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Developmentally-Appropriate Sexuality Education:  
Theory, Conceptualization, and Practice

By

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A dissertation submitted in partial satisfaction of the  
requirements for the degree of  
Doctor of Public Health  
in the  
Graduate Division  
of the  
University of California, Berkeley

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Clinical Professor Norman Constantine, Co-Chair

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Professor Eva Goldfarb

Fall 2014



## **Abstract**

Developmentally Appropriate Sexuality Education: Theory, Conceptualizations, and Practice

By

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University of California, Berkeley

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It is widely agreed that sexuality is an important aspect of adolescent development, and the combination of developmental transitions can leave adolescents vulnerable to negative sexual health outcomes. Sexuality education has the potential to positively support sexuality development and influence sexual health outcomes. However, evidence suggests that current approaches to sexuality education are not adequately meeting adolescent sexual health and development needs. The incorporation of a more clearly defined developmentally-appropriate approach may be one way to strengthen these programs.

Through this dissertation, I aim to inform future directions for sexuality education by assessing and analyzing current understandings of the construct of developmentally-appropriate sexuality education and highlighting where gaps exist between the scientific knowledge base on adolescent development and current practice in sexuality education.

In the first paper, “Developmentally appropriate sexuality education: Implications of adolescent development research,” I broadly review the research pertaining to adolescent development, adolescent sexuality development specifically, and adolescent motivation, and note the limitations of this research. Finally, I discuss the implications of this research for sexuality education, including determining developmentally appropriate content and educational strategies, and making accommodations for developmental diversity.

In the second paper, “Conceptualizing developmentally appropriate sexuality education: Perspectives from the field,” I report on findings from 18 in-depth interviews with sexuality educators and sexuality education materials developers. Four aspects of developmentally appropriate sexuality education that emerged consistently across interviews are discussed: (1) addressing developmentally relevant topics, (2) adapting content to cognitive development, (3) accommodating developmental diversity, and (4) facilitating the internalization of sexual health messages. In addition, challenges and

barriers to the institutionalization of a more comprehensive and integrated approach to developmentally appropriate sexuality education are described.

And finally, in the third paper, "Is current sexuality education developmentally appropriate? A content analysis of popular curricula," I identify the extent to which 5 popular sexuality education curricula, designated for middle and high school aged adolescents, use developmentally appropriate educational strategies according to the criteria discussed in papers 1 and 2.

As a whole, this dissertation highlights the need for further attention to the concept of developmental appropriateness and its application to sexuality education.

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## INTRODUCTION

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Sexuality education exists in some form, formal or informal, in every country across the globe. Much of sexuality education is presented through structured programs and curricula, with the majority of programs focused on adolescents. In the United States, three quarters of states mandate some form of sex or HIV prevention education in schools (Guttmacher Institute, 2013b). Despite the recognized importance and wide reach of sexuality education and its potential for supporting adolescent sexuality development and positive sexual health outcomes, for over a century the field has been imbued in a debate about the best approach to sexuality education (Goldfarb, 2009).

Current sexuality education efforts vary in their depth, scope, and philosophical underpinning (Goldfarb, 2009). The two most common approaches to sexuality education are: (1) “sex education” which includes “abstinence-plus” and “abstinence-only”, and generally refers to behavior change approaches that tend to include content on anatomy, sexual behavior, abstinence, reproductive functioning, and disease and pregnancy prevention, and (2) “comprehensive sexuality education” (CSE) which is guided by a broader, holistic, and positive view of healthy sexuality and tends to include a range of topics such as growth and development, gender norms, sexual orientation and identity, love, attraction, pleasure, parenting, rights and responsibilities, and communication, in addition to disease and pregnancy prevention (Goldfarb & Constantine, 2011).

In an attempt to inform the debate about sexuality education, there has been substantial effort placed on evaluating school and community-based sexuality education programs for impact on adolescent sexual health outcomes. Despite numerous evaluations of sexuality education programs, in particular those employing abstinence-only and abstinence-plus intervention approaches, most reviews have found limited evidence of their effectiveness in supporting adolescent sexual health and development (Coalition for Evidence-Based Policy, 2010; Constantine, 2013; DiCenso, Guyatt, Willan, & Griffith, 2002; Johnson, Scott-Sheldon, Huedo-Medina, & Carey, 2011; Kohler, Manhart, & Lafferty, 2008; Oringanje et al., 2010; Scher, Maynard, & Stagner, 2006).

The limited evidence is in part attributed to methodological shortcomings of individual program evaluations, including threats to validity such as failure to adjust for clustering, multiple significance testing, short duration of evaluation follow-up, and low retention rates (Constantine, 2013; Scher et al., 2006). In addition, experts in sexuality education have suggested that programs suffer from weaknesses in their underlying theoretical frameworks and, in particular, how adolescent development informs these frameworks (Goldfarb & Constantine, 2011; Halpern-Felsher, 2011; Pedlow & Carey, 2004; Suleiman & Brindis, 2014).

In a field ripe with debate and conflict over what is the best way to promote adolescent sexual health and development, there is wide support for the use of a developmentally appropriate perspective, as highlighted in reviews of promising practice and policies (e.g., Jemmott & Jemmott, 2000; Kim, Stanton, Li, Dickersin, & Galbraith, 1997; Kirby, Laris, & Rolleri, 2007). However, the extent to which a developmentally appropriate

approach is used in practice, as well as the degree to which there is a common understanding of how it can be best conceptualized, is unclear. Some initial work aimed at identifying the extent to which sexuality education programs adopt a developmentally appropriate perspective indicates that there is not wide inclusion of the concepts of adolescent development in these programs (Klein, Goodson, Serrins, Edmundson, & Evans, 1994; Pedlow & Carey, 2004).

### **Dissertation project**

This dissertation aimed to highlight the relevance of the scientific research knowledge base on adolescent development for sexuality education, and to assess current understandings and applications of the construct of developmentally appropriate sexuality education. The dissertation was designed to address three research questions through three distinct projects:

- (1) What are the implications of adolescent developmental research for sexuality education?
- (2) How is developmentally appropriate sexuality education conceptualized in the field?
- (3) To what extent are popular sexuality education curricula developmentally appropriate?

#### Paper 1. Developmentally appropriate sexuality education: Implications of adolescent development research

The research literature on adolescent development is ample and growing. Yet, this research has not been clearly translated and applied to the practice of sexuality education. Furthermore, despite the expressed support for the use of a developmentally appropriate perspective to sexuality education, little has been written that provides clarity on how the concept should be implemented within these programs. This first paper reviews the research on adolescent development, with a specific focus on adolescent sexuality development, and discusses the implications of this literature for sexuality education.

#### Paper 2: Conceptualizing developmentally appropriate sexuality education: Perspectives from the field

It remains uncertain if the perceived lack of clarity in the definition of developmentally appropriate sexuality education is in its documentation, or in its application to practice as well. Furthermore, how those individuals most intimately involved with the day-to-day implementation of sexuality education apply adolescent development concepts to their practice is unknown. Sexuality education materials developers and sexuality educators have an important responsibility to convey messages about sexuality to students, thus their perspectives on the conceptualization of developmentally appropriate sexuality education are important. Through the use of in-depth qualitative interviews, this second

paper addresses how adolescent development is understood by sexuality educators and sexuality education materials developers, the application of these understandings to their practice, and perceived and experienced barriers to conducting developmentally appropriate sexuality education. In addition, perspectives from the field on adolescent development are compared to those from adolescent development research.

Paper 3: Is current sexuality education developmentally appropriate? A content analysis of popular curricula

Despite numerous evaluations of sexuality education interventions, there remains limited evidence of their effectiveness in supporting adolescent sexual health and development. Qualitative evaluations of sexuality education curricula content and educational strategies have the possibility of offering more insight into the quality of sexuality education materials (Klein et al., 1994; Oringanje et al., 2010; Pedlow & Carey, 2004). Content analysis was conducted on five popular sexuality education curricula for adolescents. This third paper reports on three primary research questions: (1) are the educational strategies employed by sexuality education curricula developmentally appropriate? (2) to what extent is developmental diversity accommodated within the curricula? and (3) how do developmentally appropriate strategies and accommodations of developmental diversity compare across curricula based on abstinence-only, abstinence-plus, and comprehensive sexuality education philosophies?

## PAPER 1: DEVELOPMENTALLY APPROPRIATE SEXUALITY EDUCATION: IMPLICATIONS OF ADOLESCENT DEVELOPMENT RESEARCH

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### **Abstract**

Sexuality is an important aspect of adolescent development. The confluence of developmental changes that occur during adolescence creates opportunities for positive development, and at the same time can leave adolescents vulnerable to negative sexual health outcomes. Sexuality education has the potential to support healthy sexuality development and to influence sexual health outcomes. However, the full potential to do so is not being realized by current sexuality education approaches. A more intentional and comprehensive integration and application of adolescent development research to sexuality education curricula, as well as in training educators, could result in greater effectiveness of these programs. Despite recognition of the importance of a developmentally appropriate approach to sexuality education, there is little guidance on how to do this, or even what this means. In addition, the adolescent development literature relevant to sexuality education remains segmented, making it challenging for program developers and educators to put into practice. This paper reviews the research on adolescent development, with particular emphasis on adolescent sexuality development. The implications of this literature for sexuality education are discussed.

## Introduction

Sexuality education exists in some form, formal or informal, in every country across the globe. Much of sexuality education is presented through structured programs and curricula, with the majority of programs focused on adolescents. In the United States, three quarters of states mandate some form of sex or HIV prevention education in schools (Guttmacher Institute, 2013b). Despite the recognized importance and wide reach of sexuality education and its potential for supporting adolescent sexuality development and positive sexual health outcomes, for over a century the field has been imbued in a debate about the best approach to sexuality education (Goldfarb, 2009).

Current sexuality education efforts vary in their depth, scope, and philosophical underpinning (Goldfarb, 2009). The two most common approaches to sexuality education are: (1) “sex education” which includes “abstinence-plus” and “abstinence-only”, and generally refers to behavior change approaches that tend to include content on anatomy, sexual behavior, abstinence, reproductive functioning, and disease and pregnancy prevention, and (2) “comprehensive sexuality education” (CSE) which is guided by a broader, holistic, and positive view of healthy sexuality and tends to include a range of topics such as growth and development, gender norms, sexual orientation and identity, love, attraction, pleasure, parenting, rights and responsibilities, and communication, in addition to disease and pregnancy prevention (Goldfarb & Constantine, 2011).

In an attempt to inform the debate about sexuality education, there has been substantial effort placed on evaluating school and community-based sexuality education programs for impact on adolescent sexual health outcomes. Despite numerous evaluations of sexuality education programs, in particular those employing abstinence-only and abstinence-plus intervention approaches, most reviews have found limited evidence of their effectiveness in supporting adolescent sexual health and development (Coalition for Evidence-Based Policy, 2010; Constantine, 2013; DiCenso et al., 2002; J. Johnson et al., 2011; Kohler et al., 2008; Oringanje et al., 2010; Scher et al., 2006).

The limited evidence is in part attributed to methodological shortcomings of individual program evaluations, including threats to validity such as failure to adjust for clustering, multiple significance testing, short duration of evaluation follow-up, and low retention rates (Constantine, 2013; Scher et al., 2006). In addition, experts in sexuality education have suggested that programs suffer from weaknesses in their underlying theoretical frameworks and, in particular, how adolescent development informs these frameworks (Goldfarb & Constantine, 2011; Halpern-Felsher, 2011; Pedlow & Carey, 2004; Suleiman & Brindis, 2014).

In a field ripe with debate and conflict over what is the best way to promote adolescent sexual health and development, there is wide support for the use of a developmentally appropriate perspective, as highlighted in reviews of promising practice and policies (e.g., Jemmott & Jemmott, 2000; Kim, Stanton, Li, Dickersin, & Galbraith, 1997; Kirby, Laris, & Rolleri, 2007). However, the extent to which a developmentally appropriate approach is used in practice, as well as the degree to which there is a common

understanding of how it can be best conceptualized, is unclear. Some initial work aimed at identifying the extent to which sexuality education programs adopt a developmentally appropriate perspective indicates that there is not wide inclusion of the concepts of adolescent development in these programs (Klein et al., 1994; Pedlow & Carey, 2004).

### Purpose of current review

The purpose of this review is to highlight the research on adolescent development with special potential to inform the design and implementation of sexuality education programs. First, I present a brief history of research on adolescent development together with a framework for adolescent development as the theoretical foundation for the subsequent analysis. Next, I review research pertaining to adolescent development broadly, adolescent sexuality development specifically, and adolescent motivation. I note the limitations of the adolescent development research in order to foster discussion about future directions for research. Finally, I discuss implications of the adolescent development research for sexuality education, focusing on determining developmentally appropriate content and strategies.

### **Adolescent development research**

Launching the field of study with the publication of *Adolescence* in 1904, Stanley Hall described this period in the lifecycle as one of “Storm and Stress” (Hall, 1904). Although much of Hall’s research has since been criticized due to methodological concerns, his view of adolescence as a troubled time in the lifespan was held by many early researchers (e.g., Anna Freud, Eric Erikson) and continues to influence research and practice in the field (Lerner & Steinberg, 2009; Newman & Newman, 2011). This deficit-oriented perspective is evidenced by the research emphasis on problem or risk behaviors during adolescence, which within the study of adolescent sexuality development surfaces in the focus on negative consequences of sexual behavior (i.e., teen pregnancy, STIs, HIV).

While the earliest research on adolescent development tended to view it as influenced by either individual biological or contextual processes, towards the end of the 1960s the emphasis of study began to recognize the relationship between the two (Lerner & Steinberg, 2009). It was during this time that Bronfenbrenner (1979) developed the Ecological Model to describe the bi-directional relationships between contextual factors and the individual, creating a framework for understanding adolescent behavior and behavior change that remains highly utilized in current adolescent-focused research and interventions. Within the fields of public health, and sexual health more specifically, the ecological approach has led to the study of the contextual and individual level risk and protective factors that influence adolescent sexual health (e.g., Kirby, 2007).

Although the deficit perspective has continued to influence the field, there is growing recognition that adolescence is a period of opportunities and is defined by plasticity (Dahl, 2004). Since the early 1990s, there has been greater research emphasis on the application of adolescent development theories to practice. For example, positive youth development (PYD) interventions are rooted in principles of adolescent development and have been suggested to positively contribute to adolescent sexual health (Gavin,

Catalano, David-Ferdon, Gloppen, & Markham, 2010). Despite the current trends in research, much of the literature on adolescent development remains segmented by domain of development and offers few examples of its application in practice, making it less inaccessible to practitioners working with adolescents.

### An Adolescent Development Framework

The use of a framework to organize concepts of adolescent development facilitates its integration, while also highlighting the interrelated nature of development. For this review, I have expanded on the work of Steinberg (2008b), which includes four components: 1) the fundamental changes of adolescence; 2) the psychosocial domains of adolescent development; 3) the contexts of adolescence; and 4) the stages of adolescence (Figure 1-1). The fundamental biological, cognitive, and social changes that occur during adolescence provide the impetus for transitions that occur within various domains of human development (e.g., autonomy, achievement, emotional, identity, intimacy, moral, sexuality development) relevant throughout the lifespan. Developmental tasks or challenges presented within each of these domains become defining characteristics of adolescent motivations and behaviors. Although not depicted in figure 1-1, the contexts, or environments, with which adolescents engage (e.g., school, family, media) are also a critical component of the framework, as they influence the process and expression of development in the young person (Steinberg, 2008b).

Most developmental psychologists refer to three distinct stages of adolescence in their frameworks, early, middle, and late (Salmela-Aro, 2011; Steinberg, 2008b), which often described by age groups to reflect similarities in developmental characteristics. The corresponding age breakdown varies by researcher, but is roughly the following: early adolescence = 11-13 years old, middle adolescence = 13-17 years old, and late adolescence = 17-19 years old, with overlaps attributable to developmental differences by sex (Salmela-Aro, 2011). In the United States, these stages correspond approximately to 5<sup>th</sup>-7<sup>th</sup> grades, 8<sup>th</sup>-10<sup>th</sup> grades, and 11<sup>th</sup> grade to post-high school, respectively. Some researchers have extended adolescence from preadolescence and into young adulthood, both narrowing the age range in each category and reflecting the suggestion that adolescence extends beyond the boundaries of the second decade of life (Breinbauer & Maddaleno, 2005). Unlike the “stages approach” to understanding the specific domains of development, (e.g., Erikson’s stages of identity development) which has been critiqued for its portrayal that development is a linear process, the stages of adolescence highlight that adolescents are not a developmentally homogenous group (Salmela-Aro, 2011).

It is important to note that although age provides a rough estimate for when certain changes are likely to occur during adolescence, some developmental changes may be better predicted by pubertal timing. For example, romantic motivation, sexual interest, emotional intensity, changes in sleep regulation, appetite, risk for affective disorders in females, and increases in risk taking, novelty seeking, and sensation seeking, have been found to be more strongly associated with the onset of puberty than age (Dahl, 2004). Similarly, experience, in combination with age, has been found to be the best predictor of some measures associated with cognitive development, such as planning,



logic, reasoning ability, inhibitory control, problem solving, and understanding consequences (Dahl, 2004).

### Review of Adolescent Development Research

The research on adolescent development offers important insight into the various developmental factors that influence how adolescents think, make decisions, and experience motivation, and what types of supports they need for healthy development (Lerner & Steinberg, 2009). As such, adolescent development more broadly has important implications for sexuality education.

There are diverse views about the defining characteristics of adolescence; however, it is generally agreed that individuals around their second decade of life undergo biological, cognitive and social changes (Newman & Newman, 2011; Steinberg, 2008b). The biological changes include those that are spurred by puberty (Pinyerd & Zipf, 2005). In addition to the physical transitions typically associated with puberty, pubertal hormones trigger changes to the brain (Dahl, 2004). In many ways the adolescent brain looks like the adult brain but is engaged in a process of refinement that increases the efficiency of information processing through better integration of various brain regions (Dahl, 2004; Giedd et al., 1999; Gogtay, 2004; Paus, 2005).

Research on brain development suggests that during adolescence, the brain is sculpted to match the environmental demands and opportunities presented to the adolescent. Situations that lead to exposure to strong, frequent, or prolonged activation of the stress response system (e.g., homelessness, family dysfunction, etc.), in particular in early childhood, have been found to have an impact on memory, learning, and response to other stressors throughout life (National Scientific Council on the Developing Child, 2005). Conversely, studies have found that social interaction and education lead to positive changes in the brain, supporting self-awareness and social cognitive skills such as perspective-taking and understanding of social emotions (Blakemore, 2010). Further research is needed to determine if more intentional educational practices directed at the parts of the brain that undergo the most change during adolescence – those that guide internal control, multitasking, planning, social awareness, and social cognitive skills – would contribute to enhanced development in these areas, and perhaps offset negative influences endured earlier in life (Blakemore, 2010; National Scientific Council on the Developing Child, 2005).

There is substantial interest in using adolescent brain science to explain adolescent behaviors. An influential proposition suggests that the gap in maturation between cognitive control and affective processes explains increases in adolescent risk-taking behavior (e.g., Steinberg, 2008a). However, in a careful review of the literature, Crone and Dahl (2012) propose that current evidence does not support this hypothesis, but rather points to adolescents' cognitive flexibility and ability to recruit cognitive control mechanisms when motivated to do so.

Related to these biological and neurological changes, there are changes in how individuals think. These cognitive changes include: development of advanced reasoning

skills, which allows the adolescent to consider multiple options and possibilities as well as hypotheses; development of abstract thinking skills, which allows the adolescent to think about things that cannot be seen, heard, or touched; and the development of capacity for thinking about one's own thinking (metacognition) (Keating, 2011). These changes have implications for how adolescents learn, view their present and future, and interact with peers, romantic partners, and adults.

During adolescence, there is also a gradual increase in social expectations and responsibility generally conferred by adults and society. The markers of social changes from childhood to adulthood are represented differently by different cultures. In the United States, for example, signs of these changes include transitions through schooling levels, being able to stay at home without an adult, being able to obtain a driver's license, obtaining the age of majority, bringing with it the right to vote, and being legally allowed to consume alcohol (Steinberg, 2008b). Changes in social roles and expectations bring about more opportunities for adolescents to explore social relationships outside the family, including sexual and romantic relationships.

The fundamental biological, cognitive, and social changes activate particular expressions of psychosocial development, creating a series of developmental tasks that, if accomplished, support healthy developmental trajectories for subsequent stages of the lifespan. Although culturally influenced, for many adolescents these tasks include becoming a successful and competent member of society (achievement), establishing a healthy sense of emotional and behavioral independence and volition (autonomy), learning to identify and regulate one's emotions (emotional), discovering and understanding who one is as an individual (identity), forming close and caring relationships with people outside the family unit (intimacy), determining and enacting one's own value system (moral), and expressing sexual feelings and enjoying sexual contact with others (sexuality) (Goldfarb & Constantine, 2011; Steinberg, 2008b). Important to the accomplishment of these developmental tasks is the need for experimentation and risk taking (Crone & Dahl, 2012; Goldfarb & Constantine, 2011). The contexts of development within which adolescents interact (e.g., school, work, family, peers, media) play an important role in shaping the process and expression of development in these various domains (Steinberg, 2008b).

### Review of Adolescent Sexuality Development Research

Adolescent sexuality development is one aspect of development that is intertwined with the other domains of psychosocial development and is heavily influenced by the fundamental changes that happen during adolescence. It is the process of learning how to express sexual feelings, enjoy sexual contact with others, and establish a sexual identity (Diamond & Savin-Williams, 2009; Goldfarb & Constantine, 2011). While sexuality development is a lifelong process, the onset of puberty during adolescence marks the inception of eventual reproductive capabilities and the hormonal changes that increase sex drive, making sexuality a particularly salient aspect of development during this period. Changes in cognitive capabilities allow adolescents to be introspective and reflective on their sexual identity, sexual decisions and relationships (Diamond & Savin-Williams, 2009; Steinberg, 2008b).

The public discourse and much of the research on adolescent sexuality has centered on the negative consequences of sexual behavior (namely pregnancy, STIs, HIV) and the behaviors that lead to these outcomes (e.g., early sexual initiation, lack of contraceptive use, multiple sexual partners). Although adolescents in the United States, in comparison to other industrialized countries, experience an elevated incidence of pregnancy, STIs and HIV (Alford & Hauser, 2011; Guttmacher Institute, 2013a), the focus on these data ignore the normative and healthy developmental sexual processes that occur during adolescence.

The following sub-sections offer a summary of adolescent sexuality development by stage of adolescence. Within each stage, sexuality development is explored from the perspective of the adolescent development framework, stressing important differences between the stages and shedding light on areas of development that may be informative for sexuality education programs.

### 1. *Early adolescence*

The start of early adolescence is generally considered to occur with the visible signs of puberty, which typically begins between the ages of 9 and 12 years of age (Crone & Dahl, 2012). The onset of puberty usually starts 1-2 years earlier in girls than in boys and variations in timing have been identified by race, ethnicity, and body mass index (Biro et al., 2013; Chumlea et al., 2003; Crone & Dahl, 2012; Pinyerd & Zipf, 2005; Susman & Dorn, 2009). An overall trend towards earlier pubertal onset among girls in the United States has been documented (Biro et al., 2013), whereas the data for boys has been insufficient to reach a conclusion about developmental trends (Susman & Dorn, 2009). Although the onset of puberty varies by sociodemographic, genetic, and environmental factors, the sequence remains largely the same and includes rapid physical growth, sexually dimorphic alterations in facial structure, voice and body characteristics, menarche in girls and spermarche in boys. According to National Health and Nutrition Examination Survey (NHANES) data, the average age of menarche in the United States is 12.43, with fewer than 10% of girls experiencing menarche before age 11 and 90% having done so by age 13.75 (Chumlea et al., 2003). Estimates based on the few available data suggest that, on average, spermarche occurs between the ages of 13.5 and 14 years old (Pinyerd & Zipf, 2005). The cascade of hormones released during puberty play a central role in the emergence of new motivations, increases in sexual arousal and desire, and a wide range of other social, behavioral and emotional changes (Crone & Dahl, 2012).

Early adolescence is characterized by tremendous inter- and intra-individual developmental variability. In addition to the timing of physical development, there is also tremendous variation in cognitive development, with some early adolescents continuing to rely on concrete thinking and others exhibiting higher-level cognitive abilities (Meschke, Peter, & Bartholomae, 2012). This variability has an impact on the type of information that adolescents seek, as well as how that information is interpreted (Meschke et al., 2012). For example, Walsh and Bibace (1990) report that some early adolescents classify causes of HIV in discrete terms (e.g., flies, bugs, drugs, etc.), rather than by categories (e.g., body fluids, blood, etc.).

During early adolescence there is a gradual increase in self-consciousness and vacillations in self-image (Harter, 1990; McNeely & Blanchard, 2010). This can bring on increased feelings of embarrassment, a need for privacy, and fluctuations in verbal and nonverbal expressions of intense emotions (McNeely & Blanchard, 2010). This, in conjunction with the physical changes at this time, lead to the body becoming a topic of focus. Although there is some conflicting evidence, it appears that girls are somewhat more vulnerable to negative self-image, body dissatisfaction, and depression during this stage than boys (Carlson Jones, 2004; Pinyerd & Zipf, 2005). Factors related to body dissatisfaction have been found to differ by gender. For example, in a prospective longitudinal study of nearly 300 7<sup>th</sup> and 10<sup>th</sup> grade boys and girls, Carlson Jones (2004) found that boys' body dissatisfaction was related to internalized commitment to muscularity ideals, whereas girls' dissatisfaction was influenced by the number of appearance conversations with friends, social comparisons, and greater body mass. Body dissatisfaction is positively associated with risky sexual behavior (Gillen, Lefkowitz, & Shearer, 2006; Schooler, 2013).

