Adolescent Sexuality and Sexual Behavior

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This chapter presents a theoretical framework that incorporates eight significant factors that have been associated with adolescent sexuality and sexual behaviors. Specifically, we discuss genetics, antenatal experiences, gender, parents, siblings, peers, partners, and neighborhood and cultural influences. Next, we provide an overview of the developmental trajectory of sexual behavior during adolescence. We also highlight the role of media in influencing adolescent sexual behavior. We then review psychosexual development and four dimensions of adolescent sexual self-concept (i.e., sexual self-esteem, sexual openness, sexual ambivalence, sexual anxiety). Finally, our chapter concludes with a discussion of adolescent sexual health and the limits of our current sexual health curriculum.

Adolescent Sexuality and Sexual Behavior

Adolescence represents a sociosexual developmental period through which sexuality and sexual behavior initiates, develops, and matures. Adolescence is closely tied to the hormonal and physical changes of puberty (Graber, Nichols, & Brooks-Gunn, 2010) in the context of ongoing neuropsychological brain development, achievement of adult body habitus, and an emerging autonomy from parents. Through use of a developmental approach, we present an overview of seven multifaceted factors that have been demonstrated to influence adolescent sexuality to varying degrees. These factors include genetic, antenatal, family, peer, partner, gender, and cultural influences. This chapter also highlights the relative impact of these factors on sexual behaviors, psychosexual development, sexual self-concept, and sexual health during adolescence.

A Theoretical Framework for Understanding Sexuality and Sexual Behavior in Adolescence

Our general theoretical perspective is that adolescent sexual behaviors are microsocial events organized as subjective and situational experiences. These events occur within the context of specific interpersonal relationships and are represented by fixed psychological and social features related to developmental life-stage, gender, sexuality, and interpersonal relationships. Because sexual behavior is a repetitively enacted experience, variations in motivation, context, affect, and outcomes may occur from event to event. Features of situations interact with cognitive, affective, and/or behavioral mediating elements, which create a typical response pattern. These features encompass the

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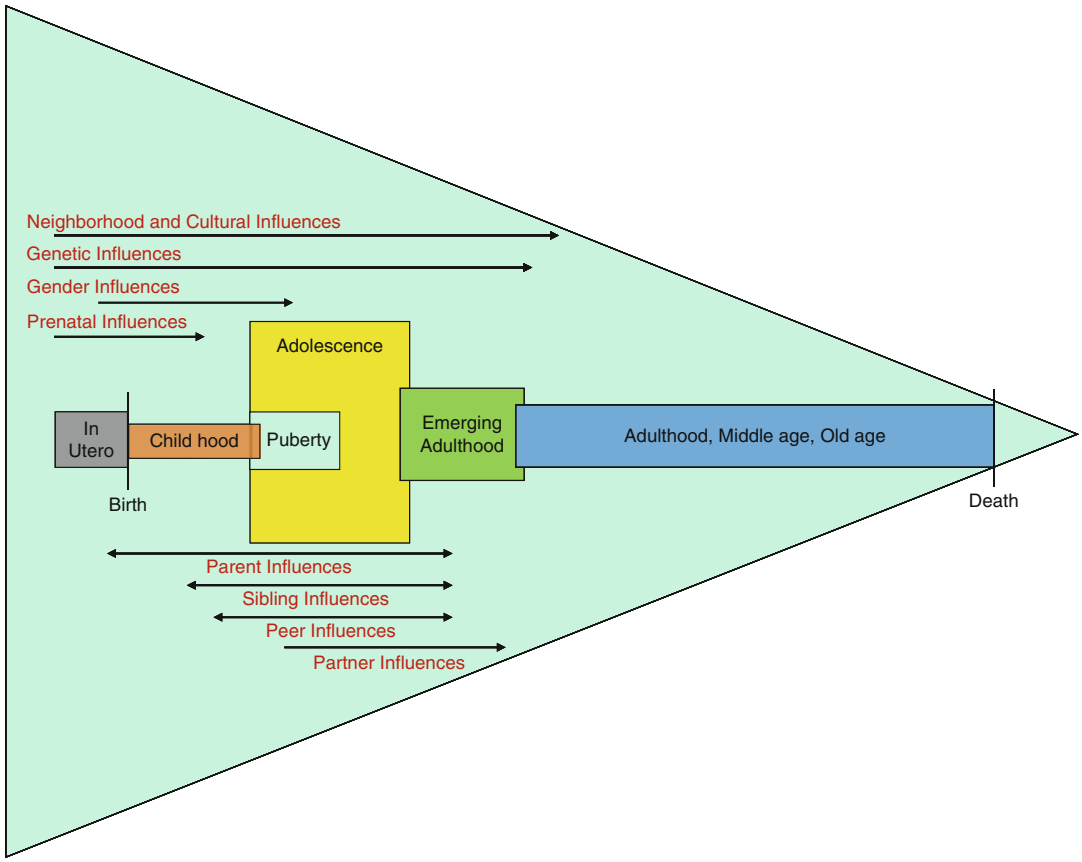

Fig. 1 Theoretical factors influencing adolescent development

social and interpersonal situation (i.e., a potential sexual event) as well as more variable circumstances such as mood and the everyday stream of experience and feeling. Sexual situations are rarely, if ever, entirely defined by sexual exchanges conducted without regard to cultural, social, or personal contexts. The affective and behavioral phenomena associated with dyad interactions and sexual situations thus do not occur randomly. Rather, meanings develop from social interactions with significant others and are modified through reflection and interpretation, which ultimately influences subsequent interactions. Simply stated, the combination of accrued learning, development of sexual expectations, and improved sexual skills throughout adolescence is the basis of adult sexuality (Fig. 1).

Genetic Influences

Genes influence various adolescent sexual behaviors including sexual abstinence, sexual initiation, and number of sexual partners. These influences also appear to be more significant for males (Mustanski, Viken, Kaprio, Winter, & Rose, 2007). For instance, Verweij and colleagues (2009) examined current risky sexual behaviors in adults and retrospective misconduct during adolescence and discovered that genetics accounted for approximately one-third of the variance in understanding risky sexual behaviors among late adolescent and adult twins. In addition, gender trends were observed such that shared environmental factors seemed to be more significant in the relationship between adolescent

misconduct and risky sexual behaviors for females, while genetic influences were more significant for males (Verweij, Zietsch, Bailey, & Martin, 2009). In another study, researchers discovered a much closer relationship in the timing of sex among identical twins as compared to fraternal twins. For example, the probability of first sex was approximately 30 % greater when an identical twin had initiated sex as compared to the twin being a virgin. This relationship was not observed among same-sex fraternal twins. Also, Asian American, European American, and Hispanic American adolescents who possessed a 3R allele of the dopamine receptor DRD4 gene were significantly more likely to have engaged in first sex. This relationship was not found among African American adolescents (Guo & Tong, 2006).

