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Implications of Parenting Behaviour and Adolescent Attachment for Understanding Adolescent Sexting

Julie Margaret Norman
University of Windsor

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IMPLICATIONS OF PARENTING BEHAVIOURS AND ADOLESCENT ATTACHMENT
FOR UNDERSTANDING ADOLESCENT SEXTING

by
Julie Norman

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Understanding Adolescent Sexting

by

Julie Norman

APPROVED BY:

_____
S. Campbell, External Examiner
University of Michigan

_____
D. Kane
Faculty of Nursing

_____
K. Babb
Department of Psychology

_____
J. Hakim-Larson
Department of Psychology

_____
R. Menna, Advisor
Department of Psychology

18 September 2017

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ABSTRACT

The present study examined the nature and prevalence of adolescent sexting, and its relation to parenting behaviours and adolescents' attachment, in a sample of Canadian adolescents. Participants were 305 adolescents between 14 and 18 years of age (158 females, 147 males). Adolescents completed a paper-and-pencil questionnaire assessing sexting-related behaviours and experiences, attachment, temperament, and experiences of parental warmth, parental-psychological control, parent-child communication, and parental monitoring. The analyses revealed that, among Canadian adolescents, sending and receiving sexual messages and images was more common among older adolescents. There were no gender differences in rates of sending and receiving sexual messages or images, however, males reported forwarding sexual images, and asking others for sexual messages and sexual images, more frequently than did females. Females reported more frequently being asked to send sexual messages and sexual images. Sending and receiving sexual messages and images were more common among adolescents who were in a romantic relationship, and adolescents most commonly cited a relationship partner, or someone with whom they hoped to begin a relationship, as the individual(s) with whom they had sent and/or received sexual messages and images. Results also revealed that better parent-child communication was predictive of lower frequency of adolescent sending of sexual images, and that higher report of adolescent attachment avoidance was predictive of higher frequency of adolescent sending of sexual images. Although parental warmth and parental psychological control did not directly predict adolescent sending of sexual images, these variables were found to have indirect effects on sending sexual images through attachment avoidance. These findings suggest that parent-child communication has a relatively

stronger, more direct relation with adolescent sending of sexual images, but that parental warmth and psychological control may also influence this behaviour through formation of adolescents' working models of relationships. A thematic analysis of participants' responses to an open-ended question revealed that most adolescents have had passive involvement in sexting, although many also reported use of sexting for a social purpose (i.e., flirtation) or a negative experience with sexting. These findings help to clarify the social and relational processes that are influential in adolescent sending of sexual images, which provides useful information for the development of public health education programs and directions for future research.

DEDICATION

To my parents: despite what Freud might say about a psychologist who studies parenting, I am so lucky to have parents who raised me with the unconditional love and support necessary to follow my dreams.

You are both wonderful examples of what it means to love your work, and I can only hope to one day have a career as long, fulfilling, and respected as each of yours. Thank you for instilling in me confidence, curiosity, persistence, an analytical mind, and a sense of humour, which have served me so well during this journey (I'll let you decide who each of those qualities can be attributed to!).

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CHAPTER I

Introduction

General Context and Study Objectives

Mobile technologies are increasingly essential for the development and maintenance of social relationships in the 21st century (Lenhart, Ling, Campbell, & Purcell, 2010). This is particularly true for adolescents, approximately 88% of whom own a cell phone (Lenhart, 2015), and among whom text messaging has surpassed voice calling in popularity (Lenhart et al., 2010). Research has begun to address the positive ways in which these technologies facilitate interpersonal relationships (Lewis & Fabos, 2005), as well as the drawbacks (Gillespie, 2008). One form of communication among adolescents that has received a great deal of recent media attention is sexting, or the sharing of sexually explicit pictures via online messaging applications (e.g., Spencer, 2015). Between 2.5-21% of adolescents report having sent a sexual image of themselves to someone, and between 7-40% of adolescents have viewed or received a sexual image that was intended for someone else (Doring, 2014; Mitchell et al., 2012; Peskin et al., 2013; Strassberg et al., 2013). The wide variation in prevalence rates obtained in different studies is likely due to several factors, including the age of participants and the timing of data collection, given that adolescent use of smartphones and broader societal conversation around sexting have both increased relatively recently (Wood, Barter, Stanley, Aghtaie, & Larkins, 2015).

Implications for sending or forwarding sexual images vary widely depending on the adolescent's location, ranging from no legal consequences at all to child pornography-related charges (*Criminal Code*, 1985; PROTECT Our Children Act, 2008). In addition, a

number of a recent media stories have highlighted how sexting can also result in emotional and psychosocial consequences (e.g., "Weeks after posting", 2012). Given the potential for negative consequences associated with sexting, research has focused on exploring risks associated with sexting and characteristics of adolescents who engage in sexting (e.g., Dake, Price, & Maziarz, 2012; Temple et al., 2012). However, there has been relatively limited research concerning the processes that lead to adolescent sexting, or adolescent motivations for engaging in this behaviour. In addition, there has been little study of sexting among Canadian adolescents.

Several authors have highlighted the growing need for research to address the larger social and relational context of adolescent sexting (Hasinoff, 2012; Walker, Sanci, & Temple-Smith, 2013). The family context has been identified as a primary context within which adolescents acquire skills and cognitions related to interpersonal relationships and social interaction (e.g., Tracy, Shaver, Albino, & Cooper, 2003), and as such, consideration of parenting behaviours and the parent-adolescent relationship may offer important insights into the processes that lead to adolescent sexting. Parenting constructs such as warmth, psychological control, communication, and monitoring have been found to be influential in the development of adolescent sexual behaviour (Hutchinson, Jemmott, Jemmott, Braverman, & Fong, 2003; Kan, Cheng, Landale, & McHale, 2010; Kerpelman, McElwain, Pittman, & Adler-Baeder, 2013). Additionally, adolescents' attachment representations have been identified as important determinants of motivation for sexual activity (Huebner & Howell, 2003; Tracy, Shaver, Albino, & Cooper, 2003). Given these links between the parent-child relationship, attachment representations, and adolescents' offline sexual

behaviour, the extension of these findings to the study of adolescents' sexual behaviour in the online sphere merits exploration.

Therefore, the present study sought to extend previous findings regarding influences in adolescent sexual development (i.e., parenting behaviours, the parent-child relationship, and adolescent attachment) to the study of adolescent sexting. Although previous research has found parenting behaviours and attachment representations to be relevant in the development of adolescents' sexual behaviour, these constructs have not been explored in the context of adolescent sexting. In addition, many samples in previous sexting research have been comprised of American adolescents, with limited study of this behaviour in Canadian adolescents. Given important differences in both legal treatment of sexting, as well as in cultural views of sexuality, between Canada and the United States, study of sexting in a Canadian sample is warranted (Maticka-Tyndale, 2001). Accordingly, the present study sought to contribute to this area of research by exploring the role of parental behaviours and adolescent attachment in sexting in a sample of Canadian adolescents. In particular, it has been identified that in order to promote safer sexting, changes in the way individuals understand consensual sexting and consent for electronic sexual behaviours must occur (Hasinoff, 2015). The study of parenting behaviours and adolescent attachment may offer important insights into the development of sexting behaviours, as well as the social context of adolescent sexting, and may help to identify how to effect such change through parent-child relationships and educational interventions.

Review of the Literature

Adolescent Sexting

No single definition of sexting currently exists; therefore, comparing findings across the available literature can be challenging. Although sexting generally refers to transmission of images or video, a limited number of studies have also included sexual text messages, without images, in the operational definition of sexting (Drouin & Landgraff, 2012; Drouin & Tobin, 2014; Fleschler-Pesking et al., 2013). In addition to the type of content that may be considered a sext, there are a variety of behaviours that may be referred to by the term sexting. These behaviours may include producing and sending images of oneself, receiving images directly from someone else (the producer), and/or forwarding received images to others via cell phone, email, instant messaging applications, or social networking websites (Lounsbury, Mitchell, & Finkelhor, 2011). Therefore, in the literature, the term sexting has been used to refer to a combination of sending, receiving, and forwarding sexually suggestive text messages and/or nude, partially nude, or sexually suggestive digital images, of oneself or others, via cell phone- or computer-mediated communication tools (Campbell & Park, 2014; Dake, Price, & Maziarz, 2012; Hinduja & Patchin, 2010; Fleschler-Peskin et al., 2013; Mitchell et al., 2012; National Campaign, 2008; van Ouytsel, van Gool, Ponnet, & Walrave, 2014; Rice et al., 2012; Strassberg, McKinnon, Sustaita, & Rullo, 2013; Temple & Choi, 2014; Temple et al., 2012). In this review, study findings will be presented and reported for each discrete behaviour whenever possible.

Prevalence. The prevalence of sexting in adolescent samples varies widely across different studies in this area. There are a number of methodological and larger societal factors that may have contributed to this, including the operational definition of sexting

used, the age of participants at the time of data collection, the relatively recent adoption of

smartphones by a large majority of adolescents, and the increased exposure to discussions

around sexting in media and education (Lounsbury et al., 2011; Ontario Ministry of

Education, 2015; Wood et al., 2015). For example, in a sample of 15-19-year-olds, the

prevalence of sending a sexually explicit message, picture, or video was approximately 18%

in the two months preceding data collection (Walrave et al., 2015). However, in a younger

sample (10-17-year-olds), with a narrower definition of sexting (e.g., appearing in nude or

nearly-nude images), the rate of appearing in sexual images was only 2.5% (Mitchell et al.,

2012). Accordingly, the prevalence of the following sexting behaviours are discussed with

reference to the specific samples in which they were identified, whenever possible.

When messages with photo and/or text content are considered sexting, the

prevalence of sending such messages was 15% in a sample of adolescents (N = 1,839 youth

between the ages of 12 and 18 years) that was nationally representative of the United

States across genders, racial/ethnic groups, and sexual orientations (Rice et al., 2012).

When messages with only photo or video content were considered, the prevalence of

sending such messages ranged from approximately 4% in random telephone surveys of

adolescents (N = 552 adolescents, 12-17 years of age, Campbell & Park, 2014; N = 655

adolescents, 13-18 years of age, Cox Communications, 2009) to 27.6% in a study of

adolescents in the southern United States (N = 1,042 adolescents, 14-19 years of age,

Temple et al., 2012). The true prevalence is likely somewhere in between those estimates,

as at least four studies with varying samples of adolescents have reported prevalence rates

that are approximately 20% for sending photo or video sext messages (Dake et al., 2012;

Fleschler-Peskin et al., 2013; National Campaign, 2008; Strassberg et al., 2013).

In contrast, when only receiving messages is considered, the prevalence of receiving messages with photo or text content was found to be 31.5% in sample of 1,034 culturally diverse tenth-graders (*M* age = 16.3 years, Fleschler-Peskin et al., 2013). When receiving messages with only photo content is considered, prevalence estimates range from 15% in telephone surveys of adolescents (*N* = 552 adolescents, 12-17 years of age, Campbell & Park, 2014; *N* = 655 adolescents, 13-18 years of age, Cox Communications, 2009) to 41% in an in-school study of 606 high school students from the southern United States (Strassberg et al., 2013). At least two studies have reported that approximately 30% of adolescent samples report receiving sexual images (*N* = 964 adolescents, M_{age} = 16.09 years, Temple & Choi, 2014; *N* = 1,034 tenth-graders, M_{age} = 16.3 years, *SD* = 0.68, Flescher-Peskin et al., 2013), suggesting that the true prevalence of this behaviour likely lies in between the lowest and highest estimates from recent research.

Few studies have examined the prevalence of forwarding or sharing sexual messages or images with someone other than the intended recipient(s), and estimates vary between samples. In a sample of 1,034 Black and Hispanic adolescents, 9% of adolescents reported having forwarded sexual pictures or video (Fleschler-Peskin et al., 2013), whereas the prevalence of this behaviour has been reported as 14-20% in online surveys of adolescents (*N* = 1,247 respondents, 12-24 years of age, AP-MTV, 2009; *N* = 653 adolescents, 13-19 years of age, National Campaign, 2008). Similarly, in a sample of 606 high school students from the southern United States who completed a questionnaire package in the school setting, 25% of students who had received a photo sext had forwarded it to at least one other person (Strassberg et al., 2013).

Thus, the current available estimates of prevalence of different sexting-related behaviours vary widely, suggesting that there is little clarity in this research at present. There is only one known meta-analysis in this area of research (Klettke, Hallford, & Mellor, 2014). Klettke and colleagues (2014) reported that the prevalence estimate for sending photo sexts is 11.96% and 15.48% in representative/random and non-representative samples of adolescents, respectively. The prevalence estimate for receiving sexts with photo content is 11.95% and 35.37% in representative/random and non-representative samples of adolescents, respectively (Klettke et al., 2014). However, these estimates are based on data from the pool of studies that were available in this field as of August 2013, including six studies that utilized a representative/random sample and six studies which were non-representative (Klettke et al., 2014). In addition, there are several factors that may be contributing to rapid changes in the prevalence of sexting, such as increased coverage of this behaviour in the media (e.g., Bruce, 2014) and the inclusion of sexting in sexual education curriculums (Ontario Ministry of Education, 2015). Although there has not yet been any explicit study of such factors, it seems likely that conversations about sexting in media and in classrooms could serve either to increase adolescents' proclivity for sexting by normalizing the behaviour, or alternatively, to decrease the likelihood of adolescent sexting through making adolescents more aware of the consequences of this behaviour. At the very least, data support that sexting is a well-known practice among adolescents: in one study, 49% of 653 adolescents surveyed online reported that sending sexy photos of oneself was at least "fairly common" (National Campaign, 2008). Therefore, further study of this behaviour may find that the prevalence is higher than some of the

lower estimates reported recently (e.g., 4.5%, Campbell & Park, 2014; 11.96%, Klettke et al., 2014).

Although knowledge of demographic factors that influence sexting behaviour is limited because this area of research is relatively new, there is some research that has looked at how age, gender, and ethnicity may influence participation in sexting.

Age. There is consensus based on data from several studies to suggest that, among adolescents, age is positively related to engaging in sexting-related behaviours (Dake et al., 2012; Klettke et al., 2014; Mitchell et al., 2012; Rice et al., 2012; Temple et al., 2012). That is, older adolescents are more likely to report having engaged in sexting. For example, Temple et al. (2012) administered a battery of questionnaires to 1,042 adolescents from seven public high schools, finding that the proportion of teens who report being asked to send a sext peaked in the 16-17-year-old age group at 61.5%, and then declined among individuals aged 18 years and older (53.3%). Among adolescents 15 years of age or younger, the proportion of teens who report being asked to send a sext was 20% (Temple et al., 2012). This trend may simply reflect the fact that sexual activity becomes more common as adolescents age (Harvey & Spigner, 1995). At the same time, increased engagement in sexting among older adolescents may also reflect that some of the risks associated with sexting diminish with age. For example, in many areas of the United States, sexting can be prosecuted under child pornography legislation when the images depict an individual under 18 years of age (PROTECT Our Children Act, 2008). Thus, there are several reasons for which sexting may become more common as adolescents age.