The increased need for autonomy during early adolescence spurs a process of emotional and behavioral individuation from parents/guardians that continues throughout adolescence. Parent-child conflict may increase during this stage, reaching its peak in middle adolescence (Smetana, 2011). Smetana (2011) suggests that the majority of this conflict is due to discrepancies between what the adolescent and parent perceive to be personal, with adolescents considering control over one's body, privacy, preferences about appearances, activities, and friendships (including romantic relationships) as falling within this domain. However, throughout adolescence, issues pertaining to adolescents' health, safety, comfort, or harm to the self are seen by the adolescent as legitimately controlled by the parents. This same body of research indicates that early adolescents may be more likely to disclose to their parents issues pertaining to their health than in later stages (Smetana, Villalobos, Tasopoulos-Chan, Gettman, & Campione-Barr, 2009). Issues related to sexuality cross both the personal and health and safety domains.

During early adolescence, there is active exploration of mutually agreed upon expectations that organize social interactions in different social contexts, referred to as social conventions (Smetana, 2011). As a result, the exploration and use of social labels is common. This can, for example, result in a desire to categorize others using labels such as "straight" and "gay" (Bailey & Piercy, 1996). Rules during this stage are viewed as arbitrary social conventions, prompting early adolescents to regularly challenge classroom and household rules (Smetana, 2011).

Increasing self-awareness, capacity for empathy and emotional control, and interest in making and keeping friends make the development of emotional regulation capabilities a critical aspect of development during all stages of adolescence (McNeely & Blanchard, 2010). Increased behavioral autonomy often means that adolescents spend more time with friends and away from their parents/guardians. The influence of peers on behavior is steadily increasing at this time, while resistance to peer pressure remains low (Steinberg & Monahan, 2007; Sumter, Bokhorst, Steinberg, & Westenberg, 2009).

Friendships become increasingly important, with loyalty and intimacy being highly valued characteristics. Close friends are generally of the same sex, however there is increased involvement with mixed-sex peer groups, which is thought to facilitate the formation of romantic relationships (Collins, Welsh, & Furman, 2009). Many early adolescents report participating in mixed-sex activities such as going to the movies, dances, and parties (Connolly & McIsaac, 2011). Although only a minority of early adolescents are involved in romantic relationships, their interest tends to be high and topics of romance often dominate conversations with friends, as well as internal fantasies (Connolly & McIsaac, 2011). Few gender differences in the developmental sequence of romantic activities (Connolly, Craig, Goldberg, & Pepler, 2004). Studies on the developmental trajectory of romantic relationships during adolescence have largely neglected the experiences of sexual or gender minority youth. However, the available data suggests that the progression of romantic involvement during early adolescence is consistent, although not always linear, regardless of gender attraction: involvement in same-sex friendships, followed by involvement in mixed-sex peer groups, and then romantic involvement (Connolly et al., 2004).

The quest to answer the question “who am I?” starts during early adolescence and continues throughout middle and late adolescence. Active exploration of multiple identities is expressed by experimenting with different ways of appearing, sounding and behaving (Harter, 1990). Incongruences in identity tend not to bother early adolescents, however at later stages, adolescents are likely to spend considerable effort to consolidate multiple identities into one sense of self (Harter, 1990). Sexual identity, defined as the name and meaning individuals assign to themselves based their sexual attractions, fantasies, desires, and behavior, can be an important aspect of identity development (Diamond & Savin-Williams, 2009). Studies of sexual identity development have primarily looked at sexual orientation, with particular emphasis on the development of sexual minority identities (Diamond & Savin-Williams, 2009). The few studies that have sought to understand the sexual identity trajectories of heterosexually-oriented individuals have found little processing of this identity (Savin-Williams, 2011). Sexual minority youth – those who identify as bisexual or gay – seem to experience instability of sexual identity and lack of consistency among sexual identity, attraction and behavior throughout adolescence (Savin-Williams, 2011). Studies of youth who identify as sexual minorities have found that, on average, first awareness or feelings of same-sex attractions happen in pre- or early adolescence (ranging from ages 7.7 to 11 years old), with females reporting awareness about two years later than males. However, disclosure of this identity usually occurs in later stages of adolescence (Floyd & Stein, 2002; Savin-Williams & Diamond, 2000).

Sexual behaviors during early adolescence may include both masturbation and partnered behaviors. Partnered behaviors may include kissing, touching, mutual masturbation, oral sex, anal sex, and vaginal sex. The timing of when these behaviors emerge, their sequence, and progression have been found to vary by gender, race, ethnicity, socioeconomic status, and level of educational achievement (Cavazos-Rehg et al., 2009; Halpern-Felsher & Reznik, 2009; Haydon, Herring, Prinstein, & Halpern, 2012; Lindberg, Jones, & Santelli, 2008). For many early adolescents, experimenting with some sexual behaviors is common, however the majority have not engaged in

sexual intercourse. Table 1-2 outlines the percentage of lifetime sexual behavior by age and gender, providing an overview of the approximate trajectories of sexual behavior, based on data from the National Survey on Sexual Behavior (Herbenick et al., 2010). Males are more likely to begin having intercourse during this stage but most often delay regular sexual activity until middle or late adolescence. Adolescent girls are much less likely to begin sexual intercourse at this stage. Both boys and girls who do have sexual intercourse during this stage are more likely to be in a relationship with a boyfriend or girlfriend who is more than two years older than them (Vanoss Marín, Coyle, Gómez, Carvajal, & Kirby, 2000).

The confluence of developmental changes during this stage, in conjunction with their lack of experience and knowledge about sex leave early adolescents particularly vulnerable to negative outcomes (Suleiman & Brindis, 2014). One suggested reason for this increased vulnerability is that during this stage implicit beliefs about sexual behavior (that is, unconscious beliefs that may make an individual willing to participate in sexual behavior even if he or she has no immediate intention of doing so) seem to be more predictive of behavior than explicit behavioral intentions (Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2008). This means that sexuality education that focuses on changing attitudes or perceived norms about sexual behavior (most often through lessons and activities that aim to address explicit attitudes or behavioral intentions), may be less salient or effective with younger adolescents as they do not perceive a need for this information.

## *2. Middle adolescence*

Middle adolescence generally takes place between the ages of 13 and 17 (Salmela-Aro, 2011; Steinberg, 2008b). During this time, the secondary sex characteristics typically become fully established, and for females, the growth rate decelerates. For some females, menarche starts during this stage (Christie & Viner, 2005). Changes in fat deposition for females can become more apparent, producing a body shape that more closely resembles that of an adult. Males who have not already done so will likely experience spermarche (Christie & Viner, 2005; Pinyerd & Zipf, 2005). Nocturnal emissions, changes to voice, and a growth spurt are also common for males during this stage (Christie and Viner, 2003).

Middle adolescents often experience high levels of self-consciousness as well as fluctuations in self-image (Harter, 1990). As in early adolescence, physical changes can generate increased attention to the body and, for some adolescents, result in negative body image (Carlson Jones, 2004; Pinyerd & Zipf, 2005). Body dissatisfaction has been found to peak in middle adolescence. It then generally decreases for males but stays consistently high for females throughout adolescence (Carlson Jones, 2004).

Increased ability to empathize and an emergent ability to reflect on one's own feelings allows for more intimate friendships and romantic relationships. Intimacy, loyalty, and shared values and attitudes hold great weight among friends and therefore friendships evolve into becoming more supportive and communicative (Savin-Williams & Berndt, 1990). Peer feedback acts as an important source of affirmation of the adolescent's self-

image (Harter, 1990). Peer influence on behaviors remains high, but starts to decrease during this stage (Steinberg & Monahan, 2007; Sumter et al., 2009). Boys, in particular, continue to be influenced by their peers more than girls, a pattern that appears to persist throughout the lifespan and is possibly explained by differing feelings of self-reliance (Steinberg & Monahan, 2007). Stronger de-idealization of parents, greater emotional dependency on friends, and increased definition of one's own opinions contribute to parent-child conflict. However, this conflict may start to decline during this stage (Smetana, 2011).

During middle adolescence, casual dating emerges as an important form of romantic involvement. Generally, these relationships last only a few months, however frequency of contact is high. Group dating may also be prominent at this stage (Connolly & McIsaac, 2011; Feiring, 1999).

Research has increasingly recognized the importance of pornography, in particular Internet-based pornography, as a source of information about sex for adolescents (Kubicek, Beyer, Weiss, Iverson, & Kipke, 2010; Ybarra & Mitchell, 2005). Middle-adolescent males of all sexual orientations, starting around age 14, are more likely to access pornography than girls (Peter & Valkenburg, 2008). Exposure to pornography during adolescence has been associated with higher levels of risky sexual behavior, with a dose-response relationship between exposure to pornography and sexually permissive attitudes (Braun-Courville & Rojas, 2009). In addition, exposure to pornography has been found to challenge sexual identity development (Peter & Valkenburg, 2008). Peter and Valkenburg (2008) looked at the impact of pornography on a large sample of Dutch adolescents, finding that those who sought out sexually explicit materials on the Internet experienced greater uncertainty about their own sexual beliefs and values and more positive attitudes toward uncommitted sexual exploration (i.e., casual sex)

More same sex-attracted adolescents become aware of their feelings during this stage and some individuals may disclose their sexual identity at this time. However, attractions remain relatively fluid and undeclared for most middle adolescents (Savin-Williams & Diamond, 2000). Across all adolescents, including sexual minority youth, first sexual intercourse usually takes place towards the end of middle adolescence (Floyd & Stein, 2002; Savin-Williams & Diamond, 2000). In the United States, nearly two-thirds of adolescents have had sexual intercourse by the end of middle adolescence (Guttmacher Institute, 2013a).

Unlike in early adolescence where rules are considered to be arbitrary social conventions, , increased understanding of social structures during middle adolescence leads to more stringent following of rules (Salmela-Aro, 2011; Smetana, 2011). Adolescents become increasingly interested in forming their own code of ethics and may start to establish a fervent ideology (Salmela-Aro, 2011). This process, in conjunction with ongoing identity development and contextual influences, can manifest as homophobia and sexism, while for others it may open up an opportunity to challenge these social conventions.

Cognitive abilities continue to advance, including increased ability for abstract thinking and using advanced reasoning skills, such as considering multiple options and hypotheses, being able to think about one's own thinking, and taking another person's perspective (Keating, 2011). The brain enters a phase of pruning and myelination, thus increasing the speed at which information is processed and improving connections between brain regions. As in early adolescence, the emotional regions of the brain continue to be highly influential on thinking and behavior (Steinberg, 2005). These cognitive changes have several implications for how adolescents make decisions, which become increasingly complex with adolescents' increased autonomy, search to define themselves, and changing social relationships. Sexual decisions are particularly complicated. Many studies have found that by mid-adolescence most adolescents have similar cognitive capacities to adults, including the ability to make cognitively-based decisions such as planning for sex; however, in emotionally charged contexts adolescents take greater risks than adults (Suleiman & Brindis, 2014). Developmental research points to several factors that may explain this apparent divergence: (1) adolescents tend to have less experience in certain types of decisions and behaviors (Reyna & Brainerd, 2011); (2) adolescents weigh risks and benefits differently from adults, often placing greater importance on benefits than on risks and with emphasis on short term outcomes (Halpern-Felsher, 2011); (3) adolescents are particularly motivated by social-affective factors, including finding novel, exciting and sensual experiences that can be enhanced by the presence of peers (Crone & Dahl, 2012); and (4) adolescents may hold implicit beliefs or willingness to engage in sexual behaviors, resulting in less opportunity for planning and consideration (Gerrard et al., 2008). Sexual decision-making during adolescence includes decisions about: sexual partners, engaging in sexual behavior, and contraceptive use, among many others. For most adolescents, these types of sexual decisions are often new, or relatively unrehearsed. They are also inherently emotional and often made under conditions of emotional arousal.

### 3. *Late adolescence*

Late adolescence usually commences around age 17 (Salmela-Aro, 2011; Steinberg, 2008b). During this time, there is a stronger psychosocial shift towards matters of identity development, including a focus on acquiring adult roles by preparing for jobs or post-secondary education (Steinberg & Monahan, 2007). Continued development of more complex thinking processes are used to focus on less self-centered concepts as well as personal decision-making. This includes increased thoughts about more global concepts such as justice, history, politic and patriotism. Often, late adolescents develop idealistic views on specific topics or concerns and they may debate opposing views (Salmela-Aro, 2011). Discussions on broad social topics, such as the influence of gender on sexuality may be particularly interesting to adolescents in this stage.

Although emotional regulation skills are more advanced by this stage, emotional and physical arousal appears to continue to influence decision-making and behavior. For example, in one particularly striking, albeit small, study of male undergraduate students, it was found that when aroused the young men were more likely to endorse high risk (e.g., not using a condom even if the sexual history of the partner is unknown) and morally questionable behaviors (e.g., encourage your date to drink to increase the



chance that she would have sex with you), as well as date-rape like behaviors (e.g., keep trying to have sex after your date says “no”), even when they did not endorse these same behaviors when they were not aroused (Ariely & Loewenstein, 2006).

Decreased self-consciousness, greater awareness of different social groups, and changes in moral development during middle adolescence often result in increased tolerance and acceptance of different social groups (Smetana, 2011).

Within the family, late adolescents move to a more adult relationship with their parents. Those who were close to their parents prior to early adolescence tend to have close relationships again (Steinberg, 1990). Although peers and friendships remain important, the influence of peers on behavior recedes for both males and females (Sumter et al., 2009). This increased resistance to peer pressure, in conjunction with increased impulse control and ability to regulate emotions, can result in decreased interest in risk taking behavior for both males and females (Steinberg & Monahan, 2007).

Late adolescents are more likely to engage in more stable and longer-term romantic relationships that are focused on fulfilling the needs of the couple such as companionship and sexual activity. However, cycling between casual and more stable relationships is common (Connolly & McIsaac, 2011). Most late adolescents have experience some form of partnered sexual behavior, including sexual intercourse. Some may be starting families.

Although many adolescents with same-sex attractions have noticed their feelings prior to this stage, by late adolescence many have participated in a same-sex relationship. Both male and female same-sex attracted individuals are most likely to disclose their sexual identity in late adolescence or later (Savin-Williams & Diamond, 2000). However, different developmental trajectories are hypothesized for male and females. In a retrospective study, Savin-Williams and Diamond found that females were more likely to identify as non-heterosexual after an emotional attraction to another female, whereas males were more likely to identify as non-heterosexual after engaging in sexual behavior with another male (Savin-Williams & Diamond, 2000).

The transition out of high school is a major milestone experienced by most late adolescents. Although some young people may continue to live at home, changes in direct supervision make contextual influencers (e.g., work environment) on development and behavior particularly important during this stage. The majority of adolescents (66%) transition to college immediately following high school (National Center for Education Statistics, 2014). Largely due to the convenience of recruiting college-based samples, there is much more information about this group than there is about the remaining third of young people who do not immediately attend college (Arnett, 2012). In looking at the trajectory of risk behaviors from high school to college, Fromme et al. (2008) studied adolescents during this transition point, finding that although not all risk behaviors persisted or increased from high school to college (e.g., drunk driving, aggression, and property crime), there was a significant increase in alcohol and marijuana use and number of sexual partners during the first year of college. There were no socioeconomic differences found, although young men were more likely to use marijuana than young

women, and Caucasian youth reported greater involvement in most risk behaviors (Fromme, Corbin, & Kruse, 2008).

### Adolescent Motivation

In order for adolescents to experience healthy sexuality development they must be motivated to engage in and maintain healthy behaviors, while avoiding behaviors or situations that could cause them harm. In reviewing the literature relevant to adolescent development and sexuality education, the topic of motivation surfaces with frequency. For example, research has looked at adolescent motivations for sex, contraceptive and condom use, and pregnancy and disease avoidance. In addition, efforts to understand the nature of family, peer, and educational influences on adolescent sexual behavior are primarily concerned with the motivational impact of these socialization agents (Ford & Smith, 2011). Research has also sought to understand how interventions can motivate or persuade adolescent engagement in healthy behaviors.

Theories of motivational processes help elucidate the factors that promote or thwart motivation in adolescents. Motivation is an interrelated set of psychological processes that determine a person's willingness to pursue a goal (Ford & Smith, 2011; Henderson & Dweck, 1990). For adolescents, goals may range from short-term endeavors such as dating a particular person to long-term ones such as pursuing a particular career. Motivational systems theory (MST), a theory developed to encompass other theories of motivation, describes three interrelated determinants: personal goals, personal self-agency beliefs, and emotions (Ford & Smith, 2011). Personal goals represent desired (or undesired) future outcomes that people wish to experience (or avoid). Deciding whether to pursue these goals depends on the anticipated result of the goal-seeking activity (i.e., being successful or not), referred to as personal agency beliefs. Agency beliefs are determined by the individual's perceived knowledge, skills, and biological capabilities as well as the perceived environmental support for efforts in pursuing a particular goal. The feelings associated with pursuing a particular goal produce the energy required to (or not to) do so (Ford & Smith, 2011).

Although the three elements of motivation described in MST provide an understanding of the overarching factors that determine motivation, self-determination theory (SDT), a theory studied widely in the fields of health care and education, provides greater detail on the internal and external influences on motivation, referred to as intrinsic and extrinsic motivation, respectively (Ryan & Deci, 2000). Intrinsic (autonomous) motivation is the self-initiated drive and persistence for action that moves people to engage in a behavior or activity because the behavior or activity is perceived by the individual to be fun or interesting (Ryan & Deci, 2000; Zimmer-Gembeck, Ducat, & Collins, 2011). Adolescents experiencing intrinsic motivation will be motivated by their own interest, regardless of external influences, to pursue information, skills, or experiences needed to feel competent and autonomous in the activity they are pursuing.

However, there are many activities that are not inherently interesting, as could be considered in the case of condom use for some individuals. In these cases, there is a need for other incentives or reasons to engage in those activities or behaviors. Studies

have found that a powerful incentive is an outcome or behavior that is highly valuable to the individual's social group, for example not having a pregnancy in high school. When this happens, the individual tends to internalize the regulation of that behavior and integrate it with their sense of self. A high level of internalization leads to participation in and maintenance of behaviors to the degree expected of intrinsically motivating activities, thus making it a form of autonomous motivation (Deci & Ryan, 2002; Koestner & Losier, 2002).

Controlled motivation, on the other hand, is motivation that originates from external sources, such as receipt of incentives or external rewards, avoidance of punishment, or compliance with social pressures. This form of motivation has been found to produce less sustained compliance, and in some cases reactance (Pavey & Sparks, 2008; Ryan, Patrick, Deci, & Williams, 2008). Reactance is the act of restoring a sense of autonomy (self-determination) when freedoms are eliminated or threatened (Brehm, 1966; Dillard & Shen, 2005). Individuals may engage in the forbidden behavior, increase liking for the threatened choice, deny the existence of the threat, or exercise a different freedom to gain a feeling of control (Brehm, 1966; Dillard & Shen, 2005). Individuals with generally low levels of autonomy, as is the case for many adolescents, may be at particularly high risk for reactance when receiving messages that convey controlled motivation, such as persuasive messages emphasizing the risks of engaging in particular behaviors (Pavey & Sparks, 2008). For example, reactance to HIV prevention campaigns using controlling messaging regarding condom use has been suggested as an explanation for increases in unprotected sex among young gay men (Crossley, 2002).

The adolescent developmental need for autonomy makes a focus on promoting autonomous motivation particularly important. Adolescent autonomy development is concerned with establishing emotional, behavioral, and cognitive independence while maintaining connectedness with family and society, as well as developing a sense of choice, volition, and self-regulation (Spear, 2011; Steinberg, 2008b; Zimmer-Gembeck et al., 2011). The process of autonomy development is reflective of the guidance and opportunities afforded to the adolescent to practice, negotiate and learn about autonomy (Zimmer-Gembeck et al., 2011).

Autonomous motivation can be encouraged within environments that are supportive of an individual's basic psychological needs for autonomy, relatedness, and competence (Reeve, 2002; Williams, 2002). In particular, studies of the impact of school and health care environments on motivation show that individuals are more likely to engage in actions and maintain behaviors when asked to do so within an autonomous motivation supportive environment (Reeve, 2002; Williams, 2002). For example, a series of studies on a tobacco prevention intervention among high school students found that youth exposed to presenters who use messages that focus on the students' making a choice for themselves about whether or not to smoke (autonomous motivation), in contrast with presenters who focused on telling students they should not smoke because of the risks of doing so (controlled motivation), were more likely to express autonomous motivation for not smoking, which in turn was associated with reduction in frequency and intensity of smoking (Williams, Cox, Kouides, & Deci, 1999; Williams, 2002). In addition, autonomous motivation supportive environments have been found to be associated with

better overall health outcomes. For example, a study on the effects of autonomous motivation support on disclosure of sexual identity found that young people who reported disclosing their sexual identity in autonomy supportive environments experienced less anger and depression and higher self-esteem in comparison with those who disclosed in environments that used controlled motivation (Legate, Ryan, & Weinstein, 2012).

In addition to the developmental need for autonomy, the adolescent developmental research points to other developmental tendencies that may influence autonomous motivation. For example, research suggests that the onset of puberty increases the motivational salience of social-affective experiences, including those that increase social status and sensations, thus making activities that offer these experiences particularly enticing (Crone & Dahl, 2012; Forbes & Dahl, 2010).

### Limitations of Adolescent Development Research

Many of the limitations of the adolescent sexuality development literature have been noted already in this paper, including emphasis on sexual behavior, segmented study of different aspects of adolescent sexuality (e.g., body image, HIV, pregnancy, sexual identity), and a lack of data on sexual minority youth and sexual identity development in general. In addition to these, there are several overarching limitations of the adolescent development research that should be considered in its interpretation and application.

Considering the extensive research on adolescent development, it is surprising that there continues to be infrequent study of non-white, non-middle class youth populations. Research that does look at other populations is subject to gross aggregations, obscuring potential differences in developmental trajectories resulting from contextual influencers. One notable exception is in the study of moral development during adolescence, where there has been substantial study across cultures, races, and ethnicities (Smetana, 2011).

Similarly, studies often largely focus on particular stages within adolescence to the exclusion of other stages, or adolescence as a whole without making distinctions between stages, making it difficult to draw conclusions about developmental characteristics at different time points within adolescence and how these may relate to subsequent developmental processes and outcomes (M. K. Johnson, Crosnoe, & Elder, 2011). In addition, most studies of adolescent health and behaviors are cross-sectional, as opposed to longitudinal, and therefore while these studies may be suggestive of developmental trajectories, the patterns they identify could merely be artifacts of the data. A notable exception is the National Longitudinal Study of Adolescent Health (Add Health), a longitudinal study of a nationally representative sample of adolescents in grades 7-12 in the United States which commenced during the 1994-95 school year (Harris, 2009). Although strong in many ways, Savin-Williams and Joyner (2014) recently brought light to an important limitation in this data set. They found that reporting of same-sex attractions during Wave 1 of the study appeared to disappear during subsequent waves, thus questioning the validity of these data (Savin-Williams & Joyner, 2014).

Finally, the focus on negative health and social outcomes related to development propagate negative conceptions of adolescence. For sexuality development, the emphasis on the negative health outcomes (e.g., pregnancy, STIs), in conjunction with a lack of data on how these outcomes relate to trajectories of adolescent sexuality development, facilitates the problematization of adolescent sexual behavior (Haydon et al., 2012).

### **Implications of Adolescent Development Research for Sexuality Education**

This adolescent development research has important implications for sexuality education including (1) determining developmentally appropriate content, (2) incorporating developmentally appropriate education strategies, and (3) accommodating developmental diversity.

#### *1. Determining developmentally appropriate content*

There is wide variation in the content included in sexuality education programs. This is, in part, due to a lack of agreement in the field about appropriate goals for sexuality education, and subsequently the appropriate topics to be addressed (Goldfarb, 2009; Goldman, 2011). The age at which adolescents should be introduced to different sexuality education topics has also been a point of contention in the field (Somers & Surmann, 2005). The adolescent development research offers suggestions for developmentally informed goals, topics, and the timing of their introduction, as well as special considerations of these based on audience characteristics.

#### **Program goals**

Traditionally, sexuality education for adolescents has been directed by prevention-oriented goals aimed at preventing particular behaviors (e.g., sexual intercourse) and associated outcomes (e.g., pregnancy and STIs). Although learning how to avoid negative outcomes is an important aspect of healthy sexuality development, narrowly defined goals limit a program's capacity to support and promote other aspects of sexuality development including the encouragement of healthy and positive sexuality-related behaviors, attitudes, beliefs and skills.

The adolescent development framework indicates that sexuality development, like other domains of development, are interrelated and thus influenced by and influential on the various domains of psychosocial development. As sexuality education intends to support positive trajectories in sexuality development, consideration of these developmental relationships is fundamental to the orientation of these programs.

Building on this perspective, the Commission on Adolescent Sexuality elaborated a list of developmental tasks for adolescent sexuality development, entitled the Characteristics of Healthy Adolescent Sexuality (Haffner, 1995) (Table 1-1). These developmental tasks describe what an individual, when given the appropriate support, should achieve during adolescence, thus positioning the adolescent to pursue a positive trajectory in sexuality development. Although these tasks are not sub-divided by stage of adolescence, in part because accomplishment of them is not necessarily a linear

process, they offer sexuality education programs an important basis for elaborating developmentally informed goals.