Gender nonconformity also seems to have a heritable quality for both males and females (Bailey, Dunne, & Martin, 2000). In fact, genes have been implicated in gender atypical behavior during childhood and later sexual orientation. Again, the relationship between genes and behavior appears stronger for males (Alanko et al., 2010). Significant skewing of X-chromosome inactivation has also been associated in mothers with gay sons. This relationship appears to be stronger among mothers with more than one son who identifies as homosexual (Bocklandt, Horvath, Vilain, & Hamer, 2006). Similarly, having more female relatives, such as aunts, is more prevalent in female-to-male transsexuals. This relationship has not yet been established in male-to-female transsexuals (Green & Keverne, 2000).

These studies suggest that genes are involved in adolescent sexual behaviors with early displays of genetic influences observed in gender atypical behavior during childhood. Variations in genetic influences have been observed among different ethnic groups and among males. Moreover, genes appear to be implicated in the development of sexual orientation to some degree. All the same, it is likely that a combination of genetic and non-shared environmental factors influence adolescent sexual behaviors.

Antenatal Influences

Variation in adolescent development of sexual identity and sexual behaviors has been consistently highlighted within research investigating congenital adrenal hyperplasia (CAH). In fact, substantial understanding of the influence of congenital hormone anomalies on gender identity, sexual orientation, and sexual interest has emerged during the past 30 years. In attempting to understand variation in adolescent development of sexual identity and sexual behaviors, examining research of CAH is particularly illustrative. CAH occurs as a result of a variety of intra-uterine sex hormone exposure, via fetal or maternal sources. Specifically, key enzymes involved in the synthesis of adrenal glucocorticoid hormones become mutated. These mutations render the enzyme partially or completely ineffective, leading to an excess of hormone intermediaries. These intermediaries may have potent effects on expressions of sexuality during adolescence or on genitals themselves (girls with CAH are born with an XX chromosome pattern but may be substantially virilized). The majority of women with CAH report different-sex (i.e., heterosexual) sexual orientation, although women with CAH are much more likely than unaffected women to express same-sex fantasies and behaviors (Cohen-Bendahan, van de Beek, & Berenbaum, 2005). Some studies show that young women with CAH do not differ from other women in terms of age at menarche, age of initiation of masturbation, age at first partnered sex, and age of first orgasm (Meyer-Bahlburg, Dolezal, Baker, & New, 2008). However, other studies suggest that women with CAH may be delayed in terms of onset of partnered sexual activity (Dittmann, Kappes, & Kappes, 1992).

Another illustration of potential antenatal influences on sexual orientation relates to the ratio of the lengths of the second and fourth fingers (2D:4D). Males typically develop a smaller 2D:4D ratio, presumably as an effect of intrauterine androgen exposure (Rahman & Wilson, 2003). This gender dimorphism becomes especially apparent during puberty

(Friedman & Downey, 2008). A substantial body of research has addressed 2D:4D ratio as a marker for sexual orientation. A recent meta-analysis of these studies confirmed the markedly lower 2D:4D ratio in males with different-sex orientation compared to females with different-sex orientation. Women with same-sex orientation have smaller (i.e., more masculine) 2D:4D ratios compared to women with different-sex orientations. However, no differences were noted in men with same- and different-sex orientations (Grimbos, Dawood, Burriss, Zucker, & Puts, 2010).

Overall, understanding potential antenatal influences on other characteristics of adolescent sexuality and sexual behavior, such as age at first coitus or preferred number of sexual partners, remains quite meager. Data are emerging to provide a more detailed understanding of antenatal hormonal effects on characteristics such as sexual orientation, but some of these data remain controversial. Additionally, very few studies have gathered prospective data from adolescents themselves. Thus, we still know little about the developmental experience of sexuality and sexual behaviors of various potential antenatal exposures as they unfold during adolescence.

Gender Influences

Gender differences in sexuality are often noticeable early in development and include behaviors such as preferences for sex-typed toys among boys and girls (Hassett, Siebert, & Wallen, 2008). It has been argued that these types of preferences occur at their earliest stages because young girls are programmed to seek objects that imply nurturance, while young boys are interested in objects that suggest movement or excitement (Alexander & Hines, 2002). However, these differences are also likely to occur within an environment that reinforces or punishes such behaviors. From early age, young boys and girls are treated differently by parents and peers for engaging in play behaviors that are deemed appropriate for their gender. Fathers tend to display more positive reactions to daughters and provide more negative feedback to boys playing with cross-gendered toys. On the other hand, mothers and peers exhibit more rewards for play with gendered toys and mothers tend to be more positive overall about their children's play (Langlois & Downs, 1980). Play preferences are a significant part of sexuality development, as it has been linked with later homosexual orientation (Alanko et al., 2010). Even when play behavior decreases, other gender differences still persist throughout adolescence.

In a study of middle and late adolescent women, researchers examined two qualities, relationship authenticity and body objectification, associated with feminist ideology. They discovered that young women who were less authentic in friendships and those who felt more negative about their body demonstrated less sexual self-efficacy or feelings of being in sexual control within their sexual relationship. Lower sexual self-efficacy was also predictive of less hormonal contraceptive use and greater use of condoms during first sex. Similarly, negative feelings about one's body were related to lower rates of condom use. The authors argued that being less authentic and feeling less positive about one's body may be associated with traditional feminine ideology and less perceived sexual control. Ironically, young women also tended to view aggression as a desirable quality in a potential partner (Impett, Schooler, & Tolman, 2006). This relationship might be due to the association that young men who display aggressive qualities may appear older or more distinctive (Bukowski, Sippola, & Newcomb, 2000).

Pleck and others (1993) examined the masculine ideology of middle and late adolescent men and discovered that young men who held more traditional views of romantic relationships viewed heterosexual relationships as more oppositional, believed that it was their partner's responsibility to prevent pregnancy, believed that getting a relationship partner pregnant is a vital part to being a man, endorsed more overall sexual partners, demonstrated a negative view of condoms, and used condoms less regularly (Pleck, Sonenstein, & Ku, 1993). In a more recent study, Giordano and colleagues (2006) found disparate results which indicated that young men expressed greater

feelings of awkwardness when communicating with a dating partner. Young men were also less confident within romantic relationships, although young men who engaged in sexual activity with their romantic partner felt more confident within their relationship. Participants also endorsed greater levels of attempted interpersonal influence and this influence increased throughout the length of the relationship. However, young men were less likely to view themselves positively with regard to having power within their relationship, as they endorsed actual influence deriving from their relationship partner (Giordano, Longmore, & Manning, 2006).

In a retrospective account of gender differences within partnered relationships, Morgan and Zurbriggen (2007) found that sexual gender roles are very prevalent among adolescents engaging in sexual intercourse. When recounting their first sexual experience during adolescence, adult women reported feeling pressured to engage in sex. Adult women also had beliefs that their male sexual partner ascribed to masculine values. Adult men recounted that their first female sexual partner wanted to set sexual boundaries. However, both men and women highlighted the significance of sexual negotiations within their first sexual encounter. This suggests that sexual negotiating is an important part of developing one's sexual identity and communicating within an adolescent sexual relationship.

