Psychosocial Development and Puberty

MARY B. SHORT[a] **AND SUSAN L. ROSENTHAL**[b]

[a]*Department of Psychology, University of Houston–Clear Lake, Houston, Texas, USA*

[b]*Department of Pediatrics and Sealy Center for Vaccine Development, University of Texas Medical Branch, Galveston, Texas, USA*

The context of adolescent development in which puberty occurs is briefly reviewed, along with the psychosocial impact on timing of puberty, girls' perception of puberty, and the impact of puberty on relationships with parents and on psychological health. This information can be integrated into clinical practice in order to provide the best care for adolescents, but, first, access to confidential and comprehensive care must be available.

Key words: **psychosocial; puberty; adolescent development; pubertal maturation; adolescence; adolescent; cognitive development; parent; menarche; emotional disorder**

Introduction

Pubertal maturation is typically determined by the sequence of events, the timing of events, and the tempo or rate of progression of changes.[1] When examining the relationship between psychosocial development and puberty, research has typically focused on the timing of puberty and often on those girls with early pubertal development. Clearly, there are the psychological implications for girls experiencing precocious puberty (i.e., puberty occurring extremely early and which is driven by a pathologic process), but that is beyond the scope of this chapter. Here we provide a brief review of the context of adolescent development in which puberty occurs, the psychosocial impact on timing of puberty, girls' perception of puberty, the impact of puberty on relationships with parents and on psychological health. Finally, we provide some thoughts about how to integrate this information into clinical practice.

Brief Review of Adolescent Development

Adolescence is the transitional period between childhood and adulthood, and is the period in which young people develop the skills which allow them to lead responsible adult lives. Although the period of adolescence may be defined as beginning with puberty and ending with attainment of adult work and family roles,[2] it has become simpler to define adolescence as the second decade of life.[3] It is also typical to divide adolescence into three phases: early (10–14 years of age), middle (15–17 years), and late adolescence (18–20 years). The ages of these phases are somewhat arbitrary, but the phases have distinct aspects. Early adolescence is characterized by the onset of puberty and the transition from childhood to adolescence.[4] For the purposes of this paper, we will use the onset of puberty and first menses relatively synonymously. While we recognize that this is not biologically accurate, this is how most girls and their mothers view the transition into being a "young woman." Early adolescence also frequently includes a change from elementary school to middle or junior high school. Middle adolescents fit the usual stereotype of the teenager. Adolescents' identification with their peer group increases, as does their preoccupation with activities associated with the peer group, such as wearing particular clothing, listening to the same music, or using similar language.[3] Late adolescence involves the transition into adult roles in work and relationships.

It is important to remember, however, that the developmental features typically associated with these age groupings represent very rough guidelines. Some of the differences across individuals may be culturally determined. For example, some young people marry, have children, and establish financial independence shortly after high school. Others delay financial independence and family roles until their thirties, when they have completed professional

Address for correspondence: Mary Short, Ph.D., 2700 Bay Area Blvd.; Houston, TX 77058. Voice: 281-283-3324.
shortmb@uhcl.edu

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training; while yet others have children, may or may not marry, and then pursue educational and occupational goals once their children are older. In addition to these differences between individuals, there are intra-individual differences across areas. For example, early-developing girls do not necessarily demonstrate more advanced cognitive and social development.[4] Given these asynchronies across areas and individuals, it is incumbent on health care professionals to consider the context of the particular girls' life and to be sensitive to her biological, cognitive, and social stages of development.