### Program topics

Research on typical developmental trajectories provides information on the aspects of sexuality development that are experienced by most adolescents, such as the psychosocial changes associated with puberty, interest and participation in romantic relationships, initiation of sexual behaviors, among others. These aspects of development can be translated into topic areas for sexuality education. In addition, the adolescent development literature offers details on how a broader topic area (e.g., romantic relationships) is experienced at a particular stage of adolescence. The inclusion of these developmental details in a curriculum can make the content more meaningful to the student. For example, in addressing romantic relationships among early adolescents, activities should reflect relationship characteristics common to this stage, namely the importance of loyalty and trust between same-sex friends, a shift towards mixed-sex peer groups, little experience with but substantial interest in romantic relationships, and the role of implicit beliefs or willingness in influencing sexual behaviors. In late adolescence, however, a session on a similar topic may focus more on casual and steady romantic relationships and behavioral intentions in different dating scenarios. As with emerging needs for new information related to sexuality development, the adolescent development research also points to particular skills that become increasingly important for successful navigation of sexuality development, and thus should be practiced as part of sexuality education. For example, as social-affective behavioral motivators increase and adolescents seek increased exposure to and interest in new and sensual situations, addressing sexual decision-making skills become critical.

Despite their developmental relevance, certain topics are often excluded from sexuality education due to political reasons, including the influence of personal values held by policy makers, materials developers, school administrators, and educators. For example, federal funding and state policies continue to endorse abstinence-only education (Marshall, 2010) even in light of ample evidence that this form of sexuality education is ineffective in supporting healthy adolescent sexuality development (Kohler et al., 2008; Trenholm et al., 2008). Despite developmental indication that sexual behavior is a normative part of sexuality development during adolescence, abstinence-only education emphasizes postponement of sexual behavior until marriage and explicitly excludes discussions of contraception. Even where comprehensive sexuality education approaches are endorsed, topics are often omitted. Pornography is one such example. Given the importance of pornography as a source of information on sexual behavior for adolescents, discussions of pornography may be critical to supporting healthy sexuality development.

### Timing of topic introduction

Studies aimed at determining the best time to introduce sexuality education topics have primarily looked at how the introduction of topics relates to sexual initiation and sexual

behavior. To date, no research has found a relationship between school-based sexuality education and the hastened onset of sexual intercourse; in fact, the introduction of topics prior to first sexual experience has been associated with greater protective behavior (e.g., condom use) (Mueller, Gavin, & Kulkarni, 2008; Somers & Surmann, 2005).

Although there may be developmental diversity based on individual developmental trajectories and contextual factors, the research on trajectories of adolescent sexuality development provide general indication of the approximate timing at which aspects of sexuality development become most relevant to a young person.

Two considerations inform the timing of topic discussions. The first calls for providing guidance on developmental processes or health behaviors prior to them being experienced by the individual. This concept is referred to as “anticipatory guidance,” a principle that has been endorsed by education and health promotion fields (Lowenstein, Foord-May, & Romano, 2009). The second looks to address topics that are currently relevant to the adolescent. In addressing currently relevant topics, the adolescent has an immediate way to connect and apply the information to his or her experience. This can be particularly important for adolescents who primarily rely on concrete thinking and have challenges in applying hypothetical or more abstract concepts to their own life, as would be expected among many early adolescents. For example, using the concept of anticipatory guidance, education about puberty should be introduced in pre-adolescence (ages 8-11) given that the majority of adolescents initiate puberty between the ages of 9 and 12 years old. Then, to ensure current relevancy, puberty education would continue to be a topic of discussion during early, and perhaps middle adolescence as individuals experience pubertal changes. Similarly, the substantial increase in the numbers of young people who engage in sexual activity during middle adolescence suggests that education on contraceptives and STI prevention should be initiated in early adolescence and then continued. In sum, initiating some form of sexuality education program in elementary school and then continuing throughout high school, allowing for sequential learning and providing opportunities for repetition of topics and skills practice, and making adjustments according to emerging developmental capabilities responds to and supports adolescent sexuality development.

#### Existing efforts to determine developmentally appropriate content

Two important efforts in the field have incorporated some of the suggested developmental perspective into guidance on content for school-based sexuality education programs. These efforts are the Guidelines for Comprehensive Sexuality Education (referred to as Guidelines) (National Guidelines Task Force, 2004) and the National Standards for Sexuality Education (referred to as National Standards) (Future of Sex Education Initiative, 2011). The Guidelines, developed by a committee of experts in human sexuality and education, are influenced by a list of life behaviors of a sexually healthy adult, a precursor to the Characteristics of a Sexually Healthy Adolescent (Haffner, 1995). The Guidelines offer six key concepts, each with underlying essential topics (totaling 39 topics). Developmental messages are provided for each topic ranging from level 1 (middle childhood) to level 4 (adolescence ages 15-18). The Guidelines are

seen as an ideal for sexuality education. Different from the Guidelines, the National Standards were developed with the intention of acting as the core minimum standard of content for a sexuality education program. They are designed to align with the National Health Standards and provide learning objectives in grade level groups (K-2; 3-5; 6-8; 9-12).

Although the Guidelines and National Standards provide several examples of developmentally informed topics and the suggested timing for their introduction, there are some gaps in how these align with the adolescent development framework (see Table 1-3 for alignment with the framework based on middle school grades/ages designated topic areas). The Guidelines address a greater range of topics, with some being decoupled from sexuality. Both documents, in particular the National Standards, place strong emphasis on sexual health and sexual behavior. Although other aspects of sexuality are touched upon, the disproportionate focus on sexual behavior and its potentially negative outcomes may convey that these are the most important aspects of adolescent sexuality development. The Guidelines explicitly call for the introduction of a rational model of decision-making, which inaccurately reflects what is currently understood about adolescent sexual decision-making processes (elaborated below). The National Standards, however, leave the decision-making model up to the discretion of the materials developer. This could be problematic if materials developers and educators continue to rely on the behavioral theories guiding most current sexuality education programs, as these also assume rational models of decision-making.

Perhaps a greater challenge in applying a developmentally informed perspective using the Guidelines or National Standards is that neither aligns the suggested content to the stages of adolescence (as defined here). This is problematic because it incorrectly conveys that adolescents within these age or grade ranges have the same developmental needs. For example, the National Standards suggest content by ranges of grade level that bridge several stages of adolescence (e.g., grades 3-5 bridges late childhood, pre-adolescence, and early adolescence). Both the Guidelines and National Standards suggest that content should be the same for adolescents across grades 9-12 (ages 15-18), in essence categorizing middle and late adolescents as one group.

## *2. Incorporating developmentally appropriate strategies*

Motivation to pursue behaviors related to healthy sexuality development includes having the knowledge, skills, capabilities, and environmental support, as well the desire to do so. Several aspects of sexuality development may be intrinsically motivating or innately interesting to adolescents, for example forming and participating in romantic relationships and enjoying sexual behavior. In these cases where adolescents experience intrinsic motivation, they will likely be driven by their own interest, regardless of external influences, to pursue information, skills, or experiences that will allow them to meet their basic psychological needs for autonomy and competence. In order to support adolescents who are intrinsically motivated, the role of sexuality education programs is to encourage the adolescent's autonomous motivation in pursuing healthy sexuality development by ensuring that the information, skills, and experiences they seek are founded on accurate understandings of sexuality.



For aspects of healthy sexuality development that may not be intrinsically motivating (e.g., condom or contraceptive use), where motivations may come in conflict (e.g., experiencing physical intimacy vs. abstaining from sexual behavior), or where motivations have directed adolescents towards unhealthy behaviors (e.g., seeking multiple concurrent sexual partners to appease gender norms), the task of sexuality education is to “persuade” them to embark on a path of healthy sexuality development. In this role, sexuality education promotes and supports the development of autonomous motivation by supporting adolescents in aligning healthy sexuality development with their basic psychological needs of competence, relatedness, and autonomy.

The adolescent development literature points to developmental characteristics that can be incorporated into curricular activities and teaching strategies to support autonomous motivation. These strategies are outlined below, with further specific examples offered in Table 1-4.

#### Establishing an autonomous motivation supportive environment

Schools, classrooms or curricula that are designed to support autonomous motivation have been found to contribute to improved learning and engagement in healthy behavior among adolescents. Critical to establishing these autonomous motivation supportive environments is the promotion of choice, while minimizing forms of control. Use of risk-focused language (e.g., sex without a condom can result in unintended pregnancy or STIs), as is common to many sexuality education programs (Schalet, 2011), can signal control. Populations with little perceived autonomy, as is the case for many adolescents and in particular those who are members of marginalized social groups, may be at increased susceptibility to reactance when faced with these types of controlling messages (Pavey & Sparks, 2008).

Although no studies have looked at the facilitation of autonomous motivation within a sexuality education intervention, reviews of studies from other health and education fields have outlined the following characteristics of autonomous motivation supportive environments that could be informative for sexuality education. These:

- Provide meaningful rationale for why a behavior is being recommended so an individual will understand personal importance of activity for themselves
- Acknowledge feeling and perspectives of individuals so they feel understood
- Use an interpersonal style that emphasizes choice and minimizes control so that an individual will not feel pressured to behave
- Employ teachers who cultivate autonomous motivation in students by listening more, spending less time holding materials, offering fewer directives, providing time for independent work, giving fewer answers to problems, using more perspective-taking empathetic statements, are more student-centered, and support student initiative.

#### Developmentally responsive strategies

In addition to, and as part of, establishing a supportive environment, autonomous motivation can be promoted through the use of developmentally responsive strategies. Such strategies specific to the motivational tendencies may enhance adolescent current and future self-motivation for healthy sexuality development during the diverse stages of adolescence and for particular populations.

Developmentally responsive strategies integrate developmental considerations in two primary ways: (1) addressing intrinsically motivating aspects of sexuality; and (2) introducing information and skills by drawing on developmental opportunities, while considering developmentally related challenges.

As mentioned, for many adolescents the topic of sexuality is inherently interesting. Adolescents often have many questions and curiosities. Strategies that encourage students to identify and then learn about aspects of sexuality that are most interesting to them responds to their basic needs for autonomy and competence. For example, strategies that respond to intrinsic motivation may include allowing students to elaborate lesson plans, involving students in program development, and answering student questions.

Identifying and incorporating opportunities resultant from developmental processes may encourage adolescents' engagement with the program content. Concurrently, adapting to or addressing potential developmentally related challenges can reduce frustration and discomfort, and ultimately disconnection, with the program. For example, in response to cognitive changes that results in less reliance on concrete experiences to learn during middle adolescence, case studies or video representations for this age group can be engaging modes of presentation. These same approaches may be lost on younger students who are limited in their ability to apply abstract lessons to their own lives (Meschke et al., 2012). Similarly, consideration of biological changes, in particular the rapid physical growth during early and middle adolescents that can make it uncomfortable for adolescents to sit for long periods of time, could include using activities that involve movement (Manning, 1993).

Opportunities are also revealed in developmental characteristics that make certain topics or activities inherently interesting. For example, emerging cognitive skills, questions about identity, processes of individuation, and a new awareness of the broader social environment, make moral questions particularly interesting to adolescents. This may entail integrating lessons during early adolescence that allow students to explore their new social world and potentially challenging moral situations, for example discussing commonly used social labels, such as "gay" and "straight", their meaning and implications. During middle adolescence, this may include addressing topics of homophobia and sexism by integrating the topic of fairness, whereas during late adolescence, it may involve integrating discussions of broader social justice issues that cultivate critical thinking about the influence of social structures on sexuality development. Similarly, careful examination of the brain, autonomy, emotional, and intimacy development indicates that drawing on social-affective motivational tendencies can be a way to entice adolescent engagement in an intervention. These strategies could include providing opportunities for gaining social status (e.g., providing

employment, being a peer leader) and partaking in experiences that appeal to sensation or reward seeking needs.

A major limitation to many of the current sexuality education programs is the use of outdated understandings of adolescent development, in particular regarding the motivational tendencies that influence adolescent behavior. An important example of this limitation is that the majority of current sexuality education programs are designed based on normative decision-making models, including the health belief model, theory of planned behavior, and theory of reasoned action (D. Kirby & Laris, 2009). These models describe a deliberate and analytic process of decision-making, positing that an individual will consider the positive and negative consequences of an action and their chance of experiencing each of these consequences given the action (Halpern-Felsher, 2011). An important assumption of these theories is that mature decision-making ability is reflected in this deliberate, analytical, and relatively unemotional process. However, studies have found this assumption to be inaccurate (Rivers, Reyna, & Mills, 2008). In addition, the evidence suggests that while these models of decision making may be useful in predicting behaviors that are relatively unemotional, their contribution to understanding more emotional behaviors is limited (Halpern-Felsher, 2011; Rivers et al., 2008). As described previously, adolescents in particular are challenged in the use of normative models of decision-making by their lack of experience, increased susceptibility to peer influence, and heightened sense of emotion. Many decisions related to sexuality are inherently emotional, confounding these challenges. Recognizing that decision making is not only a cognitive process, dual-process models of decision-making describe two (or sometimes more) interwoven processes of decision-making (Halpern-Felsher, 2011). There are several such models (e.g., Fuzzy Trace Theory, Prototype-Willingness Model, etc.). Generally, the first process involves a deliberate and analytic processing of information, similar to that which is described by the normative models. The second involves a less planned, heuristic, reactive, and affective process (Halpern-Felsher, 2011; Reyna & Rivers, 2008). Adolescents, like adults, are thought to use both pathways to make decisions, with reliance on the heuristic-based process being a sign of more mature information processing (Reyna & Brainerd, 2011). The developmental research suggests that integrating emotionally relevant experiential learning into sexuality education programs may better support the development of decision-making skills among adolescents, and more accurately reflect the motivational processes driving sexual behaviors (Suleiman & Brindis, 2014). Identifying the best way to do this is being explored. Suggestions that need to be researched further included the use of virtual-reality computer programs or emotionally engaging television series. Role plays, an approach common to many sexuality education curricula, usually aim to help students practice responses in different situations, however, there are questions as to whether adolescents with limited experiences can translate this learning to highly emotional situations (Suleiman & Brindis, 2014).

### *3. Accommodating developmental diversity*

There is substantial variability in the timing and sequence of developmental changes both within and among adolescents. This intra- and inter- individual developmental

diversity is a reflection of biological and contextual influences on development. It can be seen in a young person who displays advanced sexuality development but relatively immature cognitive development, as well as in the differences between that young person and his or her peer of the same age. The recognition of developmental diversity suggests that content, including topic selection, timing and educational strategies, may need to be adjusted in order to meet the needs for a given population or individual. For example, several studies have found that the timing and sequence of sexual behaviors differs by race and ethnicity (Cavazos-Rehg et al., 2009; Haydon et al., 2012; Lindberg et al., 2008). Although addressing different types of coital and non-coital behaviors with all adolescents is important, these data remind programs to be wary of assumptions about the timing and sequence of sexual behaviors for different students and point to the need to address certain topics earlier for some groups of students than others. Furthermore, education that acknowledges the reality of student sexual practices may be more engaging than education that broadly tries to talk about all types of behaviors at one time.

In addition, gender has been found to influence the type of sexuality education sought by adolescents. In a study with early adolescent boys and girls, Measor (2004) found that boys felt they should know how to have sex prior to doing so and therefore sought out detailed information on sexual behavior, whereas girls did not feel this same pressure. The lack of detailed information about sexual behavior in school-based sexuality education programs was considered cause for boys seeking out pornography (Measor, 2004). This suggests that early adolescents need spaces to talk and ask detailed questions about sexual behavior, as well as to process the portrayal of sex, as seen in popular television shows or pornography.

Stage of adolescence and the associated developmental processes also play a role in determining audience needs in sexuality education. As discussed above, early adolescence is perhaps the time when the combination of psychosocial changes creates the greatest opportunities for motivating healthy behaviors, while simultaneously placing young people at most risk for negative health outcomes. In regard to sexual behavior, this is the time when knowledge about one's body is the lowest, and unconscious willingness to engage in sexual behaviors may make adolescents less likely to seek out support on their own. This makes the provision of sexuality education during this stage particularly important. Early adolescence is also a time when embarrassment increases for both males and females. During this stage, offering single sex education – at least for some sessions – might allow students to explore topics with less inhibition.

Although the developmental literature points to gross differences in trajectories of sexuality development among different populations, it is not feasible to segregate students completely by developmental characteristics within a classroom setting. In addition, learning from peers who are at different stages may be beneficial. Finding ways to provide spaces within a sexuality education program for individuals to identify their own needs and to reflect on their own process of development, as well as seeking opportunities to provide individual education, may be critical in addressing the intra- and inter-individual diversity that exists within a classroom.

## Recommendations

The body of literature on adolescent development remains under-utilized in practice. The application of this research base to inform the content and strategies utilized in sexuality education programs has the potential to strengthen these initiatives and provide an important source of support to adolescents. Table 1-5 summarizes the recommendations outlined below.

The adolescent development research points to the interconnectedness of the components of the adolescent development framework in determining adolescent sexuality development. As such, sexuality education programs should seek to address this synergy through establishing goals that reflect the many aspects of sexuality development, rather than focusing on sexual behavior exclusively. The Characteristics of a Sexually Healthy Adolescent (Haffner, 1995) offer a point of initiation in elaborating developmentally informed goals for sexuality education programs. Additional work to ensure a comprehensive application of the adolescent development framework to these tasks, including consideration of the wide range of sexual and gender identities, would prove even more useful in establishing a thread that guides sexuality education throughout adolescence.

Topics, including information and skills-building, should be based on what is currently salient and relevant for the developmental stage of the intended population as well as what is soon to be relevant and salient. Intra- and inter- developmental diversity can result in differential information and skills needs and interests over the course of early, middle, and late adolescence. Population characteristics (e.g., sex, race, ethnicity, sexual orientation, socioeconomic status) and studies on trajectories of sexuality development can be used as indicators of topic sequences and approaches; however, conducting assessments of student needs would allow for more precise tailoring of program materials. Developmental diversity can also be addressed by developing and implementing sequential sexuality education programs so that content can be built upon and repeated as necessary to meet different needs within a classroom, as well as ensuring flexibility within curricula to make mid-course adjustments and integrating individualized components (e.g., individual counseling).

The majority of sexuality education materials are targeted to middle and late adolescents, specifically high school students. However, the developmental changes in early adolescence make it an important stage for learning. Offering sexuality education during early adolescence, including in late elementary school and continuing through multiple years of middle school, would offer important supports during this period of intense change, vulnerability, and high variability between individuals. In addition, providing parents and guardians with anticipatory guidance on adolescent development, including sexuality development, prior to early adolescence may better equip them to support adolescents during this time.

Research on adolescent motivation indicates that promoting autonomous motivation can enhance intervention outcomes. The developmental literature, in turn, offers insight into behaviors, topics, and educational approaches that are intrinsically motivating, as

well as potential ways to support the internalization of those that are extrinsically motivating. Changing the paradigm of sexuality education from being risk-focused with controlling messages, to one that offers adolescents choices about sexual decisions and sexual behavior is foundational to utilizing this approach. In addition, educators need to be trained to establish autonomous motivation supportive environments. An important aspect of this training would be addressing adolescent development more broadly, as well as adolescent sexuality development specifically, so that educators are equipped to make adjustments to meet differing developmental needs.

The development, implementation, and evaluation of developmentally appropriate sexuality education programs require close collaboration between developmental scientists, materials developers, evaluators, and educators. Continued work to translate research to practical applications is needed, as are updated curriculum materials to reflect current understandings of adolescent development.

### Challenges

There are several challenges in applying the proposed developmentally informed approach to sexuality education in the current environment.

First, decisions about sexuality education have been guided primarily by moral and political agendas and not public health and research-based aim of promoting sexuality development. These factors influence program goals, content, timing, and evaluation, as well as funding. Current standards primarily endorse an emphasis on pregnancy and disease prevention, with many programs focusing on delaying onset of sexual behavior. This focus is founded in the assumption that sexual behavior among adolescents is an unhealthy behavior. This counters the adolescent sexuality development literature, which describes involvement in sexual behavior as a normative part of sexuality development, in particular during middle and late adolescence.

Second, educators face many competing pressures resulting in time constraints for non-academically focused programs such as sexuality education. This makes implementation of a comprehensive program across multiple years of adolescence challenging. The reality of sexuality education in the U.S. is that students receive very few hours of instruction (a median of 17.2 hours across elementary, middle and high school combined) (Future of Sex Education Initiative, 2011). This hardly allows enough time to address the full range of topics relevant to healthy sexuality development, let alone time to adequately explore complex sociocultural factors that relate to them. In addition, the developmental diversity within a classroom may make it difficult to determine which topics to address and how to address them such that the content responds to the needs of various individuals. Inter-individual differences in knowledge can also be attributed the inconsistency with which sexuality education is offered throughout elementary, middle, and high school, thus requiring that basic information be repeated (e.g., reproductive anatomy) affecting the amount of time available for more in-depth explorations of sexuality development.

Third, this perspective calls for sexuality educators who are well versed in sexuality development, as well as adolescent development more broadly. By and large, teachers asked to teach sexuality education are not trained in sexuality education, let alone adolescent sexuality development (Eisenberg, Madsen, Oliphant, Sieving, & Resnick, 2010). In some schools, expertise is sought from partner agencies that specialize in sexuality education. However, these outside educators typically have less information about students' developmental characteristics in individual classrooms and thus are less able to meet specific and emerging needs.

Lastly, the field of adolescent development has outpaced the development of sexuality education curricula resulting in continued use of outdated materials. Because positive evaluation results of many of these curricula have been published, they are replicated in new settings with great frequency.

### Future research

Several questions will need to be addressed to concretize the conceptualization of developmentally appropriate sexuality education. Critical first steps are establishing an understanding of how materials developers and sexuality educators understand and utilize information about adolescent development to inform their practice, and how developmentally appropriate concepts are applied in popular sexuality education curricula.

### Limitations

This review should be interpreted in light of its limitations. The literature on adolescent development has a long history and as a result there is a substantial amount of research pertaining to each domain of development. This review sought to synthesize key aspects of this literature, in particular as it concerns sexuality development, however there are aspects of adolescent development that could be informative to sexuality education that have not been captured. In particular, there is a burgeoning field on the influences of trauma on developmental trajectories that is critical to consider when working with adolescents who have been exposed to chronic stress (National Scientific Council on the Developing Child, 2005). In addition, due to the diversity of perspectives and fields of study that have sought to understand adolescent development and behavior, there is multiple terminology used to describe similar concepts. Although the modification of Steinberg's adolescent development framework was intended to integrate recognition of domains of development recognized by other researchers as important in adolescent development, it is possible that important literature was missed due to the use of different terminology.

## **Conclusions**

A large body of research on adolescent development offers a rich understanding of the period of adolescence and the factors that are unique to this stage in the life course. It also highlights areas where adolescents have particular opportunities for learning and growth, and points to the importance of contextual factors in facilitating healthy

developmental trajectories. The intentional integration of adolescent development research implications into sexuality education programs has the potential to provide adolescents with much needed support in their sexuality development.



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Table 1-1. Characteristics of a Sexually Healthy Adolescent

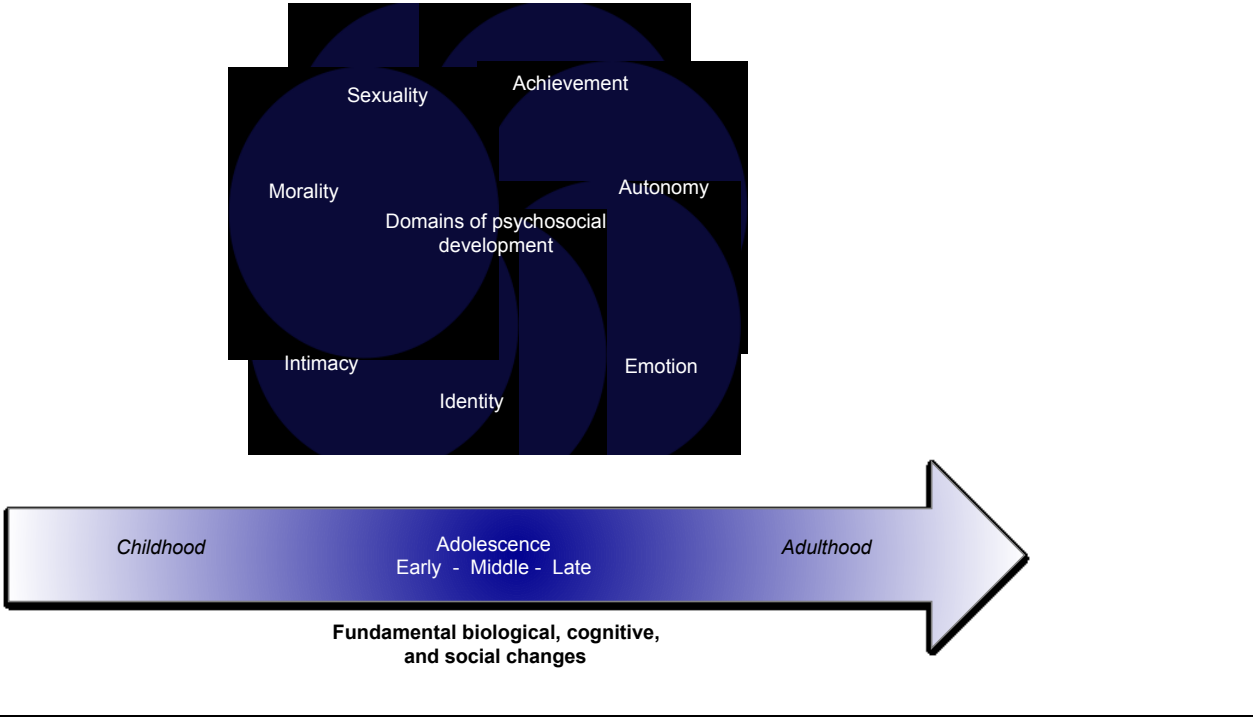
Table 1-2. Percentage of lifetime sexual behavior by age and gender

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Figure 1-1. Adolescent development framework



**Table 1-1. Characteristics of a sexually healthy adolescent**

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Appreciates own body
Takes responsibility for own behaviors
Knowledgeable about sexuality issues
Communicates effectively with family about issues including sexuality
Understands how to seek information about parent and family values and use these to determine own values
Interacts with both genders in appropriate and respectful ways
Acts on one's own values and beliefs when they conflict with peers
Expresses love and intimacy in developmentally appropriate ways
Has skills to evaluate readiness for mature sexual relationships

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Source: Haffner, 1995

Table 1-2. Percentage of lifetime sexual behavior by age and gender

Sexual Behavior	14-15		16-17		18-19	
	Men	Women	Men	Women	Men	Women
Masturbated alone	67.5	43.3	78.9	52.4	86.1	66.0
Masturbated with a partner	5.7	9.0	20.3	19.7	49.3	38.8
Received oral from a female	13.0	3.8	34.4	6.6	59.4	8.0
Received oral from a male	1.6	10.1	3.2	25.8	8.8	62.0
Gave oral to female	8.3	5.4	20.2	9.0	60.9	8.2
Gave oral to male	1.6	12.8	2.8	29.1	10.1	61.2
Vaginal intercourse	9.9	12.4	30.3	31.6	62.5	64.0
Inserted penis into anus	3.7	N/A	6.0	N/A	9.7	N/A
Received penis in anus	1.0	4.3	0.9	6.6	4.3	20.0

Source: National Survey on Sexual Behavior, 2009

Notes: Table reports percentage of respondents reporting lifetime sexual behaviors by age and gender. The study was nationally representative and surveyed a total of 5,865 individuals ages 14-94. The number of respondents by age group and gender (men and women respectively) was 14-15 n=191, 188; 16-17 n=219, 212; 18-19 n=72, 50.