Gender influences likely occur through a system of reinforcement and punishment from parents, family members, and peers. Adolescents appear to ascribe to specific gendered roles which are quite different for young men and young women. Young women in particular tend to report feeling pressured to engage in sex. Nonetheless, our understanding of these experiences appears to be more complex then early research in this area has suggested. That is, young men may be more aware of and in touch with the emotional component of sexuality than previous research has asserted. Young women may also be making partnering decisions with the intent of locating a more distinctive, aggressive partner, but may, in actuality, be increasing their probability of lowered sexual self-efficacy. Overall, adolescent pathways of gender development may be more similar than divergent for young men and young women. It is probable that both young men and young women have similar sexuality experiences, but they may experience very different reinforcement strategies from parents and peers. Accordingly, they may encounter a host of punishing behaviors if they do not display their sexual emotions and behaviors in a gendered-specific manner.

Parent Influences

Throughout childhood, parents play an increasing role in their children's lives. From managing their basic survival necessities, they also present morals, values, and messages regarding acceptable and appropriate sexual behavior. Parents who engage in open and responsive communication, tend to have adolescents with intentions to delay sexual activity for at least 1 year (Fasula & Miller, 2006). Whitaker and Miller (2000) also discovered that adolescents who had discussion with their parents about sex tended to initiate sex later and have fewer sexual partners. Additionally, parents who discussed condom use were more likely to have adolescents who had ever used condoms, had used condoms at their most recent sexual event, and who used condoms more consistently overall. Moreover, they found that adolescents who communicated with their parents about sex and condom use were less influenced by peers and more likely to report that their parents provided more accurate information about sex as compared to adolescents who had not engaged in such conversations.

Another way that parents have been shown to be a significant influence on adolescent sexual behavior is through parental monitoring. Adolescents with lower levels of parental monitoring tend to engage in sexual intercourse at a younger age. This relationship is especially significant among young women who have more sexual partners and are less likely to use any form of contraceptives during sex intercourse (Wight, Williamson, & Henderson, 2006). Researchers have also found that parental monitoring techniques and its

effects vary across ethnic groups. For example, Pearson and colleagues (2006) examined the specific aspects of parental involvement that influence initiation of sexual activity among European American, African American, and Latino American adolescents. Results from this study indicated that adolescents living with two biological parents were less likely to engage in sexual behaviors as compared to adolescents with other family formations. However, African American adolescents residing with step-parents were no more likely than those residing with biological parents to initiate sex. In addition, shared dinnertime, parent-adolescent communication about sex, shared parent-adolescent activities, and having a close parent-adolescent relationship was related to European American adolescents being less likely to ever initiating sex. However, with regard to sexual initiation, engaging in shared activities was the only significant parent-adolescent factor for African American adolescents and communicating about sex was the only significant parental monitoring technique among Latino American adolescents (Pearson, Muller, & Frisco, 2006). Although it is likely that other parental factors do in fact influence feelings of social support and sexual behaviors among African American and Latino American adolescents, it is possible that cultural differences within parent–adolescent relationships may not have been captured by the instruments utilized in this study.

Taken together, parents play a vital role in the engagement of their adolescent's sexual behaviors. Both parental communication and parental monitoring have significant influences on not only adolescent beliefs but also the behaviors with which they engage. These techniques appear to delay intent to engage in sexual intercourse, an increase in parental status regarding sexual information, and reduced sexual risk-taking through increased condom use and fewer sexual partners. Parents are strongly encouraged develop an open dialogue with their adolescents about sexuality, sexual behaviors, contraceptive use and parental values of preferred adolescent behavior. Preferably, these conversations would occur during preadolescence. This would promote an open dialogue for adolescents to seek out additional information from their parents, clarify inconsistencies in sexual knowledge, and problem-solve sexual conflicts.

Sibling Influences

Similar to parents, siblings also provide a significant model with regard to sexual behavior. These effects tend to be more influential when siblings are older and more alike. For example, adolescents with older siblings are more likely to have engaged in sexual behaviors. This effect appears to be most significant for adolescent with siblings who are 4 or more years older than themselves. In addition, research demonstrates a subthreshold trend that young women with an older sibling tend to be less likely to use contraception during their first sexual intercourse encounter (Argys, Rees, Averett, & Witoonchart, 2006).

Having a good relationship with a sibling or having a sibling who is more genetically similar has also been linked to risky sexual behaviors. Also, stronger attitudes about becoming pregnant have also been associated among siblings who are more biologically similar (McHale, Bissell, & Kim, 2009). For instance, young women who report higher levels of companionship with their older sister are more likely to become pregnant. Likewise, young women have a greater probability of becoming pregnant if their older sister has experienced a pregnancy or if both their older sister and mother have experienced a teenage pregnancy. However, when teenage pregnancies of mothers and older siblings are compared, young women have a greater chance of becoming pregnant if their older sister experienced a pregnancy as compared to their mother having experienced a pregnancy when she was a teenager (East, Reyes, & Horn, 2007).

Overall, having an older sexually active sibling shapes adolescent sexuality and sexual behaviors. Adolescents with older siblings have the opportunity to learn from their sibling's experience, be more encouraged to participate in sexual activity, or be less inclined to follow in their sibling's footsteps. These relationships

appear to be stronger when adolescents are more biologically similar to their siblings or share a closer relationship to their sibling. However, much of the research conducted to date has investigated sibling relationships among young women. Although it is likely that older male siblings also influence sexual behaviors among young men, additional research is needed to examine these relationships.

Peer Influences

The impact of peers on adolescent sexual behaviors is notable, complex, and strengthens across time. Not surprisingly, peers often set norms for sexual behaviors (Kinsman, Romer, Furstenberg, & Schwarz, 1998) and these norms are likely established both overtly (e.g., increased social status) or subtly (e.g., encouraging the perception of participation in sexual behaviors). Although the differences in sexual behavior as a result of either norm has yet to be clearly established, perception of peer engagement of sexual activity has been associated with having more sexually experienced friends, perceiving more respect from friends, being more involved with friends (Sieving, Eisenberg, Pettingell, & Skay, 2006), and initiating sexual activity (Zimmer-Gembeck & Helfand, 2008). The literature has also highlighted that adolescents who are not themselves engaging in sexual behaviors may feel hindered by their limited ability to contribute to conversations with peers (Skinner, Smith, Fenwick, Fyfe, & Hendriks, 2008). This suggests that adolescents may perceive the peer norm to participate in discussions about sexual behaviors through sharing relevant and personal experience.

