

Adolescents' Digital Media Interactions within the Context of Sexuality Development

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Abstract

Sexually oriented digital media use plays an important role in adolescents' sexuality development. The literature points to unique affordances of these media uses (e.g., accessibility, anonymity), which invite adolescents to use these media for the construction of their sexuality and the engagement in sexual behaviors. Different theories that have been used in research on sexually oriented digital media use (e.g., Uses and Gratifications and Self-effects) explain why adolescents use such media and how it may shape adolescents' sexuality. Specifically, research has documented different motivations of sexually oriented digital media use (e.g., sexual exploration) and how such uses relate to sexual self-development outcomes (e.g., sexual certainty), attitudinal outcomes (e.g., gender stereotypical beliefs), relationship quality indicators (e.g., commitment), and sexual behavioral outcomes (e.g., risky sexual behavior). The literature further points to challenges and future directions in the field of sexually oriented digital media use research. Particularly, future research is advised to explore the beneficial implications of digital media uses for adolescents' sexuality. Also, more attention needs to be drawn to underlying processes explaining the link between adolescents' digital media uses and sexuality-related outcomes, and the bidirectional nature of this link.

Keywords: adolescents, sexuality, digital media, media effects, positive sexuality

Introduction

Digital media interactions have become an integral part of adolescents' everyday lives as a wide range of evolving technological tools (e.g., smartphones) allow adolescents to be online almost continually (Davis, 2013). As such, the context in which teens mature has now expanded from the traditional offline context to the online environment (Lerner et al., 2010). One of the most significant developmental tasks, which is facilitated through the use of digital media, is the construction of one's sexuality (Collins et al., 2010).

Within the current chapter, the uses of different digital media applications are discussed in the context of the establishment of a sexual identity. In particular, the chapter focuses on social media, sexting, and online pornography. The literature has explained that the unique affordances of these media (i.e., accessibility, anonymity and asynchronous communication) invite adolescents to use them for the construction of a sexual identity (e.g., Valkenburg & Peter, 2011).

The current chapter situates adolescents' sexually oriented digital media use by first describing adolescents' sexuality development. Then, the chapter delves into (1) adolescents' varying sexually oriented digital media activities, (2) motivators for these activities, and (3) outcomes of such uses with attention for potential (3a) underlying processes, and (3b) the possible conditional nature of such outcomes. The chapter concludes with recommendations for future research that should help to bolster our understanding of adolescents' digital media interactions and their impact on sexuality.

1. Adolescent Sexuality Development

Adolescence marks a time of self-discovery and is characterized by profound physical, cognitive, psychological and sociocultural changes (Sawyer et al., 2012). Within this unique developmental context, the exploration and construction of an adolescent's sexuality is believed to be one of the most significant and challenging developmental tasks

(Fortenberry, 2013). In the literature, sexuality often denominates an inclusive category which refers to how adolescents describe, feel or express their sexual selves (Diamond & Savin-Williams, 2009).

Sexuality development has received growing attention over the past 40 years, with early studies responding to concerns of educators and parents regarding adolescents' early sexual initiation or negative consequences of sexual activities, such as unwanted pregnancies (Moran, 2000). In recent years, sexuality scholars have increasingly acknowledged adolescents' emerging sexual feelings and behavioral responses as expected and thus developmentally normative without undermining the necessity of exploring sexual risks (e.g., Tolman & McLelland, 2011). In this view, scholars point to the usefulness of studying how adolescents construct a 'positive sexuality' (Russell, 2005). Maes et al. (2021), for instance, refer to a positive approach to sexual relationships, acceptance of one's own sexuality, a respectful approach to different sexual expressions of others, the ability to have control over sexual interactions, and resilience against negative sexual experiences. Yet, most research still focuses on a negative sexuality and thus addresses indicators such as sexual uncertainty, sexual objectification, and risky sexual behaviors (e.g., Peter & Valkenburg, 2009; 2011). In the current chapter, a focus will be placed on both positive and negative sexuality-related attitudes and behaviors.

Adolescents' sexuality development is typically driven by elevated levels of sexual hormones (e.g., testosterone and estrogen levels) which increase sexual drives and stimulate the development of primary (i.e., menarche for girls and semenarche for boys) and secondary sex characteristics (e.g., enlargement of breasts for girls and deepening of the voice for boys) (Ponton & Judice, 2004). Simultaneously, adolescents' cognitive abilities improve, which, in turn, stimulates abstract thinking and self-reflection (Christie & Viner, 2005). Such self-

reflection skills are especially imperative regarding the exploration and construction of one's sexuality (e.g., determining one's sexual orientation) (Ponton & Judice, 2004).

Adolescents typically respond to these developmental changes by communicating about their emerging sexual feelings and engaging in (non-)coital sexual behaviors (e.g., self-masturbation) (DeLamater & Friedrich, 2002). Scholars emphasize the active role of peers in these processes as they function as sources of support and inform adolescents on sexual strategies (e.g., how boys and girls flirt) and behavior (e.g., when to 'lose' your virginity) (van de Bongardt et al., 2015). However, the sexual socialization that adolescents receive from peers can also reinforce prevailing sexual stereotypes (e.g., sexual passiveness for girls; sexual dominance for boys) and sometimes contains erroneous information about, for instance, sexual protection (Ponton & Judice, 2004). Furthermore, romantic and sexual relationships offer a primary venue in which emerging sexual feelings are explored, experimented with and responded to (Diamond & Savin-Williams, 2009). During this explorative period adolescents will also further discover their preference for heterosexual, homosexual and bisexual relationships. This exploration is typically more challenging for non-heterosexual adolescents (Saewyc, 2011).