Table 1-3. Topic suggested by the Guidelines for Comprehensive Sexuality Education (Guidelines) and the National Standards for Sexuality Education (National Standards) aligned with the adolescent development framework for middle school aged adolescents

Adolescent development framework		Topic areas	
		Guidelines (Levels 3)	National Standards (Grades 6-8)
Fundamental changes	Biological changes	Human development Sexual behavior Sexual health	Anatomy and physiology Puberty and adolescent development Pregnancy and reproduction Sexually transmitted diseases and HIV
	Cognitive changes	Relationships Personal skills*/** Society and culture	Puberty and adolescent development** Identity* Pregnancy and reproduction* Healthy relationships* Personal safety
	Social changes	Human development Relationships* Sexual behavior Society and culture	Puberty and adolescent development Healthy relationships Personal safety
Domains of psychosocial development	Achievement	Relationships	Not addressed
	Autonomy	Human development Relationships* Personal skills Sexual health Society and culture	Puberty and adolescent development Anatomy and physiology Personal safety
	Emotion	Human development Relationships* Personal skills Sexual behavior	Puberty and adolescent development*
	Identity	Human development* Society and culture*	Identity*
	Intimacy	Human development Relationships* Personal skills* Sexual behavior Sexual health Society and culture*	Pregnancy and reproduction Healthy relationships* Personal safety*
	Morality	Human development Relationships* Personal skills* Sexual behavior Society and culture*	Identity Personal safety*
	Sexuality	Human development Relationships* Personal skills* Sexual behavior* Sexual health* Society and culture*	Anatomy and physiology Pregnancy and reproduction* Sexually transmitted diseases and HIV Personal safety

\* Topic addresses contextual influences on development

\*\* The Guidelines suggest a rational model of decision-making, while the National Standards indicate that students should demonstrate the use of a decision-making model and evaluate possible outcomes of decisions adolescents may make. The model of choice is left open.

Table 1-4. Examples of developmentally appropriate strategies for sexuality education

Adolescent development framework		Stage of Adolescence		
		Early Adolescence (11-13 years old)	Middle Adolescence (13-17 years old)	Late Adolescence (17-19 years old)
Fundamental changes	Biological changes	Emphasize hands-on/interactive activities and experiences, allowing students to move around the classroom to avoid long periods of passive work <sup>2</sup>	Continue to emphasize hands-on/interactive activities and experiences, in particular for male students who are likely at the peak of their growth spurt <sup>4</sup>	Student is better able to sit for longer periods of time and can approach topics from a more cognitive perspective. Need for activity and action can be less common and frequent, though it is still important for learning. <sup>4</sup>
	Cognitive changes	<p>Tailor information to learners requiring concrete representations, while offering opportunities for practice of higher level cognitive processing<sup>2</sup></p> <p>Include problem-solving skills development and reflective thinking processes<sup>2/4</sup></p> <p>Include time for reflection<sup>4</sup></p> <p>Incorporate activities that require critical thinking, such as interpreting messages conveyed by the media<sup>4</sup></p> <p>Focus on short-term consequences and benefits of behaviors<sup>4</sup></p> <p>Address role of emotion in decision-making</p> <p>Incorporate activities that address implicit and explicit beliefs about sexuality, for example using emotionally engaging technology such as virtual reality or videos/TV shows<sup>4</sup></p> <p>Reinforce connection of previously learned material with new material (e.g. from one lesson/module to the next), or curriculum content to topics addressed in other classes<sup>2</sup></p>	<p>Can increasingly use activities that require higher level cognitive processing, including hypothetical scenarios to explore concepts<sup>4</sup></p> <p>Work on problem-solving, decision-making, and critical-thinking skills by asking students about their thoughts processes (metacognitive process) in reaching conclusions<sup>4</sup></p> <p>Continue to focus on short-term benefits and consequences of behaviors, but start incorporating exploration of medium-term benefits/consequences<sup>4</sup></p> <p>Address role of emotion in decision-making<sup>4/6</sup></p> <p>Practice anticipating difficult situations that may occur in the future<sup>4</sup> and planning in advance<sup>4</sup></p> <p>Use role-play, case studies or video representation as effective programming modes<sup>4</sup></p>	<p>Continue practice with advanced cognitive skills, such as those that promote metacognition, critical thinking, and problem solving<sup>4</sup></p> <p>Expand focus on medium-term benefits/consequences and begin focus on longer-term<sup>4</sup></p>

Adolescent development framework		Stage of Adolescence		
		Early Adolescence (11-13 years old)	Middle Adolescence (13-17 years old)	Late Adolescence (17-19 years old)
Fundamental changes	Cognitive changes (cont.)	Use examples, role plays or simple lists of possible options to help early adolescents who may have trouble generating ideas <sup>4</sup> Limit the number of activity/content transitions <sup>4</sup>		
	Social changes	Incorporate understanding of important social transitions into lessons and discussion, for example many early adolescents transition to middle school and experience increased freedom to be with friends, without the company of an adult, also often peer groups start to change dramatically, cliques form, and other gender friendships become more common. Additionally, "dating" begins for many making exploration of what is meant by dating, including behaviors, boundaries, etc. relevant both in couples and in groups. <sup>8</sup>	Incorporate understanding of important social transitions into lessons and discussion and their influence on sexuality, for example during this stage many middle adolescents transition to high school and obtain their driver's license allowing them increased behavioral autonomy and opportunity to be alone with a romantic partner. High school expands one's peer group and often this transition is a time of "reinvention" for adolescents regarding how they see themselves, portray themselves and what peer group they choose/develop. <sup>8</sup>	Incorporate understanding of important social transitions into lessons and discussion and their influence on sexuality, for example the transition out of high school which may include starting post-secondary education or obtaining employment, as well as moving into a new peer/social group and new social opportunities and freedoms away from home. <sup>8</sup>
Domains of psychosocial development	Achievement	Focus on short term goals (e.g. 1 month, 6 months, 1 year), rather than 5- and 10-year goals in goal-setting exercises <sup>4</sup> Create milestones or pivotal points for long-term projects, such as short and intermediate deadlines for components of project <sup>4</sup> Find ways to identify achievement for each adolescent so that they feel a sense of accomplishment/competence <sup>10</sup>	Recognize possible gender differences in measures of competence, for example boys may view sexual behavior as a measure of competence rather than intimacy <sup>7</sup> Individual achievement becomes more prominent. Integrate lessons that help an adolescent differentiate themselves from peers through accomplishments.	Integrate activities that have relationship to the youth's future educational or career goals <sup>4</sup>

Adolescent development framework		Stage of Adolescence		
		Early Adolescence (11-13 years old)	Middle Adolescence (13-17 years old)	Late Adolescence (17-19 years old)
Domains of psychosocial development	Autonomy	<p>Establish an autonomy supportive classroom environment<sup>5</sup></p> <p>Offer opportunities for youth to select learning topics or activities and planning activities and allow group to develop own rules<sup>2/4</sup>. For younger early adolescents, may need to offer guidance through examples or suggestions.</p> <p>Avoid power struggles over autonomy between adult and adolescents, rather try to find as many opportunities for autonomy to the adolescent<sup>4</sup></p>	<p>Establish an autonomy supportive classroom environment<sup>5</sup></p> <p>Continue identifying and increasing opportunities for autonomy, including involving youth in program development<sup>4</sup></p> <p>Allow selection of learning topics or activities and planning activities and allow group to develop own rules with limited supervision<sup>2/4</sup></p> <p>Provide or help youth identify leadership opportunities.</p> <p>Do not force participation in youth culture, allow for distance between youth and adult (e.g. educator) unless the adult feels natural, unforced, and respectful using youth language<sup>4</sup></p>	<p>Establish an autonomy supportive classroom environment<sup>5</sup></p> <p>Provide, or help youth identify, leadership opportunities, such as involving youth in program development<sup>4</sup></p>
	Emotion	<p>Discuss conflicts privately or acknowledge behavior as inappropriate and remind the group of the appropriate behavior, and move on<sup>4</sup></p> <p>Avoid competitive activities that result in a winner and loser<sup>2</sup></p> <p>Avoid direct challenges or tests of student knowledge, rather correct misinformation as it arises<sup>2</sup></p> <p>Address preoccupation with physical changes by normalizing diversity in physical development<sup>2</sup></p>	<p>Introduce and discuss coping responses to moments of extreme emotional response, including relaxation techniques, journaling, self imposed time-outs<sup>3/4</sup></p> <p>Continue to normalize diversity in physical development<sup>2</sup></p> <p>Continue to normalize seemingly inconsistent, uncontrollable, confusing or unpleasant emotions, including when external expression of emotion does not reflect internal feelings (embarrassment expressed as anger, anger expressed through crying, etc.)<sup>11</sup></p>	<p>Allow adolescents to work through emotions, doubts, and dreams about transitions to adulthood, independence, and separation from their family<sup>3/4</sup></p> <p>Address feelings of love, emotional intimacy vs. physical intimacy.<sup>12</sup></p>



Adolescent development framework		Stage of Adolescence		
		Early Adolescence (11-13 years old)	Middle Adolescence (13-17 years old)	Late Adolescence (17-19 years old)
Domains of psychosocial development	Emotion (cont.)	<p>Be aware of and normalize seemingly inconsistent reactions or responses to concepts. Help students to look at and consider those inconsistencies without judgment.<sup>11</sup></p> <p>Discuss feelings that can feel embarrassing, strange or uncomfortable. Normalize inconsistent and changing emotions as a normal part of development.<sup>3</sup></p>	<p>Begin to address feelings of love, and emotional intimacy vs. physical intimacy.<sup>12</sup></p>	
	Identity	<p>Offer skills-building in public speaking, group theatrics, role playing or other brief spotlight activities to promote confidence and comfort<sup>4</sup></p>	<p>Continue to build skills that reduce self-consciousness<sup>3,4</sup></p> <p>Allow youth to process different aspects of their identity within different contexts. Provide support and opportunities for students explore or “try on” different parts of themselves and ways of expressing themselves.<sup>11</sup></p>	<p>Offer leadership roles, such as peer educators, mentors or coaches for younger youth<sup>4</sup></p> <p>Although sexed attraction may have been evident to youth earlier, supporting youth ready for disclosure may be appropriate<sup>9</sup> (appropriate to support in all stages, however as majority of disclosure happens during late adolescence or later particularly relevant to be cognizant of here)</p>
	Intimacy	<p>A preference for same gender peer groups common among young adolescents (ages 9-11), therefore dividing groups by gender can increase comfort among students (may continue to be appropriate, at least for some sessions throughout adolescence). At the later part of this stage (ages 12-13) mixed gender groups becomes appropriate.<sup>4</sup></p> <p>Allow/encourage youth to express support for each other<sup>2</sup></p> <p>Encourage team building and peer support<sup>2</sup></p>	<p>Continues to be appropriate to debunk “everyone is doing it myth”<sup>4</sup></p> <p>Encourage youth to express support for each other, encouraging youth to engage in activities they are interested in where they can build social connections<sup>3,4</sup></p> <p>Outside experts can be more appreciated during this stage<sup>4</sup></p>	<p>Recognize and allow adolescents to work through feelings regarding social transitions to adulthood (see emotional development)<sup>3,4</sup></p> <p>Recognize the importance of romantic relationships, including distinctions between casual and steady relationships<sup>3</sup></p>

Adolescent development framework		Stage of Adolescence		
		Early Adolescence (11-13 years old)	Middle Adolescence (13-17 years old)	Late Adolescence (17-19 years old)
Domains of psychosocial development	Intimacy (cont.)	<p>Engage near peer leaders to help facilitate sessions or peer leaders to promote positive norms about sexuality<sup>4</sup></p> <p>Debunking the “everybody is doing it” myth can be an effective<sup>4</sup></p> <p>Discuss the meaning of and characteristics of true friendship, including finding role models for friendship<sup>3</sup></p> <p>Address role of technology in social development<sup>4</sup></p> <p>Normalize shift from parent-centered to peer-centered world changes in friendship groups<sup>2</sup></p> <p>Offer support to parents on how to navigate the biological, cognitive, and social transitions<sup>4</sup></p>		
	Morality	<p>Allow group to develop own rules / group norms and embed these within a discussion of the purpose of these rules for group functionality<sup>4</sup></p> <p>Incorporate activities that explore morally challenging situations. Newspaper articles, movies and TV can be good vehicles for discussion<sup>1</sup></p> <p>Create space to explore labels, such as “gay” and “straight”, their meaning and implications<sup>1</sup></p> <p>Work with students to develop empathy<sup>3</sup> for their peers and others</p>	<p>Incorporate activities that ask students to explore situations where their behavior may be challenged by conflicting values, (e.g. In a one night stand, how might each party feel?), ask them to identify the conflicting values, and how they might follow through on their decision<sup>1</sup></p> <p>Provide space for adolescents to individually explore their own relationship and sexual intentions in different scenarios (e.g. through journaling)<sup>1</sup></p>	<p>Incorporate discussions of broader social justice issues<sup>1,4</sup></p>

Adolescent development framework		Stage of Adolescence		
		Early Adolescence (11-13 years old)	Middle Adolescence (13-17 years old)	Late Adolescence (17-19 years old)
Domains of psychosocial development	Morality (cont.)		<p>Allow youth to process their actions and where these may contradict with their values or where two sets of values may conflict (i.e. family and individual values)<sup>1,3</sup></p> <p>Incorporate lessons on defining and living consistently with one's own values (e.g., successfully saying "no" to an unhealthy behavior even if it seems that everyone else is doing it.)<sup>1/14</sup></p>	
	Sexuality	<p>Help students to think critically about sexuality related message and images in culture and media.<sup>3</sup></p> <p>Although most early adolescents will not be engaging in sexual behavior, recognize there may be a wide range of interest in sexual behavior, little information about sex, and may be practicing or preparing for sexual interactions through the use of text messages, phone, or social media,<sup>1,4</sup> and "going out with" partners.</p> <p>Normalize the wide range of sexual development at this age including new, growing and sometimes confusing sexual feelings as well as lack of sexual feelings as part of development.<sup>3</sup></p> <p>Focus on simple messages such as the importance of delaying sexual activity, rather than long-term benefits and consequences of sexual behavior.<sup>2,4</sup></p>	<p>Identify and rehearse skills that allow youth to integrate their knowledge about the consequences of unprotected sex into situations they may encounter<sup>6</sup></p> <p>Recognize gender differences in concerns, questions, desired information about sex<sup>7</sup></p> <p>Address peer influence on sexual behavior and attitudes<sup>5</sup></p>	<p>Incorporate discussion about how sexual relationships / behavior relate to forming personal identity, how adolescents see themselves and how they are viewed within their relationship, their community, or by other peers<sup>3</sup></p>

Sources: <sup>1</sup>Bailey & Piercy, 1996; <sup>2</sup>Manning, 1993; <sup>3</sup>McNeely & Blanchard, 2010; <sup>4</sup>Meschke, Peter & Bartholomae, 2012; <sup>5</sup>Reeve, 2002 and Williams, 2002; <sup>6</sup>Suleiman & Brindis, 2014; <sup>7</sup>World Health Organization, 2000; <sup>8</sup>Steinberg, 2008b; <sup>9</sup>Floyd and Stein, 2002; <sup>10</sup>Deci and Ryan, 2002; <sup>11</sup>Harter, 1990; <sup>12</sup>Connolly & Mclsaac, 2011; <sup>14</sup>Steinberg & Monahan, 2007

Table 1-5. Recommendations for integrating implications of adolescent developmental research into sexuality education

1. Determine developmentally appropriate content	
Select program goals	Create program goals and objectives that reflect adolescent sexuality development
Identify appropriate program topics	Develop and implement sexuality education curricula that reflect developmentally relevant topics
Appropriately time topic presentation	Develop and implement sexuality education curricula that are sequential, selecting content based on current and soon to be relevant information
2. Incorporate developmentally appropriate strategies	
Establish an autonomous motivation supportive environment	Integrate autonomous motivation, including environmental conditions that support it, into classrooms and curricula, and include training on this topic for sexuality educators
Integrate developmentally responsive strategies	Identify intrinsically motivating topics/approaches and use them to introduce content or promote skills development Design programs that accommodate developmental opportunities and challenges
3. Accommodate developmental diversity	
Adapt content to audience	Offer sexuality education during early adolescence, rather than focusing primarily on middle adolescence Tailor curricula to particular populations, making developmental assumptions clear
Tailor educational strategies to audience	Integrate teaching strategies that account for and respond to developmental diversity within a particular group of students, including allowing flexibility within curricula to respond to student educational needs/interests

## PAPER 2: CONCEPTUALIZING DEVELOPMENTALLY APPROPRIATE SEXUALITY EDUCATION: PERSPECTIVES FROM THE FIELD

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### **Abstract**

Sexuality education is an important tool to support adolescent sexual health and development. Many such programs could be strengthened through a more integrated and comprehensive developmentally appropriate approach. In-depth interviews with experienced sexuality education materials developers and sexuality educators were employed to identify how developmentally appropriate sexuality education is understood and applied in the field. Four aspects of developmentally appropriate sexuality education emerged consistently across interviews: (1) addressing developmentally relevant topics, (2) adapting content to cognitive development (3) accommodating developmental diversity, and (4) facilitating the internalization of sexual health messages. In addition, challenges and barriers to the institutionalization of a more comprehensive and integrated approach to developmentally appropriate sexuality education were described. While there was consistency across interviews in how developmentally appropriate sexuality education was conceptualized, this conceptualization seems to fall short of incorporating the breadth of knowledge offered by the adolescent development research. This paper explores these themes and offers recommendations for the continued elaboration of a definition of developmentally appropriate sexuality education.

## Introduction

Sexuality is a particularly salient aspect of development during adolescence. In the U.S., adolescent sexuality has primarily garnered attention due to elevated incidences of sexually transmitted infections (STIs) and teen pregnancy in comparison to other industrialized countries (Goldfarb & Constantine, 2011; Panchaud, Singh, Feivelson, & Darroch, 2000; Singh & Darroch, 2000). Sexuality education has the potential to support positive trajectories in sexuality development as well as to reduce these negative health outcomes.

In the U.S., 95% of adolescents receive some formal sexuality education before age 18, with most of these efforts taking place in schools. (Martinez, Abma, & Copen, 2010). Sexuality education efforts vary in their depth, scope, and philosophical underpinning (Goldfarb, 2009). The two most common approaches to sexuality education are: (1) “sex education” which includes “abstinence-plus” and “abstinence-only”, and generally refers to behavior change approaches that tend to include content on anatomy, sexual behavior, abstinence, reproductive functioning, and disease and pregnancy prevention, and (2) truly “comprehensive sexuality education” (CSE) which is guided by a broader, holistic, and positive view of healthy sexuality and tends to include a range of topics such as growth and development, gender norms, sexual orientation and identity, love, attraction, pleasure, parenting, rights and responsibilities, and communication, in addition to disease and pregnancy prevention (Goldfarb & Constantine, 2011).

Regardless of the approach employed, the sexuality educator has a responsibility to convey messages about sexuality to students. The educator is in a uniquely influential position, as they may be one of few adults or even the only adult talking with students about this topic. In some school settings this educator is someone whose primary role is to provide sexuality education, while in many other schools this person has another primary role, such as physical education, science or health teacher. Many schools also recruit external educators, typically those working for community-based organizations.

Despite wide recognition of the role of sexuality education in promoting adolescent sexual health and development, with three quarters of all states mandating some form of sexuality or HIV prevention education (Guttmacher Institute, 2013b), current approaches continue to fall short. Although some evaluations of sexuality education programs have demonstrated modest results in changing adolescents’ sexual behaviors, the full the body of evidence suggests that the current approaches are not adequately meeting adolescent sexual health and development needs (Coalition for Evidence-Based Policy, 2010; Constantine, 2013; DiCenso et al., 2002; J. Johnson et al., 2011; Oringanje et al., 2010; Scher et al., 2006).

### A Developmentally Appropriate Approach to Sexuality Education

Enhancing the developmental appropriateness of sexuality education might be one way to strengthen these programs. Many policies and funding mechanisms require that sexuality education programs be developmentally appropriate, and several reviews of promising practices for sexuality education have highlighted its importance (Jemmott III & Jemmott, 2000; Kim et al., 1997; D. Kirby, 2007). However, there is concern that the

purported emphasis on developmental appropriateness has been lacking (Goldfarb & Constantine, 2011). Reviews of HIV prevention programs have found limited inclusion of developmental aspects in these programs (Kim et al., 1997; Pedlow & Carey, 2004). In addition, outdated or incorrect interpretations of adolescent development research persist in sexuality education programs, reflecting a significant disconnect between the adolescent development research and sexuality education practice (Goldfarb & Constantine, 2011; Millstein & Halpern–Felsher, 2002; Suleiman & Brindis, 2014). The interchangeable use of the terminology “age-appropriate” and “developmentally-appropriate” in research, curricula, and policy documents also points to ambiguity in its definition.

In the broader education field, descriptions of developmentally appropriate educational practices have primarily focused on general education in early childhood and, to a lesser extent, middle school (Manning, 1993; National Association for the Education of Young Children, 1999). The underlying premise of developmentally appropriate education is that it is grounded in developmental research with the goal of supporting optimal learning and promoting positive developmental trajectories. Although sexuality education is frequently conducted within the school, the vast majority of sexuality education materials have evolved from a public health perspective where, with the exception of biological aspects of development, there is generally little emphasis on or study of human development. This factor may explain the apparent disconnect between the endorsement of the concept and its application.

With over a century of research, the body of knowledge on adolescent development paints a vivid picture of this period in the life cycle, providing important insight into how adolescents think, make decisions, and experience motivation, and of what types of supports they need for healthy sexuality development (Lerner & Steinberg, 2009). This research base highlights the dynamic nature of adolescence during which biological, cognitive, and social changes activate unique expressions of psychosocial development (Steinberg, 2008b). Contrary to the customary focus on the negative sexual health outcomes during adolescence, the adolescent development research highlights some of the normative aspects of sexuality development during adolescence including establishing a sexual identity, identifying own values and beliefs about sexual behavior and relationships, learning about and practicing intimacy in romantic relationships, expressing sexual feelings, and experiencing sexual behavior (Diamond & Savin-Williams, 2009; Goldfarb & Constantine, 2011).

Research on adolescent development has several important implications for sexuality education, including determining developmentally appropriate content, incorporating developmentally appropriate educational strategies, and accommodating developmental diversity (see Paper 1). The literature points to specific considerations in selecting program goals, identifying appropriate topics, appropriately timing topic presentation, and selecting developmentally responsive educational approaches. It also offers insight into educational approaches that promote autonomous or self-regulated forms of motivation, a factor associated with enhanced health and positive education intervention outcomes (Reeve, 2002; Ryan & Deci, 2000; Williams, 2002).

## Purpose of the current study

Despite the ample literature on adolescent development and the potential implications for sexuality education, there is no documented definition for developmentally appropriate sexuality education. Furthermore, it is unknown how individuals who are most directly involved in the day-to-day implementation of sexuality education apply adolescent development concepts to their practice. The current study addresses these gaps in understanding by identifying how experienced sexuality educators and materials developers conceptualize developmentally appropriate sexuality education. Specific research questions addressed how adolescent development is understood by sexuality educators and sexuality education materials developers, the application of these understandings to their practice, and challenges and barriers to conducting developmentally appropriate sexuality education. In addition, perspectives from the field on adolescent development are compared to those from adolescent development research. Ultimately, this research is intended to provide a better understanding of the current conceptualization of developmentally appropriate sexuality education to help guide federal, state, and local policy, school and community-based programs, and training development for sexuality education, as well as future research endeavors.

## **Methods**

### Sample

Key informants with professional expertise in adolescent sexuality education were identified through purposive sampling techniques in order to capture a range of perspectives (Maxwell, 2013). A total of 18 key informants were identified across two groups: sexuality education materials developers and sexuality educators. Within each of these two primary categories, sub-categories of respondents were identified (see Table 2-1).