Gender. Findings regarding gender differences in sexting behaviours are less clear. There is little consensus based on quantitative data, with some studies finding clear gender

differences, and others reporting no significant difference in sexting behaviour between male and female adolescents. In at least three studies assessing sending of sexual images and/or video, including an online survey of 1,247 American adolescents between the ages of 14 and 24 years (AP-MTV, 2009), an online survey of 655 American adolescents between the ages of 13 and 18 years (Cox Communications, 2009), and a telephone survey of 1,560 youth Internet users (Mitchell et al., 2012), it has been found that female adolescents were more likely to send sexual pictures than males. However, at least six other studies, including one telephone survey of 12- to 17-year-olds (N = 552, Campbell & Park, 2014), one online survey of 13- to 19-year-olds (N = 653, National Campaign, 2008), and four studies conducted within high schools (N = 1,289 12- to 17-year-olds, Dake et al., 2012; N = 1,839 12- to 18-year-olds, Rice et al., 2012; N = 606 students in Grades 9 through 12, Strassberg et al., 2013; N = 1,042 14- to 19-year-olds, Temple et al., 2012) have found no gender differences in rates of sending sexual pictures and/or video.

Similarly, there are discrepancies in rates of receiving sexual images reported by gender. Three studies assessing receipt of sexual images, including one online survey of 14- to 24-year-olds (N = 1,247, AP-MTV, 2009) and two studies that have been conducted within schools (N = 4,400 11- to 18-year-olds, Hinduja & Patchin, 2010; N = 606 students in Grades 9 through 12, Strassberg et al., 2013), have found that adolescent males are more likely to receive sexual pictures than females. At least one telephone survey of 1,560 youth Internet users has found that female adolescents report receiving sexual pictures more often than males (Mitchell et al., 2012). In addition, one other study, an online survey of 655 American teenagers between the ages of 13 and 18 years, found no significant gender differences for receiving sexual pictures (Cox Communications, 2009). There is little

consensus among these findings at present, and it is therefore difficult to make conclusions about the nature of gender differences in sending and receiving of sexual pictures among adolescents.

One area that may offer some insight into gender differences concerns who is being asked for sexts. In one study of 1,042 14- to 19-year-olds across four Houston-area school districts, girls were significantly more likely to report having been asked to send a sexual image than boys (68% of girls, 42% of boys), and boys were more likely to report having asked someone else for a sexual image (46% of boys, 21% of girls; Temple et al., 2012). Additionally, in this sample, adolescent girls (27%) were more bothered by being asked for a sexual image than were adolescent boys (3%).

In line with these gender differences, qualitative research has uncovered a sexual double standard with regard to perceptions of girls' and boys' participation in sexting-related behaviours (Lippman & Campbell, 2014; Walker et al., 2013). These differing norms for male and female sexual behaviour are referred to as a sexual double standard, wherein men and boys are socially rewarded for higher levels of sexual experience, whereas women and girls are evaluated more negatively for engaging in similar behaviours. Indeed, in an online survey of 1,247 adolescents and young adults (14- to 24-year-olds), boys were more likely to describe sexting as 'hot', while girls were more likely to describe sexting as 'slutty', 'stupid', and 'dangerous' (AP-MTV, 2009). These findings are consistent with those of Walker and colleagues' (2013) qualitative work with 33 youth between 15 and 20 years of age, and may reflect differing male and female perceptions of sending sexual images based on each gender's view of the consequences for engaging in this behaviour. That is, in line with the notion of a sexual double standard, the findings of

Temple and colleagues (2012) may reflect that adolescent males are more likely to ask for sexual images because they are motivated by social rewards (e.g., peer status). At the same time, adolescent females who are aware that they may incur social penalties for sending sexual images may be more likely to report being bothered by requests for sexual pictures (Temple et al., 2012). Additionally, girls may experience more distress when they are involved in sexting behaviours (Livingstone & Gorzig, 2012; Temple et al., 2012) because they suffer negative consequences whether they choose to engage with or ignore requests for sexts. For example, Lippman and Campbell (2014) conducted focus groups with 51 adolescents (12- to 18-year-olds), finding that girls may be labeled a 'slut' if they oblige requests for sexual pictures, but a 'prude' if they do not, making it difficult to achieve a positive outcome. In sum, there is some evidence to support that a sexual double standard operates to influence male and female participation in sexting, as well as distress associated with sexting. In particular, adolescent females may represent a group at particularly high risk for negative psychosocial consequences associated with sexting, as they may be negatively perceived whether they choose to engage in or refrain from sending sexual images. This distress, in turn, may influence females' likelihood of engaging in sexting and explain gender differences in sexting behaviours. For example, fear of negative evaluation for declining to send a sexual image may contribute to some of the gender differences that have been observed in recent research (e.g., females more likely to send pictures than males; AP-MTV, 2009; Cox Communications, 2009; Mitchell et al., 2012).

Ethnicity. Findings concerning sexting behaviour among individuals from different ethnic groups are also inconsistent. Some findings suggest that sending of sexual messages and/or images is more prevalent among youth who belong to a visible minority group,

however, there is also research to suggest that sending of sexual content is fairly consistent across different ethnic groups of adolescents. For example, some data suggest that sexting is more commonly endorsed by African American adolescents than White and Hispanic adolescents (Campbell & Park, 2014; Dake et al., 2012; Fleschler Pesking et al., 2013; Rice et al., 2012; Temple et al., 2012). In one sample of 1,289 12- to 17-year-olds, African American adolescents were approximately 2.5 times more likely to have sexted than White, Hispanic, or Other/Mixed Race adolescents (Dake et al., 2012), and at least two other studies have identified that White adolescents were less likely to have received a sexual image than adolescents who identified with other ethnic backgrounds (N = 552, 12- to 17-year-olds, Campbell & Park, 2014), and less likely to have sent a sexual message or picture than African American adolescents (N = 1,839, 12- to 18-year-olds, Rice et al., 2012). In contrast to these findings, at least one study (N = 1,042, 14- to 19-year-olds) identified that both African American and White/Non-Hispanic adolescents were more likely than students of Hispanic and Asian descent to have sent a sexual picture (Temple et al., 2012). However, in a comprehensive study of sexting practices among African American and Hispanic adolescents (N = 1,034, Grade 10 students, Fleschler-Peskin et al., 2013), the prevalence of sending sexual pictures and video in this sample (21%) was quite similar to the estimates of prevalence obtained in studies with varying sample composition, including White private high school students (N = 606, students in Grades 9 through 12, Strassberg et al., 2013), a large online adolescent sample (N = 653, 13- to 19-year-olds, National Campaign, 2008), and ethnically diverse school-based samples (N = 1,289, 12- to 17-year-olds, Dake et al., 2012; N = 1,839, 12- to 18-year-olds, Rice et al., 2012).

Interestingly, in a recent study reporting prevalence of sending sexual messages or pictures to relationship partners among adolescents across five European countries, results suggested that differing prevalence rates across these countries may be linked with cultural values in each country (Wood et al., 2015). For example, in this study, adolescents in Cyprus reported lower rates of sending sexual messages and pictures (10%) relative to adolescents in Northern European countries, including England (38%) and Norway (30%). It may be that cultural values and influences in Cyprus, such as the importance of protecting one's reputation in small communities, help to explain some of this discrepancy (Wood et al., 2015). Similarly, the variation in reported prevalence rates for sexting behaviours across cultural groups in North America may also exist because it has not yet been studied how cultural values, rather than simply ethnic background, relate to sexting practices.

Socioeconomic status. Data from two studies supports that there may be links between socioeconomic status and adolescent engagement in sexting. In a sample of 1,289 adolescents, those living in non-two-parent families were more likely to report involvement in sending, receiving, and/or forwarding sexual content (Dake et al., 2012), and in a sample of 1,042 adolescents, those whose parents had completed a high school education or less, were more likely to report having asked someone for a sexual picture (Temple et al., 2012). These findings could be explained by the fact that variables such as non-two-parent families and lower parental education sometimes also reflect decreased parental supervision, more permissive parental attitudes, and/or the combination of poverty and single-parent families, which are, in turn, linked with risky sexual behaviour among adolescents (Hofferth, 1987; Moore, Miller, Glei, & Morrison, 1995; Young, Jensen,

Olsen, & Cundick, 1991). In contrast, at least one study, a telephone survey of 552 12- to 17-year-olds, found no significant effect of socioeconomic status for predicting adolescent sending or receiving of sexual pictures (Campbell & Park, 2014). Therefore, the role of family socioeconomic status and parental education in determining adolescents' likelihood of sexting is not yet clear.

Considering these results together, it is clear that there exist discrepancies among results from different studies concerning the prevalence of sexting-related behaviours among adolescents and among different subgroups of adolescents. Much of the difficulty comparing findings can be attributed to the relative novelty of this area of research, as discrepancies among findings are likely related to variation in study samples and methodology, as well as the absence of a singular definition or precise measurement tools for assessing sexting. Some of the research that has been completed in this field has used online surveys and, therefore, results are based on a sample of convenience (AP-MTV, 2009; Cox Communications, 2009). Given that the behaviour of interest in these studies is technology-related, an online sample of convenience could be comprised largely of individuals who use technology frequently, and may therefore engage in sexting more frequently than would individuals in a more representative sample. Thus, results from some of these studies may provide inflated rates of adolescent sexting. Similarly, due to the absence of a clear working definition for sexting, or consistency in measurement of this behaviour, some studies have classified both sending and receiving of sexual messages and pictures as engagement in sexting (Hinduja & Patchin, 2010; Dake et al., 2012), whereas others have reported separate statistics for sending sexual messages and sending of sexual images (Drouin & Tobin, 2014).

In addition, all of the aforementioned research has been conducted with American or European adolescents, and, at the present time, there are no known studies that have examined sexting exclusively among Canadian adolescents. Researchers have cautioned against extending findings concerning the sexual behaviour of American adolescents to Canadian samples (Maticka-Tyndale, 2001), which is particularly true in the case of sexting, as this behaviour is sometimes punished more severely in the United States than it is in Canada (*Criminal Code*, 1985; Wood, 2009).

Each of these factors may have influenced findings in important ways, and this summary highlights the need for continued research of adolescent sexting using greater specificity in terminology and diverse samples of youth. However, what can be taken away from the current state of the literature in this area is that there is a small but nonetheless important group of adolescents who are engaging in sexting, and that this practice is considered at least fairly common by individuals in this age group (National Campaign, 2008). Therefore, it will be important to consider the implications of engaging in sexting.

Sexting and Risk

Legal status. Although it is not yet clear from the research whether sexting is a risk behaviour, or in under what circumstances it may be a risk behaviour, it is undeniable that in certain geographic locations, some forms of sexting can have serious legal consequences. In Canada, the creation and exchange of explicit text, pictures, and video between consenting youth under 18 years of age is not punishable by law when such media is for personal use. In 2001 (*R. v. Sharpe*, 2001), the Supreme Court of Canada established the "personal use" exception to the child pornography provisions of the *Criminal Code* (*Criminal Code*, 1985), which permits two consenting youth under the age of 18 years to

make and possess recordings of their own sexual activity as long such recordings are for their own personal use. Generally, this is interpreted to mean that adolescents engaging in consensual sexting in Canada do not risk legal consequences for this behaviour, if both partners are under 18 years of age (CCSO Cybercrime Working Group, 2013). However, when explicit/intimate recordings (pictures or video) of youth under the age of 18 are transmitted outside of a consenting relationship (i.e., if one partner sends or shows the recordings to others without the consent of his/her partner), this is, strictly speaking, punishable in Canada under the child pornography provisions of the *Criminal Code* (*Criminal Code*, 1985). Indeed, these laws have been used to prosecute recent cases of adolescents engaging in non-consensual sexting (Bruce, 2014). Although non-consensual sexting can be prosecuted in this manner, police and prosecutors are often reluctant to charge child pornography in such cases because of the stigma and the long-term consequences associated with these charges (CCSO Cybercrime Working Group, 2013). Therefore, on the basis of this group's recommendations, in March 2014, Bill C-13 was passed in Canada, creating a new criminal offence entitled *non-consensual distribution of intimate images* (*Criminal Code*, 1985). At present, Canadian adolescents who engage in non-consensual sexting, such as forwarding intimate photos to individuals who were not the intended recipients, may still be subject to criminal prosecution under this new class of offence.

In the United States, the legal status of adolescent sexting varies widely by location. Many states, such as Indiana and Massachusetts, have implemented legislative reforms for adolescent sexting that include decriminalization of this behaviour, as well as diversion or mediation programs (Wood, 2009). However, other states, such as Ohio and Utah, have

upheld child pornography legislation and continue to prosecute sexting in the same manner as child pornography offences, even when it is consensual, and this practice can result in felony charges and/or registration as a sex offender (Wood, 2009). Therefore, in the United States, there is significant variability in how adolescent sexting is treated within the legal system, and in the nature of consequences that adolescents may experience as a result of engaging in sexting.

Legal ramifications are frequently offered as the most compelling reason for discouraging adolescent sexting. Indeed, when sexting arises in the media, it is often in relation to legal consequences (e.g., Bruce, 2014). However, sexting has also been explored within the framework of typical adolescent psychosocial development and in the context of more general adolescent risk behaviour.