Although sexuality development is equally significant and profound among adolescent girls and boys, their experiences and perceived consequences do differ (Petersen & Hyde, 2010). Such differences are often argued to be the product of biological and social factors. Biologically, differential hormonal influences bring along different developmental needs and body growth among boys and girls (Perry et al., 2011). As for social factors, societal pressure typically leads individuals to conform to traditional gender roles (Ponton & Judice, 2004). These traditional gender roles coincide with the idea of a sexual double standard in which girls and women are expected to be sexually attractive and pleasing while ignoring their own sexual needs or even denying and shaming their sexual agency (Hamilton

& Armstrong, 2009). At the same time, sexual desire and agency is assumed to be inherent in male sexuality (Murray, 2018).

2. Digital Media and Adolescents' Sexuality

Over the past two decades, scholars have pointed at the increasing presence of digital media in the everyday lives of adolescents (Guse et al., 2012). Owing to the rapid adoption of mobile devices (Ling & Bertel, 2013), most adolescents have the possibility to be constantly online. Within this online environment, sexually oriented digital media activities take place in accordance to adolescents' sexual development and needs. Such activities can be divided into two underlying themes: sexual health education and entertainment. Sexual health related digital media activities include the use of websites and other online tools (e.g., social media banners) that cover sexual health information (e.g., contraceptive use, STD's, or menstrual cycles). Existing studies indicate that adolescents often turn to digital media in order to seek sexual information (e.g., Nikkelen et al., 2020).

Entertainment related sexually oriented digital media encompasses adolescents' uses of social media, sexting (via instant messaging tools of social media or mobile phone messages), and online pornography. Adolescents frequently use social media on a daily basis. When describing social media uses, the literature distinguishes between the private and public sphere in which interactions take place. Within the public sphere of social media, existing research mainly focuses on the posting of sexy selfies (e.g., van Oosten et al., 2018) which encompasses 51.7% of adolescents' self-presentations on social media (Kapidzic & Herring, 2015). Further, the public display of romantic affection and conflicts has also been the focus of existing studies (e.g., Rueda et al., 2015). Private social media use encompasses adolescents' engagement in romantic relational communication (e.g., Young et al., 2017) and even sexting via instant messaging tools (e.g., Van Ouytsel et al., 2019).

The current literature defines sexting as “the sending of self-made sexually explicit messages, pictures or videos through the computer or mobile phone” (Van Ouytsel et al., p. 1, 2019). This particular behavior takes place through instant messaging tools of social media and other digital applications, such as snapchat, a tool which allows adolescents to send temporary available sexting message to one (or multiple) person(s). A recent meta-analysis points to the relative commonness of sexting among adolescents, as one in ten adolescents has already engaged in this online behavior (Madiga et al., 2018). This number is higher among girls and older adolescents (Cooper et al., 2015).

Apart from producing their own sexual material, adolescents, and especially boys, consume sexually explicit internet material (i.e., online pornography) which can also be described as an intimate sexually oriented digital media activity (Peter, & Valkenburg, 2016). Exposure rates differ substantially depending on the examined countries in the literature. For instance, in the US, 77% of adolescent boys and 33% of adolescent girls indicated that they watched pornography in the past year (Hardy et al., 2019), while in Croatia, pornography use rates were higher among both adolescent boys (90%) and girls (43%) (Milas et al., 2019).

3. The Affordances of Sexually Oriented Digital Media

Sexually oriented digital media use is especially imperative in adolescents’ sexuality as their unique affordances (i.e., characteristics of digital media that provide the potential for a particular action) support the exploration of one’s sexuality. Specifically, Cooper and colleagues (1999) identified three disinhibiting characteristics of online environments: (1) *accessibility*, (2) *anonymity* and (3) *asynchronous communication*.

First, digital media are characterized by their (1) *accessibility* to (the creation of) various forms of content related to intimacy, sexuality and gender identity (e.g., Beals, 2010). Given that some adolescents may lack sexual experiences or may feel too embarrassed to discuss intimate topics with others (in person) (e.g., how to wear a condom), the accessibility

to a rich variety of sexual information through the online environment can be particularly helpful (Simon & Daneback, 2013). For example, adolescents can turn to sexual health websites to receive reliable information on intimate topics (e.g., Park & Kwon, 2018). Also, via online pornography, adolescents have access to explicit information about sexual behaviors, attitudes, and gender roles (e.g., Grubbs et al., 2019).

Second, digital media's unique affordance to maintain one's (2) *anonymity* is useful for adolescents who are still discovering their sexuality. Peter and Valkenburg (2011) point to two forms of anonymity: source anonymity and audiovisual anonymity. With source anonymity, adolescents have the ability to view or even distribute content of a sexual or romantic nature without the possibility to link this type of content to a particular individual or source. This extreme form of anonymity is especially appealing to adolescents when they are searching for sexually explicit content online (i.e., pornography). Specifically, adolescents can explore emerging sexual feelings without the risk of being discovered and, consequently, feeling ashamed afterwards (Shek et al., 2016).

With audiovisual anonymity, the lack or the reduction of nonverbal cues (i.e., visual or auditory) in online communication is captured (Peter & Valkenburg, 2011). When adolescents engage in sexting or communicate through instant messaging tools, they can choose to only communicate through linguistic/textual/verbal content or to use visual and/or audio cues. Adolescents typically have high levels of self-awareness and are, as a result, often more shy in traditional face-to-face interactions (e.g., Weil et al., 2013). Within digital contexts, audiovisual anonymity can facilitate discussions about intimate topics or themes, while such discussions may be more likely perceived as awkward in offline environments (Van Ouytsel et al., 2016).