Peer influences also vary across sexual behaviors. One such example is that peers influence oral sex behaviors more readily than vaginal intercourse behaviors. Prinstein and colleagues (2003) found a relationship between the reported numbers of oral sex partners among adolescents and their perceived number of oral sex partners for their best friends. Adolescents who endorsed engaging in more oral sex were considered to be more popular but less friendly. The researchers also found that peers shape sexual intercourse behaviors, especially if adolescents perceive that their peers engaged in sexual intercourse at a younger age, were currently engaging in sexual intercourse, or that social status would be gained as a result of sexual intercourse (Prinstein, Meade, & Cohen, 2003). Ironically, in the same way that peer influence may be negative through increased pressure to initiate sexual activity, peer pressure may also be protective with regard to contraceptive use. In another study, it was found that having the belief that peers are more likely to use condoms during sexual activity was linked to a greater desire to use condoms at first sex and an increased use of some form of contraception during sexual intercourse, especially among young men (Potard, Courtois, & Rusch, 2008).

Some have even suggested that the media may represent a "super peer" by influencing early adolescents' interest in advanced sexual behaviors (Brown, Halpern, & L'Engle, 2005). This hypothesis was demonstrated by a study that investigated adolescent sexual behavior and the media domain of music, adolescents who listened to greater amounts of sexually degrading music lyrics were more likely to engage in sexual intercourse and other sexual behaviors (i.e., masturbation). Notably, music with strong sexual themes without degrading lyrics was not related to adolescent sexual behaviors (Martino et al., 2006). This implies that sexual themes alone do not promote sexual behavior. Rather, the addition of degrading lyrics appears to be the key feature in encouraging adolescents to participate in sexual behavior. Another media study examined the relationship between sexual content from four media domains (i.e., television, movies, music, and magazines) among African American and European American adolescents across time. Researchers discovered that adolescents aged 12–14 with the highest media exposure to sexual content were more likely to have engaged in sexual intercourse 2 years later. However, this trend was more widely observed among European American adolescents (Brown et al., 2006). It is possible that the association between the media was not as prevalent for African American adolescents because much of the content within

these domains did not reflect basic demographic characteristics of these adolescents (i.e., skin color). Thus, the likely reduced salience across media domains may have led to reduced media comparisons, resulting in less media influence among African American adolescents.

By and large, peers have a substantive influence on perception of sexual activity, contraception, and various sexual behaviors. The influence of peers may be more subtle, such as making adolescents feel bad if they cannot contribute to a conversation about sexual activity or more overt such as improved social status through engaging in various sexual behaviors. Paradoxically, the media which is operated and controlled by adults also functions as a peer by providing explicit cues about appropriate sexual activity, although the influence of these effects may be more relevant across groups of adolescents. Nevertheless, peers influence is most apparent among adolescents who lack adequate communication with their parents about sexual behaviors and using condoms (Whitaker & Miller, 2000).

Partner Influences

As the common saying goes, "it takes two to tango," most sexual behaviors involve a sexual partner. Sexual partnerships often play an increasing role as individuals shift from middle to late adolescence and early adulthood. These relationships encompass a wide variety of dynamics including age of first partnership, age differentials between partners, emotional connectedness, sexual power, sexual gender roles, and sexual negotiation. While many of these variables may be involved in adolescent sexual relationships to some degree, the literature is clear that the outcomes of these variables may differ among young men and young women.

In a longitudinal study investigating relationship experiences between adolescent men and women, researchers discovered interesting gender similarities and differences. Both young men and young women who participated in a relationship in the seventh grade demonstrated a greater probability of being sexual active by the ninth grade. However, young women who had older boyfriends in the seventh grade were even more likely to have engaged in sexual activity in ninth grade. This relationship was not found among young men. In addition, when young women were compared to each other, those who experienced menarche in sixth grade were more likely to be in relationships with young men who were at least 2 years older than themselves (Marín, Kirby, Hudes, Coyle, & Gómez, 2006). Another study found that approximately one-third of adolescents engage in sexual partnerships with older individuals. Characteristics associated with these adolescents include having an older peer group, attending a school with a wider grade span, being younger, using substances, endorsing higher levels of communication with their parents, having less educated parents, or being foreign born (Manlove, Ryan, & Franzetta, 2007).

Other partner characteristics such as feeling emotionally close to a romantic partner or perceiving that a romantic partner has more power has been demonstrated to influence adolescent sexual behaviors. For example, when adolescent participants were asked who they perceived to have more power within romantic relationships, both young men and young women agreed that they perceived young women to have more power within romantic relationships. However, young men were found to have more actual power in adolescent relationships (Giordano, Manning, & Longmore, 2010). Power differentials are important as risky sexual behaviors have been observed among adolescents who want to please their partner because they perceive their partner as having more relationship control (Marston & King, 2006). For instance, young women have reported that despite not feeling ready to initiate sexual intercourse, they have done so out of fear of losing a relationship partner or due to concern that their relationship partner may feel unsatisfied (Skinner et al., 2008). Moreover, Blythe and colleagues (2006) found that within a 3-month span, approximately 40 % of young adolescent women reported experiencing unwanted sexual intercourse at least once and over one-third of young women reported engaging in unwanted sexual intercourse out of concern that their partner

would become angry if they refused (Blythe, Fortenberry, Temkit, Tu, & Orr, 2006).

These studies reveal that sexual partners play a very significant role in influencing adolescent sexual behaviors. Early experiences with a romantic partner are related to the increased probability that adolescent young women will become sexual active. In addition, perception of relationship power and actual relationship power has been demonstrated to be important components of adolescent relationships. This may be especially relevant among young women who may feel pressured to engage in unwanted sexual behaviors because they perceive that their sexual partners have more relationship power or that their partner may become angry and/or decide to leave the relationship. Also, young women who participate in romantic partnerships with older young men may experience an even greater power dynamics within their relationship. Of note, a lack of parental involvement and monitoring was implicated as a risk factor for young women participating in relationships with older partners. This again highlights the role that parents play in mitigating the effects of undesirable partner influences. Moreover, additional partner research that is squarely focused on young men would be valuable to better understanding this area.

Neighborhood and Cultural Influences

Social environments have also been shown to influence adolescent sexuality and sexual behaviors. Previous research has demonstrated distinct differences in the sexual behaviors of adolescents who reside in communities that are poor, structurally disadvantaged, lack supervision, experience greater incidents of crime, and/or have fewer available community resources (Cubbin, Santelli, Brindis, & Braveman, 2005; DiClemente et al., 2008; Sampson, Morenoff, & Gannon-Rowley, 2002). Accordingly, it is no surprise that adolescents who spend more time at home alone are more likely to engage in sexual behaviors (Buhi & Goodson, 2007).