Developmental appropriateness of sexting. Some research has explored sexting as a new form of social or sexual behaviour in the context of the evolution of technology (Hasinoff, 2012; Campbell & Park, 2014; Lippman & Campbell, 2014). In this context, sexting is a developmentally appropriate adolescent behaviour in the age of new media, or an extension of typical adolescent behaviour brought about by the advent of new communication technologies. Research suggests that use of cellphones, as well as other types of digital communication, is central to the process of social development during adolescence (Ito et al., 2010). That is, cell phone use, and by extension, sexting, may be viewed as a mechanism through which adolescents work toward social emancipation (Ling, 2005), or as an integral part of their "transition toward greater peer connectedness and social autonomy" (Campbell & Park, 2014, p. 22). For example, there is evidence that teens who have more cell phone contact with their peers are more likely to send and receive

sexts, while teens who have more cell phone contact with family members are less likely to send and receive sexts (Campbell & Park, 2014). Thus, being more connected with peers via technology is associated with greater likelihood of engaging in sexting, whereas being more connected with family is associated with less likelihood of engaging in sexting. In this framework, sexting, as a behaviour that occurs largely via cellphones, may contribute to emancipation by occurring as part of increased social/mobile connection with peers and romantic partners. Similarly, sexting may be a new form of sexual activity among adolescents. In another study of adolescent sexting, engaging in sexting predicted only future sexual activity, but not future risky sexual activity, and sexting mediated the relation between being asked for a sext and engaging in intercourse (Temple & Choi, 2014). Therefore, sexting may represent a new, intermediary form of sexual behaviour for adolescents (Temple & Choi, 2014). Indeed, Wolak and Finkelhor (2011) worked to develop a categorization of adolescent sexting based on a review of instances of sexting that were brought to the attention of law enforcement agencies. They derived two broad classifications of sexting from all cases reviewed: aggravated sexting, which involves intent to harm or elements of abuse, and 'experimental' sexting, which is motivated by romantic intentions or sexual attention seeking. Therefore, at least some cases of adolescent sexting may occur as a way for adolescents to achieve important developmental tasks, such as social emancipation, or pursuit of identity formation through experimentation and/or intermediary sexual behaviour.

Sexting and risk. Although sexting may, in some cases, be developmentally appropriate, there is often still risk associated with this behaviour. Indeed, non-consensual sexting exposes adolescents to the risk of legal, social, and emotional consequences.

Estimates vary, but between 9-29% of adolescents report having forwarded explicit

pictures or video that were sent to them, or having received or viewed explicit pictures or

video that were intended for someone else (AP-MTV, 2009; Fleschler-Peskin et al., 2013;

National Campaign, 2008; Strassberg et al., 2013). Given that most cases of non-consensual

sexting arise from situations that were originally consensual (i.e., there is always a risk that

photos may be distributed without the creator's consent), this suggests that in up to one-

third of instances of adolescent sexting, the individual may be exposed to adverse social

and emotional consequences as a result of non-consensual sexting. Recent media stories

have demonstrated the type of emotional consequences that can arise when pictures that

were originally meant to remain private are shared with others ("Weeks after posting",

2012). Indeed, there has been empirical support for this effect, as research among college

students suggests that sending sexual images is associated with a significant risk of

cybervictimization, particularly for females (Reyns et al., 2013). As Reyns and colleagues

note, this may be due, in part, to the fact that the opportunity for victimization increases

when sexual pictures are distributed outside of the original consenting partners.

Therefore, there are a range of psychosocial consequences that may be linked with sexting.

In addition to consequences that may result from sexting, some research has

identified that adolescents who send sexual images are also more likely to engage in

various forms of risk behaviour, including risky sexual behaviour and substance use (Dake

et al., 2014; Klettke, Hallford, & Mellor, 2014; Temple et al., 2014). Although sexual activity

itself is not a risk behaviour, adolescents who report sending sexual messags and/or

images are more likely than adolescents who do not engage in this behaviour to be sexually

active (AP-MTV, 2009; Dake et al., 2012; Rice et al., 2012; Temple et al., 2012).   However,

adolescents who report having sent sexual messages and/or images are also more likely to have had unprotected sex (Dake et al., 2012; Rice et al., 2012), to have a higher number of sexual partners (Dake et al., 2012; Temple et al., 2012), and/or to have consumed alcohol or drugs prior to sexual activity (Temple et al., 2012). Beyond sexual risk factors, adolescents who engage in sending sexual messages and/or images are more likely to engage in substance use (Dake et al., 2012; Temple et al., 2014). Sending sexual images has also been associated with personality traits and characteristics that are linked with risk behaviour among adolescents, including impulsivity, sensation seeking, and experiential thinking style (Temple et al., 2014; van Ouytsel et al., 2014), some of which may help to account for the association between sexting and risk behaviours (Robbins & Bryan, 2004). Together, these findings indicate that sexting may belong to a constellation of behaviours that are considered risky.

Finally, there are gender-related differences in perceptions of sexting that may influence the risk associated with this behaviour differentially for males and females. That is, there is evidence that adolescent girls are more frequently asked for sexts, and are more negatively evaluated for engaging in such behaviour (Temple et al., 2012; Lippman & Campbell, 2014; Walker, 2013), in spite of the fact that adolescent girls and boys may be equally likely to send sexts (Campbell & Park, 2014; Strassberg et al., 2013; Temple et al., 2012). As a result of the negative connotations associated with sending sexual pictures for girls, this act may be associated with more risk behaviours among girls than it is among boys. That is, the risk of negative evaluation associated with sending sexual images may dissuade most adolescent females from participating, such that girls who choose to engage in this form of sexting are among those already engaging in other risk behaviours. For

example, Temple and colleagues (2012) identified that adolescent girls who had sent at least one sexual picture were more likely to be sexually active, to have had more than one partner in the previous year, and to have used alcohol and/or drugs prior to sexual activity. Among adolescent boys in the same study, sending sexual images was associated only with increased likelihood of being sexually active (Temple et al., 2012). In addition, girls may suffer more emotional consequences as a result of sexting, as adolescent girls appear to report higher levels of distress about having sent sexual content than boys (Livingstone & Gorzig, 2012; Temple et al., 2012). Together, this evidence suggests that a sexual double standard creates an environment in which the link between sending of sexual content, socioemotional risk, and risk behaviour is stronger for adolescent girls than for adolescent boys.

To summarize, the research findings concerning sexting and risk in adolescents are mixed and it is unclear whether sending sexual images falls in the category of risky sexual behaviour. At present, there is evidence that engaging in sexting may expose adolescents to social and emotional risks, and also that adolescents who sext may also engage in other risk behaviours. At the same time, there is also growing research to suggest that sexting may be part of a new context for social development that is influenced by continually evolving forms of media and communication. Going forward, it will be essential to consider consensual and non-consensual forms of sexting behaviour separately, as much of the risk associated with sexting is largely due to non-consensual sexting behaviours (e.g., non-consensual distribution of a person's image). Additionally, it is necessary to begin shifting the focus away from criminalizing those who produce sexts and concentrating on penalizing those who choose to harm others (e.g., by distributing images without consent;

Hasinoff, 2015). Hasinoff (2015) argues that this shift can be accomplished through three

pathways, including advocating for legal changes (e.g., decriminalization of consensual

forms of sexting), advocating for technological changes (e.g., advances in technology that

promote and safeguard individual's data), and working to effect changes at the level of

individuals (e.g., changes in perceptions, beliefs, and behaviours related to sexting).

The present study is positioned to contribute to the latter pathway, through

increasing our understanding of the nature and context of different types of adolescent

sexting, as well as the developmental and relational pathways through which sexting

behaviours occur. Particularly in light of emerging evidence that consensual sexting has

become part of the modern adolescent's repertoire of social and sexual behaviour, there is

a need for researchers to explore the social and relational context of consensual adolescent

sexting in greater depth to contribute to developmental models of this behaviour

(Campbell & Park, 2014; Walker et al., 2013). For example, in a 2014 study, Temple and

Choi collected data from adolescents at three time points, each one year apart. The

authors' findings provide concrete evidence that sexting appears to be a 'prelude'

behaviour to actual sexual behaviours, as sending naked pictures of oneself was associated

with being sexually active one year later. Furthermore, active sexting (sending a picture of

oneself or asking someone else to send a naked picture) mediated the relation between

passive sexting and sexual intercourse. These findings suggest that sending a sexual

picture may function as a way to indicate one's readiness to engage in more intimate

behaviours within a relationship (Temple & Choi, 2014), reinforcing the concept of sexting

as a social and relational behaviour. Therefore, in order to advance our understanding of

adolescent sexting, it is essential to explore one of the primary social and relational influences in the lives of children and adolescents: the family.

Sexting, Parental Behaviours, and Attachment Status

   Links between parental behaviours and adolescent sexting. Although progressive individuation of adolescents from their parents throughout adolescence is developmentally appropriate, parents continue to be an important target of intervention programs for adolescent behaviour (Stanton et al., 2004). This provides evidence for the continued importance of the parent-adolescent relationship and parental behaviours for adolescent development during this period. Therefore, in framing adolescent sexting within a social and relational context, it is important to consider how parental behaviours may influence the practice of adolescent sexting. As adolescent sexting is a relatively new phenomenon, there has been little study of how parental behaviour directly impacts this adolescent behaviour. However, the last two decades have produced considerable research concerning the role of parental behaviours in the development of adolescent offline sexual behaviour, which provides a basis for the extension of these findings to adolescent sexting.

   Parental behaviours and adolescent offline sexual behaviour. Parental warmth, parent-child communication, parental psychological control, and parental monitoring have consistently been identified as important factors in the development of adolescent sexual behaviour (Fletcher et al., 2004; Kotchick, Shaffer, Forehand, & Miller, 2001; Li, Feigelman, & Stanton, 2000; Miller, 2002; Rodgers, 1999).

   Parental warmth. Generally, the effect of parental warmth, or parental support, is thought to operate through an effect based in control theory (e.g., Hirschi, 1969). That is,

higher warmth and support in the parent-child relationship facilitates a bond wherein parental views and values concerning sexuality, as well as other behaviours, are expressed directly and indirectly. Accordingly, over time, the adolescent may internalize these values, and such knowledge can then play a role in shaping the adolescent's views of sexual risk behaviour, and minimize their likelihood of engaging in such behaviour. Indeed, parental warmth is consistently found to have a positive impact on adolescent sexual behaviour, as it has been linked with reduced pregnancy risk, later sexual debut, fewer sexual partners, and more consistent use of contraceptives (Crosby et al., 2001; Henrich, Brookmeyer, Shrier, & Shahar, 2006; Jaccard, Dittus, & Gordon, 1996; Kan, Cheng, Landale, & McHale, 2010; Parkes, Henderson, Wight, & Nixon, 2011; Price & Hyde, 2009; Resnick et al., 1997; Weinstein & Thornton, 1989). In one large, nationally representative study, Kan and colleagues (2010), using data from the National Longitudinal Study of Adolescent Health, explored the role of family warmth in a diverse sample (N = 8,706) of American adolescents in grades 7 through 12. As part of this study, adolescents and their parents each completed a survey during in-home interviews. Adolescents were asked to report on family warmth using a 3-item scale composed of items about the family environment (e.g., "How much do you feel that people in your family understand you?"), as well as number of sexual partners. Kan et al.'s (2010) results suggest that family warmth is negatively related to number of sexual partners at age 17 across White, Black, and Mexican American youths.

In a similar study completed with European adolescents, Parkes and colleagues (2011) collected self-report data on sexual risk outcomes (e.g., delayed first intercourse, frequency of condom use) and parental supportiveness from 1,854 Scottish teenagers. Adolescents in this study reported on parental supportiveness using an 8-item scale

assessing the extent to which, for example, parents "sense when I'm upset about something", "are loving", and "encourage me to talk about my difficulties". Indeed, in this study, parental supportiveness was positively related to delayed first intercourse and to more frequent use of contraception (Parkes, Henderson, Wight, & Nixon, 2011).

Conversely, adolescents who perceive low support from parents are more likely to report higher sexual risk (i.e., multiple partners, earlier sexual debut; Luster & Small, 1994; Price & Hyde, 2009). For example, Price and Hyde (2009) completed a study with 273 American adolescents, in which adolescents were asked to report on their sexual behaviours and parent-child relationship quality. Adolescents reported on the parent-child relationship using the Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985), which is comprised of six scales, including support, criticism, satisfaction, companionship, conflict, and reliable alliance. Several of these scales assess a warmth dimension, as exemplified by items such as, "How often does this person help you when you need to get something done?" Price and Hyde's (2009) analyses revealed that sexually experienced adolescents, defined as adolescents who reported having engaged in sexual activity by the age of 15, tended to report having poorer relationships with their parents than adolescents who were not sexually active by age 15. Together, these findings provide support that experience of low parental warmth and/or a poor relationship with one's parent(s) are associated with risky adolescent sexual behaviour.

Parent-adolescent communication. Findings from studies concerning the impact of parent-child communication on adolescent sexual behaviour are somewhat less clear, although there is still considerable support for a positive impact of parent-adolescent communication. The effect of communication on adolescent sexual behaviour is thought to

occur through processes consistent with the theory of planned behaviour (e.g., Ajzen, 1991), wherein communication with parents provides adolescents with information and with a forum for formation and discussion of personal beliefs and intentions about sexual behaviours, which directly informs sexual decision-making (Hutchinson & Wood, 2007). Further, increased parental communication is likely to provide adolescents with knowledge of sexual responsibility and sexual risk-taking, which, in turn, may also inform their sexual decision-making.

Consistent with this theory, some research concerning parent-adolescent communication has found this practice to be beneficial in promoting healthy adolescent sexual behaviour (Baumeister, Flores, & Marin, 1995; Fox & Inazu, 1980; Hutchinson, Jemmott, Jemmott, Braverman, & Fong, 2003; Luster & Small, 1994). It should be noted that there are a variety of ways in which parent-child communication has been operationalized in research (i.e., frequency, content, quality; Fasula & Miller, 2006; Hutchinson et al., 2003). The findings from this literature suggest that there are different facets of parent-child communication that are important for reducing sexual risk-taking behaviour. For example, Hutchinson and colleagues (2003) documented the importance of the content of parent-child communication in a study of 682 sexually active 12- to 19-year-old female adolescents. The researchers had adolescents report on mother-daughter sexual risk communication at Time 1 (baseline) and on sexual risk behaviours (e.g., number of sexual partners, number of episodes of sexual activity, frequency of contraceptive use) and at four time points (Time 1 baseline and 3-, 6-, and 12-month follow up). To assess mother-daughter communication, adolescents were asked to give a "yes/no" response to a series of items assessing sexual risk topics discussed (e.g., "Have you and your mother ever

talked about…"). Findings revealed that coverage of greater content in mother-daughter sexual risk communication was linked with a reduction in the frequency of sexual activity and frequency of unprotected sexual activity over the course of the follow-up period (Hutchinson et al., 2003). In addition, it was found that increased self-efficacy of contraceptive use in adolescents mediated the relation between mother-daughter sexual risk communication and frequency of unprotected sexual activity (Hutchinson et al., 2003). While these findings generally provide support for the role of parent-adolescent communication in development of adolescent sexual behaviour, these mediation results also provide support for the theoretical position that the effect of parent-adolescent communication on sexual risk behaviour can occur through increasing adolescents' ability to make responsible decisions about sexual activity.