The seven materials developers included individuals directly involved in the design of nationally used abstinence-plus and comprehensive sexuality education (CSE) curricula, and leaders in the development of the Guidelines for Comprehensive Sexuality Education (National Guidelines Task Force, 2004) and the National Sexuality Education Standards (Future of Sex Education Initiative, 2011). Several materials developers fell across multiple categories of expertise, with one curriculum developer initially identified for her involvement in the design of several abstinence-plus curricula but later recognized as practicing from a CSE perspective. In addition, four of the seven developers continued to practice as sexuality educators. Two of the materials developers were retired at the time of the interview but had been actively involved in the field within a year preceding this study.

The 11 sexuality educators included individuals currently facilitating or teaching any form of sexuality education. Sub-categories of sexuality educators included educators working for community-based health organizations, public middle schools, public high schools, a public university, and high school-based health centers. Selection criteria were developed with the intention of identifying highly experienced sexuality educators. The selection criteria included: (1) currently teaching any form of sexuality education to



adolescents, defined as ages 11-21 year olds; (2) at least 5 years teaching experience in sexuality education with adolescents; (3) formal training in sexuality education (university level or specialized training program); and (4) experience working with a standardized sexuality education curriculum.

### Procedure

The 18 in-depth individual semi-structured interviews were conducted between October 2013 and February 2014. All interviews were recorded and transcribed verbatim, and field notes were written immediately following each interview to capture emerging themes and to inform adaptations to the interview protocol. The Committee for the Protection of Human Subjects at the University of California, Berkeley approved the study design and protocols.

Interviews included questions about respondents' definition of developmentally appropriate sexuality education, their understanding of adolescent development principles, and the application of these principles in practice. Multiple elicitation techniques were used to address the same research topics of interest to reduce biases that might result from a single method (Antin, Constantine, & Hunt, 2013; Bernard & Ryan, 2009). In addition, because it was anticipated that there would be differing levels of exposure and understanding regarding adolescent development, these methods provided respondents different opportunities to express their conceptualization of developmentally appropriate sexuality education. Thus, the interview protocol was divided into three sections: open-ended questions, curriculum critique, and description of an ideal program. Open-ended questions focused on eliciting definitions and examples of developmentally appropriate sexuality education from current practice. The curriculum critique involved reviewing a lesson from a popular sexuality education curriculum and reflecting on it based on respondent conceptualization of developmentally appropriate sexuality education. The third component asked respondents to describe their ideal developmentally appropriate sexuality education program.

### Analysis

The lead researcher conducted multi-step thematic coding of transcribed interviews in Dedoose (version 4.12.4), a qualitative data analysis software (Bernard & Ryan, 2009; LeCompte & Schensul, 1999; SocioCultural Research Consultants, 2013). In the first step, general codes were identified based on main areas of interest to the study derived from the systematic review of the adolescent development literature (paper 1), for example, developmentally appropriate definition, application of definition, adolescent development concepts, and barriers and facilitators to developmentally appropriate sexuality education. The second step produced sub-codes within these main areas of interest. These sub-codes were informed by the study's conceptual framework (presented in paper 1) on adolescent development (e.g. psychosocial development, contexts), as well as through memos and observations compiled during the first step of coding (e.g. learning style, risk-focus, decision-making). In the third step, pattern-level analysis was utilized to examine particular code categories and the relationship

between codes. Patterns of themes were identified through respondent declaration, frequency, omission, similarities, co-occurrence, and congruence with prior hypotheses (LeCompte & Schensul, 1999). In addition, conflicting data within and across interviews were searched for in an effort to test the validity of the themes as well as to identify new themes (Antin et al., 2013). Similarities and differences by respondent category were explored as it was hypothesized that materials developers and sexuality educators would have a different relationship to the implementation of sexuality education programs and exposure to developmental concepts, thus producing different understandings and applications of developmentally appropriate sexuality education.

## Results

Although recognition of the terminology “developmentally appropriate sexuality education” was high, with only one respondent reporting being unfamiliar with the term, overall there was a lack of clarity and specificity in defining the concept. Despite the overall ambiguity, four major themes identified through the systematic literature review (paper 1) were supported through the respondent interviews: (1) addressing developmentally relevant topics; (2) adapting content to cognitive and brain development; (3) accommodating developmental diversity; and (4) facilitating the internalization of sexual health messages.

Within each theme, respondent definitions of the theme and applications of the described concepts in their practice (i.e., teaching, materials development) are described. In addition, challenges and barriers are discussed as they relate to each of the four themes. And finally, a fifth theme is described: challenges and barriers to the institutionalization of developmentally appropriate sexuality education. Despite variation in respondent approaches to sexuality education (e.g., abstinence-plus, CSE) and student populations of focus, there was little difference in how these themes were described by respondents. There were, however, some differences in conceptualization noted between materials developers and educators more broadly. Commonalities and differences by respondent category are noted where they surfaced.

### Conceptualization of developmentally appropriate sexuality education

#### 1. *Addressing developmentally relevant topics*

##### Definitions

Respondents raised two opposing perspectives regarding whether a developmentally appropriate sexuality education program needs to be comprehensive in the topics it addresses or whether single-issue focused programs (e.g. abstinence-only or HIV prevention) can also be considered to be developmentally appropriate. With the exception of one school-based educator, the sexuality educators stated that developmentally appropriate sexuality education needed to be comprehensive in nature. However, the materials developers conveyed a different view. Although most felt that comprehensive programs were generally better than single-issue focused ones, comprehensiveness of content was not considered integral to the definition of developmentally appropriate sexuality education. For example in response to the

question of whether single-issue focused curricula can be developmentally appropriate, an abstinence-plus curriculum developer stated, *"I don't think it should take the place of comprehensive sexuality education, but I think one could develop a developmentally appropriate curriculum."* –202.

When asked to describe current and ideal developmentally appropriate sexuality education practices, most respondents focused on only a few aspects of sexuality development, namely puberty, romantic relationships, and sexual behavior. For example in describing topic selection, a school-based sexuality educator stated, *"I'm just thinking about the changes that they have in their body and the desires that they are having"*- 110. In addition, a few respondents reported addressing gender identity, sexual orientation, and homophobia, however it was unclear if these topics were selected for developmental relevance or because they are considered to be important topics within sexuality education. For example, just prior to concluding the interview, a school-based sexuality educator added, *"[O]ne of the things that we didn't talk about earlier but that is part of my class is talking about sexual orientation and gender identity"* - 104. Even among this experienced group of respondents, the distinction between comprehensiveness and developmental appropriateness was not always clear.

#### Application in practice

Both educators and materials developers reported identifying developmentally relevant topics by gathering information from students directly, for example through the use of anonymous question boxes. Despite recognition that student-generated topic areas are indicators of those that are developmentally relevant, educators largely revealed maintaining their pre-selected topic area of focus regardless of student-identified topics of interest. Rather, student-selected topics were woven into pre-determined lessons (e.g., responding to questions about contraceptives while offering a lesson about anatomy). Although sexuality educators did not report making large alterations to pre-determined lesson topics based on student-selected topic areas, no sexuality educator followed one published curriculum with fidelity, reporting that these were too rigid to meet student needs. All educators seemed to enjoy relative freedom in selecting the source of their lesson plans, however, community based educators reported the need to be responsive to those requesting their services and thus were sometimes restricted to topics identified by school representatives requesting external assistance. Both school and community-based sexuality educators described gathering ideas for topic selection and lesson plans based on published documents that are presumed to be developmentally appropriate, such as the National Standards for Sexuality Education, and their own agency/school curricula, as described by a community-based sexuality educator, *"I think what tends to really happen in the classroom is that we teach to the standards [National Standards for Sexuality Education] for an age"* – 103. The National Standards for Sexuality Education, referred to by this sexuality educator, provide student learning objectives by grade level in several key topic areas (Future of Sex Education Initiative, 2011).

Different from the sexuality educators, the majority of materials developers referred to research on adolescents and sexuality development to help inform the topics included

within a curriculum. The majority of these references were to the developer's own research.

*We had no sexual content in that program [6th grade curriculum] and that was intentional because of the age of the young people and where they were developmentally in relation to that content. I mean those young people when we were piloting and doing the survey they couldn't even say sex, they would say the "S word" because they were too embarrassed to say sex. - Abstinence-plus curriculum developer, 202*

### Challenges and barriers

A commonly referenced barrier to teaching topics considered to be developmentally appropriate were political limitations on certain subject matter. Sexual pleasure and pornography were two specific subjects mentioned with frequency.

*We can't help them [students] unpack the difference between what is and isn't pornography and the nature of fantasy and all of the things that are related to why people watch it... That's a missing piece about sexuality around which people have a lot of shame and confusion, and it's really hard for us to teach those things in school [due to political limitations on subject matter]. - Comprehensive sexuality education curriculum developer, 204*

The timing of topic presentation was salient for many respondents. Both sexuality educators and materials developers referred to the importance of addressing topics that are currently relevant to students. In addition, presenting topics in anticipation of upcoming informational needs, referred to by some respondents and in the education and public health literature as "anticipatory guidance," was also considered important.

*What makes something developmentally appropriate is one of two things: either children have questions about it and questions deserve answers or the adults are able to anticipate what children will need soon... So just like you wouldn't wait for your child to start kindergarten to tell them about kindergarten, you don't wait for your child or the children who are in your care to start puberty before you tell them about it. You don't wait for them to be confronted with dating questions before they've had a chance to learn about dating. So what makes it developmentally appropriate among other things is that you anticipate a need. - Comprehensive sexuality education curriculum developer, 205*

*Anticipatory guidance is something we talk about a lot. We're not going to teach puberty in the 12th grade for the first time. We're going to teach it before or right when puberty's starting... It's a lot easier for young folks to know you will get a period versus that's a period. I mean it's a lot more comfortable for most young folks to know what's going to happen to their body. - Community-based sexuality educator, 103*

An important practical limitation in addressing topics of current and anticipated relevance is a lack of foundational knowledge among students on sexuality topics. Several respondents mentioned inconsistent offering of sexuality education in lower grade levels, resulting in differing levels of knowledge at higher grade levels. Despite this barrier, only a few respondents reported reviewing topics appropriate to lower grade levels based on students' lack of prior knowledge.

## 2. *Adapting content to cognitive and brain development*

### Definitions

Both sexuality educators and materials developers described developmentally appropriate sexuality education as presenting the information pertaining to the selected topics areas in such a way that it responds to the cognitive abilities of the student. Respondents referred to both cognitive and brain development, sometimes using these synonymously to describe how adolescents think, make decisions, perceive risks, and comprehend information. Content was deemed developmentally appropriate if students are able to comprehend it. *"[We need to be] sure what we're sharing is going to resonate and land with the group we're sharing it with... So being in a fifth-grade classroom and working on hypotheticals...It's not really appropriate for where they are with their cognition at that time."* – Community-based sexuality educator, 103.

Several respondents offered examples of the transition from reliance on concrete thinking to being able to understand hypothetical situations or abstract concepts during adolescence. The influence of cognitive and brain development on decision-making processes were also salient across respondent interviews. Respondents generally dichotomized decision-making processes as either active or passive. Active approaches, in which thoughtful evaluation of risk and benefits and advanced planning skills are engaged, was considered to be reflective of a more mature form of decision making that results in fewer 'mistakes' or negative consequences. This dichotomy was described by a school-based sexuality educator (109) as those students who had *"really thought it through"* and those in *"the no-no, it isn't going to happen phase."* Passive approaches to decision-making were largely considered to result from a lack of empowerment, as described by a community-based sexuality educator talking about high school age youth attending an alternative school, *"They almost never make decisions. Sometimes they just let things happen to them...because they're young people and because their culture doesn't allow them a lot of power and a lot of control over their lives..."*- 100. One school-based sexuality educator alluded to the influence of emotion in adolescent sexual decisions, *"There was no thought process...just feeling, feeling, feeling...It's more about feeling, feeling, feeling, less about 'I need to protect myself, I need to go to the doctor.'" - 108.*

Respondents primarily cited brain development to describe adolescent risk perception, with several respondents suggesting that adolescents have low levels of risk perception, consider themselves to be invulnerable to negative outcomes, and are unable to learn and modify their own behavior based on their peers' experiences.

*Teenagers tend to have an invincibility complex and even if they see something happen to their friend, they 'know' that's never going to happen to them... So that is an example of the prefrontal lobe not being as fully developed to be able to make all of those connections. – Community-based sexuality educator, 109*

#### Application to practice

In describing how cognitive and brain development influenced content development and adaptation, respondents primarily focused on cognitive development, with an emphasis on the transition from concrete to abstract thinking.

*High school students are getting better with hypotheticals... We do more thinking about, 'How would this change my life? How would this affect me?' Younger than that is challenging. I just feel like developmentally they're not there yet thinking into the future in the same way. – Community-based sexuality educator, 103*

*When I do go into the classroom, I do try to have an opportunity to talk with the people that are working with those students on a regular basis, to get an idea of where [the students] are developmentally. What group am I going to be stepping myself into?... Do I need to approach it using something like a doll as opposed to just talking abstractly? Do they need something concrete to look at? – School-based sexuality educator, 105*

In addition, respondents reported varying the level of complexity in the presented information based on cognitive developmental characteristics, with younger students being offered less detail and older students being provided more detail.

*You're going to talk in a way that is much simpler if you're talking to middle school students you know as opposed to high school students. – Community-based sexuality educator, 100*

*The developmentally appropriate slice would be how much depth. – Abstinence-plus curriculum developer, 202*

A minority of respondents described determinations of content presentation based on their described understandings of adolescent decision-making processes. For example, in regards to working with students who employ more passive forms of decision-making a school-based sexuality educator stated:

*There isn't an easy way (to help students with less mature decision-making abilities) other than just providing them the information, giving them the condoms, providing them emergency contraception just to keep at home so that if something does happen, they're already prepared to take care of things for themselves if they want to. And just keeping the door open so they can keep coming back and keep talking about it and knowing that, 'Yeah you make a mistake it's okay. Come back and just*

*let's work on that mistake and then let's plan ahead.'* – School-based sexuality educator, 109.

## Barriers or challenges

Respondents did not mention any barriers or challenges in reference to the adaptation of content to cognitive or brain development.

### 3. *Accommodating developmental diversity*

#### Definitions

According to respondents, one of the defining features and primary purposes of the concept of developmental appropriateness is the recognition of developmental diversity during adolescence. All respondents discussed developmental diversity in some capacity, and a few thought it to be essential for the designation of developmental appropriateness.

Discussions primarily focused on developmental diversity across adolescents within a given classroom or group (inter-individual diversity). For most educators and a few materials developers, developmental diversity was largely attributed to social or cultural differences.

*There is definitely a difference [in questions and curiosities about sexuality] between the 12-year olds and the 15-year olds...It is more of a culture based [difference] because my Pakistani and Iranian girls, a lot of them have no knowledge about anything because it is not talked about at home. Same thing sometimes with the Hispanic home. Other homes, maybe it's more open.* – School-based sexuality educator, 101

*In some ways they [low and high income youth] have some of the same issues as they go through development, but it [the information that they want and find valuable] is really socially and culturally influenced.* – Abstinence-plus curriculum developer, 200

Materials developers tended to focus on more detailed developmental differences than sexuality educators, a possible reflection of their command of developmental concepts.

*Some sixth graders are going to be more advanced in terms of their interest and desire to know about sexuality education and their desire to know about bodies and sexual behavior and birth control and condoms and all those things. And there are going to be some who are freaked out by the idea and aren't interested in hearing it. So we try to teach in a way that allows kids to be wherever they are.* – CSE curriculum developer, 204

Only one respondent, an abstinence-plus curriculum developer, disregarded developmental differences between populations of young people.

*No I haven't seen any developmental differences. Kids are kids, teens are teens and where I see black kids at 13 or 14, and 15 or somewhere to Latin teenage kids at 13, 14, and 15 and Asian and it's all - inner city, urban or rural kids, they all struggle with the same concept of sex and sexuality: do they do or they not do, how do you abstain, how do you be safe - all the same questions. – Abstinence-plus curriculum developer, 203*

No respondents explicitly referred to developmental asynchrony (e.g., advanced physical development and immature cognitive development). However, a few respondents recognized that adolescents, in particular early adolescents, simultaneously exhibit both mature and immature characteristics, for example as described by this middle school-based sexuality educator:

*Though they [middle school students] are mature and they've seen R rated movies, they still cry, call their mom if there's an issue with the little brother and sister, but will listen to gangster rap. So they are still like children but they are also very savvy when it comes to popular music, movies, and TV and the like. – School-based sexuality educator, 110*

#### Application to practice

Respondents differed about which group of students the educational materials, including the content covered and strategies used to convey them, should target. Several respondents suggested that materials should be designed to meet the needs of the average student, while others advocated teaching to the most advanced, and yet others to lowest level student. It is unclear to what extent these perspectives contradict each other because respondents used different domains of development as indicators of differences, as well as different types of accommodations (e.g., content or strategies). For instance, some referred to cognitive abilities more broadly when describing considerations for materials adaptation, while some felt that reading or learning ability were paramount to informing modifications, and yet others described needing to conform materials to varying levels of sexual experience.

*So we are trying to hit a little more middle of the road knowing that there are some students who are below the [developmental] level [of the sexuality education program] that are not really going to understand and really comprehend but may spark something that they're curious about. – School-based sexuality educator, 109*

*I don't believe that children can be harmed by too early education the way they can be harmed by too late education. So if a subject area is developmentally appropriate for some people in a classroom, then it should be introduced... – CSE curriculum developer, 205*

*A lot of the students that I worked with were not... strong readers, they weren't quick thinkers... If I wanted young people in the class to be*



*engaged I really needed to teach to the lowest common denominator. – Standards developer, 206*

In general, early introduction of topics was viewed more favorably than waiting until all students in a classroom were perceived to need information about a particular topic, based on the justification, “[*If something isn’t [developmentally] appropriate then it’s just not going to be taken in*]” – Abstinence-plus sexuality educator, 200. Furthermore, although the majority of respondents appeared to rely on student questions as indicators of interest and readiness to receive information, a few respondents noted that waiting for these questions may be misleading.

*People have always waited for their child to be ready and [ask] questions...thinking that just because they are asking questions [it] probably means that there’s a readiness for learning something. But just because they don’t ask questions doesn’t mean they’re not ready for learning. – Abstinence-plus curriculum developer, 200*

Ideal group composition was explored in all interviews, both in response to questions regarding respondents’ ideal developmentally appropriate sexuality education program and on how best to address developmental diversity. The majority of focus in regards to group composition was on gender, based on the recognition that informational needs and educational strategies may vary by gender. No respondent mentioned the age of students as a consideration of group composition by gender (e.g., younger students should be separated by gender and older students not being separated by gender), even after probing about developmental differences between younger and older adolescents. Respondents ranged from complete support of mixed gender groups in all circumstances, to being in complete support of gender separated education.

*The way you make those conversations [between individuals of different genders] possible is by making them happen in the classroom. The way you make them seem doable is through practice, and experience and discovering that nobody falls over dead. So, we feel really strongly about teaching, if not all, almost all of the curriculum co-ed. – CSE curriculum developer, 205*

And conversely:

*I’m a big believer with some exceptions of separating genders...The research shows that the longer a girl waits to have sex, the higher her self-esteem is, the longer a guys waits to have to sex, the lower his self-esteem is. So if you’re doing a mix gender lesson around this you’re speaking to two different populations that place a different value on the outcome of the behavior or not engaging in that behavior...There would be a lot of folks who would say to me it’s really sexist to separate the genders and I can understand you feeling that way but it has an amazing impact on learning. - Standards developer, 201*

Several respondents suggested that there were potential benefits to separating groups by gender, yet doing so largely conflicted with the need to ensure that programs were inclusive for all students.

*I wouldn't [separate groups] by gender...What do you do with non-gender students? You're separating your "boys" and your "girls" and what do you then do with your transgender and non-gender students, do you throw them in together? Do you split them out into gender groupings that maybe aren't as comfortable for them and talk about things that anatomically they may look one way but gender wise, they're another way? –School-based sexuality educator, 109*

Most respondents referenced a need for flexibility for on-the-spot adjustments to lesson plans in order to respond to developmental diversity. *"Oftentimes with a new group I tend to just bring a bag of tricks and see what they're interested in, especially if it is just a one-time class or maybe a conference-type space where there's no way I am going to know who is in the room" – Community-based sexuality educator, 103.*

Other mentioned classroom-based strategies to respond to developmental diversity included using multiple teaching techniques, repeating information as needed, having an anonymous question box to gather and answer questions from students, incorporating lessons on how to search for information to empower students to seek out answers to their questions, and using individual reflection activities such as journaling. Programmatic level techniques included providing opportunities for individual counseling, either with the educator or through clinical services, building sequential curricula that repeat key messages, and developing curricula based on particular audience characteristics.

*One of my criteria for something being a high quality curriculum is that it addresses the same issue multiple times, in multiple ways, partly because different people learn differently, so you've got to use different learning strategies to reach everybody and partly because you've got to do it at different times in children's lives. – CSE Curriculum developer, 205*

## Barriers and challenges

Despite describing several strategies for addressing developmental diversity within a classroom, doing so was considered by most respondents as one of the primary challenges to implementing a developmentally appropriate approach to sexuality education. One-time presentations were considered particularly problematic by community-based sexuality educators as they allowed for very little time to identify particular student needs. In addition, both educators and materials developers recognized educator training. In order to make appropriate adjustments, educators were perceived to need further training in adolescent development more broadly, as well as sexuality development specifically.

### 4. *Facilitating internalization of sexual health messages*

## Definitions

Respondents viewed student internalization of sexual health messages, such that they become integrated with personal beliefs, as integral to motivating adolescents to adopt behaviors that promote sexual health and development. Internalization was viewed as an important function of sexuality education overall and a factor enhanced by being developmentally appropriate.

Although only a minority of respondents explicitly linked the internalization of sexual health messages with developmental concepts, the facilitation of this process was at the core of many of the respondents' descriptions of their work. For example a school-based sexuality educator explained:

*[I]t's a limited number of sessions and so I look at my job as an editor of what is the most important information that people need to know at this stage of their life? And what is the best way for them to receive that information and internalize it in a way that can be useful for them. – School-based sexuality educator, 104.*

Internalization was described as resulting from an individual's ability to personally connect to the content.

*The content has to be not too advanced...you [the educator] are thinking of their cognitive abilities at that age, not only how they learn but what they can learn contextually, what experiences they have and can use to hook new learning on... –Abstinence-plus curriculum developer, 202*

*You have to look at kids as whole people with different learning styles and learning abilities and also different you know there is range of what kids can and cannot understand both in terms of you know their language ability but also in terms of the relevance of information to their own experience and their ability to find a place for it and make it meaningful. – CSE curriculum developer, 204*

Readiness to receiving new information was also thought to be critical to internalization. A common perception among both sexuality educators and materials developers was that, "Nobody wants to hear what they're not asking for. That just goes in one ear and out the other" - Community-based sexuality educator, 102. Despite this assertion, as mentioned previously, in a classroom setting, respondents varied in how they determined group readiness for sexuality education content (e.g., at least one student showing readiness, most students showing readiness, all students showing readiness).

There were varying perspectives on the degree to which the educator or curriculum play a role in promoting student receptiveness to sexuality education.

*I think most of it [learning] really has to do with their development as opposed to the information that they're given because you can give somebody information a million times but if they don't really start to make*

*that connection for themselves...it doesn't make a difference.* – School-based sexuality educator, 109

*[W]hat you really want this program to do is to touch them [students] and help them get it [information], swallow it, and use it. And if they're not getting it when you teach it then you blew up an opportunity, so it's really important that the programs are designed to reach the kids* – Abstinence plus curriculum developer, 203

Regardless of the current population with whom they work, the majority of respondents suggested that younger adolescents, in particular middle school students, exhibited greater receptiveness to sexuality education messages.

*I feel like in high school people are kind of resistant to new messages...but in middle school it's not like that. In middle school they are like you know what, I am open to hearing about this, you are talking about something that is going to make me laugh and that's is going to make me uncomfortable, but, you know what, I'm still open to it.* – School-based sexuality educator, 105

*By middle school we're at the tipping point and we still have this last opportunity where they are open to at least considering...They are really willing to consider - huh, maybe this stuff that I've been told my whole life isn't quite true, oh my gosh, I can think for myself! They love that.* – Standards developer, 201

#### Application to practice

Respondents described employing several strategies in facilitating the process of internalization. The most prominent of these was to identify topics of interest. Identifying topics of interest to students allowed for the introduction or insertion of the intended content in a way that aligns with these interests.

*If I came in to teach anatomy, but yet everyone has a lot of birth control questions, I am going to switch my focus to talk about birth control but incorporate in as much anatomy as possible while I'm explaining those things.* – Community-based sexuality educator, 102

*My students tend to be very interested in fairness so that's often a good or a successful route to take with them – to talk about equal, equal rights, equal access for all things, and about what their rights are.* – School-based sexuality educator, 104

For the majority of sexuality educators in particular, creating a safe space and building rapport with students was deemed essential for identifying topics of interest and in facilitating openness. Although not all educators described going to the same lengths to connect to youth culture as this community-based educator, several mentioned the need to be current on youth culture:

*I'm always researching. All the time...I'm always listening to Top 40, hip-hop and anything in the social media, and the words, the lingo, because I then flip it and I use it sometimes. I'll inject it in the lesson...Whatever it is, the latest word for "ho" something like that. Or the latest word for a one-night-stand...Knowing the word and how it's being used, all of that, is really important to then make it click. They know that you know what it is that they're going through and their communities are going through... – Community-based sexuality educator, 107*

## Barriers and challenges

Several educators mentioned limited time and resources dedicated to cultivating relationships between the educator and student as important barriers to being able to know how best to support the internalization of sexual health messages.