Third, the ability to (3) *communicate asynchronously* is another relevant affordance to understand the role of digital media in adolescents' sexuality. Through instant messaging

tools, adolescents have the opportunity to (privately) communicate with others about sexual or romantic topics while having a heightened sense of control over their conversations (Le et al., 2014). In contrast to face-to-face communication, adolescents are able to edit and think about how they communicate about their emerging sexual or romantic feelings and, thus, learn at their own pace how to have a proper and respectful conversation about intimate topics (Van Ouytsel et al., 2016b).

The affordances of accessibility, anonymity and asynchronous communication are shared over differential sexually oriented digital media. Other affordances are more platform specific. For example, when adolescents send photos via Snapchat to another person, the visual content is only accessible to the receiver for a maximum of 30 seconds. On Facebook, on the other hand, pictures sent through messenger are permanently accessible until the receiver deletes them. The temporary accessibility of posts is described in the literature as *ephemeral content* (Chen & Cheung, 2019). This and other platform-specific affordances are assumed to further play a key role in adolescents' choices to use a certain type of digital media platform as a response to specific sexual or romantic relational needs within a particular context.

4. Motivations for Adolescents' Digital Media Uses within the Context of Sexuality

Uses and gratifications theory denotes that users' media interactions are driven by differential motivations (Katz et al., 1973). Such motivations are entwined with digital media affordances as some affordances create new motivations when new media are introduced (Sundar & Imperos, 2013). Within the context of sexually oriented digital media and adolescents' sexuality, motivations differ from each other in terms of the motivational source (i.e., internal vs external). As for internal motivations, research points toward sexual exploration, and relationship initiation and maintenance. As for external (or other-imposed) motivations, pressure and coercion have been identified as motivators. The section below

discusses these motivations in terms of their meaning and how digital media use driven by a particular motivation affects adolescents' sexuality.

Sexual Exploration

One of the most commonly reported motivations for adolescents' sexual engagement with digital media is the need to explore one's sexuality and emerging sexual feelings (Cooper et al., 2016). Particularly, heightened levels of *arousal and sexual curiosity* characterize adolescence and are the predominant reasons for using online pornography and engaging in sexting. Gender differences are relevant in this context as boys are more often driven by arousal, pleasure, and sexual curiosity than girls (Cooper et al., 2016; Grubbs et al., 2019).

Apart from arousal and curiosity, adolescents share a desire to learn about sexual practices as many of them are still inexperienced. Adolescents frequently turn to sexually oriented digital media stimulated by the *need for information* about sexual activities (e.g., how to initiate intercourse) (Pascoe, 2011). This information-seeking need is especially relevant in terms of adolescents' online pornography use as this type of digital content explicitly shows how to engage in different types of sexual activities. Moreover, pornographic content can even be used as a source of inspiration for novel sexual behaviors (e.g., learning about different sexual positions) (e.g., Grubbs et al., 2019).

The *need to construct one's sexual and gender identity* is further considered to be a key motivator of adolescents' uses of sexually oriented digital media. Specifically within the online environment, adolescents feel more secure and less prejudiced when exploring and, even, expressing their own sexuality and gender identity (e.g., Pascoe, 2011). On social media, adolescents are exposed to varying types of sexual content (e.g., sexy selfies) shared by peers and other significant actors (e.g., influencers). This content offers insights on how adolescent girls and boys behave and present themselves sexually (e.g., Kapidzic & Herring,

2015; Shafer et al., 2013). These self-presentations stimulate adolescents to explore their own sexuality (van Oosten et al., 2015). Online sexual self-presentations express different sexual beliefs, preferences, and behaviors whilst simultaneously negotiating peer approval and acceptance. For heterosexual boys and girls, these self-presentations often reflect traditional gender stereotypes. Girls are more invested in portraying themselves as sexually attractive and seductive, whereas boys' self-presentations are more varied (e.g., pictures of oneself practicing hobbies) (Kapidzic & Herring, 2015). Indeed, the longitudinal study of van Oosten et al. (2017b) shows that adolescents' who hold more gender stereotypical beliefs present themselves online more in a sexy way and, at the same time, are also more exposed to sexy self-presentations.

Further, scholars point to the experimental nature of consensual sexting by which adolescents can establish their sexuality. Adolescents are motivated to *experiment with different sexual experiences* whilst expressing their own sexual preferences (e.g., Dir et al., 2013). Also, through the uses of online pornography, adolescents are exposed to different types of sexual activities which allows them to explore their sexual preferences freely. This exploration of one's sexual preferences facilitates the acceptance and establishment of, for example, one's sexual orientation (Grubb et al., 2019).

Relationship Initiation and Maintenance

One frequently reported motivator of digital media uses is the ability to *initiate a romantic relationship* and even *maintain this relationship*. Adolescents use social media and sexting in order to flirt with someone, ask someone out for a date or even ask someone to be their boyfriend/girlfriend (Young et al., 2017). For sexual minority groups, relationship initiation through digital media is particularly convenient. These groups often experience difficulties forming romantic relationships offline as they have fewer potential romantic partners and experience stigmatizations or even physical harm (Williams et al., 2009). Within

the online environment, sexual minority groups can experience less harassment and feel more secure when establishing a romantic relationship (Korchmaros et al., 2015).