Similar results have been obtained in samples with male and female adolescents, with findings indicating that adolescents who report having communicated with parents about sexual topics are more likely to take steps to reduce sexual risk (e.g., delaying sexual activity, using contraceptives, having fewer partners, abstaining; Fasula & Miller, 2006; Leland & Barth, 1993; Mueller & Powers, 1993). For example, Fasula and Miller (2006) conducted interviews in a sample of 530 culturally diverse male and female adolescents, and asked participants to report on their mother's responsiveness during sexual discussions, their perceptions of their peers' sexual activity, and the likelihood that they would have sex in the next year. Adolescents reported on maternal responsiveness during sexual discussions using an 8-item scale that included items such as, "My mother and I talk openly and freely about these topics". Findings revealed that adolescents who reported believing that peers were sexually active also reported greater likelihood of engaging in

sexual activity within the next year, while higher report of maternal responsiveness was linked with less likelihood of engaging in sexual activity within the next year (Fasula & Miller, 2006). Further, a significant interaction between perceptions of peer sexual activity and maternal responsiveness was observed, such that when adolescents perceived a high proportion of their peers to be sexually active, maternal responsiveness was significantly associated with delay of sexual activity. Therefore, these findings provide general support for the positive role of parental communication in promoting responsible sexual behaviour in adolescents, but also suggest that parental communication may be particularly important in attenuating peer influences on adolescent sexual behaviour (Fasula & Miller, 2006).

In contrast to these findings, some researchers have found that frequency of parental communication with adolescents about sexual issues has little or no impact on sexual behaviours (e.g., Huebner & Howell, 2003; Newcomer & Udry, 1985). For example, Huebner and Howell (2003) examined the relation between parent-adolescent communication and sexual risk-taking in a sample of 1,160 adolescents (578 females) in grades 7 through 12 from the southeastern United States. In this study, adolescents were asked to report on how often in the past year they had communicated with their parents about a variety of topics, including sex and birth control, as well as other areas (e.g., job or education plans after high school). Adolescents were also asked to disclose number of sexual partners and use of contraception at last sexual activity. Results indicated that this measure of frequency of parent-adolescent communication demonstrated no direct relationship with adolescents' number of sexual partners or use of contraception (Huebner & Howell, 2003).

The absence of significant findings in some research concerning frequency of parent-child communication may occur because the quality, style, and/or content of communication is an important third variable to consider. For example, in a study of 375 adolescents in grades 9 through 12 in the midwestern United States, Rodgers (1999) identified an interaction between support and communication, finding that adolescent males who perceived parents as less supportive were less likely to benefit from communication about sexual topics. In addition, Dutra and colleagues (1999) studied process and content of communication between parents and adolescents about sexual topics in a sample of 332 adolescents between 14 and 16 years of age. Adolescents were asked to report on the process of communication with their parents (e.g., "My mother knows how to talk to me about topics like this", and "I can ask my mother the questions I really want to know about topics like this"), as well as the content of their communication with their parents (e.g., "Have you and your mother ever talked about sexually transmitted diseases?"). Findings from this study suggest that both process and content (e.g., number of sexual topics discussed) of parent-adolescent communication are predictive of adolescent sexual behaviour, as higher adolescent ratings of communication process and communication content were linked with reduced adolescent engagement in sexual risk behaviour (Dutra, Miller, & Forehand, 1999). These results support that, in addition to frequency of parent-child communication, the general tone of the parent-child relationship and the overall style of parental communication are likely to influence the role of communication in adolescent sexual behaviour.

These findings suggest that positive parent-child communication can play an important role in development of responsible sexual behaviour among adolescents.

However, findings also indicate that measurement of parent-adolescent communication in studies of sexual behaviour should adopt a broader approach than assessment of simple communication frequency. Research using measurement tools that assess parental responsiveness or parental communication style has documented an important role of these factors in influencing adolescent sexual behaviour. Therefore, an indicator of the general parent-child relationship, such as parental warmth, should be considered in conjunction with reports of parent-child communication in evaluating the role of such communication on adolescent sexual behaviour.

Parental psychological control. Intrusive parental psychological control has been documented as having a consistently negative impact on adolescent sexual behaviour. Consistent with the socialization theory (e.g., Woelfel & Haller, 1971), and with the theory of planned behaviour as outlined with respect to parent-child communication (Hutchinson & Wood, 2007), intrusive parental control prevents adolescents from developing autonomy, responsibility, and the capacity for moral decision-making. That is, parents who exert intrusive influence over adolescents' cognitive and psychological processes remove opportunities for adolescents to internalize moral reasoning, resulting in poor decision-making skills and difficulty evaluating long-term consequences of behaviour (Hoffman, 1970). Consistent with this theoretical position, several studies have documented the link between adolescent reports of parental psychological control and adolescent engagement in sexual risk behaviour, including higher number of sexual partners, less frequent use of contraception, use of less effective methods of contraception, early age at first sexual activity (Kerpelman, McElwain, Pittman, & Adler-Baeder, 2013; Kincaid, Jones, Cuellar, & Gonzalez, 2011; Miller, Norton, Fan, & Christopherson, 1998; Rodgers, 1999). For example,

Kincaid and colleagues (2011) examined relations among maternal psychological control, youth adjustment, and youth risk behaviour in a sample of 175 African American adolescents from the United States. Adolescents were asked to report on maternal psychological control using the 8-item Psychological Control Scale (Barber, 1996; e.g., "My mother would like to be able to tell me how to feel or think about things all the time"), as well as to complete a self-report of adjustment and risk behaviour, including age at first alcoholic drink and age at first sexual activity. Findings revealed that maternal psychological control was a significant correlate of risk behaviour, and further, that at high levels of maternal psychological control, youth had approximately four times higher odds of reporting involvement in both early alcohol consumption and early sexual activity relative to youth in the study who did not report engaging in risk behaviours (Kincaid et al., 2011).

Similarly, Kerpelman and colleagues (2013) documented links between higher report of parental psychological control and a wider variety of risky adolescent sexual behaviour. In a study of 680 African American and European American adolescents from the southeastern United States, adolescents were asked to report on sexual behaviours, including age of sexual debut, number of sexual partners, relationship length prior to sex, seriousness of their relationship(s), and perceptions of parental psychological control. Parental psychological control was assessed using adolescent report on the eight-item Parental Psychological Control Scale (Barber, 1996). Consistent with theory and with Kincaid and colleagues' (2011) findings, higher adolescent ratings of parental psychological control were predictive of earlier age at first sexual activity, higher number of sexual partners, and shorter length of time knowing a partner prior to engaging in sexual activity

(Kerpelman et al., 2013). Together, these findings provide evidence for a consistent, negative impact of psychological control on adolescents' sexual behaviour.

   Parental monitoring. In studying parental behaviours that are important for development of adolescent sexual behaviour, it is critical to consider the role of parental monitoring. Parental monitoring of adolescent behaviour was originally conceptualized as parents' efforts to track and obtain information concerning their children's whereabouts, activities, and friends (Patterson & Dishion, 1985). Early researchers observed that parents of children with conduct problems typically did not engage in regular supervision, tracking, and monitoring of their children (Patterson & Dishion, 1985). Studies of parental monitoring since then have revealed that the protective effect of monitoring likely operates through an increase in parental knowledge (Fletcher, Steinberg, Williams, & Wheeler, 2004). That is, parents who are more knowledgeable concerning their children's whereabouts and behaviour are better able to intervene in their children's lives and discourage risk behaviours (Fletcher et al., 2004).

   It was Stattin and Kerr's seminal research (2000a; 2000b) which reframed the traditional concept of parental monitoring (i.e., supervision) as a collection of behaviours that contribute to parental knowledge of children's activities, with the primary behaviours of study being parental solicitation (i.e., parents asking children for information), parental control (i.e., parents requiring children to provide them with information), and/or child disclosure (i.e., children freely sharing information with parents; Stattin & Kerr, 2000a; 2000b). Stattin and Kerr's work (2000a; 2000b) revealed that parent-initiated behaviours (i.e., solicitation and control) were inconsistently and weakly associated with reduced risk behaviour in youth. However, child-initiated behaviour (i.e., child disclosure) consistently

predicted lower youth engagement in risk behaviour (Stattin & Kerr, 2000a; 2000b). These findings suggest that the youth-initiated aspects of monitoring (i.e., child disclosure) may be most important for reducing the likelihood of adolescent risk behaviour, as these behaviours increase parental knowledge of adolescent activity and behaviour and allow parents to better intervene, when necessary, in their children's lives (Fletcher et al., 2004). Although the parent- and youth-initiated aspects of monitoring are often not well separated or delineated in research, perhaps due to the limited availability of instruments which have separate subscales for these constructs, there are data to support that the youth-initiated component of parental monitoring is particularly important for increased parental knowledge and reduced adolescent risk behaviour (e.g., Law, Shapka, & Olson, 2010).

Consistent with Stattin and Kerr's work (2000a; 2000b), parent and youth behaviours contributing to parental knowledge have been consistently linked with reduced adolescent engagement in sexual risk behaviours (DiClemente et al., 2001; Huebner & Howell, 2003; Li, Feigelman, & Stanton, 2000). In a series of three studies with urban, low-income, African American children and adolescents (9-17 years of age), a youth report of parental knowledge (i.e., "When I go out at night, my parent(s) know where I am") was consistently inversely related to sexual risk behaviours across all age and gender groups (Li et al., 2000). The measure used in this research also contained items assessing youth disclosure (e.g., "I talk to my parents about the plans I have with my friends"; Li et al., 2000), which were used in the calculation of the total "parental monitoring" score, confounding the results somewhat. Nonetheless, results indicated that adolescents who

reported that parents were more aware of their activities reported fewer sexual risk behaviours.

In another study, researchers studied the role of parental knowledge in a sample of $N = 522$ black females (14-18 years of age) from lower socioeconomic status families (DiClemente et al., 2001). Adolescents who reported that their parents had less knowledge of their activities and whereabouts were more likely to engage in a variety of sexual risk behaviours, including not using contraceptives, having multiple sexual partners, and having risky (non-monogamous) sexual partners.

The effect of parental knowledge has also been documented in a sample of teenagers in grades 7 through 12 from the Southeastern United States (Huebner & Howell, 2003). In this study, adolescents completed a measure tapping parental knowledge and child disclosure (e.g., "My parent(s) know who my friends are", "I tell my parent(s) who I'm going to be with before I go out") and reported on their sexual risk-taking behaviours. Adolescents who reported that parents were aware of their activities and whereabouts were more likely than peers who reported low parental knowledge to demonstrate low sexual risk-taking behaviours (e.g., one sexual partner in lifetime, used contraception at last sexual encounter; Huebner & Howell, 2003). Although this study did not separate the role of parental knowledge and child disclosure, together with the previous research cited, these findings nonetheless support the overarching concept in Stattin and Kerr's (2000a; 2000b) model. That is, that parent- and child-initiated behaviours which advance parental knowledge play an important role in reduced adolescent risk-taking.

Parental behaviours and adolescent online behaviour. In contrast to the literature base concerning parental behaviours and adolescent offline sexual behaviour,

few studies have directly examined the relation between parental behaviour and adolescent online sexual behaviour, such as sexting. However, there are several studies that have explored adolescent online behaviour in relation to constructs that may be considered parallel to parental warmth. These studies have documented, indirectly, an effect of parental behaviour, such as warmth, communication, and monitoring, on adolescent online behaviours. This evidence, in turn, may provide support for considering the role of parental behaviours in adolescent sexting.

Rosen and colleagues (2008) conducted an online questionnaire with 341 adolescent MySpace users, and one of his/her parents. MySpace is a social networking website similar to Facebook. Adolescents in this study completed measures concerning their MySpace use and the target parent's parenting style, which were classified as authoritative parenting (high in parental warmth and strictness), authoritarian parenting (high strictness, low warmth), indulgent parenting (low strictness, high warmth), and neglectful parenting (low strictness, low warmth). Findings indicated that, relative to parents who reported a style low in warmth, authoritative parents had the greatest knowledge of their child's MySpace profile, were least likely to have teens who disclosed personal information on MySpace, and were most likely to be sure about whether their teen had disclosed personal information (Rosen et al., 2008). Further, adolescents with authoritative parents were least likely to have engaged in risky behaviour, such as meeting up with an online acquaintance in real life, relative to adolescents with parents whose parenting was not characterized by high warmth (Rosen et al., 2008). These findings support that the effect of parental warmth on adolescent behaviour may be extended to adolescent online behaviour.

Law, Shapka, and Olson (2010) conducted a similar study with a cross-sectional sample of elementary and high school students between 10 to 18 years of age. Participants completed an online questionnaire assessing aggressive activity witnessed and participated in online, as well as a version of Stattin and Kerr's Parenting Questionnaire (2000), modified to assess parenting of children's online activity. Consistent with Stattin and Kerr's (2000a; 2000b) model of parental monitoring, parent-initiated practices such as solicitation (e.g., asking children what they do online) and behavioural control (e.g., using monitoring software) did not predict whether the youth sent aggressive online messages. On the other hand, youth who reported that they spontaneously or openly shared the nature of their online activity with their parents were less likely to be involved in sending aggressive online messages (Law et al., 2010). This has implications for both the role of parental monitoring-related behaviours, as well as the role of parental warmth and parent-child communication, in affecting adolescent online activity. First, this suggests that, consistent with Stattin and Kerr's (2000a; 2000b) research, child-initiated efforts to increase parental knowledge are more closely linked with less risky online behaviour in adolescents than parent-initiated monitoring behaviours. Second, although the child disclosure variable was not a direct measure of parental warmth or parent-child communication, the items used to assess this construct asked adolescents to what extent their parents knew about their online activities, to what extent their parents knew who they had as friends online, and to what extent their parents knew what they were texting online or on their cell phone. Accordingly, the latent variable underlying these items might be influenced by, or may, to some extent, be an indicator of, the warmth in the parent-child relationship or the quality of parent-child communication. Indeed, the authors interpret

this finding in light of other findings suggesting that open and caring parent-child relationships tend to produce more well-adjusted children and adolescents. Therefore, these findings point to the importance of youth-initiated efforts to increase parental knowledge for discouraging engagement in risky online activity. In addition, these findings may suggest an indirect, positive influence of warm parent-child relationships and good parent-child communication on adolescent online behaviour.