### Challenges and barriers to the institutionalization of developmentally appropriate sexuality education

Respondents noted several barriers and challenges to the application of a developmentally appropriate approach to sexuality education materials development and teaching. These barriers and challenges fell broadly within three categories: barriers to program design, implementation, and institutionalization, a summary of which are found in Table 2-2.

In addition to the program design and implementation challenges and barriers noted within the discussions of the primary themes above (e.g., political limitations on topics, inconsistent previous sexuality education, limited class time, addressing developmental diversity within a classroom setting), some respondents highlighted challenges and barriers to the institutionalization of developmentally appropriate sexuality education. For example, respondents cited the current focus in the field on evidence-based programs as a barrier to the institutionalization of developmentally appropriate sexuality education. In addition to narrowing the scope of sexuality education to an emphasis on reducing negative health outcomes, the focus on replicating evidence-based programs with fidelity was described as inhibiting the needed flexibility to respond to developmental diversity among students.

*There has been such a huge emphasis on fidelity it doesn't enable [an educator to meet the needs of students] who are at all different [developmental] levels. A really trained educator knows how to adapt in the moment to adjust to that ... but [exact replication of] evidence-based interventions doesn't really allow for that. – Standards developer, 201*

For many respondents it appeared to be challenging to tease apart the concept of 'developmental appropriateness' from other practices considered to be important to sexuality education (e.g., cultural competence, interactivity, inclusiveness, medically accuracy). This may explain some of the ambiguity in the field's definition. In most cases, in particular among sexuality educators, the overlap between these practices did

not appear to cause any practical tension in the application of these important practices. For example, one community-based sexuality educator describes the intersection between the concepts of inclusivity and developmentally appropriate, a perspective shared by several sexuality educators:

*I think it's more about the space that we create to talk about sex that has to be developmentally appropriate and welcoming...then it's inclusive for people and people can walk into that space and feel comfortable as who they are... –Community-based sexuality educator, 100*

For some respondents, however, having overlapping best practices was viewed as problematic. For example, one standards developer pointed to the need to clarify and distinguish definitions of different practices considered important to sexuality education in order to ensure political accountability for each one:

*From a policy perspective, we're happy if policy makers get age and stage, like developmental stage, developmental age, sort of their cognitive ability. That's sort of as far as I want them to go when they think of developmentally appropriate...I want another section of the law to say that it needs to be inclusive of all sexual orientation, gender identity...I want another box that says that it's not fear and shame based. I want another box that says that it's medically accurate, and I want another box that says that it's culturally competent...I want those things separated out. – Standards developer, 206*

## **Discussion**

This qualitative examination was conducted to identify how developmentally appropriate sexuality education is conceptualized by experienced professionals working in the field of sexuality education. Interviews revealed four defining aspects of developmentally appropriate sexuality education: addressing developmentally relevant topics, adapting the content to cognitive and brain development, accommodating developmental diversity, and facilitating the internalization of sexual health messages. Although there were a few areas in which sexuality education material developers and sexuality educators differed in their conceptualizations, overall there was relative consistency across interviews.

Consistent with the health education and promotion literature (e.g., Lowenstein, Foord-May, & Romano, 2009), respondents highlighted the importance of selecting topics based on current and soon-to-be relevant developmental experiences for the students they were serving. Materials developers and sexuality educators largely differed as to whether the level of comprehensiveness in topic coverage was a criterion of developmentally appropriate sexuality education. Although most respondents thought a more comprehensive approach was better for students, educators often stated that comprehensive topic coverage was an important aspect of developmental appropriateness while materials developers generally thought that single-subject focused programs could also be considered developmentally appropriate. The literature on adolescent development indicates that adolescent sexuality development is

intertwined with the other domains of psychosocial development and is heavily influenced by the fundamental developmental changes that happen during adolescence (Steinberg, 2008b). In order to support positive trajectories in sexuality development, consideration of these developmental relationships is fundamental. For example, beliefs about and experiences with sexual behavior are largely influenced by intimacy development during adolescence, and thus neglecting to address intimacy results in less relevancy of the topic to the student. As such, based on this literature and as suggested by the sexuality educators, a comprehensive approach to sexuality education is more likely to reflect a holistic developmental perspective. Nevertheless, single-focused programs can still consider developmental characteristics relevant to the topics they do choose to cover.

Cognitive and brain development were the most commonly referenced domains of development across interviews. These domains of development were referred to as being important in determining how to present and adapt content to improve student comprehension of the material. It is not surprising that these two domains of development were the most cited given that these aspects of adolescent development have received substantial coverage by popular media. Similar to the explanations given by respondents, these sources have framed adolescent thinking and behavior as heavily influenced by ongoing brain development, which manifests during adolescence as an immature ability to engage cognitive control mechanisms, such as planning, poor connections between brain regions resulting in difficulties processing information, and low levels of risk perception. However, these assertions are largely unsupported by research in this area (Crone & Dahl, 2012; Millstein & Halpern–Felsher, 2002). Studies have found that by mid-adolescence most individuals have similar cognitive capacities to adults, including the ability to make cognitively-based decisions such as planning for sex (Steinberg, 2005). However, several factors have been found to differentially influence adolescent decision making, and consequent behaviors, including (1) adolescents tend to have less experience in certain types of decisions and behaviors (Reyna & Brainerd, 2011); (2) adolescents weigh risks and benefits differently from adults, often placing greater importance on benefits than on risks and with emphasis on short term outcomes (Halpern-Felsher, 2011); (3) adolescents are particularly motivated by social-affective factors, including finding novel, exciting and sensual experiences that can be enhanced by the presence of peers (Crone & Dahl, 2012; Gardner & Steinberg, 2005); and (4) adolescents may hold implicit beliefs or willingness to engage in sexual behaviors, resulting in less opportunity for planning and consideration (Gerrard et al., 2008). In addition, contrary to the perception that adolescents have low levels of risk perception, research has found that they often perceive their risk to be higher than it actually is for several adverse health outcomes, including HIV and sexually transmitted diseases (Millstein & Halpern–Felsher, 2002).

Despite respondents' emphasis on adolescent cognitive and brain development, they presented few strategies to apply this knowledge to practice. These included modifying the complexity of presented information (i.e., content), helping adolescents realize that they could be active in making decisions for themselves, and being present to support adolescents when negative or undesired outcomes occurred. The limited resources for addressing adolescent cognitive and brain development as it relates to sexuality

education may, in part, be a reflection of the way these aspects of development are currently understood. For example, the developmental research suggests that integrating emotionally relevant experiential learning into sexuality education programs may better support the development of decision-making skills among adolescents, and more accurately reflect the motivational processes driving sexual behaviors (Suleiman & Brindis, 2014). Although the research on how to best do this is still in its infancy, suggestions include using technology and virtual environments to simulate experience and facilitate emotional learning (Suleiman & Brindis, 2014).

Respondents focused on developmental diversity across adolescence and within grade levels, a characteristic of adolescence that is well-documented in the adolescent development literature (Steinberg, 2008b). There was a clear understanding across all respondents that younger and older adolescents have important developmental differences necessitating distinct educational approaches. In addition, peers of the same age were recognized as sometimes being developmentally different and thus potentially having different educational needs. However, contrary to the adolescent development literature, the topic of developmental asynchrony or intra-individual developmental diversity was largely absent from respondent narratives. For instance, an important intra-individual developmental difference to consider that did not surface in interviews would be advanced physical development and immature cognitive development. This could reflect a lack of awareness of this type of developmental diversity or lack of strategies to support it.

For respondents, the most prevalent explanations for inter-individual developmental diversity were culture, socio-economic status and school performance (i.e., low versus high performing schools). Culture, socio-economic status, and school performance, which appeared to be conflated with race and ethnicity, were described as resulting in student differences in physical development, learning ability, preferred learning style, and the likelihood of previous exposure to sexuality education. Although respondents reported several strategies to make adjustments to meet diverse developmental needs, most found adequately addressing developmental diversity within a group-level sexuality education program particularly challenging. Similar to the respondent perspectives, the adolescent development literature points to the influence of different contexts (e.g., family, peers, school) on development (Eccles & Roeser, 2009; Steinberg, 2008b). Culture, socio-economic status, school performance, and previous exposure to sexuality education are characteristics of developmental contexts, however, exploring more specific and modifiable features of developmental contexts may prove more useful in helping to define strategies that address inter-individual developmental diversity. For example, in reviewing the literature on the school as a context of development, Eccles and Roeser (2011) looked at several specific aspects of the school environment (e.g., teacher training, teacher implicit assumptions about students, and classroom environments and curriculum), finding that each had implications for adolescent development, motivation, and learning. Sexuality education programs conducted within school settings could benefit from a similar analysis to better assess how different aspects of these programs influence adolescent sexuality development.



Developmental appropriateness was perceived to be crucial in supporting students' internalization of sexuality education messages. This, in turn, was considered important to the goal of motivating adolescent engagement in healthy sexual behaviors and positive trajectories in sexuality development more generally. Much of the description of internalization echoed Self Determination Theory (Ryan & Deci, 2000). This theory describes different sources of motivation and their impact on behavior, namely that individuals who experience more self-regulated forms of motivation (autonomous motivation) are most likely to engage in a desired behavior and sustain it over time. In contrast, those who are motivated by less self-regulated forms of motivation (controlled motivation) tend to be less compliant (Ryan & Deci, 2000). Activities that are completely self-regulated and carried out simply for the inherent enjoyment that emanates from them are autonomously motivated, and specifically referred to as intrinsically motivating. For example, sexual behavior may be intrinsically motivating for some individuals. However, condom use may not be. Many behaviors are not inherently interesting, yet they can still become autonomously motivated. For instance, an adolescent who uses condoms consistently because he or she views this behavior as aligning with a personal goal of postponing pregnancy until a later age may be experiencing integrated or internalized forms of extrinsic motivation. Internalization of sexuality health messages, as described by the respondents in this study and suggested by SDT, may be a critical step in helping students become autonomously motivated (Ryan & Deci, 2000; Paper 1).

In supporting internalization of sexuality education messages, the educators emphasized the importance of establishing a close rapport with students in order to identify student interest areas and to help them personalize the information. Building rapport was sometimes challenging for community-based educators, in particular, as they were frequently asked to attend only one or a few sessions with a particular group. While respondents largely viewed these strategies as being valuable to keeping adolescents engaged in the educational process, according to SDT this student-centered orientation is also critical to supporting the development of autonomous motivation (Reeve, Bolt, & Cai, 1999; Reeve, 2002; Williams, 2002).

Respondents described several barriers and challenges to the implementation of developmentally appropriate sexuality education. A lack of developmentally appropriate sexuality education materials, primarily as a result of political limitations on subject matter, was a salient barrier to the design and implementation of developmentally appropriate sexuality education programming. In addition, educator training in developmental concepts was deemed essential to adequately responding to diverse developmental needs in the classroom, yet viewed as lacking in the field. Overall, structural and political barriers to program design, implementation, and institutionalization align with those described in reference to sexuality education more broadly (Future of Sex Education Initiative, n.d.). Although respondents were asked specifically about developmentally appropriate sexuality education, they seemed to discuss a number of other important concepts that they felt were essential to effective programming but that were not directly tied to the concept of developmentally appropriate, a likely reflection of the ambiguous definition of this concept in general.

This study should be interpreted in light of several limitations. It was a small qualitative study based on a sample of individuals working in the field of sexuality education. Although purposive sampling techniques were used to capture a range of perspectives from those working in the field, there was an absence of abstinence-only materials developer and educator participation. Consequently, comparisons between respondent categories and approaches to sexuality education were not possible. Although generalizability was not the goal of this study, the themes identified within the analysis may still have theoretical generalizability given the general consistency across respondent narratives (Maxwell, 2005).

### **Conclusions**

This study is the first to systematically examine the perspectives of individuals working in the field of sexuality education on the concept of developmentally appropriate sexuality education. Understanding these perspectives is important to help guide policy, program, and training development for sexuality education, as well as future research endeavors. While it appears that experienced materials developers and sexuality educators do consider the concept of developmental appropriateness in their practice, the application of a more comprehensive and integrated review of the adolescent development literature might be able to provide greater clarity on its definition, and provide concrete, practical and achievable suggestions for enhancing the developmental appropriateness of sexuality education programs.

The lack of clarity of developmental concepts among respondents in this study and discrepancies noted between respondent narratives and a large body of research on adolescent development, are likely a reflection of inadequate translation of research to practice, as well the structural and political barriers to institutionalizing the concept of developmentally appropriate sexuality education. More collaboration between researchers and practitioners is warranted to ensure that concepts derived from research are translated or studied in such a way that they can directly inform practice. In addition, there is need for concrete and mutually exclusive definitions of sexuality education best practices to provide specific guidance to those involved in its implementation, including educators, materials developers, and policy makers. Similarly, practical challenges to meeting the requirement of developmental appropriateness at the classroom level, in particular the need for flexibility in order to respond to developmental diversity, suggests that ways in which programs are evaluated and determined to be evidence-based programs may need to be revisited. While there is more to be done, developmentally appropriate sexuality education offers a largely untapped opportunity to support positive trajectories in sexuality development for adolescents.

## **List of tables and figures for Paper 2**

Table 2-1. Participant descriptors by primary- and sub-categories

Table 2-2. Barriers and challenges to developmentally appropriate sexuality education

Table 2-1. Participant descriptors by primary- and sub-categories

Participant categories		Number
Sexuality educator	Community-based organization	5
	School-based (2 middle school, 3 high school, 1 university; 2 school-based health center)	6
Sub-total		11
Materials developer	Curriculum developer – Comprehensive Sexuality Education (CSE)	2
	Curriculum developer – Abstinence-plus	3
	Standards developer	2
Sub-total		7
Total		18

Table 2-2. Challenges and barriers to developmentally appropriate sexuality education

Challenge or barrier	Sexuality educators	Materials developers
<b>Program design</b>		
Political limitations on subject matter	102, 105, 107	202, 204, 205, 206
Inconsistent previous sexuality education	104, 106	202, 206
Outdated materials	101, 103, 109	
Requests for single session education	102	200
Lack of programs focused on boys	107	200
Lack of sequential educational materials	108	202
Rigidity of curricula	103	206
Few materials for middle school	108, 109	
Not feasible to separate students within a classroom	101	
Peer education good model but training level makes on-spot adjustments challenging for peer educators	108	
Lack of resources available on adolescent sexuality	103	
Focus in sexuality education primarily on sexual behavior, not healthy sexuality		201
Single-focused programs replacing comprehensive sexuality education		202
<b>Program implementation</b>		
Limited class time	101, 103, 104, 107, 108	200, 201, 202
Lack of educator training in adolescent development and sexuality education	100, 104	200, 201, 203, 204
Gaining trust of students	100, 103, 107, 108	
Addressing developmental diversity in classroom setting	108	200, 201
Parent resistance	100, 108, 109	
Physical space (classroom) inadequate	100, 101	
Lack of school compliance with state laws		205
<b>Institutionalization</b>		
Difficult to distinguish developmentally appropriate from other best practices in sexuality education	100, 101, 107, 108	200, 204, 206
Lack of funding for rapport building and comprehensive programs	100, 106, 107	203
Lack of information/ comfort in addressing adolescent sexuality among society in general	100, 104	202
Evidence-based program and focus on impact is misleading		200, 201, 202
Resistance from school administrators	100, 108	

Note: Each listed number represents an individual respondent, with 100-108 representing sexuality educators and 200-206 representing materials developers.

PAPER 3: IS CURRENT SEXUALITY EDUCATION DEVELOPMENTALLY  
APPROPRIATE? A CONTENT ANALYSIS OF POPULAR CURRICULA

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**Abstract**

Despite the numerous evaluations of sexuality education curricula, the evidence of their effectiveness in supporting adolescent sexual health and development remains modest at best. Content analysis of sexuality education curricula can offer additional insights into the quality of sexuality education materials, and thus help those responsible for selecting these materials identify those that are most relevant for their students. This study focused on one aspect of curriculum quality: developmental appropriateness. Content analysis was employed to assess the application of developmental concepts in five popular sexuality education curricula. Aspects of developmental appropriateness reviewed included motivational strategies, developmentally responsive strategies, and accommodation of developmental diversity. Just as there are substantial differences between curricula in underlying philosophy, length, format, presentation, and topics, the curricula also exhibited wide variation in aspects of developmental appropriateness. This paper explores this variation and offers recommendations for the improvement of developmentally appropriate sexuality education curricula.

## Introduction

For more than a century, the field of sexuality education has grappled with the question of the best way to support healthy adolescent sexuality development (Goldfarb, 2009). In an attempt to inform this debate, substantial effort has been placed on evaluating school and community-based sexuality education programs for impact on adolescent sexual health outcomes. Although some evaluations of sexuality education programs have demonstrated modest results in changing adolescents' sexual behaviors, the full body of evidence suggests that the current approaches are not adequately meeting adolescent sexual health and development needs (Coalition for Evidence-Based Policy, 2010; Constantine, 2013; DiCenso et al., 2002; J. Johnson et al., 2011; Oringanje et al., 2010; Scher et al., 2006). As such, experts continue to search for ways to improve current approaches. Enhancing the developmental appropriateness of programs may be one such way.

### Developmentally appropriate sexuality education

Individuals around their second decade of life experience physical, cognitive and social changes (Newman & Newman, 2011; Steinberg, 2008b). Developmental transitions associated with these changes include becoming a successful and competent member of society (achievement), establishing a healthy sense of independence (autonomy), learning to identify and regulate one's emotions (emotion), discovering and understanding who one is as an individual (identity), forming close and caring relationships with other people (intimacy), determining and enacting one's own value system (morality), and expressing sexual feelings and enjoying sexual contact with others (sexuality). These changes and developments create a period of opportunity for learning, performance, and the discovery of lifelong interests (Dahl, 2004; Steinberg, 2008b). At the same time, the contexts in which an adolescent is developing (e.g., family, school, peers, neighborhood) play a significant role in shaping the process and expression of development (Steinberg, 2008b).

There is substantial variability in the timing and sequence of developmental changes both within and among adolescents. This intra- and inter-individual developmental diversity is a reflection of both biological and contextual influences on development (Steinberg, 2008b). Recognizing that adolescence is not a homogenous period in the lifespan, most developmental psychologists refer to three distinct stages of adolescence: early adolescence, middle adolescence, and late adolescence (Salmela-Aro, 2011; Steinberg, 2008b). The corresponding age breakdown can vary by sex, gender, and race, but is roughly considered to be the following: early adolescence = 11-13 years old, middle adolescence = 13-17 years old, and late adolescence = 17-19 years old (Salmela-Aro, 2011). In the United States, these stages correspond approximately to 5<sup>th</sup>-7<sup>th</sup> grades, 8<sup>th</sup>-10<sup>th</sup> grades, and 11<sup>th</sup> grade to post-high school, respectively.

The underlying principle of developmentally appropriate education is that the content and strategies should be grounded in the developmental research with the goal of promoting optimal learning and development (National Association for the Education of

Young Children, 1999). Forming the foundation for this study and elaborated in greater detail in Paper 1, the research on adolescent development has important implications for sexuality education. These include determining developmentally appropriate content, incorporating developmentally appropriate educational strategies, and accommodating developmental diversity. Developmentally appropriate content includes specific consideration of developmental factors in selecting program goals, identifying appropriate topics, and timing topic presentation. Similarly, the literature suggests that developmentally appropriate strategies promote autonomous motivation, a factor associated with enhanced health and education intervention outcomes (Deci & Ryan, 2012; Reeve, 2002; Ryan & Deci, 2000; Sheldon, Williams, & Joiner, 2008; Williams, 2002) and respond to the developmental characteristics that are particularly salient during adolescence (Bailey & Piercy, 1996; Connolly & McIsaac, 2011; Manning, 1993; McNeely & Blanchard, 2010; Measor, 2004; Meschke et al., 2012; Suleiman & Brindis, 2014). Accommodating developmental diversity requires making adjustments to content and strategies to meet varied developmental needs.

### Sexuality education curricula in the United States

Today in the United States, the most common form of sexuality education, generally referred to as “sex education” focuses on behavior management or behavior change goals and tends to include content on anatomy, abstinence, sexual behavior, reproductive functioning, and disease and pregnancy prevention. There are two types of sex education: the first, referred to as *abstinence-only* (or sometimes abstinence-only-until-marriage), is focused on delaying intercourse until marriage with a strong emphasis on the social, psychological, and health gains to be realized by doing so. These programs provide restricted information about contraception and STI prevention methods (Goldfarb & Constantine, 2011).

The second form of sex education is often referred to as *abstinence-plus* and is focused on preventing pregnancy and STIs. Similar to abstinence-only programs, these programs often seek to delay first intercourse but do not assume that sexual behavior will be confined to marriage. They also aim to influence other disease or pregnancy prevention methods, including increasing contraceptive use or reducing number of sexual partners. Generally, they include teaching on the prevention of STIs and pregnancy, including information about contraceptives and barrier methods (Goldfarb & Constantine, 2011). Abstinence-plus education is sometimes referred to as comprehensive sex education, which should not be confused with *comprehensive sexuality education* (CSE).

Comprehensive sexuality education is a second approach that is less popular in the United States but used more widely in other countries. Full CSE is guided by a “broad, holistic, and positive view of healthy sexuality, that employs a health promotion and human development approach” (Goldfarb & Constantine, 2011, p.322). In addition to disease and pregnancy prevention, CSE typically includes a range of topics from growth and development to gender, sexual orientation and identity, love, sexual rights, attraction, pleasure, and parenting.



## Purpose of the current study

Of the numerous evaluations of sexuality education curricula, most reviews have found limited evidence of their effectiveness in supporting adolescent sexual health and development (Coalition for Evidence-Based Policy, 2010; Constantine, 2013; DiCenso et al., 2002; J. Johnson et al., 2011; Oringanje et al., 2010; Scher et al., 2006). Although scarce, analyses of sexuality education curricula content and educational strategies may offer additional important insights into the quality of sexuality education materials beyond disease and pregnancy reduction outcomes (Klein et al., 1994; Pedlow & Carey, 2004). For example, Pedlow and Carey (2004) assessed 24 HIV prevention interventions and found that there were substantial variations in the use of developmental factors in these curricula. Klein et al. (1994) found that among 10 sexuality education curricula for junior and senior high school students, there was inadequate coverage of several topic areas considered to be developmentally appropriate according to the SIECUS Guidelines for Comprehensive Sexuality Education (e.g., sexual behavior). Continued assessment of curricula content is essential to providing a basis for program appraisal and selection, as well as guiding future curricula development.

This study aimed to assess the extent to which popular middle and high school sexuality education curricula are developmentally appropriate, having a focus on motivational and developmentally responsive strategies and accommodating developmental diversity. Three primary research questions were addressed: (1) are the educational strategies employed by sexuality education curricula developmentally appropriate? (2) to what extent is developmental diversity accommodated within the curricula? and (3) how do developmentally appropriate strategies and accommodations of developmental diversity compare across curricula based on abstinence-only, abstinence-plus, and comprehensive sexuality education philosophies?

## **Methods**

Content analysis was employed to assess the application of developmental concepts in popular sexuality education curricula. Three types of curricula were analyzed: abstinence-only, abstinence-plus, and comprehensive sexuality education. Choosing a range of curricula representing diverse philosophical approaches allowed for exploration of potentially different uses of developmental concepts.

### Curricula identification

School and community-based curricula were selected based on the following criteria: (1) currently in wide use in the United States, (2) represent abstinence-only, abstinence plus, or CSE approaches, and (3) designed for adolescents in middle school and high school. Where available, sequential middle school and high school curricula or curricula designed by the same developer for the two school levels were selected in order to compare how developmental concepts informed strategies at different stages of adolescence. The research team reviewed the most recent version of the curriculum available. Determination of 'wide use' was made by reviewing the list of approved

curricula for the U.S. Office of Adolescent Health (OAH) Teen Pregnancy Prevention Initiative (TPP) evidence based programs, one of the largest sources of funding for sexuality education programs in the United States (Office of Adolescent Health, 2014a, 2014b). This led to the selection of Heritage Keepers (HK), Making Proud Choices (MPC), and Be Proud! Be Responsible! (BPBR). HK is the only abstinence-only sexuality education curriculum on the list of approved programs and is designated for grades 6-12 (Badgley, Musselman, & Casale, 1998; Office of Adolescent Health, 2014b). Similarly, BPBR, an abstinence-plus curriculum, is designated for youth across school levels (ages 11-18) (Jemmott, Jemmott III, & McCaffree, 1996). However, the primary evaluation study of BPBR assessed students with an average age of 14.6 years old, which corresponds with early high school (Jemmott III, Jemmott, & Fong, 1992). BPBR was assessed with consideration of both middle and high school levels. MPC, which was developed by the same authors as BPBR, is exclusively focused on middle school aged youth (Jemmott & Jemmott III, 2012). The fourth and fifth curricula were selected to represent the full CSE perspective: 7/8 F.L.A.S.H. (F7/8) and High school F.L.A.S.H. (FHS) (Reis et al., 2006, 2011). Evaluations of F.L.A.S.H. have not conformed to the standards of the OAH TPP Initiative and therefore are not found on the list of approved curricula for the Initiative. In addition, the goals and objectives of CSE curricula, such the F.L.A.S.H. curricula, are broader than pregnancy and disease prevention and thus do not align with the objectives of the TPP initiative. However, conversations with sexuality education experts indicate that the F.L.A.S.H. curricula are the closest example of full CSE being widely used in schools in the United States. Table 3-1 provides a summary description of the final sample of curricula.

### Assessment process

The facilitator manuals for all curricula were assessed in their totality. These included, where available, curriculum background and theoretical foundation, facilitator instructions and resource materials, core activities, supplemental activities, and additional student resource materials (e.g., handouts, worksheets, homework) (see Table 3-1). Several curricula referenced the use of videos or other media. While these were not reviewed, descriptions of these included in the text were studied.