Further, in order to *maintain one's romantic relationship*, adolescents also turn to digital media. Particularly, when a relationship is established, adolescents can advertise the relationship status on Facebook (i.e., in a relationship or engaged), which can be seen as an important step in their romantic relationship (Van Ouytsel et al., 2016b). Also, instant messaging tools on social media allow romantic partners to stay in contact while being physically distant (Utz & Beukeboom, 2011). Scholars even suggest that digital communication is now an integral part of adolescent couple functioning (Blumer & Hertlein, 2015). In order to maintain a more intimate bond with one's romantic partner, adolescents often use sexting (Cooper et al., 2016). Consensual sexting is considered a normal and contemporary form of sexual expression and intimate communication within relationships (Burkett, 2015; Parker et al., 2013). Further, sexting can initiate offline sexual behaviors with romantic partners. For adolescents who are physically separated or cannot engage in sexual activities with their romantic partners (e.g., because this is forbidden by their religion), sexting can take place as a means of sustaining a level of intimacy (Cooper et al., 2016).

Pressure

Similar to offline sexual behavior, online sexual behavior can also be motivated by external factors such as *peer* and *partner pressure*. Peers become increasingly important in the lives of adolescents as they are experiencing elevated need for autonomy from one's parents and, at the same time, seek out approval from their peers (Lerner et al., 2010). Such dynamics are also relevant when considering sexually oriented digital media uses.

Particularly, studies consistently demonstrate that the need to conform to peer norms and even the experience of peer pressure are significant motivators for adolescents' posting of sexy selfies on social media (i.e., mostly among girls) (de Vaate et al., 2018; Mascheroni et

al., 2015), online pornography use (i.e., mostly among boys) (Chen et al., 2013; Vanden Abeele et al., 2014), and sexting (Dake et al., 2012; Maheux et al., 2020).

Scholars emphasize that sexting can also be initiated after experiencing *pressure from a partner*. Especially girls experience such (implicit) pressure from partners (Walrave et al., 2014). Girls often believe that they need to send self-produced sexual images to their partners in order to maintain a good relationship. Boys, on the other hand, experience more pressure from other peers as the ability to chat to girls and negotiate access to seeing their bodies proves their dominant sexual status (Lee & Crofts, 2018). Sexual activities with girls (e.g., receiving girls' sexual pictures and forwarding these pictures without their consent) can thus help boys to gain peer status and popularity (Burén & Lunde, 2018; Ringrose et al., 2013). At the same time, more moral responsibility is attributed to girls for sending a sexting picture than for boys forwarding such pictures without consent. As such, regardless of whether they engage in sexting or not, girls' behavior seems to be consistently evaluated in terms of sexist norms (Lippman & Campbell, 2014; Ringrose et al., 2013).

Sexual Coercion

A growing body of literature indicates that the uses of sexually oriented digital media can also take place in a context of abusive dating behaviors (Van Ouytsel et al., 2016a). Reed and colleagues (2017) distinguished three different types of digital dating abuse among adolescents: *digital monitoring and controlling*, *direct aggression*, and *sexual coercion*. Digital monitoring/controlling is the most frequently reported digital abusive behavior. This particular type of abusive behavior entails the intrusion of a partner's privacy via controlling their online activities and relationships (Dracker & Martsolf, 2010). Girls have reported a higher frequency of digital monitoring than boys (Reed et al., 2017).

Further, digital direct aggression towards one's romantic partner or dating interest can also be a motivation for adolescents' engagement with digital media. Such direct aggression

can, for example, be expressed by posting a hurtful public/private message or the threat to physically harm one's partner (Borrajó et al., 2015).

Lastly, scholars stress the occurrence of digital sexual coercion among adolescents. This behavior encompasses the use of sexually oriented digital media to pressure someone to send intimate pictures, redistributing intimate pictures without consent and even threatening with sexual harm (Hellevik, 2019). Boys engage more regularly in digital sexual aggression and coercion (Reed et al., 2017; 2018). In terms of digital sexual coercion, the previous section has already addressed partner pressure being a detrimental motivator for, mostly girls', sexting behaviors. When addressing sexting behaviors in adolescents and its problematic motivators, it is especially crucial to emphasize the occurrence of grooming. This online behavior is often considered a criminal offence and entails a process in which an adult manipulates a minor via digital media in order to obtain sexual materials from them or to sexually abuse them (Machimbarrena et al., 2018). For instance, 16.6% of adolescents indicated that they experienced grooming online (Machimbarrena et al., 2018).

5. Theoretical Frameworks for Effects of Sexually Oriented Digital Media Use

Several theoretical frameworks can be used to clarify how the effects of sexually oriented digital media take place. Within the literature, Social Cognitive Theory, Sexual Script Theory, and Self-Effects literature are typically proposed to explain the effects of the uses of these media (i.e., social media, sexting, and online pornography).

Social Cognitive Theory (Bandura, 2001) is frequently referred to as a traditional theoretical model that is consistently adopted by scholars examining the sexual effects of traditional media (e.g., television). Over the past two decades, this theoretical framework has also proven to be useful to explain digital media effects as the tenets of this theory are transferable to an online environment. Social cognitive theory argues that behavioral and attitudinal effects are contingent on expectancies of such behaviors and attitudes. Within the

context of digital media, expectancies are shaped by the observation of attractive models being rewarded for the engagement in or sharing of certain sexual behaviors online or the expression of particular sexual beliefs. For example, digital media users can observe peers on social media or actors of pornographic videos which operate as ‘attractive models’. These models are rewarded, for example through likes (for peers on social media) or sexual satisfaction (for actors in pornographic videos) for the engagement in or sharing of certain sexual behaviors or beliefs. Peers can, for example, share a status update which implies that they had casual sex or post an article about gender equality, while actors in pornographic movies more explicitly engage in casual sex. By observing these rewarded sexual behaviors as well as beliefs promoted by attractive models, digital media users learn which behaviors and beliefs are socially acceptable and positively reinforced. As such, these behaviors and beliefs have a higher chance of being adopted by digital media users. Social cognitive theory further points to the mechanisms explaining the adoption of certain sexual behaviors. In this context, sexual media effects are not produced immediately but operate via underlying processes. Sexual cognitions, such as sexual self-efficacy (i.e., one’s beliefs about one’s ability to control a sexual behavior or situation), often operate as factors explaining the link between media use and behavioral outcomes.

