research on adolescent siblings in recent years has focused on parents' differential treatment of their children. Parents treat siblings differently because of differences in siblings' ages, personalities, and temperament. Unequal treatment from mothers or fathers can create more conflict among siblings (Brody et al 1987) and is linked to problem behaviors, such as depression and antisocial behavior (Reiss et al 1995). Differential parental closeness and warmth is also associated with psychological adjustment in adolescence (Anderson et al 1994). Despite this evidence for differential treatment and its influence on adolescent development, adolescents report that 75% of parental treatment is not differential, and when treatment is differential it is usually perceived by adolescents as fair and justified, either because of the situation, or because of the other sibling's age or personality (Kowal & Kramer 1997).

CONCLUSIONS AND FUTURE DIRECTIONS

Knowledge about psychological development and functioning during adolescence continued to expand during the past decade at a rapid pace. Although many of the foci of recent research have been familiar ones—problem behavior, puberty, parent-adolescent relations, the development of the self, and peer relations—new themes and guiding frameworks transformed the research landscape. Compared with studies conducted prior to the mid 1980s, recent research was more contextual, inclusive, and cognizant of the interplay between genetic and environmental influences on development.

Although we commend these shifts in perspective, it is reasonable to ask what happened to research on the psychological development of the individual adolescent amidst all of this focus on context, diversity, and biology. The study of psychosocial development—the study of identity, autonomy, intimacy, and so forth—once a central focus of research on adolescence, waned considerably, as researchers turned their attention to contextual influences on behavior and functioning and to the study of individual differences. The study of cognitive development in adolescence has been moribund for some time now, replaced by studies of adolescent decision-making and judgment (e.g. Cauffman & Steinberg 2000, Fischhoff 1988). The study of physical development has progressed little beyond tracking youngsters through Tanner's well-worn stages of the development of secondary sex characteristics. No comprehensive theories of normative adolescent development have emerged to fill the voids created by the declining influence of Freud, Erikson, and Piaget. Instead, the study of adolescence has come to be organized around a collection of "mini-theories"—frameworks designed to explain only small pieces of the larger puzzle. As a consequence, although the field of adolescence research

is certainly much bigger now than before, it is less coherent and, in a sense, less developmental than it had been in the past.

Shifts in emphasis and changes in perspective are both natural and healthy for a field. But there is now a need for new, longitudinal research on normative psychosocial, cognitive, and biological development during the second decade of life that builds on recent findings on the context of adolescence, charts new territory, and takes advantage of methodological and technological innovations in the study of brain, biology, and behavior. The application of recent advances in our understanding and assessment of neuropsychological functioning, brain growth and development, neuroendocrine functioning, and the biological bases of emotion, cognition, and social relationships (e.g. Damasio 1999, Nelson & Bloom 1997) has yet to occur in the study of adolescence. Such a foundation holds great promise for the development of a comprehensive theory of normative and atypical adolescent development that takes advantage of the period's remarkable potential as an arena for research that integrates biology, context, and psychological development. In our view, it this sort of integrative, interdisciplinary work that should be the focus of the next decade of research on development during adolescence.

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