Finally, Campbell and Park's (2014) survey of 12- to 17-year-olds (N = 552) concerning engagement in sexting and frequency of mobile communication with family members and peers is the only published research to date that has examined family variables in relation to adolescent sexting. In this study, adolescents were asked to report on engagement in sexting, mobile phone communication with family members, and mobile phone communication with peers, and parents were asked to report on their use of six parent-initiated monitoring behaviours, including control and parental solicitiation. While the parent report of these monitoring behaviours did not significantly predict adolescents' engagement in sexting, results did point to a link between frequent communication with family members and lower adolescent report of sending and receiving sexual pictures. As discussed earlier in this review, results also indicated that teens who were in frequent mobile contact with family members were significantly less likely to have sent and/or received a sexual picture, while teens who were in frequent mobile contact with peers were more likely to report having sent and/or received a sexual picture. These findings were interpreted in the context of a social emancipation model (Campbell & Park, 2014), wherein the association between more frequent mobile communication with peers and sending/receiving sexual pictures reflects adolescents transitioning to increased social

autonomy from the family. That is, adolescents who communicate more frequently with peers have developed greater autonomy, and that sexting is a reflection of this autonomy. However, at the same time, this pattern of findings might also suggest that adolescents who have close family relationships, as reflected by more frequent mobile communication with family members, are less likely to send and/or receive sexual images. While frequency of mobile communication between family members is not a direct measure of family relationships or parental warmth, there is research to support that warmth is associated with better family and adolescent functioning (e.g., Jaccard, Dittus, & Gordon, 1996). It may be that frequent mobile communication with family reflects, or is an indirect indicator of, high parental warmth and/or good parent-child communication, which, in turn, contributes to better adolescent functioning (i.e., less sending of sexual images). Consequently, while Campbell and Park's (2014) research suggests that parent-initiated monitoring behaviours are not linked with adolescent engagement in sexting, these findings do support a link between increased family communication (via mobile phones) and less adolescent sending and receiving of sexual pictures. Indirectly, this may support the role of parental warmth and/or parent-child communication in influencing adolescent sexting.

Therefore, although there has been no direct study of the relation between parental warmth, communication, psychological control, monitoring, and adolescent sexting, research that has examined family variables in relation to adolescent online activity provides support for the study of these parenting variables in relation to adolescent sexting. Parental warmth has been linked with less risky adolescent social media activity (Rosen et al., 2008). Further, adolescent-initiated efforts to increase parental knowledge of online activity (i.e., disclosure of online activity), which may be representative of the

parent-child relationship quality, have been linked with lower likelihood of engaging in aggressive online behaviour (Law et al., 2010). Finally, greater frequency of communication via mobile phone with family members has been linked with lower report of adolescent sending/receiving sexual images, suggesting that family relationships may play a role in influencing this behaviour (Campbell & Park, 2014). Although these studies did not directly measure a parental warmth or communication variable, their findings are in line with research that has identified parental warmth and parent-child communication as being linked with more responsible and well-adjusted adolescent behaviour in offline environments (e.g., Luster & Small, 1994; Leland & Barth, 1993). Further, findings from these studies suggest that although parent-initiated monitoring may not play a large role in reducing adolescent online risk behaviour, youth-disclosure appears to be an important factor in this relation (Campbell & Park, 2014; Law et al., 2010). Although there has been no published research that has studied the role of psychological control in adolescent online behaviour, based on consistent findings in the literature concerning psychological control and adolescent offline behaviour (e.g., Rodgers, 1999), it is reasonable to hypothesize that psychological control might have a similarly negative effect on adolescent behaviour in the online environment.

Links between parental behaviours and attachment patterns. In addition to the socialization and control theories concerning the mechanisms of influence between parental behaviours and adolescent functioning and behaviour, attachment is often studied as an indicator of the parent-child relationship in predicting child and adolescent outcomes (Brown & Wright, 2001). Indeed, attachment patterns may be particularly important to consider in understanding adolescent sexting because of the relational context of sexting.

That is, sexting occurs in the context of social and romantic relationships, and there is considerable research to support that attachment patterns have important implications for how individuals behave within relationships (Hazan & Shaver, 1987; Mikulincer & Shaver, 2007). Therefore, the role of parental behaviours in the development of attachment-related constructs should also be considered in understanding the context of adolescent sexting.

     Parental behaviours and attachment theory. Through observation of numerous parent-child dyads during the mid-20th century, John Bowlby and his research assistant, Mary Ainsworth, identified three distinct patterns of mother-child emotional bonding (Ainsworth, Blehar, Waters, & Wall, 1978). Bowlby referred to the mother-child emotional bond as the attachment bond (Bowlby, 1958, 1969/1982, 1973). Today, these three patterns of parent-child bonding are generally referred to as secure, avoidant, and anxious (Mikulincer & Shaver, 2007). The basis for these different patterns of attachment is the child's expectations about (a), whether the attachment figure, typically the parent, is likely to respond to the child's need for support and protection, and (b), whether the child judges themself to be the type of person to whom people are likely to respond positively (Ainsworth et al., 1978; Bowlby, 1973). Bowlby termed the combination of these expectations internal working models, referring to mental models of the self and social life (Bowlby, 1973). For example, individuals who are high in anxious attachment tend to have working models related to attachment system *hyperactivation* (Mikulincer & Shaver, 2007). That is, influenced by having needs inconsistently met by caregivers, these individuals are likely to worry that others will abandon them, and consequently, employ a variety of strategies to maintain closeness, at all costs, with relationship partners. Individuals who

are high in avoidant attachment are thought to have working models that operate based on attachment system *deactivation* (Mikulincer & Shaver, 2007). That is, influenced by experiences of rejection by caregivers, these individuals are likely to have difficulty trusting and depending on others, and therefore, employ a variety of strategies to maintain psychological and emotional distance in their relationships. In contrast, individuals who are high in secure attachment, based on supportive experiences with caregivers, are likely to have working models characterized by a belief that expressions of vulnerability and neediness within relationships are met with positive outcomes (e.g., provision of support), and that turning to relationship partners for support is an effective way to manage distress (Mikulincer & Shaver, 2007).

Internal working models develop largely based on parental behaviour and attitudes toward children. That is, infants of parents who are less responsive tend to develop an insecure attachment pattern, while infants of parents who demonstrate higher sensitivity and responsivity tend to be securely attached (Ainsworth et al., 1978; Grossman, Grossman, & Kindler, 2005; van IJzendoorn & Bakermans-Kranenburg, 2004). Even retrospectively, in adulthood, Hazan & Shaver (1987) have documented that adult attachment style is related to relationship experiences with parents, with anxious adults viewing their parents as unfair, avoidant adults viewing their parents as cold and rejecting, and adults classified as securely attached viewing their parents as warm and accepting. Notably, Ainsworth and colleagues' (1978) research identified several different forms of maternal behaviour that were associated with infant attachment, such as responsivity to infant crying, timing of feeding, and psychological availability during times of infant distress. Indeed, researchers have examined how specific parental behaviours contribute to

the development of internal working models and attachment. This research has produced significant evidence for the importance of parental warmth, parent-child communication, and parental psychological control.

Parental warmth. Consistent with Ainsworth and colleagues' (1978) original work, there is considerable evidence to support that provision of parental warmth promotes the development of security in children. Due to differing terminology across research in this area, the term 'warmth' can be understood as referring to several parallel conceptualizations of parental behaviours (e.g., engagement, acceptance; Rohner, 2005), each of which denotes support of child and adolescent psychosocial development through parental affection, nurturance, and support. In his comprehensive approach to this variable, Rohner (1986) conceptualizes warmth as a continuum, with one end of this dimension marked by parental acceptance, and the other by parental rejection. Rohner's view of parental acceptance, or warmth, can be generally understood as the affection and love that parents show to their children, both verbally and physically, through acceptance, support, responsiveness, affectionate intimacy, and involvement (Rohner, 1986).

The positive effect of parental warmth on child and adolescent adjustment has been well documented, even across different cultures (Khaleque & Rohner, 2002). Warmth is viewed as a critical component for the development of secure attachment between child and caregiver, as first documented by Ainsworth and her colleagues (1978). A more recent study comparing samples of adolescents from individualistic (Turkish; n = 262) and collectivistic (Belgian; n = 263) cultures provides continued support for the importance of parental warmth for attachment (Gungor & Bornstein, 2010). In this large, diverse sample of adolescents, maternal and paternal warmth was negatively related to attachment anxiety

and avoidance, across both types of cultural upbringing, suggesting that the relation between parental warmth and attachment is consistent across individualistic and collectivistic cultures (Gungor & Bornstein, 2010). In addition to direct study of the link between parental warmth and attachment status, parental warmth has also been linked with the development of social initiative (i.e., the ability to initiate social interaction with peers and adults) and positive attitudes toward interpersonal interaction in children, which are characteristic of the working models of securely attached individuals (Mikulincer & Shaver, 2007). For example, in a comprehensive study of the relation between parental warmth, characterized as parental support, Barber and colleagues (2005) identified that parental support was consistently linked with better adolescent social initiative. The findings of Zhou and colleagues (2002) may offer some insight as to how provision of parental warmth assists children in developing social abilities, as their findings supported that children of warm and supportive parents tended to display more empathy, and that this effect was largely due to parents expressing more positive emotions in the presence of their children. Together, these findings support that repeated experiences with parental warmth contribute to the development of positive expectations of relationship partners, as well as of social relationships more generally, which is consistent with the internal working models of securely attached individuals (Mikulincer & Shaver, 2007).

   Parental psychological control. In contrast to parental warmth, parental psychological control is more closely linked with development of attachment anxiety and avoidance. Parental psychological control was originally conceptualized by Schaefer (1965) as a covert method of control that does not "permit the child to develop as an individual apart from the parent" (p. 555). This construct can be differentiated from

parental behavioural control in that the locus of the parent's control is the child's

psychological world and psychological processes, rather than the child's behaviour (Barber,

1996). Psychological control can be viewed as a constellation of parental behaviours,

attitudes, and intents meant to manipulate and constrain children (Barber, 1996). That is,

these strategies manipulate the love relationship between the parent and child as a means

of controlling the child's behaviour (Barber, 2002; Barber, 1996). Behaviours falling under

the umbrella of psychological control may include, for example, appealing to pride/guilt,

withdrawing love, and isolating or shaming the child (Barber, 1996).

The negative developmental impact of psychological control is well documented.

Barber and Harmon (2002), in a comprehensive review of studies that have examined

correlates and outcomes of psychological control, reported that this practice is linked with

development of internalizing and externalizing symptoms across samples, including poor

self-esteem, depression, eating disorders, suicidal ideation, delinquency, aggression, and

antisocial behaviour. In a comprehensive study of the relation between parental

psychological control and adolescent psychosocial outcomes, control was consistently

predictive of adolescent depressive symptoms, and, to a lesser degree, antisocial behaviour

(Barber et al., 2005). With respect to interpersonal symptoms, Mayseless and Scharf

(2009) found that parent-child dyads reporting high parental psychological control

evidenced poor coping in relation to the transition to high school, and that adolescents in

these families evidenced lower individuation and separation in their relationship with their

parents than did adolescents from families that were lower in control and guilt induction.

The authors of this study characterized adolescents from high control families as being torn

between desiring closeness with their parents, while simultaneously wanting to distance

themselves, culminating in the child being unable to fulfill either desire. This evidence for

psychological control being linked with development of unhealthy relationship dynamics is

consistent with evidence from other research indicating that psychological control is linked

with attachment avoidance and anxiety in close relationships. In two samples of

adolescents (n_1 = 653 females; n_2 = 1,035 students, of whom 603 were female), Pittman and

colleagues (2012) identified that greater adolescent-report of parental psychological

control was predictive of attachment anxiety and attachment avoidance. Additionally,

findings from a study of adolescents from individualistic and collectivistic cultures support

that maternal and paternal psychological control were consistently positively related to

attachment avoidance and anxiety across culture (Gungor & Bornstein, 2010). These

findings provide evidence for a detrimental impact of parental psychological control on

adolescent functioning, particularly with respect to development of attachment anxiety and

avoidance.

Parent-adolescent communication. Relative to the research concerning parental

warmth and attachment, or the research concerning psychological control and attachment,

there is less research focused on the relation between family communication processes and

attachment. Much of the research concerning parent-child communication and attachment

comes from early childhood research (Bost et al., 2006; Etzion-Carasso & Oppenheim,

2000; Main, 1995). This is likely in large part because of the increasing influence of

language in children's development during this period. Cognitive theorists have written

that as children's language competency begins to develop during the preschool years,

quality of parent-child communication becomes highly influential in the development of

attachment representations, such as internal working models (Nelson, 1996; Thompson,

2000; Tomasello, 2000). Parent-child discourse in early childhood has been found to contribute to cognitive structures regarded as important for the formation of internal working models, including theory of mind (Welch-Ross, 1997) and cognitive models of the world (Laible & Thompson, 2000). Thompson (2000) argues that similar to warm and supportive caregiving, parents can contribute to the development of secure and insecure attachment in preschoolers through parent-child communication because parental conversational style, attributions communicated through conversation, emotional tone of parental language, and the semantic content of speech all contribute to how children construct representations of their experiences, themselves, and others. Although Thompson (2000) highlights the gap in research addressing the explicit links between these communication variables and children's attachment representations, there is some research to support that securely attached parent-child dyads engage in more open and coherent communication than insecurely-attached parent-child dyads (Bost et al., 2006; Etzion-Carasso & Oppenheim, 2000; Main, 1995). For example, Etzion-Carasso and Oppenheim (2000) recruited 113 mothers with preschool children and had them complete the Strange Situation procedure when the child was between 12 and 16 months of age and subsequently evaluated mother-child communication at 4.5 years of age. Mother-child communication was coded based on videotaped mother-child interaction following a separation. Indeed, results identified that boys who were classified as securely attached during infancy were more likely to have open communication with their mothers at 4.5 years of age (i.e., communication that was coherent and fluent, in which mothers showed genuine interest in children and enjoyed talking to them). Conversely, children classified as insecure in infancy tended to have non-open communication with their mothers at 4.5

years of age (i.e., communication that was characterized by absence of coherency or fluency, poor timing, or maternal boredom, disinterest, or hostility). These findings provide support for the link between parent-child communication and development of attachment processes during early childhood.

Compared with research concerning this link in preschoolers and young children, there is relatively little known research concerning the link between parent-child communication and attachment among adolescents. Although there are some data that support the extension of this relation into the adolescent period, this research has been conducted with non-North American samples or is characterized by methodological problems. In an unpublished master's thesis, Koen (2009) obtained data from a sample of 276 South African adolescents in Grades 9 through 11. Adolescents completed a battery of questionnaires in a school setting, including the Parent-Adolescent Communication Scale (PAC; Barnes & Olson, 1982) and the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987). Results indicated that higher scores on the IPPA Trust subscale, reflecting greater experiences of mutual trust in relationships with parents and peers, were associated with more open parent-adolescent communication (Open subscale on PAC) and linked with fewer problems in parent-adolescent communication (Problem Communication subscale on PAC; Koen, 2009). These findings suggest the presence of a relation between attachment-related constructs (i.e., mutual trust within interpersonal relationships) and the quality and style of parent-adolescent communication.