Although the day-to-day nature of parent–child relationships changes across adolescence, parents remain a significant influence in their adolescent's life and decision-making. For example, as adolescents practice their increased decision-making skills, they argue more frequently with their parents, but remain emotionally close. Other ways in which the day-to-day relationship with parents change include decreases in the amount of time spent with parents, and parental involvement in decision-making, particularly around issues such as clothing and hair styles. Research has demonstrated that a parenting style that is characterized by developmentally appropriate limit-setting and supervision in the context of a warm and supportive relationship (i.e., authoritative parenting) is associated with the greatest psychosocial health.[5] A key is for the limit-setting and supervision to be developmentally appropriate—for example, parents move from supervision through direct physical presence to supervision through knowledge and they allow their adolescents to have increasing autonomy as their cognitive abilities and experiences increase. Although parents remain important throughout this entire period, peers and romantic partners play an increasing role in socialization.[6] As adolescents age, they begin spending more time with peers, and peers start to have more influence in adolescents' lives, and these friendship seem to help adolescents adjust to their ever-changing lives.[7,8]

Psychosocial Impact on the Timing of Puberty

Research has consistently demonstrated that the psychological context of the girl can influence the timing of puberty beyond the contribution from heredity and health status.[9] However, although studies find that the psychosocial environment can produce *statistically* significant differences in age of menarche, these differences range from 2 to 8 months.[10,11] It is unknown how much earlier puberty needs to occur for it to be clinically meaningful for the girl and her family, and to the best of our knowledge, this has not been studied.

High levels of family conflict, divorce, negative parenting, absent fathers, and emotional distance appear to be related to an earlier age of the onset of menarche.[10–16] These studies differ in the measures used and the timing of the assessment (i.e., as adolescents or retrospective reports), resulting in slightly different specific findings across studies and within studies. For example, one study found that the adolescent's perception of marital conflict did not predict early age of menarche, but parental reports of overt marital conflict did.[11] The focus has been on negative qualities within families, but perhaps it would be beneficial to examine protective effects. For example, one study found that girls who have fathers in the home and parents who are supportive and affectionate have a later onset of puberty.[17]

In addition to the family environment, a history of child sexual and physical abuse has been shown to be associated with the early onset of menarche. Overall, the research supports that girls who have a history of child sexual abuse have an increased chance of experiencing menarche early.[15,18,19] However, there are differences across studies as to which variables of the abuse (type and duration) have an impact on the timing of menarche. Further, one study found that severe physical abuse was associated with early menarche,[15] but another found no association with physical abuse.[16] Only one study measured duration of abuse and it found that when the sexual abuse occurred for more than 12 months, then were the girls more likely to experiencing menarche early.[15]

A challenge has been to examine the relative contribution of potential stressors and whether multiple stressors have a greater impact than a single one. For example, the study that examined sexual abuse and father absence found that father absence was more important than sexual abuse in the likelihood that the girl had early pubertal development.[15] However, the research is not conclusive regarding which stressors are more important and, to date, there is little information regarding what factors might be protective for a girl should she experience an isolated stressor. With regard to additive effects, another study examined the impact of the number of stressors, some of which had no relationship to timing of puberty in bivariate models. This study found that girls who had two risk factors (overweight, behavioral problems, family conflict, and father absence) had menarche an average of 2 months earlier; whereas, girls who had all four risk factors had menarche an average of 8 months earlier.[10] This suggests that a higher number of stressors are likely

to leave the girl vulnerable to an even earlier age of menarche.

Girls' Perceptions of Puberty

The available data suggest that girls initially experience menarche negatively, and this may be particularly true for early-developing girls.[20–26] These negative emotions can include embarrassment, shame, fear, shock, confusion, and misery; however, some girls described feeling happy, proud, relieved, and excited.[26] Research has shown that the more prepared and knowledgeable a girl is when beginning pubertal maturation, the more likely she will have a positive initial experience.[21–24] However, the content of the preparation is important. For example, one study found that when parents included information about the risk of adverse outcomes (such as the risk of mistimed pregnancy), girls had more negative feelings, including fear, shame, and dysfunction.[25] Girls also may benefit more from information that prepares them for the practical aspects of managing menses as compared to the biological mechanisms underlying menstruation.[26] Clearly, more information is needed as to how to best prepare young girls so that they embrace these changes in a positive and celebratory manner.