Three aspects of developmental appropriateness were assessed (see Table 3-2 for definitions and examples). The first involved the motivational strategies utilized, with a focus on strategies that convey autonomous versus controlled motivation. Autonomous motivation is self-regulated performance of an activity. It includes intrinsic motivation and integrated or internalized forms of extrinsic motivation (Ryan & Deci, 2000). Intrinsic motivation refers to the performance of an activity for the inherent satisfaction of doing so, whereas extrinsic motivation refers to engagement in an activity in order to attain some separable outcome (e.g., to please someone, to earn a reward) (Ryan & Deci, 2000). Extrinsically motivating activities can become autonomously motivated when there is identification with the behavioral goal or when there is integration of the activity with one's own goals and values (Ryan & Deci, 2000). Controlled motivation, on the other hand, is not self-regulated, but rather guided by external sources of motivation, such as rewards or threats. Studies have found that individuals who are autonomously motivated are more likely to engage in and sustain a desired behavior over time (Ryan

& Deci, 2000). In addition, the developmental need for autonomy during adolescence makes the emphasis on autonomous motivation particularly important (Steinberg, 2008b; Zimmer-Gembeck et al., 2011).

Indicators of strategies that support autonomous motivation included those that support identification of intrinsic motivation (e.g., journaling, special projects allowing topic determination by the student, integration of student questions into lesson plans. It also included messages that communicate individual choice in behavior and beliefs (e.g., “Everyone can decide when and with whom they want to have sex, and when and with whom they want to refuse sex” – FHS), or that seek to build skills that support autonomy development (e.g., allow student participation in program development). Strategies that reflect controlled motivation emphasize extrinsic sources of motivation, including risks and threats, through offering directives, or by providing rewards (e.g., grades, financial incentives). Developmentally appropriate curricula at all stages of adolescence should be expected to exhibit higher proportions of autonomous motivation supportive strategies, and few instances of controlled motivation. Curriculum background materials, facilitator instructions, and core and supplemental activities were reviewed to determine the presence of autonomous or controlled motivation.

The second aspect of developmental appropriateness that was assessed involved the use of developmentally responsive strategies. Developmentally responsive strategies are those that consider developmental characteristics of adolescents at different stages of development and their influence on learning and behavior (e.g., need for physical activity as part of physical growth and development, need for concrete presentation of information as part of cognitive development, and interest in social justice issues as part of morality development) (Meschke et al., 2012). An assessment tool was developed based on a review of adolescent development and educational strategies for sexuality education (Paper 1, table 1-4, Appendix A). The middle school designated curricula were assessed against the early adolescent developmentally responsive strategies and the high school designated curricula were assessed against the middle adolescent developmentally responsive strategies. The two curricula labeled for use at both middle school and high school levels (HK and BPBR) were assessed based on use of developmentally responsive strategies for either early or middle adolescence. Although not all middle and high school students fall within early and middle adolescence, it is probably that the majority of students at each of these school levels do. Curriculum background materials, facilitator instructions, and core and supplemental activities were reviewed to determine the presence of developmentally responsive strategies at the appropriate level.

Finally, the third aspect assessed involved accommodations to developmental diversity. Curriculum background materials, facilitator instructions, core and supplemental activities were analyzed. Indicators of these accommodations included educator or activity notes specifying the potential presence of developmental diversity (e.g., text informing students of potential diversity in physical development) or strategies that would allow educators and students to identify or meet diverse developmental needs (e.g., forums for student questions and answers, journaling about how a topic applies to

own behavior, educator invitation for students to seek individualized support outside of class, supplemental lessons on particular topics).

### Analyses

Content analysis (Bernard & Ryan, 2009) was employed to assess the curricula. An attributes matrix was developed, serving as the foundation for the codebook. The codebook was modified throughout planning and piloting stages; no further changes occurred after the completion of pilot testing in order to maintain consistency across all coding activity. To assess the use of developmentally appropriate strategies by curriculum component, two primary coding categories were established: (1) curricula components and (2) educational strategies. Sub-codes for curricula components included background, facilitator instructions, core activities, and supplemental activities. Sub-codes for strategies included autonomous motivation, controlled motivation, developmentally responsive, not developmentally responsive, and accommodating developmental diversity. Each curriculum component category containing a particular strategy was coded with the appropriate sub-code, with assignment of multiple strategies sub-code designations being possible. In addition, developmentally responsive strategy alignment to developmental domains addressed was documented. Coding was carried out from May to June 2014 by the primary author and a research assistant, using the qualitative data analysis software Dedoose (SocioCultural Research Consultants, 2013). To ensure coding consistency across curricula, the research assistant focused on the component codes and the primary author focused on strategy codes. Coders met regularly to address coding questions.

Coder-generated memos, field notes and research team meetings were used to corroborate and elaborate emerging themes throughout the analysis process. Once coding was completed for all five curricula, code occurrence and co-occurrence tools in Dedoose were used to analyze the distribution of coded content. Proportions of curriculum components using particular strategies were calculated by dividing the number of strategy instances by total component of interest (e.g., number of instances of autonomous motivation divided by number of core activities), allowing for comparisons of relative distributions of strategies across curricula.

### **Results**

The five curricula varied in format, length, presentation, and topics covered. HK is an abstinence-only program designated for students in grades 6-12 with five 90-minute core modules to be implemented in either school- or community-based settings. MPC and BPBR are abstinence-plus curricula designated for middle school and high school levels, respectively, and both can be implemented in either school- or community-based settings. MPC is divided into eight 60-minute modules and BPBR is divided into six 60-minute modules. The CSE curricula assessed, F7/8 and FHS, were longer in length than any of the other curricula, with 24 and 18 core lessons, respectively, each designated for use during one class period. Different from the other curricula, the two CSE curricula are primarily designed for use in school-based settings and both acknowledge that teachers can be selective in the activities that they choose to

implement (although they encourage use of all lessons). Also different from the other curricula, the two F.L.A.S.H. curricula included special HIV prevention lessons for distinct grade levels as opposed to the full school level range (i.e., a lesson each for 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> or 12<sup>th</sup> grades as opposed to 7/8 and 9-12). See Table 3-1 for a summary description of the curricula.

There were both commonalities and differences across curricula in the developmentally appropriate strategies employed. The sections that follow describe findings on curricula use of motivational strategies, developmentally responsive strategies, and accommodation of developmental diversity.

### Motivational strategies

Curricula were assessed to identify motivational strategies used to promote healthy sexuality development of adolescents, with a focus on autonomous and controlled motivation. Figure 3-1 shows the proportion of core activities with occurrences of autonomous and controlled motivation by curriculum. Overall, there were relatively few instances of autonomous motivation supportive strategies across all curricula, ranging from 11% to 28% of core activities containing at least one example of autonomous motivation. Showing a wider range, the proportion of core activities using strategies of controlled motivation ranged from 8% to 61%. HK, MPC, and BPBR had fewer occurrences of autonomous motivation than did the F7/8 and FHS, while HK, MPC, and BPBR exhibited greater use of controlled motivation.

Autonomous motivation supportive strategies were primarily revealed in activities that supported student autonomy development. For example, four of five curricula (MPC, BPBR, F7/8 and FHS) allowed students to identify group rules with some degree of autonomy. In addition, all curricula included at least one statement emphasizing student behavioral choice. Two curricula, F7/8 and FHS, explicitly called on educators to answer student questions, allotted time to do so, and then encouraged incorporation of student interests or questions into subsequent activities. Only FHS offered activities that allowed students to explore their own intrinsic interests related to sexuality. For example, this curriculum included a journaling activity that allowed students to discuss their own interest areas and a research assignment where students could choose their own topic to explore in greater depth.

Unlike the examples of autonomous motivation, which generally occurred only once per activity, there were often multiple instances of controlled motivation per activity across all curricula. Controlled motivation was revealed through activities offering specific behavioral directives, emphasizing, and in some cases exaggerating, risks, or using grades or extra points to motivate participation in particular activities. HK, MPC, and BPBR showed a higher prevalence of controlled motivation messages. These curricula frequently offered behavioral directives (e.g., “Wait for the best sex; the kind of sex that is in marriage”- HK; “Use condoms if you are going to have sex” - BPBR). In some cases these curricula would initiate statements with expressions of behavioral choice, immediately following them with behavioral directives (e.g., “if you are going to engage in sexual activity, make sure you use a latex (or polyurethane) condom”- MPC). The

F.L.A.S.H. curricula rarely offered behavioral directives, and although there was presentation of information regarding the possible negative health consequences of sexual behavior the focus was primarily on the behaviors that can increase or decrease risk, rather than generalized statistics about adolescents' risks of acquiring STDs, HIV, or experiencing an unintended pregnancy. As part of their theoretical framework, HK, MPC, and BPBR explicitly state that adolescents hold low levels of risk perception regarding sexual behavior. Following from this assertion, several core activities within these curricula emphasized the risks associated with sexual behavior during adolescence by offering numerous statistics highlighting the risk of particular outcomes (e.g., HIV, STIs, pregnancy). In several places throughout these curricula statements about risks were misleading, outdated, or incorrect (e.g., "If you have sex outside of marriage, you may be infected with the Herpes Simplex Virus" – HK; "Many experts believe anal intercourse is so dangerous it should be avoided completely" – BPBR). Unlike the other three curricula, the two F.L.A.S.H. curricula did suggest using grades to incentivize completion of curricular assignments.

### Developmentally responsive strategies

The use of at least one developmentally responsive strategy was high overall across curricula, with all curricula including at least one developmentally responsive strategy in more than 75% of core activities and one curriculum, FHS, including at least one developmentally responsive strategy in all activities. Figure 3-2 displays the proportion of core activities using developmentally responsive strategies in comparison to core activities not using any developmentally responsive strategy by curriculum. HK and BPBR were assessed based on both middle school and high school level developmentally appropriate strategies, which providing these curricula with greater opportunity to exhibit developmentally responsive strategies overall. Figure 3-3 displays the proportions of core activities using developmentally responsive strategies by the domain of development addressed by the strategy, for each of the five curricula. ‘

Across curricula, the majority of strategies were responsive to cognitive developmental considerations. Despite this focus, the middle school curricula in particular generally included several activities per lesson or module, neglecting the developmental need for minimal transitions in activities and adequate time for processing and reflection. Also related to cognitive development, all curricula included at least one activity focused on healthy decision-making. Despite different curricular goals regarding sexual decisions (e.g., abstinence until marriage, use of condoms), the underlying assumption that better decision making involves the use of a rational model of decision making appeared to be common to all curricula. This assumption appeared to guide activity selection and message framing. Missing across all curricula was the consideration of motivational tendencies that influence adolescent behavior and decision-making. In particular, the role of emotion in decision-making processes was only alluded to in one curriculum (BPBR), and the influence of peers on behavior, where included, focused on misperceptions of peer behavior (i.e., everyone is having sex) and partner pressure to have sex or to not use condoms, as opposed to how the presence of peers can influence behavior.

The curricula shared several common educational strategies, regardless of stage of adolescence being targeted. All curricula included a mix of large and small group activities, with HK, MPC, and BPBR exhibiting a preference for large group activities and F7/8 and FHS favoring small group activities. The HK and F.L.A.S.H. curricula also included individual activities, with HK using a student manual with individual exercises and both F.L.A.S.H. curricula primarily using homework assignments as the basis for individualized activities. The use of videos and games were also common activity types across all curricula, and role plays and case studies were common to MPC, BPBR, and F.L.A.S.H. curricula. Parent support activities were part of both F.L.A.S.H. curricula in the form of optional family homework assignments. As discussed further below, in some instances these strategies were developmentally responsive, however this depended on which stage of adolescence was being targeted by the curriculum.

All curricula showed some attention to moral development, typically through values identification activities. Of all curricula HK drew most heavily on this aspect of development, focusing on values identification as well as emphasizing living consistently with one's own values. However, the underlying assumption within HK is that the correct value is to abstain from sexual behavior outside the confines of marriage. All curricula utilized at least one strategy that considered intimacy development, however FHS drew most substantially on this domain through the use of peer supportive activities, outside experts, and debunking myths about peer behavior. Recognition of transitions in social roles, achievement, and emotional development were only minimally utilized to inform strategies across all curricula.

### Accommodation of developmental diversity

Accommodation of developmental diversity primarily surfaced in facilitator instructions and supplemental activities, however, some curricula integrated attention to developmental diversity within core activities. Table 3-3 provides example quotes illustrating consideration and accommodation of developmental diversity. All curricula included at least one accommodation of developmental diversity. Accommodations of developmental diversity focused on differences in physical and pubertal development (biological), previous knowledge about sexuality (cognitive), comfort with topics addressed (emotional), and sexual experience (sexuality). General considerations of maturity at the classroom level were also referenced. No single accommodation type was found in all curricula. The extent to which notations about developmental diversity offered precise suggestions of how to modify activities or content based on developmental diversity varied, both across and within curricula. Some references merely raised awareness to the facilitator or student of potential developmental diversity while other notations suggested different strategies to use based on developmental differences.

In addition to facilitator or activity instructions referencing developmental diversity, four of the five curricula also included supplemental or optional activities that could accommodate developmental diversity. For example, MPC and BPBR include supplemental lessons on specific topics that can be provided to students with different levels of knowledge or interest in these topics (e.g., puberty development and human

sexual response system, respectively). Similarly the F.L.A.S.H. curricula offer additional alternative activities integrated within the core activities and multiple lessons on HIV designated as meeting different developmental needs by grade. As noted previously, the F.L.A.S.H. curricula also offered forums for student questions and answers, providing educators with a way to identify student educational needs. Individual assignments in HK, through the student handbook, and in the F.L.A.S.H. curricula through individual homework assignments, could also allow students to address curricula topics based on their own developmental needs.

## **Discussion**

Just as there are substantial differences across curricula in underlying philosophy, length, format, presentation, and topics, the curricula also exhibit wide variation in aspects of developmental appropriateness, including motivational and developmentally responsive strategies employed and accommodations of developmental diversity.

All curricula aimed explicitly to motivate adolescent engagement in healthy adolescent sexuality development, the definition of which varied by underlying philosophy. Overall, the curricula showed few instances of autonomous motivation. Although some curricula conveyed behavioral choice in regards to sexual behavior, most references to choice were qualified with a directive of how to best do so (i.e., use a condom, wait for marriage). The hesitance to offer adolescents full choices about their sexual behaviors may be a reflection of both absolutist and pragmatic cultural beliefs about adolescent sexual behavior (i.e., adolescents should not have sex and adolescents should not have sex, but if they do they should use protection, respectively) (Constantine, Jerman, & Huang, 2007). Contrary to these assumptions, the adolescent development literature suggests that sexual behavior, ranging from non-coital to coital behavior, is a normative and important part of adolescent sexuality development (Diamond & Savin-Williams, 2009). Hesitance to offer full choices about sexual behavior may also be a reflection of the belief that adolescents need simple, concrete messages regarding behavior. The literature on adolescent cognitive development indicates that although concrete messages about sexual behavior may be warranted up until the beginning of early adolescence, after this point adolescents are increasingly likely to engage higher level cognitive capacity to explore nuanced information and to question concrete directives (Keating, 2011).

The abstinence-only and abstinence-plus curricula exhibited greater proportions of controlled motivation than did the CSE curricula. This pattern was expected as the philosophies guiding these types of curricula are explicit about their desired behavioral outcomes for students. In these curricula, controlled motivation largely took the form of behavioral directives. Another salient form of controlled motivation primarily found in the abstinence-only and abstinence-plus curricula was the emphasis on the risks of negative outcomes to sexual behavior, and in several instances exaggeration or inaccurate presentation of these risks. The notion that adolescents have low perceptions of risk to negative outcomes of sexual behavior has been countered in studies of adolescent perceived risk and vulnerability (Millstein & Halpern–Felsher, 2002). A possible danger of providing directives and emphasizing risk is that



adolescents will exhibit reactance to this information. Reactance is the act of restoring a sense of autonomy (self-determination) when freedoms are eliminated or threatened (Brehm, 1966; Dillard & Shen, 2005). In doing so, the adolescent may engage in the forbidden behavior, increase liking for the threatened behavior, deny the existence of the threat, or exercise a different freedom to gain a feeling of control, all of which potentially lead to outcomes counter to those desired by the curriculum (Brehm, 1966; Dillard & Shen, 2005). As described previously, the cognitive development literature points to increased capacity during adolescence to question concrete directives (Keating, 2011), which in conjunction with the developmental need for autonomy (Zimmer-Gembeck et al., 2011) and the evidence that controlled motivation is less effective in encouraging adoption and maintenance of behaviors than autonomous motivation, makes curricular reliance on strategies that convey controlled motivation problematic.

A general challenge for sexuality education programs, in particular school-based programs, is time (Future of Sex Education Initiative, 2011). Truly cultivating autonomous motivation, in particular the integration or internalization of extrinsically motivating behaviors, takes time. Doing so requires supporting students in identifying intrinsic interests and personal goals, working with students to make connections between their own interests and goals and behaviors, and helping students develop the needed skills to execute the desired behavior. Some ways to support autonomous motivation within sexuality education might involve: (1) skills development in finding information or resources so that new information can be pursued when needed or when interest arises; (2) assigning homework or supplemental individual assignments that allow students to explore a topic of interest to them; (3) conducting activities that help students identify personal values, or start connecting topics learned in class to personal behaviors or situations that they may encounter, and; (4) including time in the curriculum to ask for and respond to student questions and integrate these topics into subsequent activities so that topics of intrinsic interest to the students are covered.

In contrast to the findings related to motivational strategies, curricula use of developmentally responsive strategies was comparable across philosophical approaches. While use of at least one developmentally responsive strategy in core activities was high across curricula, in many instances developmentally responsive strategies were juxtaposed to strategies that were not developmentally responsive. Curricula attempting to cover multiple stages of development were especially likely to exhibit this issue. For example, all curricula used some form of video, case study or scenario to present the experiences of other individuals regarding a particular topic (e.g., HIV). Introduction of factually based information through a video can be understood by students at all stages of adolescence, and may be a useful strategy for ensuring consistent information dissemination. However, the use of these strategies with the intention of the student translating this information to their own behavior requires higher level cognitive skills that are still forming in early adolescence (Meschke et al., 2012). Similarly, role plays, activities in which scripted or unscripted scenarios are presented by students, were yet another common strategy. Role plays can be developmentally responsive in both early and middle adolescents as they can help reduce self-consciousness (McNeely & Blanchard, 2010; Meschke et al., 2012).

However, similar to videos, more advanced cognitive abilities are needed to learn and adapt one's own behavior from role plays. Given the time constraints for sexuality education, selecting strategies that are developmentally responsive for the primary purpose of interest is crucial.

Key challenges for sexuality education curriculum developers include finding ways to maintain student interest in the curriculum, and identifying strategies that allow students to relate to and internalize information. Common perceptions of what may support engagement, however, may be developmentally inappropriate. For example, the use of games, a common strategy in all curricula, is often considered a good way to maintain participation in a particular lesson. However, for early adolescents in particular, making games competitive, in which there is a winner and loser, might not be optimal for emotional development during this stage as these types of activities can be discouraging to students and thus result in disconnection from the material (Manning, 1993).

In several instances across all curricula, strategies appeared to only scratch the surface of the developmental potential of students at a given stage. For example, most curricula included a ground rules setting exercise (e.g., listen to others, don't interrupt). Although there was some variation in how these exercises were conducted, the amount of autonomy given to students and discussion of these rules was usually minimal. With early adolescents it would be developmentally appropriate to provide some guidance on the rule selection if the students seem to be facing challenges in identifying rules on their own, while also including a discussion about the importance of the rules for the group functioning, thus drawing on and supporting both autonomy and moral development during this stage (Manning, 1993; Meschke et al., 2012). For middle adolescents, providing greater autonomy with minimal facilitator instruction would be developmentally responsive (Manning, 1993; Meschke et al., 2012).

Another example of only superficially addressing the developmental potential of students was found in activities intended to support morality development. All curricula addressed values or beliefs about sexuality in some fashion. Generally, these exercises were limited to values identification. Support in values identification can be important throughout adolescence as values can change based on new experiences and social interactions (Bailey & Piercy, 1996; Smetana, 2011). However, limiting discussion of values to identification restricts the potential of these activities. Increasingly during adolescence, individuals are faced with interpreting new social contexts and relationships, making decisions based on their values, and making decisions about how to act when values conflict (Bailey & Piercy, 1996). During early adolescence, students are usually capable of identifying challenging moral situations, in particular as they relate to friendships and their new social environment. Middle adolescents are usually capable of identifying conflicting values (i.e., personally held values that conflict with each other and personal values that conflict with those held by the individual's community), exploring situations where their behavior may be challenged by conflicting values, and considering how the adolescent might determine an appropriate behavior (Bailey & Piercy, 1996).

Cognitive development was the most common domain of development informing strategies across curricula. This was in part revealed through the use of activities that support decision-making skills development. All curricula appeared to promote the use of rational models of decision-making, the underlying assumption being that these models lead to better decision outcomes. Increasingly researchers acknowledge that adolescent (as well as adult) use of rational models of decision making is highly susceptible to error, in particular when decisions are made in emotional situations, as is the case for most sexually related decisions (Reyna & Farley, 2006; Rivers et al., 2008).

Sexuality educators and sexuality education materials developers have acknowledged that recognizing and responding to developmental diversity is a critical aspect of developmental appropriateness (Paper 2). However, overall there were few references to developmental diversity across curricula, with little consistency as to what aspects of development are most important to accommodate. Acknowledgement of diversity in physical development and sexual experience were the most common aspects of development recognized by curricula and were largely expressed as notes to the facilitator or as text to be read to students.

In several curricula, developmental diversity also surfaced as part of facilitator tips on how to control behavioral issues that may arise in a group situation (i.e., behavior management). The problem-oriented language used to describe this type of accommodation of developmental diversity is not optimal in that it stigmatizes students who exhibit developmentally appropriate behavior but happen to be at a different developmental stage than their peers. Intra-individual developmental diversity, such as immature cognitive development and advanced physical development, was not explicitly addressed by any curriculum, an issue that is particularly salient in regard to sexual coercion.

### **Limitations**

The results of this study need to be considered in light of several limitations. First, this is a small qualitative content analysis. Consequently, the findings discussed cannot be taken as representative of all middle and high school level sexuality education curricula, or abstinence-only, abstinence-plus, and CSE sexuality education curricula. Further assessment of other sexuality education curricula is needed to draw more generalized conclusions. Second, though two researchers worked on this project, only one researcher coded for motivational strategies, developmentally responsive strategies, and accommodation of developmental diversity. This division of coding responsibility was intended to improve coding efficiency. However, the use of multiple coders, for at least some content, can help reduce subjectivity (Barbour, 2001). As such, subsequent efforts might benefit from multiple coders and inter-coder reliability checks. Finally, the HK materials assessed were not the most recent version in use, as the developer restricts availability of these materials. Additionally, the copy obtained by the research team was missing two core activities. Accordingly, findings reported on this curriculum may not be representative of more current versions of this curriculum.

## Conclusions

This study is one of few studies that systematically assessed the use of developmentally appropriate strategies in sexuality education curricula. Although the studied curricula exhibited some developmentally appropriate characteristics, a need exists for improvement. Curricula should be revised to include greater support for autonomous motivation and a reduction or elimination of strategies conveying controlled motivation. In addition, the emphasis on risk should be reduced, and opportunities to discuss benefits of healthy behavior should be augmented, and where data are presented there should be clear references and dates included to facilitate regular updates. Better explanations of underlying developmental assumptions (including citations of research to support those assumptions) and more precise targeting of materials to specific developmental stages could also enhance the alignment of developmentally responsive strategies to population needs.

As schools and educators seek to identify the most appropriate sexuality education materials for their students, considerations of adolescent development should be a focus. This study offers initial guidance on how to identify three aspects of developmental appropriateness: motivational strategies, developmentally responsive strategies, and accommodation of developmental diversity. Further assessment of other popular curricula would prove even more useful to practitioners.

### **List of tables and figures for paper 3**

Table 3-1. Summary descriptions of curricula

Table 3-2. Educational strategies definitions

Figure 3-1. Proportion of core activities providing autonomous motivation supportive messages versus controlling messages

Figure 3-2. Proportion of core activities employing developmentally responsive strategies by domain of development

Figure 3-3. Percentage of core activities employing developmentally responsive strategies by curriculum

Table 3-3: Examples of accommodation of developmental diversity by type of accommodation

Table 3-1. Summary descriptions of curricula

Curriculum, (year updated)	School level	Stage of adolescence	Philosophy	Curriculum components	Sessions/time	Core activities	Supplemental activities
Heritage Keepers Abstinence Education Teacher Manual I, (1998)	Middle school and High school	Early, Middle	Abstinence-only	Facilitator manual; Student handbook	5 (90 minute)	20*	0
Making Proud Choices: An Evidence-Based, Safer-Sex Approach to Teen Pregnancy, STDs & HIV Prevention, 4th Edition Facilitator Curriculum, (2012)	Middle school	Early	Abstinence-plus	Facilitator manual	8 (60 minute)	35	4
Be Proud! Be Responsible! Strategies to Empower Youth to Reduce Their Risk for HIV Infection, 6th edition, (1996)	Middle school and High school	Early, Middle	Abstinence-plus	Facilitator manual; Student resources (worksheets)	6 (60 minute)	28	4
7/8 F.L.A.S.H., a curriculum in Family Life and Sexual Health for grades 7 and 8, (2006)	Middle school	Early	Comprehensive sexuality education	Facilitator manual; Student resources (worksheets, handouts, homework)	N/A	24	31
High School F.L.A.S.H., Family Life and Sexual Health Grades 9-12, 2nd Edition, (2011)	High school	Middle	Comprehensive sexuality education	Facilitator manual; Student resources (worksheets, handouts, homework)	N/A	18	43

\*Incomplete information was available for 2 activities in the Heritage Keepers curriculum. Analyses are therefore based on 18 activities for which complete information was available.