Similarly, in a study of 275 university students in the Phillippines, Maximo and colleagues (2011) identified links between parent-adolescent communication style and attachment style. Youth between the ages of 16 and 21 years were administered a battery

that included a parent-adolescent communication measure and the Relationship Scales

Questionnaire (Griffin & Bartholomew, 1994). Maximo and colleagues (2011) created the

40-item instrument assessing parent-adolescent communication style for the purposes of

the study, and items were classified on subscales designating communication as assertive,

loving, aggressive, or passive. Findings from this study support a link between more

negative parent-child communication and insecure attachment, as both passive and

aggressive communication styles were associated with insecure attachment styles,

including fearful, preoccupied, and dismissing styles (Maximo et al., 2011). Therefore, to

the author's knowledge, there is little methodologically rigorous or specific research in this

area, and no known research examining these relations in North American adolescents.

However, there is preliminary evidence that more open parent-child communication is

characteristic among youth who are securely attached.

In sum, these findings support that parental warmth and parental psychological

control are important factors in the development of attachment and internal working

models. In addition, although there is a need for greater depth and specificity in the

research concerning these constructs, parent-child communication also appears to play a

role in the development of attachment representations in childhood and adolescence. An

important tenet of attachment theory, implied in the conceptualization of internal working

models, is the relevance of attachment-related beliefs for individuals' behaviour in

relationships outside of the parent-child relationship. Indeed, of particular relevance for

the present study, there is a considerable research dedicated to exploring how working

models manifest within close and romantic relationships. This area of research may

provide insight into adolescent functioning within relationships that can help to contextualize the behaviour of adolescent sexting.

Links between attachment patterns and sexting. Hazan & Shaver (1987) were among the first researchers to document how attachment patterns manifest in romantic relationships. In both a sample collected via newspaper survey, as well as a sample of undergraduate students, Hazan and Shaver (1987) documented that individuals classified as securely attached described their love experiences as friendly, happy, and trusting, while avoidant individuals' relationships were characterized by fear of closeness, and anxious individuals' relationships were marked by jealousy, emotional highs and lows, and desire for reciprocation. Thus, subjective reports of romantic relationship experiences appear to correspond with the conceptualization of the internal working models for the different attachment patterns (Mikulincer & Shaver, 2007).

One of the important ways in which the role of attachment patterns within romantic relationships has been studied is with respect to motivations for engaging in sexual activity (Davis, Shaver, & Vernon, 2004; Shachner & Shaver, 2004). Consistent with theory related to internal working models, anxiously attached individuals tend to report motivations for engaging in sexual activity that are related to satisfying a need for security and love (Davis et al., 2004). For example, anxious adults report engaging in sexual activity with a partner to promote their sense of closeness or to keep their partner in the relationship (Davis et al., 2004). Similarly, in a sample of adolescents, anxiously attached individuals were more likely to engage in first intercourse due to fear of losing their partner (Tracy, Shaver, Albino, & Cooper, 2003). Still more research has documented that anxiously attached individuals are more likely to defer to their partner's sexual needs in order to please their

partner (Birnbaum, Svitelman, Bar-Shalom, & Porat, 2008; Davis, 2006). These motivations reflect the hyperactivation (i.e., pursuit of closeness) that is characteristic of anxious internal working models.

Likewise, avoidant individuals' motivations for sexual activity are related to their discomfort with intimacy, and typically reflect an effort to detach or separate sexuality from psychological intimacy. For example, rather than motivations related to intimacy or relationship maintenance, avoidant individuals frequently cite external factors as motivation for sexual activity, such as gaining social status and/or power (Mikulincer & Shaver, 2007). Further, individuals high in avoidance tend to prefer to engage in 'emotionless' sexual activity, such as 'one night stands', where there is little expectation of intimacy (Schachner & Shaver, 2002). Tracy and colleagues (2003) documented this effect among adolescents, finding that avoidant adolescents were more likely to engage in first intercourse due to desire to lose their virginity. Together, these motivations are consistent with the deactivation (i.e., maintenance of distance) that is characteristic of avoidant working models. Thus, there is support for the role of attachment patterns and internal working models in influencing individuals' motivations for sexual activity. Given that sexting may represent a modern form of sexual activity among adolescents (Temple & Choi, 2014), this area of research may have important implications for understanding the relational context of adolescent sexting.

Attachment and sexting among college students. Although research in this field is limited, studies of college students have provided preliminary evidence that sexting is differentially associated with attachment patterns. In one of the first known studies in this area, Weisskirch and Delevi (2011) completed an online questionnaire with 128

undergraduate participants, including a measure of attachment, items assessing how often

participants had sent sexually suggestive text messages and/or pictures and video, and a

scale assessing attitudes toward sexting. Among participants in relationships, attachment

anxiety predicted more frequent sending of sexually suggestive text messages. Findings

also indicated that attachment anxiety predicted scores on a measure of relational

expectations, reflecting that anxiety was related to a belief that sexting is expected to

please one's partner. Given that results indicate anxious individuals are more likely to send

sexual text messages, as well as the finding that anxious individuals believe this practice is

expected within relationships, Weisskirch and Delevi (2011) posit that this type of sexting

may represent a reassurance-seeking behaviour designed to reduce tension created by

anxious attachment, which is consistent with Mikulincer and Shaver's (2007) description of

a hyperactivating strategy employed by anxious individuals.

Subsequent studies have built on these findings by exploring these findings in larger

samples and with additional variables. Drouin and Landgraff (2012) explored how

attachment anxiety and avoidance related to reports of sexting in a sample of 744

undergraduate students. Respondents completed an online survey including a measure of

attachment and questions about the frequency of sending sexually explicit text and picture

messages to relationship partners. Results indicated that the majority of the sample had

engaged in sending sexual text and picture messages, with 67% and 54% of the sample,

respectively, indicating that they had engaged in this behaviour at least once. Further, both

attachment anxiety and avoidance were significant predictors of sending sexual text

messages, with results suggesting that those higher in anxiety and avoidance more

frequently sent sexual text messages. Additionally, attachment avoidance was a significant

predictor of sending sexual pictures and video, with those higher in avoidance reporting more frequent sending of sexual pictures and video. Drouin and Landgraff (2012) situate their findings in the context of attachment theory and internal working models, suggesting that sexting may be viewed as another form of casual or 'emotionless' sexual activity for those with avoidant attachment. They further suggest that sexting may represent a deactivating strategy, designed to allow sexual interaction devoid of physical intimacy in order to keep partners at a distance (Drouin & Landgraff, 2012). Overall, findings from this study give evidence for a link between attachment anxiety and avoidance and sending of sexual text messages, as well as a link between avoidance and sending of sexual pictures and video.

In a similar study, Drouin and Tobin (2014) studied motivations for sexting as a potential mediator between attachment and unwanted sexting. The authors describe unwanted sexting as similar to unwanted but consensual sexual activity, which refers to sexual activity that is unwanted by at least one partner, but for which both partners have given consent (Muehlenhard & Cook, 1988). Reasons for engaging in unwanted but consensual sexual activity have been found to vary by gender; for example, women report doing so in order to fulfill a partner's needs and/or because of fears of the relationship ending, and men report doing so to achieve popularity and/or because of peer pressure (Muehlenhard & Cook, 1988). Participants in Drouin and Tobin's (2014) study completed a measure of attachment, responded to items concerning frequency of engaging in unwanted sexting (sending a sexual message or image) with a relationship partner, and reported motivations for unwanted sexting from a list of ten possible motivations for unwanted sexual activity. Similar to prevalence rates in Drouin and Landgraff's (2012) results, the

majority of this college-aged sample reported having engaged in unwanted but consensual sending of sexual messages/images (48% of men, 55% of women; Drouin & Tobin, 2014). Among women only, anxious attachment significantly predicted higher frequency of engaging in unwanted sexting. In contrast, associations between attachment status and unwanted sexting were non-significant among men in this sample. Motivations for engaging in unwanted sending of sexual messages/images were also related to attachment, as consenting to avoid an argument was related to anxiety and avoidance, while consenting due to loneliness was related to anxiety. Therefore, as a final step, the motivation of consenting to avoid an argument was explored as a mediator for the relation between attachment anxiety and unwanted sending of sexual messages/images in women. This mediation model was supported (Drouin & Tobin, 2014). Thus, findings from this study provide further evidence that engagement in sexting is linked with attachment patterns, and particularly for sexting that is unwanted. In particular, given the finding that wishing to avoid an argument mediates the relation between anxiety and unwanted sexting, these findings provide support for interpreting unwanted sexting behaviour in the context of internal working models. The motivation of avoiding an argument is consistent with a hyperactivating strategy (Mikulincer & Shaver, 2007) designed to prevent rejection or losing their partner. Given that findings in this study were significant for anxiety but not avoidance, findings could suggest that the link between attachment and unwanted sending of sexual content is stronger for anxiously attached individuals than for avoidant individuals. This may reflect that use of Internet-mediated communication within relationships is particularly challenging for those who are anxiously attached. For example, anxious individuals may engage in unwanted sexting more frequently because this

communication medium leads to greater uncertainty in the relationship, causing escalation

in hyperactivation strategies (e.g., sexting; Drouin & Tobin, 2014).

Drouin and Tobin (2014) caution against attributing too much significance to the

gender differences highlighted in these results, namely, that the relation between

attachment and unwanted sexting is stronger among women than men, as there is evidence

for an effect of attachment status on unwanted but consensual (offline) sexual activity in

both men and women (Gentzler & Kerns, 2004). Nonetheless, these findings may suggest

that the relation between attachment anxiety and sending of sexual content is influenced

by gender roles and expectations. For example, it may be that because women tend to pair

sexual behaviour with emotions more often than men (Caroll, Volk, & Hyde, 1985), and

because highly anxious people will go to great lengths to obtain or maintain relationships

(Mikulincer & Shaver, 2007), that anxious women may, therefore, represent a group that is

especially likely to engage in unwanted sexual behaviour in order to feel close to their

partner or to avoid losing their partner (Gentzler & Kerns, 2004). Findings from Drouin and

Landgraff's (2012) study support a stronger relation between anxiety and sexting among

women, as well as a stronger relation between avoidance and sexting among men. In this

study, the relation between avoidance and sending sexual text messages and pictures was

stronger among men than women, whereas the relation between anxiety and sending

sexual text messages approached significance for being stronger among women than men

(Drouin & Landgraff, 2012). Complementary to the earlier hypothesis concerning anxiety

and sexual behaviour in women, it may be that the relation between avoidance and sexual

variables is stronger among men than women because men do not pair sexual behaviour

with emotional intimacy as often as do women (Carroll et al., 1985), and because avoidant

individuals are particularly disinterested in emotional intimacy (Mikulincer & Shaver,

2007). Therefore, men high on avoidance may represent a group that is particularly likely

to engage in more casual forms of sexual activity, such as sexting, in which physical and

emotional intimacy is minimized. This pattern of findings suggests that gender differences

should be considered in further exploration of the relation between attachment and

sexting.

   Attachment and sexting among adolescents. To date, no studies that have

explored sexting in adolescence have considered attachment patterns as a factor in this

phenomenon. However, there are several indicators that suggest attachment theory may be

an important perspective to consider in understanding this behaviour. First, following the

initial wave of research that has looked at risk behaviours that are associated with sexting,

there has been a call for more research to address the social and relational context of

adolescent sexting (Hasinoff, 2012; Walker et al., 2013). Due in part to conflicting results

among studies concerning whether sexting is associated with risk behaviours, there is a

need to examine other factors that may play a role in adolescent sexting. In addition, there

is a sound theoretical basis for exploring the relation between attachment and sexting in

adolescence, as the link between attachment and adolescent motivations for sexual activity

has been established (Tracy et al., 2003). This work has been extended to sexting among

samples of college students, with findings suggesting that, similar to 'offline' sexual activity,

attachment anxiety and avoidance are associated with more frequent sexting, and also with

reasons for engaging in sexting (Drouin & Landgraff, 2012; Drouin & Tobin, 2014;

Weisskirch & Delevi, 2011). Although some of these findings come from research that was

conducted concerning the construct of unwanted sexting (Drouin & Tobin, 2014), findings

from qualitative research with adolescents suggest that the majority of adolescents cite pressure from others as a primary reason for sexting (Walker et al., 2013), which may mean that a large proportion of adolescent sexting could be considered 'unwanted'. This, in turn, provides another impetus for the study of the relational context of sexting: if adolescents are engaging in this behaviour largely because they feel pressure to do so, advancing our understanding of sexting in a relational context may provide information about what beliefs and behaviours should be targeted by public health intervention and education programs. Together, these findings provide support for both the importance and the relevance of examining adolescent sexting from an attachment perspective.

Rationale for the Present Study

Media coverage of adolescent sending of sexual content has characterized this behaviour as a distressing trend (Hasinoff, 2012). Research in this area has been focused on risks associated with adolescents sending sexual content, as well as exploration of whether this may be a risk behaviour (Cox Communications, 2009; Dake et al., 2012; Mitchell et al., 2012). However, many of the samples used in this previous research have been comprised of American adolescents and there has been limited study of sexting among Canadian adolescents, which may differ from sexting among American adolescents due to the disparity in legal consequences for this behaviour in Canada and in United States (*Criminal Code*, 1985; Wood, 2009). In addition, as highlighted by Walker and colleagues (2013) and Hasinoff (2012), there is a growing need for research to situate adolescent sending and receiving of sexual content within a developmental and interpersonal context in order to fully understand this behaviour. The study of parental behaviours in relation to adolescent sexual behaviour, as well as adolescent online behaviour, provides relevant

background for the study of adolescent sexting. Attachment theory has successfully been

used as a context for understanding adolescent behaviour in close and romantic

relationships, and attachment research has uncovered links between parental behaviour

and adolescent psychosocial development that may be important for understanding

adolescent sexting. Study of these social and relational factors in relation to sending and

receiving of sexual content will contribute to the larger discussion around sexting by

identifying pathways to and social contexts of adolescent sexting. For example, the

association of attachment with sexting in adolescents may suggest working models of

relationships and attachment representations are an important factor in adolescents'

decision-making process with respect to sexting. In turn, this information can contribute to

better, more targeted design of sexual health education programs. Overall, these areas of

research will help to provide insight into some of the factors that influence adolescent

engagement in sexting.