Puberty and Relationships with Parents

Most of the research on adolescents and their relationship with their parents do not relate the changes during adolescence to the onset of puberty. Clearly, one can assume that some of the struggles that occur between parent and adolescent are related to the adolescents' increased interest in romantic relationships and concerns about the adverse outcomes (violence, sexually transmitted infections, pregnancy). In fact, it has been shown that it is the onset of puberty rather than the timing of puberty that is associated with decreased closeness with parents, more intense and more frequent conflict with mothers, deceased number of calm discussions with mothers, and more rejection from mothers.[16,27,28] Other studies have looked specifically at the parent–adolescent relationships of early-maturing girls. These studies found that early-developing girls, when compared to "on-time girls," have more conflict with parents, engage in less communication with their parents, and when they do communicate, the conversations are "more heated."[14,16,27–29]

Impact of Puberty on Girls' Psychological Functioning

Although the adolescent time period is associated with the need for the young girl to manage rapid changes in many areas, most adolescents are leading healthy, productive lives even if their parents find them challenging at times. One area of change that places an adolescent girl at increased risk for psychological difficulties is the early onset of puberty. Overall, the early onset of puberty is associated with increased emotional/psychological problems, aggression/delinquency, substance use, and sexual risk-taking behavior. The mechanism for these relationships is complicated and multi-factorial. One important mechanism is the social environment. Early-maturing girls may associate with older and more-deviant peers,[30,31] either because they feel more accepted by those peers or those peers assume these girls are older and then initiate them into deviant behaviors. The girls may begin to adopt those deviant behaviors, which are reinforced and maintained by the older peer group. These relationships may also be associated with more frequent trips to places such as clubs, which present girls with opportunities to engage in age-inappropriate behavior.[6,32] With regard to the sexual risk-taking seen among early-maturing girls, an additional mechanism may be the increased sexual interest associated with the onset of puberty.[33]

Emotional Disorders

There is some suggestion that for all girls, the onset of puberty is associated with increased risk of depressive symptoms, regardless of the timing of puberty.[34] In fact, girls have more depressive symptoms than boys do, and these symptoms increase after 13 years of age.[34–36] However, one study examining pubertal status, age, and pubertal timing found that timing of puberty was important, with early-maturing girls having more depressive symptoms than on-time or late-maturing girls.[37] This is consistent with a body of literature, which suggests that compared to on-time or late-maturing girls, early-maturing girls are at risk for a variety of psychiatric disorders (e.g., depression, anxiety, eating disorders), self-harm behaviors, and minor symptoms related to distress, anxiety, or depression.[34,35,37–45]

In general, as girls go through puberty, they are at risk for being dissatisfied and preoccupied with their bodies.[46–48] Early-maturing girls are particularly vulnerable and exhibit problematic body image and eating, such as negative feelings related to body image,[47]

body dissatisfaction,[49] and more bulimia pathology[50] than on-time girls or late-maturing girls.

Behavioral Problems

Early-maturing girls have higher levels of aggression, conduct disorders, and delinquent behaviors than those peers who developed on-time.[51–54] The impact of the timing of puberty interacts with the girls' genetic risk and environment. For example, although the development of conduct disorders has a high genetic component for girls with on-time development (67% of the variance), genetics play a minimal role for girls with early maturation (8% of the variance).[51] Another study, which examined girls with or without behavioral problems prior to the onset of puberty, found that early maturation accentuated the pre-existing behavioral problems. For on-time girls, a previous history of behavioral problems predicted later behavioral problems, although it may be that being a late-maturer was protective.[52] Similar effects are found for environmental influences.[37,54] For example, early-maturing girls have more associations with deviant peers, but those who are early maturing and from a highly disadvantaged neighborhood have more deviant peer associations then their early-maturing peers from less-disadvantaged neighborhoods. For those who are late maturing, no such effect is found. In fact, those from the highly disadvantaged neighborhoods have less association with deviant peers than their late-maturing peers from less-disadvantaged neighborhoods. The same study found similar findings for the impact of harsh and inconsistent parenting. Although there was a main effect for the relationship of pubertal timing on externalizing behavioral symptoms, early-maturing girls with parents who had high levels of harsh and inconsistent parenting exhibit even a greater number of behavioral symptoms than do other early-maturing girls, but this was not true for the late-maturing girls.[37]