Neighborhood influences on sexual behaviors have also been observed in a study by Browning and colleagues (2008). The investigators examined how immigrant populations, neighborhood level covariates and collective efficacy or the combined effects of parental and adult supervision of adolescents within one's neighborhood predicted adolescents engaging in multiple sexual partnerships across time. Using data derived from the Project on Human Development in Chicago Neighborhoods and 1990 Census data, the researchers discovered that adolescents were more likely to report ever having a sexual partner if they were older, male, in the latter stages of puberty, living in concentrate poverty and/or if they had ever experienced past problem behaviors. Adolescents who reported higher levels of parental attachment and those who were first or second generation immigrants and lived in neighborhoods with low levels of immigrant populations were less likely to ever report having a sexual partner. Having ever had more than one sexual partner was related to being older, male and African American. Adolescents who endorsed greater collective efficacy were less likely to have ever experienced more than one sexual partner (Browning, Burrington, Leventhal, & Brooks-Gunn, 2008).

Perhaps one of the most frequently considered cultural aspects of adolescent sexuality and sexual behavior is religiosity. Religiosity has been associated with reduced risk-taking behaviors such as delinquency (Armour & Haynie, 2007) and delay of initiation of first sex among early, middle, and late adolescents (Zimmer-Gembeck & Helfand, 2008). In a recent study, adolescent young women who were affiliated with a religious organization during childhood were less likely to have ever engaged in oral sex or vaginal sex. Also, young men who consistently endorsed attending religious services during their childhood were more likely to be virgins and never have engaged in oral sex (Brewster & Tillman, 2008).

Norms and limits established within one's culture and neighborhood likely serves as an example of appropriate adolescent sexual behavior. This is possibly why significant differences in sexual behaviors have been observed among adolescents residing in disadvantaged communities. Adolescents in these communities may have

reduced opportunities and less parental monitoring experiences, thus increasing the influence of peers, relationship partners or perhaps other individuals in their community. Similarly, religiosity also models acceptable sexual behaviors as adolescents who ascribe to a particular religion delay initiating in sexual behaviors. These studies emphasize that adolescent sexual behaviors cannot be viewed in isolation. That is, consideration must be given to the context of one's environment and relevant cultural factors.

Sexual Behavior During Adolescence

Adolescents engage in a variety of sexual behaviors, with vaginal sex representing one of many forms of sexual expression. Accordingly, the variety and prevalence of sexual behaviors with which adolescents engage is central to understanding adolescent sexuality. For example, masturbation is a very common form of sexual expression throughout one's life course. In studies of older adolescents and adults, masturbation is nearly universal among men and reported by a majority of women (Gerressu, Mercer, Graham, Wellings, & Johnson, 2008; Kinsey, Pomery, & Martin, 1948; Kinsey, Pomeroy, Martin, & Gebhard, 1953; Laumann, Gagnon, Michael, & Michaels, 2000; Pinkerton, Bogart, Cecil, & Abramson, 2003). In a recent national sample of sexual behaviors in the USA (see Table 1), masturbation was more common than any partnered sexual behavior among 14–17-year-old adolescents (Herbenick et al., 2010). In addition, masturbation onset has been shown to occur by early adolescence (between the ages of 11 and 13) in 53 % of males and 25 % of females (Janus & Janus, 1993).

Despite the prevalence of masturbation, it remains an extremely sensitive topic, and accordingly is often underreported adolescents, even with the use of confidential reporting techniques (Halpern, Udry, Suchindran, & Campbell, 2000). This is likely due to themes of guilt, shame, and indulgence often being associated with this behavior (Bullough, 1995; Patton, 1986). Perhaps this is the rationale behind omitting masturbation from sexuality education, (Moore & Rienzo, 2000), even in the context of abstinence-only education (Fine & McClelland, 2006). Moreover, many parents omit discussions of masturbation in hopes that children will view masturbation unfavorably (Friedrich et al., 1991; Gagnon, 1985; Leung & Robson, 1993). Few data directly explore associations of adolescent masturbation and other sexual behaviors, although a recent paper shows that masturbation in the past year was associated with partnered sexual behaviors among young men and young women (Robbins et al., 2011).

Noncoital sexual behaviors such as kissing, nongenital touching, and genital touching are also common adolescent sexual behaviors that often precede first sexual intercourse (O'Sullivan, Cheng, Harris, & Brooks-Gunn, 2007). The prevalence of oral sex has also become more common in recent years, perhaps in response to a greater emphasis on the value of virginity and media popularized "risks" associated with sexual intercourse. Oral sex, in particular, also allows for sexual learning that emphasizes exchange, physical intimacy, and pleasure as well as "safer" sexual behaviors (Halpern-Felsher et al., 2005). To the extent that noncoital sexual behaviors provide opportunity to experience partnered arousal, sexual agency, and sexual control, oral sex is likely an important part of the development of healthy sexuality during adolescence and young adulthood (Horne & Zimmer-Gembeck, 2005). Frequencies by age of giving and receiving oral sex with same- and different-sex partners are summarized in Table 1.

Vaginal sex is often viewed in both popular and professional dialogue as the *sine qua non* of sexual development. Many societies develop separate language and social status for adolescents before and after an initial vaginal sexual experience (Fasula & Miller, 2006). However, the range and meanings of sexual behaviors available to adolescents suggest the need for a more nuanced perspective. For example, a recent daily diary study showed no difference in daily mood on days before and after first coitus (Tanner et al., 2010). Recent data from the National Survey of Sexual Health and Behavior (NSSHB) provided age-specific rates of a range of sexual behaviors of

Table 1 Sexual behavior during adolescence

	Adolescent males ($N=482$)			Adolescent females ($N=450$)		
	14–15 ($n=191$)	16–17 ($n=219$)	18–19 ($n=72$)	14–15 ($n=188$)	16–17 ($n=212$)	18–19 ($n=50$)
Masturbated alone						
Past month (%)	42.9	58.0	61.1	24.1	25.5	26.0
Past year (%)	62.1	74.8	80.6	40.4	44.8	60.0
Lifetime (%)	67.5	78.9	86.1	43.3	52.4	66.0
Masturbated with partner						
Past month (%)	3.6	7.1	14.5	4.3	11.2	18.4
Past year (%)	5.2	16.0	42.0	7.5	18.9	36.0
Lifetime (%)	5.7	20.3	49.3	9.0	19.7	38.8
Received oral from female						
Past month (%)	7.8	17.5	22.9	0	2.3	0
Past year (%)	11.9	30.9	53.6	1.1	4.7	3.9
Lifetime (%)	13.0	34.4	59.4	3.8	6.6	8.0
Received oral from male						
Past month (%)	0.5	1.4	1.5	3.7	16.4	32.0
Past year (%)	0.5	2.8	5.9	10.0	23.5	58.0
Lifetime (%)	1.6	3.2	8.8	10.1	25.8	62.0
Gave oral to female						
Past month (%)	2.6	13.8	20.3	0.5	4.2	2.0
Past year (%)	7.8	18.3	50.7	1.6	7.1	2.0
Lifetime (%)	8.3	20.2	60.9	5.4	9.0	8.2
Gave oral to male						
Past month (%)	1.0	0.9	1.4	8.0	14.6	34.7
Past year (%)	1.0	2.3	4.3	11.8	22.4	58.5
Lifetime (%)	1.6	2.8	10.1	12.8	29.1	61.2
Vaginal intercourse						
Past month (%)	7.9	16.1	31.0	5.9	20.8	43.1
Past year (%)	8.9	30.3	52.8	10.7	29.7	62.0
Lifetime (%)	9.9	30.3	62.5	12.4	31.6	64.0
Receptive anal sex						
Past month (%)	1.0	0.9	1.4	3.2	0.5	8.0
Past year (%)	1.0	0.9	4.2	3.7	4.7	18.0
Lifetime (%)	1.0	0.9	4.3	4.3	6.6	20.0
Insertive anal sex						
Past month (%)	0.5	1.4	0	–	–	–
Past year (%)	3.1	5.5	5.6			
Lifetime (%)	3.7	6.0	9.7			