Operational definition of sexting. Varying and/or vague operational definitions of

sexting, which have included several different sexting-related behaviours under this

umbrella term, have made it challenging to compare and contrast findings from previous

research (Dake et al., 2012; National Campaign, 2008; Cox Communications, 2009). More

recent sexting research has tended to focus on sending of sexual images/video only, rather

than creating a composite score that incorporates other behaviours (e.g., receiving,

forwarding) and/or other types of media (e.g., messages; Temple et al., 2014; Van Ouytsel,

Van Gool, Ponnet, & Walrave, 2014; Ybarra & Mitchell, 2014). The reason for this is two-

fold: first, because study of a precisely-defined behaviour leads to better understanding of

its specific correlates, predictors, and covariates, which, in turn, contributes to improved

models and understanding of the processes related to the behaviour. Some previous findings suggest that behaviour related to sexual messaging is predicted or influenced by different factors than behaviour related to sexual images (Drouin & Landgraff, 2012; Weisskirch & Delevi, 2011), supporting that these behaviours should be treated separately in research.

Second, sending of sexual images may be considered a more extreme form of sexting, in that the potential for risk is greater when sending images than when sending sexual messages with text content only. That is, for example, the potential for psychosocial (e.g., embarrassment, bullying) and legal consequences is generally higher when a sexual image is sent. Because of these potential consequences, increasing understanding of the processes that lead to or contribute to sending of sexual images is currently a priority for researchers (Strassberg et al., 2013). Therefore, sending of sexual images was chosen as the primary outcome variable for the regression analyses in the present study in order to make a meaningful contribution to this area of research.

Nonetheless, in order to obtain a clear picture of the different types of sexting behaviours that Canadian adolescents are engaging in, it was necessary to also assess the nature of participants' engagement in sending and receiving of sexual messages. Therefore, data on adolescents' use of sexual text messages was collected and analyzed to facilitate comparisons between behaviours involving sexual messages and sexual images in the present study, as well as to provide estimates of prevalence as a point of comparison for future researchers.

Research concerning nature and context of adolescent sexting. At present, most of the available research that has explored adolescent engagement in sexting-related

behaviours has done so using samples of American adolescents (e.g., Strassberg et al., 2013; Temple & Choi, 2014; Temple et al., 2012). Particularly given the important differences in legal consequences for adolescent sexting in the United States and in Canada (*Criminal Code*, 1985; Wood, 2009), one of the aims of this study was to obtain data on this practice among Canadian adolescents. Indeed, researchers of sexual activity have cautioned against extending findings concerning sexual activity in American youth to Canadian youth without investigation (Maticka-Tyndale, 2001). Therefore, in an effort to explore the relevance of current data concerning sexting among American adolescents for Canadian youth, the present study explored Canadian teens' engagement in sending, receiving, and forwarding sexual messages and sexual images, as well as information related to these behaviours (e.g., to whom messages/images are being sent, whom messages/images are being received from), and motivations and perceived motivations for sending sexual messages and images.

Research concerning parental behaviours and adolescent sexting. Given the continued importance of parental behaviours and the parent-child relationship for influencing behaviour during adolescence, and in order to gain a more complete understanding of the factors influencing adolescent sexting, the relation of parental behaviours that have been identified as influencing adolescent sexual behaviour is an important avenue of study. Findings from research concerning parental warmth, parent-adolescent communication, parental psychological control, and parental monitoring provide support for the importance of these variables in influencing adolescent sexual behaviour (e.g., Jaccard, Dittus, & Gordon, 1996; Luster & Small, 1994; Rodgers, 1999). However, to the author's knowledge, there is no known research that has examined these variables in relation to adolescent sexting. There has been limited study of broad family

characteristics in relation to adolescent online behaviour, and findings from this area of

research support that parental warmth, parent-child communication, and youth-initiated

contributions to parental monitoring are likely to influence adolescent online behaviour in

a manner that is similar to their impact on adolescent offline behaviour (Campbell & Park,

2014; Law, Shapka, & Olson, 2010; Rosen et al., 2008). Therefore, in the present study, the

role of these parental behaviours in predicting adolescent sexting was explored using the

model shown in Figure 1. Given previous findings that suggest parent-adolescent

communication may interact with warmth to influence adolescent sexual behaviour,

interaction between these variables was explored.

   Research concerning attachment and adolescent sexting. Current literature

provides empirical support for the influence of attachment anxiety and avoidance on

engagement in sexting (Drouin & Landgraff, 2012; Drouin & Tobin, 2014; Weisskirch &

Delevi, 2011). Both anxious and avoidant individuals have been identified as more likely to

send sexts, relative to securely attached individuals (Drouin & Landgraff, 2012; Weisskirch

& Delevi, 2011), and anxious individuals are more likely to engage in sexting with a

relationship partner even when they do not want to sext (Drouin & Tobin, 2014). Given

that previous research concerning the role of attachment on behaviour in romantic

relationships has been successfully extended to adolescents, one of the aims in the present

study was the extension of these findings concerning attachment and sexting to an

adolescent sample. Given the implications of attachment for determining individuals'

behaviour within close and romantic relationships (Hazan & Shaver, 1987; Mikulincer &

Shaver, 2007), it was believed that exploration of these trends could provide important

insights related to the social and relational context of adolescent sexting (e.g., Walker et al.,
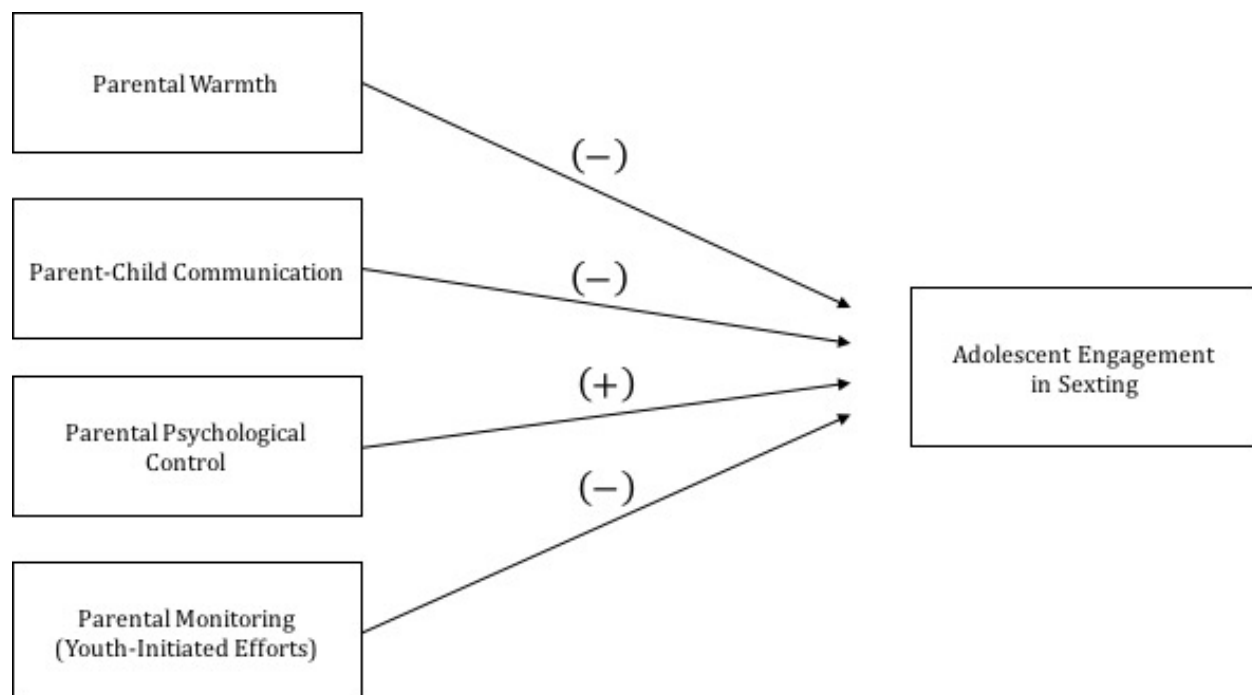
Figure 1. Proposed relations between parental warmth, parent-child communication,

parental psychological control, parental monitoring, and adolescent sexting

2013; Hasinoff, 2012). Based on previous research concerning attachment and sexting

(Drouin & Landgraff, 2012; Drouin & Tobin, 2014; Weisskirch & Delevi, 2011), relations

among these variables were explored using the model shown in Figure 2.

In addition, a potential mediating role of attachment in the relation between

parental behaviours and adolescent sexting was also explored (see Figure 3). Parental

warmth (Figure 3a), parent-child communication (Figure 3b), and parental psychological

control (Figure 3c) have been studied as contributors to child and adolescent attachment,

as well as youth behavioural outcomes. Given that sexting is a social and relational

behaviour, and attachment has been shown to have implications for social and relationship

cognitions (e.g., Mikulincer and Shaver, 2007), one of the ways in which warmth and

psychological control may have their influence on adolescent sexual behaviour is through

adolescent attachment. Other researchers have identified attachment as a mediating

mechanism between parental behaviours and child and adolescent outcomes. For example,

Roisman and colleagues (2001) reported that parental behaviours toward adolescents at

age 13, including emotional engagement and positive affect, predicted the adolescents'

behaviour, such as conflict resolution and shared positive affect, in their romantic

relationships during young adulthood. Further, the relation between parental behaviours

at age 13 and young adults' romantic relationship behaviour was mediated by adolescents'

attachment representations (Roisman, Madsen, Hennighausen, Sroufe, & Collins, 2001). In

addition, Pittman and colleagues (2010) reported that adolescents' attachment avoidance

and anxiety mediated the relation between parental psychological control and adolescents'

identity exploration in romantic relationships. Together, these findings provide empirical
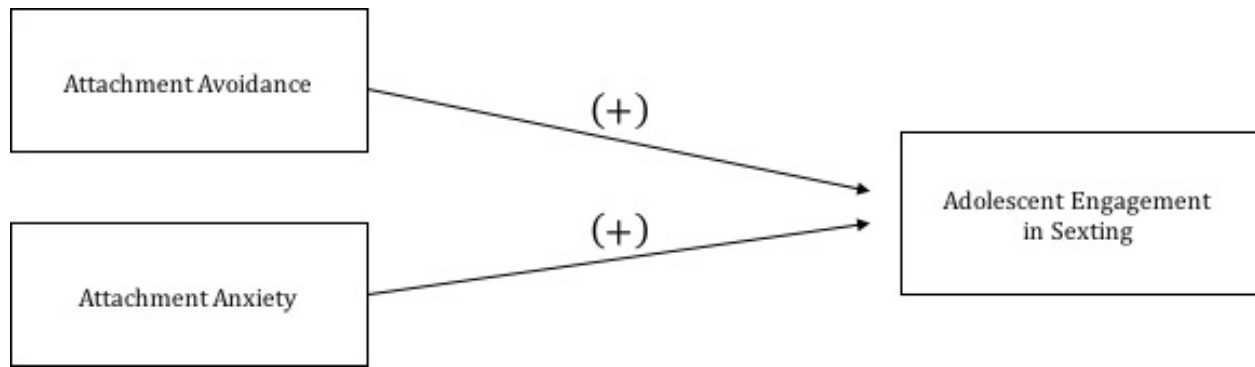
Figure 2. Proposed relations between attachment avoidance, attachment anxiety, and adolescent sexting.

(a)
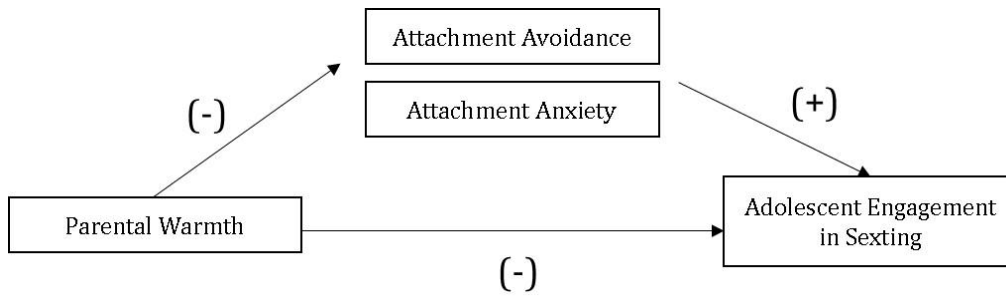
(b)
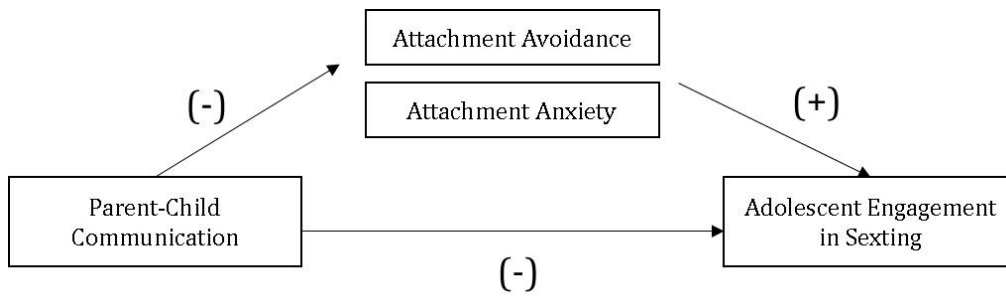
(c)
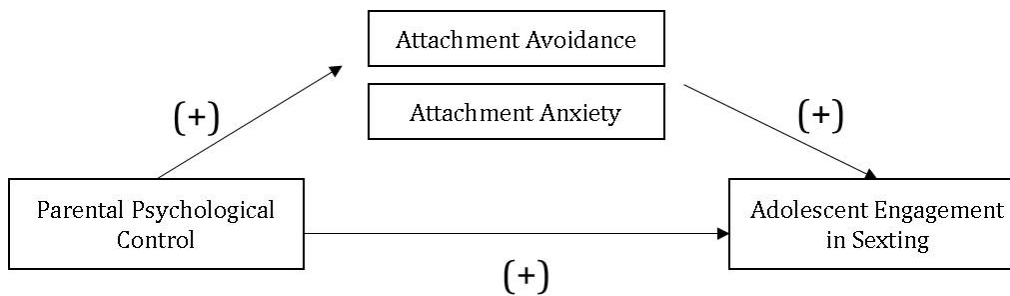
Figure 3. Proposed relations between parental warmth, parent-child communication,

parental psychological control, attachment avoidance, attachment anxiety, and sexting.

evidence that parental behaviours' influence on adolescent behaviour within romantic

relationships may occur through attachment-related mechanisms. However, this model

had not been extended to the study of parental behaviour, attachment, and adolescent

sexting. Therefore, the present study sought to explore whether adolescent attachment

anxiety and avoidance mediate the relation between parental behaviours and adolescent

sexting.