Substance Use

Studies have found that early maturation is associated with an early onset of substance use, a more rapid progression through the stages of substance use, and a greater likelihood of substance abuse.[55,56–62] Early maturation appears to play a role beyond the impact of environment or psychological health. A study of twins who were discordant for pubertal timing found that the early-maturing sister was more likely to be using substances,[57] and another study found that although adolescents who were emotionally distressed were more likely to use substances, early maturation contributed independently to the likelihood of using substances.[61] In addition to the impact of timing of puberty, it is possible that the tempo of puberty may have a minor influence on substance use behavior. Those girls with the fastest rates of pubertal progression were younger when they started drinking heavily, but the rate of progression was not related to the age of initiation of alcohol or cigarette use.[63]

Sexual Behavior

The onset of puberty leads to an interest in the exploration of sexual feelings and behaviors. Most adolescents engage in some sexual behavior, which can range from kissing to sexual intercourse; approximately 63% of teens have engaged in sexual intercourse by the time they graduate from high school.[64] Many adolescents do this in the context of a romantic relationship and make healthy decisions (e.g., 63% of these sexually active adolescents used a condom at last intercourse).[64] However, an unfortunate number of adolescents have multiple partners and/or fail to protect themselves from unintended pregnancy or from sexually transmitted infections.

Research has consistently shown that early-maturing girls are likely to have an earlier age of sexual initiation.[55,64] In part, this may be due to increased opportunities; they have earlier first romantic relationships, have more boyfriends and older boyfriends, engage in more sexual activity, and have more unsupervised outings with boys.[14,58,65,66] Further, they may experience pressure from older boys to engage in sexual activity, which they may not have skills to manage. An earlier sexual initiation is associated with riskier sexual behaviors, including a greater number of partners, poor partner selection (i.e., abusive partners), decreased likelihood of condom use at first intercourse, and increased risk of pregnancy and acquisition of sexually transmitted infections (STIs).[55,67–70]

Implications

All girls go through pubertal changes, although with different timing and tempo. While the onset of puberty and menses can be a cause for celebration, it is sometimes viewed negatively. Parental preparation and positive attitude for these events has been shown to be associated with more positive reactions to puberty, and health care providers could prepare both parents and girls to view these events as natural and health-affirming. The content of the conversations is important, and although parents may view this as a reproductive event with the possibility of an adverse outcome, this is likely not the best frame in which to discuss puberty. Girls would benefit from discussions

about what to expect, and how to handle the feelings and behaviors that might be associated with these changes. In addition, direct discussions regarding sexuality and body image should focus on encouraging the girl to feel positively about her changing shape and the sexual feelings she may be experiencing. Parents should be encouraged to process their emotional reactions to their daughters' sexual maturity and ways to balance adequate guidance with the promotion of increased autonomy. In addition, it may be helpful to reassure parents that the increased arguing with their teen does not necessarily mean she does not value or consider their views.

Girls who experience early maturation and their families will need special attention from their health care providers. It is not a foregone conclusion that these girls will have difficulty, and many go through adolescence without incident. Unfortunately, we know very little about the factors that protect the early-maturing girl; thus, it may be important to consider all at potential risk. This is particularly true if they have other genetic or social risks. Health care providers can provide anticipatory guidance which could also provide support for the girl and her family. It is important to discuss ways to manage the difference between the way they may appear to others and their current psychological and cognitive abilities and interests. This should also include discussions of sexual coercion and ways to prevent and manage those situations. For parents, this includes making sure that they continue to provide supervision and restrict the time spent with older peers in age-inappropriate settings.

In order to provide the best care to adolescents, they must have access to confidential and comprehensive care. Without this access, adolescents may not share the needed information that allows their health care provider to afford them the highest level of care. By the same token, parents may need their own opportunity to discuss this challenging period of development. Although it is easy to focus on all of the potential problems an adolescent can exhibit, particularly an early-maturing one, the maturational process also is associated with many opportunities for growth and success.

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Conflicts of Interest

The authors declare no conflicts of interest.

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