Herbenick et al. (2010)

adolescents aged 14–19 years. Vaginal intercourse was a rare event for the majority of 14–15-year-olds with 90 % of males and 88 % of females never having engaged in sex. Among 16–17-year-olds, vaginal sex occurred more frequently. However, only approximately one-third of males and females in this age group reported ever having vaginal sex. Among 18–19-year-olds, 63 % of males and 64 % of females reported experiencing vaginal sex at least once during their lifetime. Anal sex, and especially receptive anal sex, was a low occurring behavior among most adolescents. For instance, among 18–19-year-old males, lifetime prevalence rates of receptive anal sex was 4 %, while 10 % of males in this age group reported ever engaging in insertive anal sex.

Among adolescent women, anal sex was also a very low occurring event and was endorsed at a rate of 4 % among 14–15-year-olds and 7 % among 16–17-year-olds. Higher rates of anal sex were reported among 18–19-year-old adolescent females with over 20 % having experienced anal sex once during their lifetime (Table 1; Herbenick et al., 2010).

Sexual Behavior and Sexually Explicit Media

One aspect of adolescent sexual behavior that is gaining increasing attention is adolescent access to sexually explicit media through use of the internet, cell phones, television, and movies. Whether such material is obtained intentionally or unintentionally, it appears to be linked to pubertal development (Peter & Valkenburg, 2006) with approximately 90 % of adolescents who view it being age 14 or older (Ybarra & Mitchell, 2005). It is also becoming apparent that exposure to such material influences adolescent sexual behaviors (Cooper, McLoughlin, & Campbell, 2000; Štulhofer, Buško, & Landripet, 2010). For example, accessing sexually explicit material has been associated with male gender, a higher level of sensation seeking, a reduced odds of condom use during last sex (Luder et al., 2011), more lifetime sexual partners, having multiple sexual partners in the last 3 months, and having used alcohol or substances during a last sexual encounter (Braun-Courville & Rojas, 2009). Greater levels of sexually explicit material also have been linked to lower socioeconomic status, having less educated parents, being older, being African American, being more likely to have engaged in some form of sexual harassment, and having less developed gender role beliefs (Brown & L'Engle, 2009). Adolescents who view sexually explicit material also are more likely to endorse that it depicts sexually realistic behaviors and that sex is more of a physical rather than a relational activity (Peter & Valkenburg, 2010).

Sexting, or the transmission of sexual text, seminude, or nude photographs via cell phone use is a contemporary form of sexually explicit media. Despite considerable attention of this topic, very little scientific research has been conducted in this area (Weiss & Samenow, 2010). This is significant in that sexting is a unique form of sexually explicit media. Some jurisdictions view sexting within the framework of child pornography laws (Ostrager, 2010) and multiple adolescents have been prosecuted for self-produced child pornography (Arcabascio, 2010).

Sexting appears to be a somewhat frequent behavior. According to a recent survey of adolescents and young adults, approximately 22 % of adolescent young women and 18 % of adolescent young men report having sent or received sexting picture messages, with the vast majority of these messages being sent to a relationship partner. With regard to sexting text messages, 37 % of adolescent young women and 40 % of adolescent young men have sent or posted such messages. Of note, approximately 59 % of young adults (aged 20–26) have sent or posted sexting text messages (The National Campaign to Prevent Teen and Unplanned Pregnancy & Cosmo Girl.com, 2008). This suggests that despite the focus of adolescent sexting, late adolescents and young adults are regularly engaging in sexing behaviors.

Notwithstanding the novelty of many new forms of sexually explicit media, glaring behavioral differences between adolescents and adults has yet to be found. Any pattern differences suggest that adults utilize sexually explicit media much more frequently than adolescents, with adult males endorsing the highest rates (Peter & Valkenburg, 2011). By and large, additional research is needed in this area to examine longitudinal trends of sexually explicit media among adolescents. Likewise, more consistent definitions are necessary so that generalized findings can be made across studies (Short, Black, Smith, Wetterneck, & Wells, 2011).

Psychosexual Development

Normal prepubertal children display a range of sexual behaviors, including masturbation, interest in sexual topics, revealing genitals to adults or children, and efforts to observe the genitals of others (Friedrich et al., 1991; Thigpen, 2009). Many children demonstrate knowledge of sexual