Building on the principles of Social Cognitive Theory, *Sexual Script Theory* (Gagnon & Simon, 1973) offers an additional theoretical framework conceptualizing how sexual media messages shape users’ sexual behaviors. Although this theory was initially created to explain the impact of sexual content in traditional media, its tenets can also be adopted to explore the implications of sexual messages in the digital environment. Within the context of digital media uses, sexual script theory argues that online sexual content is stored in users’ memories and operates as a ‘script’ to guide their future sexual behavior. For example, when digital media users observe how other couples behave on social media (e.g., expressing their

love for each other), they can ‘store’ this information and use it to guide their (online) behaviors within a romantic relationship. In pornographic content, these sexual scripts are shown more explicitly, offering digital media users more practical guidelines on how to engage in sexual activities. The retrieval of these sexual scripts from one’s memory is facilitated through activation and recency processes. In particular, the more often and/or the more recently sexual scripts are observed, the more likely users are to engage in such behaviors endorsed by the scripts.

Although these two traditional theoretical frameworks can explain exposure effects of digital media, they cannot clarify all effects and processes within the online environment. Social media and sexting allow users to create and distribute content themselves. This ability to create and distribute online sexual content can also have substantial implications for the media users themselves. In recent years, scholars have recognized such effects and described them as *self-effects*, which generally constitutes “the effects of messages on the cognitions, emotions, attitudes and behavior of the message creators/senders themselves” (Valkenburg, 2017, p. 478).

Two mechanisms, namely self-perception and self-presentation processes, are especially relevant when clarifying these sexual self-effects. In terms of *self-perception processes*, Bem (1972) argues that individuals ascertain their self-concepts by retrospectively observing their own behaviors. Within the context of digital media, self-perception processes are triggered by the observations of the content media users share or the behavior they depict online. For example, through the sharing of sexy selfies online or the description of certain adventurous sexual behaviors via sexting, digital media users can verify that they are respectively sexy or sexually adventurous (e.g., van Oosten et al., 2018).

Another key mechanism of self-effects of the online environment, namely the occurrence of *self-presentation processes*, is especially relevant within the context of social

media. In particular, digital media users have the ability to carefully select which information to share on social media platforms regarding their sexual beliefs and/or behaviors. Therefore, media users will first reflect elaborately on how to present themselves online by engaging in a process called biased scanning. Particularly, by envisioning their desired and ideal online sexual selves, media users will search for information about certain sexual characteristics in their memory which can help to create such desired self-presentations online (Valkenburg, 2017). For example, when adolescents focus on certain physical attributes when sharing sexy selfies (e.g., for girls their cleavage, for boys their muscles) the evaluation of these characteristics makes them more accessible in media users' memories which can, in turn, affect self-evaluations (Schlenker et al., 1994). Moreover, individuals tend to strive for consistency in terms of the way they present themselves to others. This need for consistency can increase the likelihood that online self-presenters will continue to express the same sexual beliefs and/or engage in the same sexual behaviors as they do online (i.e., public commitment, Kelly & Rodriguez, 2006).

6. Digital Media and its Implications for Adolescents' Sexuality

A vast and still growing body of literature has examined adolescents' sexually oriented digital media uses and their effects on adolescents' sexuality. A search in the scientific database Web of Science with the following key words in the search command "digital media, adolescents, sexual*" resulted in 98 articles. Of these studies, 25 focused on sexting, 61 on social media and 15 on pornography. Below, the conclusions of these studies are summarized regarding four types of sexual self-development outcomes (i.e., sexual self-concept, sexual agency, sexual certainty, and sexual satisfaction), three types of attitudinal outcomes (i.e., sexually permissive attitudes, gender stereotypical sexual beliefs, and sexual objectification), two relationship quality indicators (i.e., commitment and sexual attraction) and three types of behavioral outcomes (i.e., sexual activities, risky sexual behavior, and

sexual aggression). These outcomes are all significant aspects in the context of adolescents' sexuality development. We also discuss existing literature on underlying processes (e.g., sexual arousal) that can explain the relationship between sexually oriented digital media use and sexual outcomes. Further, if relationships were conditional (e.g., a stronger effect based on adolescents' gender), this will also be addressed.

Sexual Self-Development Outcomes

Sexual Self-Concept

The construction of the sexual self-concept can be described as adolescents' understanding of their sexual selves and attributes that define them as a sexual person. The literature shows that social media and sexting play an important role in the construction of this self-concept and, therefore, guide adolescents in their understanding of their sexual selves. Particularly, with regards to social media, sexy online self-presentations appear to be especially relevant. The study of van Oosten et al. (2018) demonstrated that such self-presentations can define adolescents' sexual self-concept over the course of 6 months, and are also driven by one's sexual self-concept. This means that not only sexy self-presentations on social media are used as guidance for adolescents to understand their own sexual selves, but the way adolescents view themselves sexually also guides the way they present themselves online (Bobkowski et al., 2015). Among high extraverts, the last link appeared to be stronger. Relatedly, when it comes to sexting, the literature has demonstrated that when adolescents sext, they have a more developed sexual self-concept in comparison to adolescents who do not sext (Settani & Longobardi, 2019). As such, this implies that sexting may help adolescents in their understanding and exploration of their own sexual selves, such as discovering to whom they are attracted to.