Table 3-2. Educational strategies attributes matrix

Educational strategy component	Definitions	Examples
Motivational strategies	<p><i>Autonomous motivation supportive strategies</i> are those that identify intrinsic motivations, convey behavioral choice through language that explicitly recognizes autonomy, promote autonomy, or seek to build skills that support autonomy development.</p> <p><i>Controlled motivation strategies</i> emphasize extrinsic sources of motivation, including risks, threats, or through offering directives.</p>	<p>Autonomous motivation strategies:</p> <ul style="list-style-type: none"> <li>• Individual or small group assignments that allow for student identification of topic of interest - e.g., FHS student report, Lesson 15</li> <li>• Individual handbook/worksheet activities that allow students to process own questions, beliefs, behaviors - e.g., HK student handbook or FHS. journaling activity</li> <li>• Statements conveying choice - e.g., “HIV is entirely preventable – you can choose to protect yourself.” – FHS</li> <li>• Group rules - e.g., BPBR Module 1, Activity B</li> <li>• Student questions - e.g., Anonymous question box- F7/8 Lesson 1</li> </ul> <p>Controlled motivation strategies:</p> <ul style="list-style-type: none"> <li>• Directives - e.g., “...use condoms if you are going to have sex, or abstain from sex altogether”- BPBR Module 1, Activity D</li> <li>• Risk focused activities - e.g., Rolling the Dice activity - HK, Section 1</li> <li>• Rewarding participation through grades - e.g., FHS, Lesson 1</li> </ul>
Developmentally responsive strategies	Curriculum components that take into consideration how individual developmental characteristics influence learning and its application to behavior.	<p>Middle school:</p> <ul style="list-style-type: none"> <li>• Activities requiring movement - e.g., MPC, Module 7, Activity A (Biological)</li> <li>• Critical thinking about sexuality related messages on media - e.g., F7/8, Lesson 22 (Cognitive)</li> </ul> <p>High school:</p> <ul style="list-style-type: none"> <li>• Use of video to present experiences of other teens - e.g., BPBR, Module 2, Activity A (Cognitive)</li> <li>• Use of external presenters - e.g., FHS, Lesson 7 (Intimacy)</li> </ul>
Accommodation of developmental diversity	Curriculum components that make allowances for intra- and inter-individual developmental differences	<ul style="list-style-type: none"> <li>• “It is very important to discuss the wide variation of ages when puberty can begin and progress.” – MPC, Optional activity: Puberty and adolescent sexual development discussion</li> <li>• “If you think your class is too immature for so much personalizing...” – F7/8, Facilitator instruction (Lesson 11)</li> </ul>

Figure 3-1. Proportions of core activities providing autonomous motivation supportive messages and controlling messages

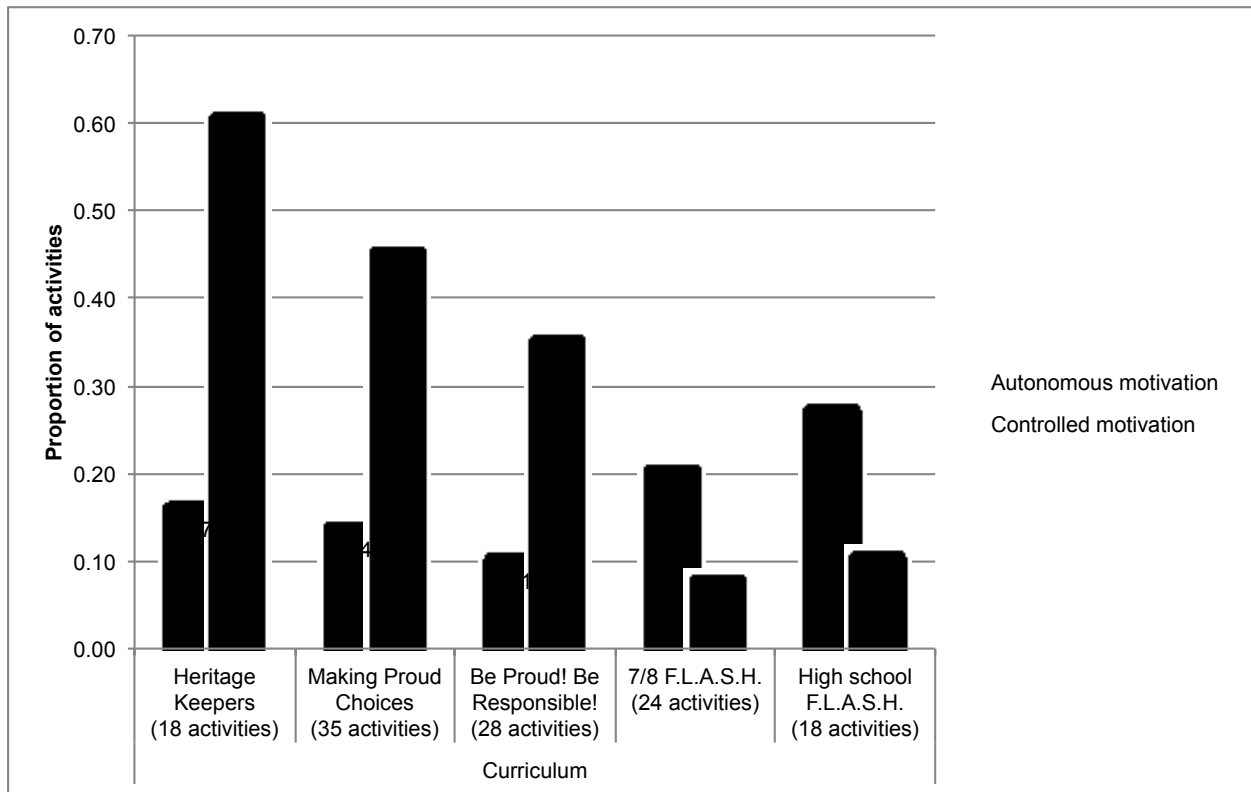




Figure 3-2. Percentage of core activities employing developmentally responsive strategies by curriculum

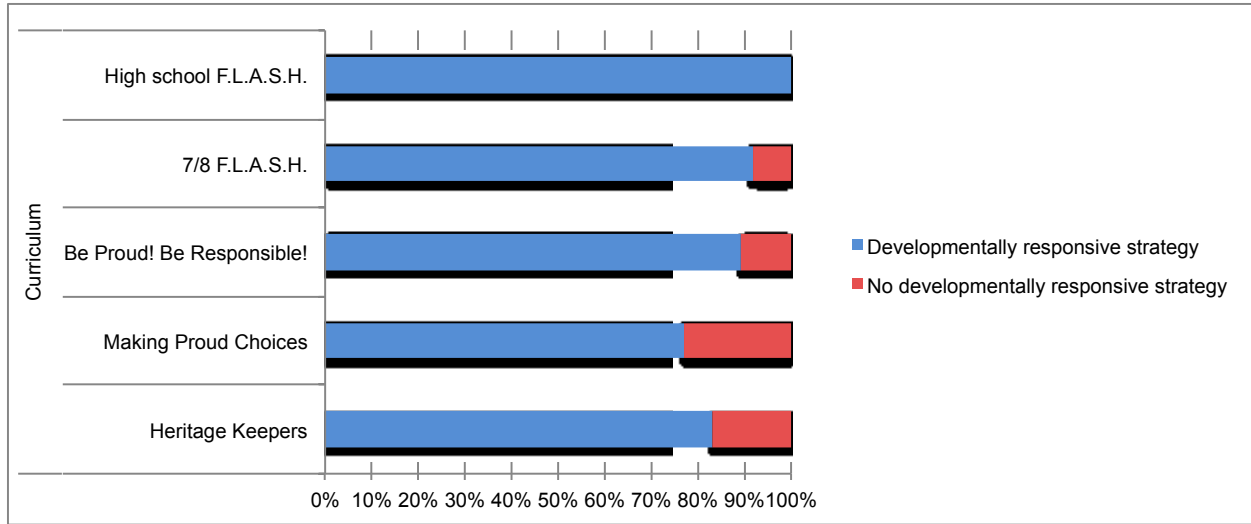


Figure 3-3. Proportion of core activities employing developmentally responsive strategies by domain of development

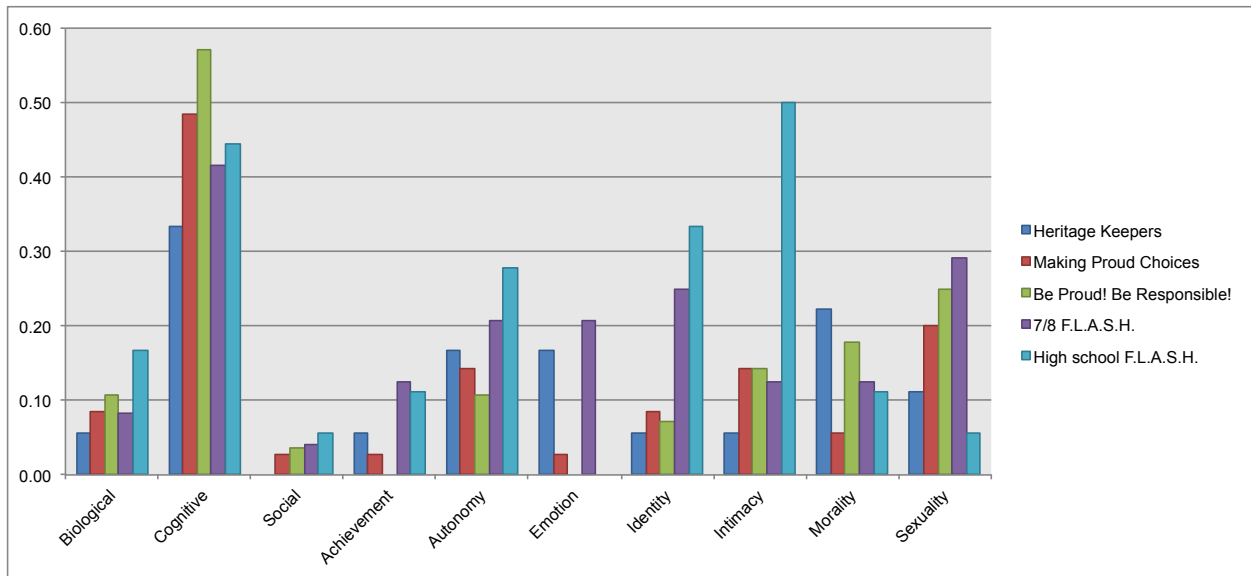


Table 3-3. Examples of accommodation of developmental diversity by area of accommodation

Area of accommodation	Example
Biological development	<p>“You are all getting ‘new’ young adult bodies. Some of you already have them, and you all will before you graduate from high school.” - <i>F7/8, Core activity (Lesson 3)</i></p> <p>“It is very important to discuss the wide variation of ages when puberty can begin and progress.” – <i>MPC, Optional activity: Puberty and adolescent sexual development discussion</i></p>
Cognitive development	<p>“By 7<sup>th</sup> or 8<sup>th</sup> grade, most students will have been introduced to puberty topics in an earlier class, but some will not have been really ready to hear the concepts, because it was not yet personally relevant...Thus you will have to present ‘old’ information in the respectful enough way that the students do not feel you are talking down to them.” – <i>F7/8, Facilitator instruction (Lesson 2)</i></p> <p>“Seventh and eighth graders frequently believe they already are quite knowledgeable regarding pregnancy, and some actually are. You do not want them to feel you are talking down to them.” – <i>F7/8, Facilitator instruction (Lesson 8)</i></p>
Emotional development	<p>“This question may cause discomfort for some participants. Allow the discussion to flow freely while respecting some participants’ desires not to participate.” –<i>BPBR, Facilitator instruction (Module 1, Activity C)</i></p> <p>“Some students may find the one-on-one nature of this activity intimidating. If you think your class will feel this way, you can ask students to stand in a big circle...it may reduce student anxiety.” – <i>FHS, Core activity (Lesson 9)</i></p>
Sexuality development	<p>“Explain that you realize the class probably contains students with different levels of sexual experience. Reassure them that you want to share important, valuable information, not to make anyone feel bad or guilty.” – <i>HK, Core activity (Section One)</i></p> <p>“In sexual health education it’s even more crucial than in other subject areas for you to validate and affirm every student with conscious regard for the probably diversity in the room...Not all bodies look like the typical ones we draw...By high school, some students will have had abortions or be parenting...You don’t have to agree with the decisions they’ve made...You do have to make your classroom a safe place where they can get as much value from the FLASH unit as anyone else.” – <i>FHS, Facilitator instruction (Introduction)</i></p>
Classroom context	<p>“There are three ways to do the role plays in groups, depending on the maturity, the numbers, and the ability of the pairs to work together.” – <i>BPBR, Facilitator instruction (Module VI, Activity B)</i></p> <p>“If you think your class is too immature for so much personalizing, you can simply read the mini-scripts aloud, yourself, or have students read them silently to themselves.” – <i>F7/8, Facilitator instruction (Lesson 11)</i></p>

## Appendix for paper 3

### Appendix A: Developmentally responsive educational strategies assessment tool

#### Early adolescence (middle school)

Curriculum: \_\_\_\_\_

Developmental domain	Strategy	Session #, Activity #
Biological	Emphasize hands-on/interactive activities and experiences, allowing students to move around the classroom to avoid long periods of passive work <sup>2</sup>	
Cognitive	Tailor information to learners requiring concrete representations, while offering opportunities for practice of higher level cognitive processing <sup>2</sup>	
	Include problem-solving skills development and reflective thinking processes <sup>2/4</sup>	
	Include time for reflection <sup>4</sup>	
	Incorporate activities that require critical thinking, such as interpreting messages conveyed by the media <sup>4</sup>	
	Focus on short-term consequences and benefits of behaviors <sup>4</sup>	
	Address role of emotion in decision-making	
	Incorporate activities that address implicit and explicit beliefs about sexuality, for example using emotionally engaging technology such as virtual reality or videos/TV shows <sup>4</sup>	
	Reinforce connection of previously learned material with new material (e.g. from one lesson/module to the next), or curriculum content to topics addressed in other classes <sup>2</sup>	
	Use examples, role plays or simple lists of possible options to help early adolescents who may have trouble generating ideas <sup>4</sup>	
	Limit the number of activity/content transitions <sup>4</sup>	
Social	Incorporate understanding of important social transitions into lessons and discussion, for example many early adolescents transition to middle school and experience increased freedom to be with friends, without the company of an adult, also often peer groups start to change dramatically, cliques form, and other gender friendships become more common. Additionally, “dating” begins for many making exploration of what is meant by dating, including behaviors, boundaries, etc. relevant both in couples and in groups. <sup>8</sup>	
Achievement	Focus on short term goals (e.g. 1 month, 6 months, 1 year), rather than 5- and 10-year goals in goal-setting exercises <sup>4</sup>	
	Create milestones or pivotal points for long-term projects, such as short and intermediate deadlines for components of project <sup>4</sup>	
	Find ways to identify achievement for each adolescent so that they feel a sense of accomplishment/competence <sup>10</sup>	
Autonomy	Offer opportunities for youth to select learning topics or activities and planning activities and allow group to develop own rules <sup>2/4</sup> . For younger early adolescents, may need to offer guidance through examples or suggestions.	
	Avoid power struggles over autonomy between adult and	

	adolescents, rather try to find as many opportunities for autonomy to the adolescent <sup>4</sup>	
	Discuss conflicts privately or acknowledge behavior as inappropriate and remind the group of the appropriate behavior, and move on <sup>4</sup>	
Emotion	Avoid competitive activities that result in a winner and loser <sup>2</sup>	
	Avoid direct challenges or tests of student knowledge, rather correct misinformation as it arises <sup>2</sup>	
	Address preoccupation with physical changes by normalizing diversity in physical development <sup>2</sup>	
	Be aware of and normalize seemingly inconsistent reactions or responses to concepts. Help students to look at and consider those inconsistencies without judgment. <sup>11</sup>	
	Discuss feelings that can feel embarrassing, strange or uncomfortable. Normalize inconsistent and changing emotions as a normal part of development. <sup>3</sup>	
Identity	Offer skills-building in public speaking, group theatrics, role playing or other brief spotlight activities to promote confidence and comfort <sup>4</sup>	
Intimacy	A preference for same gender peer groups is still common among young adolescents (ages 9-11), therefore dividing groups by gender can increase comfort among students (this may continue to be appropriate, at least for some sessions throughout adolescence). At the later part of this stage (12-13) increasing mixed gender groups becomes appropriate. <sup>4</sup>	
	Allow/encourage youth to express support for each other <sup>2</sup>	
	Encourage team building and a peer supportive environment <sup>2</sup>	
	Engage near peer leaders to help facilitate sessions or peer leaders to promote positive norms about sexuality <sup>4</sup>	
	Debunking the “everybody is doing it” myth can be an effective <sup>4</sup>	
	Discuss the meaning of and characteristics of true friendship, including finding role models for friendship <sup>3</sup>	
	Address role of technology in social development <sup>4</sup>	
	Normalize shift from parent-centered to peer-centered world changes in friendship groups <sup>2</sup>	
	Offer support to parents on how to navigate the biological, cognitive, and social transitions <sup>4</sup>	
Morality	Allow group to develop own rules / group norms and embed these within a discussion of the purpose of these rules for group functionality <sup>4</sup>	
	Incorporate activities that explore morally challenging situations. Newspaper articles, movies and TV can be good vehicles for discussion <sup>1</sup>	
	Create space to explore labels, such as “gay” and “straight”, their meaning and implications <sup>1</sup>	
	Work with students to develop empathy for their peers and others <sup>3</sup>	
	Help students to think critically about sexuality related message and images in culture and media. <sup>3</sup>	
Sexuality	Although most early adolescents will not be engaging in sexual behavior, recognize there may be a wide range of interest in sexual behavior, little information about sex, and may be practicing or preparing for sexual interactions through the use of text messages, phone, or social media, and “going out with” partners. <sup>1,4</sup>	

	Normalize the wide range of sexual development at this age including new, growing and sometimes confusing sexual feelings as well as lack of sexual feelings as part of development. <sup>3</sup>	
	Focus on simple messages such as the importance of delaying sexual activity, rather than long-term benefits and consequences of sexual behavior <sup>2,4</sup>	

### Middle adolescence (high school)

Curriculum: \_\_\_\_\_

Developmental domain	Strategy	Session #, Activity #
Biological	Continue to emphasize hands-on/interactive activities and experiences, in particular for male students who are likely at the peak of their growth spurt <sup>4</sup>	
Cognitive	Can increasingly use activities that require higher level cognitive processing, including hypothetical scenarios to explore concepts <sup>4</sup>	
	Work on problem-solving, decision-making, and critical-thinking skills by asking students about their thoughts processes (metacognitive process) in reaching conclusions <sup>4</sup>	
	Continue to focus on short-term benefits and consequences of behaviors, but start incorporating exploration of medium-term benefits/consequences <sup>4</sup>	
	Address role of emotion in decision-making <sup>4/6</sup>	
	Practice anticipating difficult situations that may occur in the future and planning in advance <sup>4</sup>	
	Use role-play, case studies or video representation as effective programming modes <sup>4</sup>	
Social	Incorporate understanding of important social transitions into lessons and discussion and their influence on sexuality, for example during this stage many middle adolescents transition to high school and obtain their driver's license allowing them increased behavioral autonomy and opportunity to be alone with a romantic partner. High school expands one's peer group and often this transition is a time of "reinvention" for adolescents regarding how they see themselves, portray themselves and what peer group they choose/develop. <sup>8</sup>	
Achievement	Recognize possible gender differences in measures of competence, for example boys may view sexual behavior as a measure of competence rather than intimacy <sup>7</sup>	
	Individual achievement becomes more prominent. Integrate lessons that help an adolescent differentiate themselves from peers through accomplishments.	
Autonomy	Continue identifying and increasing opportunities for autonomy, including involving youth in program development <sup>4</sup>	
	Allow selection of learning topics or activities and planning activities and allow group to develop own rules with limited supervision <sup>2/4</sup>	
	Provide or help youth identify leadership opportunities.	
	Do not force participation in youth culture, allow for distance between youth and adult (e.g. educator) unless the adult feels natural, unforced, and respectful using youth language <sup>4</sup>	

Emotion	Introduce and discuss coping responses to moments of extreme emotional response, including relaxation techniques, journaling, self imposed time-outs <sup>3/4</sup>	
	Continue to normalize diversity in physical development <sup>2</sup>	
	Continue to normalize seemingly inconsistent, uncontrollable, confusing or unpleasant emotions, including when external expression of emotion does not reflect internal feelings (embarrassment expressed as anger, anger expressed through crying, etc.) <sup>11</sup>	
	Begin to address feelings of love, and emotional intimacy vs. physical intimacy. <sup>12</sup>	
Identity	Continue to build skills that reduce self-consciousness <sup>3,4</sup>	
	Allow youth to process different aspects of their identity within different contexts. Provide support and opportunities for students explore or “try on” different parts of themselves and ways of expressing themselves. <sup>11</sup>	
Intimacy	Continues to be appropriate to debunk “everyone is doing it myth” <sup>4</sup>	
	Encourage youth to express support for each other, encouraging youth to engage in activities they are interested in where they can build social connections <sup>3,4</sup>	
	Outside experts can be more appreciated during this stage <sup>4</sup>	
Morality	Incorporate activities that ask students to explore situations where their behavior may be challenged by conflicting values, (e.g. In a one night stand, how might each party feel?), ask them to identify the conflicting values, and how they might follow through on their decision <sup>1</sup>	
	Provide space for adolescents to individually explore their own relationship and sexual intentions in different scenarios (e.g. through journaling) <sup>1</sup>	
	Allow youth to process their actions and where these may contradict with their values or where two sets of values may conflict (i.e. family and individual values) <sup>1,3</sup>	
	Incorporate lessons on defining and living consistently with one’s own values (e.g., successfully saying “no” to an unhealthy behavior even if it seems that everyone else is doing it.) <sup>1/14</sup>	
Sexuality	Identify and rehearse skills that allow youth to integrate their knowledge about the consequences of unprotected sex into situations they may encounter <sup>6</sup>	
	Recognize gender differences in concerns, questions, desired information about sex <sup>7</sup>	
	Address peer influence on sexual behavior and attitudes <sup>5</sup>	

## CONCLUSION

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This dissertation was developed to inform future directions for sexuality education by analyzing current understandings of the construct of developmentally appropriate sexuality education and highlighting where gaps exist between the research knowledge-base on adolescent development and current practice in sexuality education.

In the first paper, I reviewed the adolescent development research literature and suggested several implications of this literature for sexuality education. The body of research on adolescent development offers a rich understanding of the period of adolescence and the factors that are unique to this stage in the life course. It also highlights areas where adolescents have particular opportunities for learning and growth, and points to the importance of contextual factors in facilitating healthy developmental trajectories. The intentional integration of adolescent development research to sexuality education programs has the potential to provide adolescents with much needed support in their sexuality development. Specifically, adolescent development research has important implications for sexuality education including selecting developmentally appropriate program goals, identifying appropriate topics, appropriately timing the presentation of these topics, establishing environments supportive of autonomous motivation, integrating developmentally responsive strategies, and making content and educational strategy accommodations for developmental diversity.

In the second paper, I presented findings from in-depth interviews with sexuality educators and sexuality education materials developers on their conceptualization of developmentally appropriate sexuality education. Four aspects of developmentally appropriate sexuality education emerged consistently across interviews: (1) addressing developmentally relevant topics, (2) adapting content to cognitive and brain development (3) accommodating developmental diversity, and (4) facilitating the internalization of sexual health messages. While it appears that experienced materials developers and sexuality educators do consider the concept of developmental appropriateness in their practice, the application of a more comprehensive and integrated review of adolescent development research might be able to provide greater clarity on its definition, and thus enhance use of this perspective.

And finally in the third paper, I analyzed the content of five popular sexuality education curricula to determine the extent to which the educational strategies used were developmentally appropriate. This study provided insight into the quality of these curricula, revealing that curricula exhibited wide variation in aspects of developmental appropriateness. Although the curricula assessed in this study exhibited some developmentally appropriate characteristics, a need exists for improvement, including increased focus on promoting autonomous motivation, reduction in the predominant focus on risk, more consistent citation of high quality data sources, elaboration of underlying developmental assumptions guiding the curriculum, and more precise targeting of materials to specific developmental stages of adolescence or developmental characteristics.



The findings from these studies suggest that further work is needed to define of developmentally appropriate sexuality education. In addition, increased collaboration between researchers and practitioners is called for to ensure that concepts derived from research are translated to practice, or studied and presented in such ways that they can directly inform practice. Concrete and mutually exclusive definitions of sexuality education best practices should be developed to provide specific guidance to those involved in its implementation, including educators, materials developers, and policy makers. Furthermore, ways in which programs are evaluated and determined to be “evidence-based” need to be revisited to be able to accommodate programmatic adjustments responsive to developmental diversity. Greater educator training in developmental concepts and applications will be critical to ensuring that up-to-date applications of the adolescent development research are put in practice.

The goal of this dissertation was to encourage further attention to the concept of developmental appropriateness and its application to sexuality education, as well as to highlight the richness of the body of research literature on adolescent development. Although the three research questions were addressed in three distinct individual papers, it was the intention of this dissertation to form a coherent whole that provides a foundation for understanding how developmentally appropriate sexuality education is conceptualized and applied in theory and practice. While there is more to be done to clarify the definition of developmentally appropriate sexuality education, adolescent development research offers a largely untapped opportunity to identify ways in which to support positive trajectories in sexuality development for adolescents.

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