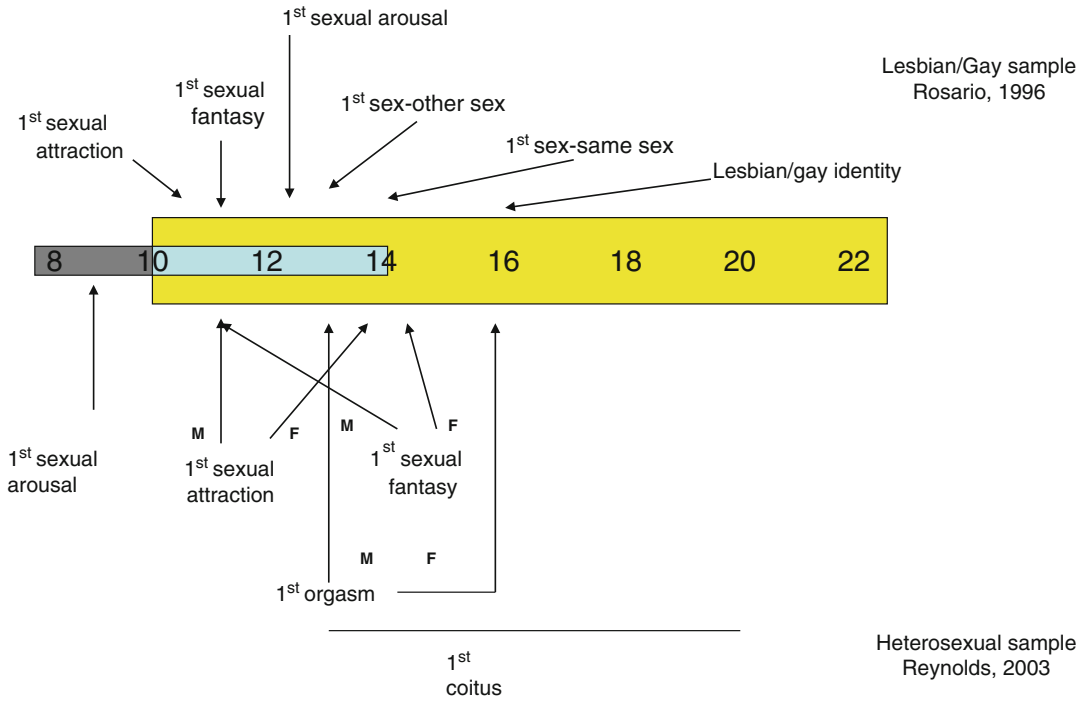

Fig. 2 Milestones in adolescent psychosexual development

body parts, the functions of those parts, and other aspects of sexuality (Grocke et al., 1995) and engage in both same-gender and cross-gender sexual play (Okami et al., 1997). Familial attitudes, familial and environmental stressors and responses to manifestations of sexuality in a child, likely influence subsequent psychosexual development (Thigpen & Fortenberry, 2009). However, there is no evidence that children have a self-awareness of themselves as *sexual*, and some authors argue for a clear conceptual distinction between children's and adolescents' sexuality (Rademakers, Laan, & Straver, 2003).

The developmental connections of childhood and adolescent sexuality and sexual behavior are not clearly specified. Figure 2 depicts a general timeline. Although linear growth and breast and genital development (gonadarche) during puberty are generally identified as the starting place for adolescent sexuality, first sexual attractions (to same or different sex persons) are reported around age 10 (Herdt & McClintock, 2000). This age roughly corresponds to the process of adrenarche and it is associated with increases in levels of two androgenic steroid hormones dehydroepiandrosterone (DHEA) and dehydroepiandrosterone sulfate (DHEAS) (Campbell, 2006). This suggests that the developmental origins of adolescent sexuality precede puberty (Herdt & McClintock, 2000).

Sexual Self-Concept

Sexual self-concept is a multidimensional construct encompassing an individual's positive and negative perceptions of themselves as a sexual person (Rostosky et al., 2008). These perceptions are developed from identities, self-evaluations, attitudes, beliefs, values, and desires of one's sexual self. Accordingly, the sexual self encompasses feelings to help interpret sexual experiences and provides both structure and motivation for sexual behavior in different sexual scenarios (Birnbaum et al., 2006).

Some elements of sexual self-concept are apparent in early adolescence, often months or years before any physical sexual contact (Butler, Miller, Holtgrave, Forehand, & Long, 2006; Ott,

Pfeiffer, & Fortenberry, 2006). However, as sexual self-concept develops, new behaviors reshape existing generalizations about the sexual self. This process, in turn, influences the choice of future sexual behaviors (Houlihan et al., 2008; O'Sullivan & Brooks-Gunn, 2005). Previous research has varied in its operationalization of sexual self-concept, with some using uni-dimensional definitions (e.g., Breakwell & Millward, 1997) and more recent studies postulating multiple domains of sexual self-concept (e.g., O'Sullivan et al., 2006). Four domains of sexual self-concept (i.e., sexual openness, sexual self-esteem, sexual ambivalence, and sexual anxiety) are considered in more detail.

Sexual Self-Esteem

Sexual self-esteem includes one's affective reactions and appraisals of their sexual thoughts, feelings, and behaviors as well as perceptions of their body in a sexual context (Horne & Zimmer-Gembeck, 2006). Australian adolescents who classified themselves as sexually "competent," "adventurous," or "driven" reported a more positive view of their sexual activity, perceived themselves as more sexually attractive, felt more assured in sexual situations, and were more satisfied with their bodies as compared to those who reported themselves as less sexually experienced (Buzwell & Rosenthal, 1996). Higher sexual self-esteem has also been linked with more sexual experience and higher sexual satisfaction, but not with earlier onset of intercourse or with increased number of partner changes (Hensel, Fortenberry, O'Sullivan, & Orr, 2011; Impett et al., 2006). It is possible that adolescents with higher sexual self-esteem place more value on their sexuality and sexual experiences, and by extension are willing to engage sexual partner discussions related to sexual satisfaction, emotions, and openness to participate in risk (Oattes & Offman, 2007).

Sexual Openness

Sexual openness refers to recognition of sexual pleasure or sexual arousal, as well as deriving a sense of well-being from understanding one's entitlement to experience and express sexual desire (Horne & Zimmer-Gembeck, 2006). In general, greater sexual openness is associated with greater desire to explore (or not explore) new sexual behaviors, greater use of condoms and contraception, lower pregnancy rates, and later onset of sexual intercourse (O'Sullivan et al., 2006). Sexual openness increases with age among young women, with higher levels of sexual openness being associated with a greater frequency of oral and vaginal sex (Hensel et al., 2011).

Sexual Ambivalence

Sexual ambivalence has been defined as two processes including individuals wanting to engage in sex but not consenting to it (nonconsensual wanted sex) or individuals not desiring sex but deciding to consent to it (unwanted consensual sex) (Muehlenhard & Peterson, 2005). Sexual ambivalence is a common, normal developmental process during adolescence, with higher levels associated with younger adolescents, less body satisfaction, pressure to engage in first sex, a stronger desire to be in a relationship prior to engaging in first sex, being on an educational track intended for college, or delaying first sex (Pinquart, 2010). Greater levels of sexual ambivalence have also been linked to a reduced ability to predict engaging in sexual behavior and decreased use of condoms (MacDonald & Hynie, 2008).

Sexual Anxiety

Negative emotions associated with sexuality (e.g., anxiety and guilt) can serve as a deterrent to sexual behavior or contribute to sexual dysfunction. Sexual anxiety, for example, has been associated with more abstinence beliefs, lower perceived likelihood of intercourse in the near future, fewer reports of having a partner, having been in love, or having engaged in kissing, fondling, or vaginal sex. Also, older adolescents had lower negative sexual affect as compared to younger adolescents (O'Sullivan et al., 2006). This reveals that reduced negativity regarding sexual topics appears to align with increasing sexual experience, perhaps as an anticipatory effect (O'Sullivan & Brooks-Gunn, 2005).

Sexual Health

Sexual health has gained prominence in recent years as a guiding concept for understanding STIs and for the organization of testing, treatment, and prevention services. Sexual health is likely more explicitly linked to developmental change than at any other point during the sexual life span, with the possible exception of menopause. The approximately one decade span from age 10–20 encompasses the physical, psychological, social, and relational changes that become critical parameters of sexual health in the decades after adolescence (Bolton & MacEachron, 1988; Christopher & Cate, 1988; Dornbusch et al., 1981; Ehrhardt, 1996; Furman & Wehner, 1997; Gfellner, 1986; Halpern, 2010; Miller & Benson, 1999; O'Sullivan, Cheng, Harris, & Brooks-Gunn, 2007; Ott, Pfeiffer, & Fortenberry, 2006; Rosenthal, Cohen, & Biro, 1996). The World Health Organization (WHO) provides the following definition of sexual health.