Sexual Agency

As for *sexual agency*, which entails the ability to communicate and negotiate about one's sexuality, the literature seems to be relatively scarce when it comes to adolescents' sexually orientated digital media uses. To our knowledge, only the study of Klein et al. (2020) has explored this sexual outcome in relation to adolescents' pornography uses. They demonstrated that, the more girls view pornography online, the more sexually agentic they seem to feel over time. This outcome is especially relevant for girls, as scholars have previously highlighted girls' lack of attention for their own sexual desires (Cheng et al., 2014). Therefore, pornography may offer a useful tool for girls to take ownership of their own sexual desires and express what they want sexually. Contrary, the cross-sectional study of Manago et al. (2015) hints that social media may be detrimental for adolescents' sexual agency. Indeed, they found that among young adults, Facebook involvement appears to predict a decreased sexual assertiveness through mechanisms of objectified body consciousness. These findings suggest that similar processes can occur among adolescents. However this assumption has not been tested yet among adolescents, nor can conclusions be made about the directionality of this relationship given its cross-sectional nature.

Sexual Certainty

A large body of online pornography studies has explored how this online sexual media use can affect other important factors of adolescents' sexuality. Particularly, it appears that viewing pornography online can be detrimental for adolescents' sexual certainty (e.g., Peter & Valkenburg, 2008; 2010; van Oosten, 2016). The latter is referred to in the literature as the extent to which adolescents are certain about their own sexual beliefs and values. Studies show that the more adolescents watch pornography online, the more they feel uncertain about their sexual beliefs and values. This relationship has been demonstrated to occur via adolescents' involvement with pornographic content (Peter & Valkenburg, 2010).

Also, girls appear to be more affected than boys (Peter & Valkenburg, 2010; van Oosten et al., 2016).

Sexual Satisfaction

In terms of *sexual satisfaction* (i.e., the degree to which one is satisfied with their sexual life), scholars point to the likelihood that adolescents' sexting behavior can promote a greater sexual satisfaction in adolescents (Van Ouytsel et al., 2019) as such relations have been found among adults (Galovan et al., 2018). However, as of yet, no research has explored this particular question in youth. In terms of pornography, on the other hand, it appears that adolescents' uses of this online sexual media negatively affects adolescents' sexual satisfaction in the long term (Peter & Valkenburg, 2006; Doornwaard et al., 2014). This means that the more adolescents view online pornography, the less satisfied they are with their own sexual lives. This link was stronger for adolescents with little to no sexual experience and adolescents who perceived that the majority of their peers were sexually inexperienced.

Attitudinal Outcomes

Sexually Permissive Attitudes

In different types of online sexual content (e.g., sexual self-presentations or pornographic content), sexual activities are predominantly portrayed or referred to as casual and risk-free, without paying attention to the emotional (e.g., fear of being rejected) and physical complexities (e.g., properly using a condom) of these activities (e.g., Carrotte et al., 2020). Such content has been demonstrated to have a significant impact on the development of sexually permissive attitudes among adolescents. Sexually permissive attitudes can be conceptualized as an inclusive category, generally constituting positive attitudes towards sex with casual partners.

The literature indicates that social media and pornography use contribute to the development of such permissive attitudes. Particularly, the longitudinal study of van Oosten et al. (2017) found a long-term link over the course of one year between adolescents' time looking at sexual online self-presentations of others and increased willingness to engage in casual sex. This means that the more adolescents are exposed to sexy online presentations of others, the more they hold positive attitudes towards sex with casual partners. Moreover, this relationship occurred indirectly through descriptive peer norms about casual sex (e.g., the perception that casual sex is a common behavior among peers) (van Oosten et al., 2017a). Thus, looking at others' self-presentation on social media predicted an increase in adolescents' perception of the amount of same-aged friends engaging in casual sex, which in turn predicted an increase in their own willingness to engage in casual sex themselves. Further, on the long term, the adolescents watch pornographic content online, the more they hold positive attitudes toward casual sex (e.g., Baams et al., 2015; Brown & L'Engle, 2009; Doornwaard et al., 2015). Studies further indicate that this link was stronger among adolescents who perceive pornography as realistic (Baam et al., 2015) and was only present among boys (Doornwaard et al., 2015; L'Engle, 2009).

Gender Stereotypical Beliefs

A large body of literature has paid attention to digital media distributing and reinforcing traditional sexual gender stereotypes. These gender stereotypical beliefs include the assumption that men are more sexually assertive and dominant, and that women lack sexual agency and are, thus, more passive. Double standards are commonly embedded within these gender stereotypes as, for example, women are expected to be sexually reluctant while, simultaneously, they are also highly sexualized and valued based on their sexual attractiveness (Popa & Gavrilu, 2015).

Pornography use especially contributes to the development of gender stereotypes as these beliefs are reflected in the content and uses of online pornography. Not only do studies point to online pornography depicting men and women in a gender stereotypical manner (e.g., Klaassen & Peter, 2015), but its uses are also highly gendered as online pornography is typically targeted at men and perceived by both boys and girls as ‘manly’ behaviors (e.g., Scarcelli, 2015). Cross-sectional (To et al., 2012) and longitudinal studies (Brown & L’Engle, 2009) consistently found that the more adolescents are exposed to online pornography, the more they hold gender-stereotypical and, even, sexist beliefs. The study of To et al. (2012) demonstrated that this link occurs mainly because adolescents have a physical reaction to online pornography, such as an increased heart rate or stimulation of the genitals.