> Sexual health is a state of physical, emotional, mental and social well-being related to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual responses, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. For sexual health to be attained and maintained, the sexual rights of all persons must be respected, protected and fulfilled (Koyama, Corliss, & Santelli, 2009).

A somewhat different definition of adolescent sexual health was proposed in the Consensus Statement of the National Commission on Adolescent Sexual Health and endorsed by more than 50 national medical and policy organizations. They stated that

> Sexual health encompasses sexual development and reproductive health, as well as such characteristics as the ability to develop and maintain meaningful interpersonal relationships; appreciate one's own body; interact with both genders in respectful and appropriate ways; and express affection, love, and intimacy in ways consistent with one's own values (Bacon, 1999).

The Consensus Statement additionally notes that "responsible adolescent intimate relationships" should be "consensual, nonexploitative, honest, pleasurable, and protected against unintended pregnancy and STD's if any type of intercourse occurs."

The WHO and the National Consensus statement raise some additional issues to consider in thinking about the sexual health of adolescents. First, adolescents' sexual behavior is substantially limited by legal proscriptions. Most states have specific age thresholds to distinguish illegal and legal sexual activity (English, 2002; Findholt & Robrecht, 2002). For example, in the state of Indiana, partnered sexual activity before age 14 is defined as child abuse. Whether or not the sexual activity is consensual is not considered by these laws. Other states have established different age thresholds, up to age 18 years, meaning that the precept of individual sexual autonomy implicit in the WHO definition is legally restricted. We do not argue for or against the appropriateness of this restriction. Rather, it is important to note that adolescents do not have full sexual autonomy in most jurisdictions.

One additional difficulty in applying sexual health concepts to adolescents is the relative lack of data regarding sexual functioning and the subjective experience of sex among adolescents. Approximately, two-thirds of young men and just under half of young women reported orgasm associated with a sexual event, proportions similar to those reported by 16–19-year-olds in Australia: 84 % and 52 % for young men and young women, respectively (Richters, Visser, Rissel, & Smith, 2006). Orgasm is strongly associated with vaginal intercourse for both young men and young women and with oral sex for young men. Relationship status has also been associated with orgasm, consistent with a two-dimensional model of orgasm, reflecting both physical and emotional aspects, demonstrated among adults (Mah & Binik, 2002, 2005). Research also suggests that orgasm among adolescents is affected by factors such as cognitive distractions due to body image issues or performance anxieties (Meana & Nunnink, 2006). Pain is another relevant factor during adolescence and it is especially common among young women as one-third to half of young women report at least some pain with sexual intercourse (Landry & Bergeron, 2011).

Sexual Health Curricula

The limitations of the educational system in addressing sexual health have been noted for years (Fine, 1988). Access by adolescents to sexual health information is often restricted by local governmental or school board policy, as well as by state and national statutes. The content of sex education curricula is often skewed toward abstinence, pregnancy, and STI, with little or no mention of masturbation, sexual pleasure or orgasm (Koyama et al., 2009; Santelli, 2008). Similarly, the educational system has failed to attend to other pertinent adolescent sexuality issues such as sexual desire and it frequently stigmatizes youth who differ from mainstream society (Fine & McClelland, 2006). Adolescents who feel ashamed may instead turn to the internet for sexual health information. Even so, inaccuracies persist in large amounts online, even among websites touted as reputable (Yen, 2010). Additionally, much of the sexual health information portrayed in other aspects of the media tends to be incorrect, vague and vastly undervalue conscientious sexual behavior through use of humor. In a study examining four types of media content (i.e., movies, television, music, and magazines) less than half of 1 % of all media domains were represented by sexual health information. Furthermore, the sexual health information was organized around three key themes: (1) sexual health is awkward and comical, (2) young men are consumed by thoughts of sex and their sexual ability, and (3) young women are responsible for all prevention (e.g., contraceptives) and potential negative outcomes (e.g., pregnancy, STIs) of sexual behavior (Hust, Brown, & L'Engle, 2008).

Curriculum designed to teach sexual health is extremely important as adolescents are one of the most vulnerable populations to contract STI infections (Bearinger, Sieving, Ferguson, & Sharma, 2007) and large knowledge deficits regarding STIs and HIV continually persist, especially among some of the most vulnerable adolescent groups (Swenson et al., 2010). For example, one study found that approximately 14 % of adolescents believed that it was not possible to acquire an STI or HIV during oral sex. Oral sex was also viewed as less risky and less compromising (Halpern-Felsher, Cornell, Kropp, & Tschann, 2005). However, research has demonstrated negative emotional outcomes for adolescents who engage in only oral sex. These adolescents tend to feel guiltier and are less likely to experience the positive sexual feelings endorsed by peers who have participated in vaginal intercourse. Negative emotional outcomes are also markedly salient for young women participating in any sex, as they tend to be approximately three times more likely to endorse "feeling used" and twice as likely to have negative feelings about themselves after engaging in either vaginal or oral sex (Brady & Halpern-Felsher, 2007).

Adolescents require access to clinical health services and accurate information regarding sexual behaviors, negative outcomes of sex, and sexual decision-making. These programs appear to be most effective when implemented in both school and community settings. In addition, providing accurate sexual information and engaging adolescents to become advocates for themselves are also very important (Bearinger et al., 2007), as adolescents tend to be more proactive about their sexual health when provided with sexual health services (Maticka-Tyndale, 2008). Potential programs may include a combination of focus groups and a peer-socialization framework, as both appear to be useful in facilitating conversations about sex (Campbell & MacPhail, 2002; Hyde, Howlett, Brady, & Drennan, 2005). Regardless of the precise composition of these programs, much work is needed to begin implementing these changes into the existing adolescent sexual health curriculum. We suspect that few persons within the public health arena would endorse purposeful under-education as a national health strategy, but that persists as the de facto approach in much of the USA.

Conclusion

Overall, adolescence represents a period of trial and error. Entering and navigating through the world of sexual exploration, sexual initiation, and sexual maturity is certainly complex. Additional research is needed to understand the

various sexual behaviors with which adolescents at different developmental stages engage. Furthermore, as the vast majority of early and middle adolescents have never participated in vaginal intercourse, polling only for this form of sexual behavior truncates our knowledge of sexuality and sexual behavior during adolescence. Supplementary work is needed to explicate the nuances of these relationships, and especially prospective research on young men. These literary pieces would be useful to help expand our understanding of adolescent sexual development and provide additional information to develop and refine sexual health venues that provide adolescents with skills to make informed decisions about their sexual health.

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