Sexual Objectification

Although a growing body of literature points to the occurrence of sexualizing practices in digital media, especially towards women (Ringrose, 2011), few studies have addressed how digital media can contribute to the development of adolescents’ sexually objectifying beliefs. These beliefs generally constitute the evaluation of an individual based on their sexual attractiveness and sexually instrumental value (Fredrickson & Roberts, 1997). In terms of social media uses, while holding more sexually objectifying beliefs increased exposure to sexy self-presentations of others for young adolescents in one study, this exposure did not further increase such beliefs (Van Oosten et al., 2015). Further, in terms of adolescents’ engagement in sexting behavior, scholars have expressed concerns regarding the possible sexually objectifying practices which may occur when one sends or receives sexually explicit pictures (Ringrose & Harvey, 2015). Nevertheless, no research has yet explored such possible mechanisms (Cooper et al., 2016).

As for online pornography uses, existing content analytical research stresses that pornographic content is saturated with sexually objectifying practices (especially towards women) (Carrotte et al., 2020; Klaassen & Peter, 2015). Both cross-sectional (e.g., Maes et al., 2019) and longitudinal studies (e.g., Peter & Valkenburg, 2009; 2011) have documented that the more adolescents watch online pornography, the more they sexually objectify women. Such beliefs even explain the relationship between exposure to online pornography and acceptance of rape myths, generally referred to as “prejudicial, stereotyped, or false beliefs about rape, rape victims, and rapists” (Burt, 1980, p. 217) (Maes et al., 2019). The acceptance of rape myths can have negative implications for adolescents’ future sexuality since it can be related to sexual coercion perpetration (Trottier et al., 2019).

Relationship Quality Indicators

Commitment

To understand romantic relational outcomes of adolescents’ digital media uses, digital media applications can be distinguished by users’ abilities to communicate, create content or be exposed to content within a public sphere (e.g., Facebook wall or online pornography) vs. a private sphere (e.g., instant messaging tools of social media or sexting behavior). These different contexts shape the occurrence of different romantic relational outcomes in adolescents. With regards to the private sphere of instant messaging tools or sexting behavior, scholars point to its beneficial implications for adolescents’ perceived romantic relationship quality. Specifically, a growing body of studies has emphasized that adolescents’ online communication with romantic partners improves levels of trust, commitment, communication, and security (e.g., Blais et al., 2008, Morey et al., 2013). Moreover, as previously mentioned, the ability to post about one’s relationship in the public online sphere allows adolescents to express their love for their partners (Utz & Beukeboom, 2011).

However, research is lacking regarding the possible negative or positive implications of such online behavior among adolescents.

Existing research does emphasize that, when adolescents are active in the online public sphere, they can also be confronted with other profiles that can be perceived as ‘romantic competition’. Both qualitative and quantitative research has demonstrated that such online experiences evoke feelings of jealousy and distrust among adolescents (e.g., Rueda et al., 2015). Moreover, the literature also points to the possibility that the exposure to alternative partners on social media may have negative implications for adolescents’ relationship commitment (de Lenne et al., 2018).

Sexual Attraction

Another indicator of relationship quality is one’s sexual attraction to one’s partner. In this view, sexting with one’s partner may be especially relevant for adolescents’ sexual attraction for their partner. The study of Van Ouytsel et al. (2019) demonstrated that the more adolescents engage in this online sexual behavior, the higher their feelings of sexual attraction, passion, and sexual arousal towards their partner.

Behavioral Outcomes

Sexual Behavior

Sexually oriented digital media can play an important role in adolescents’ engagement in sexual activities. Particularly, longitudinal studies have concluded that the more adolescents use social media, the more sexually experienced they were (Reitz et al., 2015; van Oosten et al., 2015). Also, sexting seems to promote sexual behavior in adolescents as well as this online behavior can be to a higher sexual activity (e.g., MacDonald et al., 2018) and having multiple sexual partners (e.g., Romo et al., 2017). This means that the more adolescents engage in sexting online, the more they engage in sexual interactions online, with

multiple partners. In terms of having multiple sexual partners, the literature indicates that this link was stronger among boys than girls (Mori et al., 2019).

As for adolescents' uses of online pornography, both cross-sectional (e.g., Donevan & Mattebo, 2017) and longitudinal studies (Brown & L'Engle, 2009) have demonstrated that the more adolescents watch such sexual content online, the higher their likelihood to have (casual) sexual intercourse and multiple sexual partners.

Risky Sexual Behavior

With risky sexual behaviors, the current chapter refers to sexual behaviors (under the influence of drugs) which contribute to unintended pregnancy and the transmission of STIs. A recent meta-analysis points to the role of adolescents' social media uses in the engagement in risky sexual behaviors (Vannucci et al., 2020). Particularly, the meta-analysis warns for the consistent findings that social media uses can increase adolescents' likelihood to engage in risky sexual interactions. Furthermore, consistent correlational evidence has emerged that the more adolescents sext, the less they use contraception in sexual interactions (e.g., Rice et al., 2018). When it comes to adolescents' online pornography use, results regarding risky sexual behavioral outcomes are inconsistent. Specifically, some studies found that the more adolescents view pornography, the riskier their sexual behaviors (e.g., Luder et al., 2011), while others indicated that there is no such link (e.g., Peter & Valkenburg, 2011).

Sexually Aggressive Behavior

Within the field of sexting research, specific attention has been paid to the occurrence of this online behavior as a form of sexual coercion or harassment (Cooper et al., 2016). Specifically, the literature emphasizes that, next to the experimental nature of sexting which is beneficial for adolescents' sexuality development, this online behavior can also entail forms of sexual aggression, sexual pressure and harassment (e.g., through non-consensual forwarding of sexually explicit pictures). However, limited knowledge exists regarding the

offline consequences of negative forms of sexting behavior. Specifically, Choi and colleagues (2016) highlighted the association between offline sexual coercion (e.g., being pressured to engage in sexual activities) and sexting behavior among girls.

In terms of adolescents' online pornography use, a link was found with sexual harassment perpetration among boys (Brown & L'Engle, 2009). Further, the literature points to the necessity of addressing the type of online pornographic content in the context of sexual aggression research. Specifically, only exposure to violent online pornography predicts a higher sexual assault perpetration among adolescents (Ybarra et al., 2011).

6. Challenges and Future Directions

For the past two decades, growing attention has been given to adolescents' sexually oriented digital media uses. Not only has the literature pointed to positive motivations of these online media applications (e.g., construction of sexuality), but also to harmful and negative reasons to use sexually oriented digital media (e.g., relationship monitoring). These uses have been demonstrated to shape different outcomes related to sexual self-development (e.g., sexual agency), sexual attitudes (e.g., gender stereotypical beliefs), relationship quality (e.g., commitment), and sexual behaviors (e.g., risky behaviors). By focusing on the unique developmental context of adolescents and, thus, stressing their receptiveness for sexual content, the majority of the studies have pointed to detrimental sexual outcomes of digital media uses. However, scholars have recently emphasized that the predominant attention to negative outcomes and, simultaneously, a systematic inattention to positive outcomes, cannot provide a comprehensive and nuanced understanding of digital media effects (de Leeuw & Buijzen, 2016). As such, it may be possible that positive digital media effects in the context of adolescents' sexuality are undiscovered. This shortcoming introduces our first and most important suggestion for future research.

Specifically, we first encourage future research to explore *beneficial implications* of digital media uses for adolescents' sexuality and future sexual identity and experiences. Future studies are recommended to adopt a positive psychology framework when exploring adolescents' digital media uses. In this framework, positive and beneficial experiences, traits, and underlying mechanisms facilitating such experiences are explored (Seligman & Csikszentmihalyi, 2014). It is fundamental to note, however, that the adoption of this positive psychology paradigm should be considered as an addition to the current knowledge in order to present a balanced and more exhaustive understanding of adolescents' digital media uses. With the occurrence of different social movements striving for, for example, LGBTQ+ rights (e.g., #pride), adolescents are exposed to online prosocial sexual content (e.g., messages which promote a positive sexuality). Such exposure may have a beneficial impact on adolescents' understandings of others' sexualities. Moreover, with the engagement in sexting or the uses of online pornography, adolescents may be more aware and accepting of their own physical sexual feelings. Other positive influences of sexual digital media on young users may include sexual empowerment, an increased sexual knowledge or other outcomes related to the adolescent's well-being.

As for gender stereotypical beliefs, social media, and in particular online videosharing sites (e.g., Youtube), despite still being restricted by standards of femininity or masculinity (Molyneaux et al., 2008; Wotanis & McMillan, 2014), have shown to be spaces that support a change in gendered ideology among youth (Morris & Anderson, 2015). For instance, male vloggers challenge masculine stereotypes by being emotionally open and embracing of their femininity, supporting gender equality and homosexual rights (Morris & Anderson, 2015), in particular by using satire and parody (Maloney et al., 2018; Wotanis & McMillan, 2014).

Second, the current chapter draws attention to the limited knowledge on *underlying processes*, such as peer norms or physical responses (e.g., arousal), which may explain the

(possible) link between adolescents' digital media uses and detrimental and beneficial sexuality outcomes. The lack of longitudinal and experimental research, which is needed to interpret complex response states elicited by digital media uses, may explain this gap in the literature. The exploration of underlying processes explaining sexual digital media effects is crucial though, as it can provide a more comprehensive understanding of key processes explaining why certain media effects occur. Thus, future research, more specifically longitudinal and experimental studies, is strongly recommended to further examine such indirect processes.

Lastly, studies have largely adopted cross-sectional designs, especially in terms of exploring adolescents' sexting behavior and their effects. By following such designs, the literature has only examined the unidirectional nature of sexual digital media effects. More importantly, due to these designs, the direction of the relationships often cannot be established. Moreover, it is likely that the link between adolescents' digital media uses and sexuality is reciprocal and bi-directional. Specifically, we point to adolescents' agency to select digital media or create digital content shaped by their personal characteristics (e.g., pubertal status), sociocultural context (e.g., peers or Western culture), lived experiences and expectancies of such media uses and content creation. Scholars postulate that adolescents' selection of digital media and content creation and the outcomes of such media uses are two interacting processes. As such, it could be possible that adolescents' existing sexual attitudes, experiences or behaviors guide the selection of specific digital media applications (e.g., instant messaging tools) or the creation of sexual content (e.g., sexy self-presentations) which, in turn, can strengthen such sexual attitudes or behaviors or make them more susceptible to other attitudinal, experiential, and/or behavioral influences. As such, the third recommendation for future research is to examine the possible *bidirectional nature of links* between adolescents' digital media uses and sexuality-related outcomes.

In sum, the literature shows that sexually oriented digital media use can play an important role in adolescents' sexual socialization. Unique affordance of these media, such as its accessibility, invite to use sexually oriented digital media for the development of sexual selves, relationships, sexual attitudes, and behaviors. Several theories, such as Social Cognitive Theory, can explain why adolescents use such media and how it may shape their sexuality. This chapter advises future research to explore next to antisocial effects, the beneficial implications of digital media uses for adolescents' sexuality. Moreover, attention needs to be paid to underlying processes explaining the overall sexual socialization of adolescents via the uses of sexually oriented digital media. Lastly, the bidirectional nature of the link between such media uses and sexual outcomes needs to be further explored.

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