Research Questions and Hypotheses

Research Question 1

What is the nature and context of sexting (sending, receiving, and forwarding sexually suggestive images and messages) among Canadian adolescents?

    Hypothesis 1: Sending, receiving, and forwarding of sexual messages and sexual images*.* The prevalence of sending, receiving, and forwarding was examined separately for sexual messages and sexual images. It was expected that reports of sending, receiving, and forwarding of sexual messages and sexual images would be more common among older adolescents (Hypothesis 1A; e.g., Rice et al., 2012).

    It was expected that reports of sending, receiving, and forwarding of sexual messages and images would not differ by gender (Hypothesis 1B). However, consistent with Temple and Choi's (2014) findings, it was anticipated that males would more often report asking for sexual messages/images, and females would more often report being asked for sexual messages/images (Hypothesis 1C).

    It was also expected that reports of sending, receiving, and forwarding of sexual messages and images would be higher among adolescents who reported being in a relationship (Hypothesis 1D).

    To complement Hypothesis 1, exploratory data were gathered concerning to whom adolescents reported having sent such messages/images, from whom they have reported receiving such messages/images, and the most common motivations reported by adolescents for having sent sexual messages/images. Perceived motivations for sending sexual messages/images were assessed in adolescents who reported never having engaged

in sexting. These data were assessed using forced-choice categorical response items with several potential response categories.

Additionally, to increase understanding of the relational contexts of adolescent sexting (Lippman & Campbell, 2014) and to better incorporate young people's perspectives into the scholarly conversation about sexting (Walker et al., 2013), adolescents were also asked to share, in their own words, a sexting-related experience, including a personal experience or secondary knowledge of another person's experience (e.g., a friend, someone at their school, etc.). Previous qualitative research on adolescent sexting has looked at gender differences in this behaviour (Lippman & Campbell, 2014; Walker et al., 2013), as well as trends related to type of media, peer involvement, and socioemotional effects (Ringrose et al., 2012). Therefore, the aim of the qualitative portion of this study was to build on these findings by exploring the typical sexting practices and experiences of adolescents in Canada.

Research Question 2

What are the relations between parental warmth, parent-child communication, parental psychological control, parental monitoring, and adolescent sexting?

Hypothesis 2: Parental behaviours and adolescent engagement in sexting. It was anticipated that higher perceptions of parental warmth, lower perception of parental psychological control, and perception of better parent-child communication would predict lower adolescent report of sending sexual images (Hypothesis 2A; see Figure 1). In the case of parental monitoring, it was predicted that higher report of the youth-initiated component of parental monitoring (i.e., youth disclosure) would predict lower adolescent report of sending sexual images (Hypothesis 2A).

This hypothesis was based on research suggesting that parental warmth, open parent-adolescent communication, and youth-initiated disclosure of information about activities and whereabouts appear to have a positive influence on adolescent offline sexual behaviour, in that these parent and youth behaviours are linked with less sexual risk taking in adolescents (e.g., Huebner & Howell, 2003; Jaccard, Dittus, & Gordon, 1996). This hypothesis was also based on research suggesting that parental psychological control has a negative influence on adolescent offline sexual behaviour, as control is linked with higher adolescent sexual risk (e.g., Rodgers, 1999). In addition, there is some research to suggest that parental warmth, parent-child communication, and adolescent disclosure of activities/whereabouts influence adolescent online behaviour in a manner similar to their positive impact on adolescent offline sexual behaviour (e.g., Law et al., 2010; Campbell & Park, 2014).

Given that there is some research to support an interaction in the relation between parental warmth and communication with adolescent sexual behaviour (e.g., Rodgers, 1999), it was anticipated that among adolescents who reported high levels of parental warmth, better parent-child communication would predict less engagement in sexting, and that among adolescents who report low parental warmth, parent-child communication will not predict engagement in sexting (Hypothesis 2B).

It was also anticipated that higher youth disclosure would predict higher parental knowledge, as well as less engagement in sexting, and that parental knowledge would mediate between youth disclosure and adolescent engagement in sexting (Hypothesis 2C). This hypothesis was based on research documenting that parental knowledge acts as a mechanism explaining associations between parental monitoring and adolescent risk

behaviour (Fletcher et al., 2004). This hypothesis was also based on evidence that the youth-initiated component of monitoring (i.e., youth disclosure) tends to be a better predictor of adolescent outcome behaviour than the parent-initiated components of monitoring (i.e., solicitation, control; Law et al., 2010; Stattin & Kerr, 2000a; 2000b).

Research Question 3

What are the relations between parental warmth, parent-child communication, parental psychological control, adolescent attachment, and adolescent sexting?

Hypothesis 3. Adolescent attachment and engagement in sexting. It was predicted that higher scores on attachment anxiety and avoidance would predict higher adolescent report of sending sexual images. This hypothesis was based on studies with similar findings in college student samples (e.g., Drouin & Landgraff, 2012; Drouin & Tobin, 2014).

Hypothesis 4. Adolescent attachment as a mediator between parental behaviour and adolescent sexting. It was anticipated that adolescent attachment anxiety and avoidance would mediate the relation between parenting behaviour and adolescent engagement in sexting.

Specifically, it was anticipated that higher parental warmth would predict lower anxiety and avoidance, as well as less sending of sexual images, and that anxiety and avoidance would mediate the relation between warmth and this form of sexting (Hypothesis 4A). Similarly, it was expected that lower perceptions of parental psychological control would predict lower anxiety and avoidance, as well as less sending of sexual images, and anxiety and avoidance would mediate the relation between psychological control and this form of sexting (Hypothesis 4B). Finally, it was anticipated that more open parent-child communication would predict lower anxiety and avoidance, as well as less sending of

sexual images, and that anxiety and avoidance would mediate the relation between

communication and this form of sexting (Hypothesis 4C).

CHAPTER II

Method

Participants

A total of 309 participants were recruited for this study. After data were removed

for participants who completed less than 50% of the questionnaire battery, the final

sample was comprised of N = 305 adolescents. Based on an a priori power analysis using

G*Power 3.1.4 (Fauld, Erdfelder, Lang, & Buchner, 2007), for a linear multiple regression

analysis this provided a sample large enough to detect a small effect size (f^2 = .10; Cohen,

1992) given a desired statistical power level of .8 and up to six independent variables.

Further, in what is a considered a conservative estimate (Field, 2009), Miles and Shevlin

(2001) report that a sample of 200 participants will allow detection of a medium effect size

in analyses with up to 20 predictors. Based on these guidelines, as well as effect sizes

which range from small to medium in previous research concerning parenting, attachment,

and adolescent sexting (e.g., Campbell & Park, 2014; Law et al., 2010), it was determined

that a sample of N = 305 should be sufficient to detect small to medium effect sizes among

the study variables.

Demographic information for the 305 adolescent participants is presented in Table

1. Participants ranged in age from 14 to 18 years (M = 16.10 years, SD = 1.30). Participants

were in Grades 9 through 12 and attended a Catholic high school in or around Windsor,

Ontario. The final sample was comprised of n = 147 males (48.2%) and n = 158 females

(51.8%). The spread of participants across the different grades was approximately equal.

The majority of participants were White (83%). Most participants reported that their

parents were married (71.5%), and that their mother (72.1%) and father (63.3%) had

Table 1

Participant Characteristics (N = 305)

	N	%
Gender (*N* = 305)		
Female	158	51.8
Male	147	48.2
Grade (*N* = 303)		
9	73	23.9
10	63	20.7
11	78	25.6
12	89	29.2
Missing	2	0.7
Ethnic Background (*N* = 304)		
Arab	15	4.9
Black	5	1.6
Chinese	3	1.0
Filipino	7	2.3
Latin American	8	2.6
Other	9	3.0
South Asian	1	0.3
Southeast Asian	2	0.7
West Asian	1	0.3
White	253	83.0
Missing	1	0.3
Parents' Marital Status (*N* = 301)		
Married	218	71.5
Divorced	56	18.4
Separated	11	3.6
Living Together	4	1.3
Remarried	9	3.0
None of the above	3	1.0
Missing	4	1.3

Table 1 Continued

	N	%
Maternal Education (N = 291)		
Less than junior high school	1	0.3
Some junior high school	5	1.6
Some high school	17	5.6
Completed high school or equivalent	21	6.9
Some college or university	26	8.5
Completed college or university	220	72.1
Other	1	0.3
Missing	14	4.6
Paternal Education (N = 285)		
Less than junior high school	1	0.3
Some junior high school	2	0.7
Some high school	15	4.9
Completed high school or equivalent	33	10.8
Some college or university	38	12.5
Completed college or university	193	63.3
Other	3	1.0
Missing	20	6.6
Mother Currently Employed (N = 295)		
Yes	257	84.3
No	38	12.5
Missing	10	3.3
Father Currently Employed (N = 293)		
Yes	277	90.8
No	16	5.2
Missing	12	3.9

completed college or university. Most mothers (84.3%) and fathers (90.8%) were reported to be employed at the time of survey completion.

Recruitment and Procedure

With approval from the University of Windsor Research Ethics Board and from the Windsor-Essex Catholic District School Board (WECDSB), principals of all WECDSB Catholic secondary schools were contacted and invited to have their students participate in this study. Three principals gave permission for the involvement of their students. As an incentive for participation, students who completed the questionnaire package by providing a response for every item (even if the response was "Prefer not to say") were awarded one entry into a draw for 1 of 4 tablet devices. Students from all three schools were entered into the same draw. Once data collection had been completed at all three schools, the participant identification numbers for all participants who requested that they be included in the draw were entered into random drawing software (Random Picker System v. 5.0, 2016). This software was used to select four winners at random from the pool of numbers. Winners were contacted by telephone and collected their prize through the school principal. Following the completion of the study, staff and students at all three participating high schools were provided with a summary of the study results.

Two different methods were employed in the collection of data and the recruitment strategies for each are detailed below. After employing the first method in one high school and achieving a low rate of participation, a second method was developed in an attempt to improve recruitment and was implemented in the remaining two participating high schools. There were no significant differences in participants recruited through Method 1 and Method 2 on any demographic, predictor, or outcome variables.

WECDSB method #1. This method was employed exclusively in only one of the participating high schools (High School A). The principal researcher and several research assistants were invited to make short recruitment presentations in all classrooms during Period 2. During the presentation, students were informed about the nature of the study and their participation, and were invited to present to a specified classroom during their lunch hour if they wished to participate. Students were provided with a letter of information/parental consent form and those who were under 18 years of age were instructed to have it signed by a parent in order to participate in the study. In total, 20 students were recruited using this method (M_{age} = 16.12 years, Minimum = 14 years, Maximum = 17 years; 11 females, 9 males).

When students presented to a designated room during the lunch period (with a signed parental consent, if under 18 years of age), a researcher sat down with each individual student to complete the student consent form. If the student (and parent, if necessary) provided consent to participate, s/he was given the questionnaire package to complete. Once finished, the student was debriefed and given an opportunity to ask any questions s/he had. If completion of questionnaires had taken longer than the lunch period, the student was given a pass to return to class without penalty. This was the first method of recruitment and data collection that was attempted, however; only 20 participants were recruited using this strategy. To improve the rate of recruitment/participation, a different recruitment and data collection method was employed at the two remaining participating high schools.

WECDSB method #2. This method was employed exclusively in the two remaining participating high schools (High Schools B and C). For this method, a date was selected by

the principal on which the students in selected classrooms would complete the study

questionnaire package during class time. In advance of the date, the principal researcher

and research assistants were invited to make short recruitment presentations in the

selected classrooms. During the presentation, students were informed about the nature of

the study and their participation, and were notified of the date when researchers would be

returning to the classroom to have students complete the questionnaire package. Students

were provided with a letter of information/parental consent form and those who were

under 18 years of age were instructed to have it signed by a parent and return it to their

teacher in order to participate in the study. In total, 289 students were recruited using this

method (M_{age} = 16.10 years, Minimum = 14 years, Maximum = 18 years; 147 females, 138

males).

On the date of questionnaire completion, the researcher reviewed the student

consent form in class, together with all students who were interested in participating. If

the student (and parent, if necessary) provided consent to participate, the student was

given a questionnaire package to complete. Once finished, each student was debriefed and

given an opportunity to ask any questions s/he had.

Measures

Background information. Participants completed a demographic questionnaire to

obtain the following information: age, gender, grade, ethnicity, parents' marital status,

maternal educational level, paternal educational level, maternal employment, and paternal

employment (Appendix A).

Sexting and related behaviour. Participants completed a questionnaire designed

to assess engagement in sexting and related behaviours, motivations for sexting, cell phone

use, and Internet use. This Cell Phone and Online Behaviour Questionnaire (COBQ) was created for the purposes of the present study, but construction of items and definitions of sexual messages/images was based on measures that have been used in previous research concerning adolescent sexting (Campbell & Park, 2014; National Campaign, 2008; Fleschler-Peskin et al., 2013: Mitchell et al., 2012). Given that this version of the measure had not been used before, it was piloted with a sample of N = 196 undergraduate students (M_{age} = 19.65 years, SD = 1.58, Minimum = 18 years, Maximum = 25 years; 35 males, 121 females) prior to data collection with adolescents in order to verify its suitability for assessment of sexting behaviours. In the pilot study, internal validity of the subset of items assessing behaviour related to Written Sexual Messages (Cronbach's α = .84) and to Sexual Images (Cronbach's α = .84) were both within an acceptable range. Additionally, 43% of pilot study participants reported sending sexual images and 51% reported receiving sexual images. These data are comparable to prevalence estimates for these behaviours in a recent meta-analysis of sexting among undergraduate students and young adults in the United States, in which 49% of participants were reported to have sent a sexual image and 56% reported receiving sexual images (Klettke, Hallford, & Mellor, 2014). Similarly, in the pilot study, 68% of respondents reported having sent a sexual text message. This is in line with Drouin and Landgraff's (2014) results, in which 67% of college students reported sending sexually explicit text messages to relationship partners, and Delevi and colleagues' (2013) results, in which 76% of undergraduate students reported having sent a sexting text message. Overall, these data suggested that the measure of sexting was psychometrically sound and easily understood by participants. Therefore, no changes were made before employing it with the adolescent population.

The COBQ begins with five background information items, which assess the

respondent's ownership of a cell phone or smartphone, a tablet device, and a laptop or

desktop computer in the bedroom, as well as number of text messages sent/received in a

given day, access to the Internet, and romantic relationship status. Subsequently, the

measure is composed of three subsections: Sexual Messages, Sexual Pictures/Video, and an

open-ended response item. Although the Sexual Messages and Sexual Pictures/Video are

separate subsections, the wording of items in these sections is parallel. Items in these

sections assess frequency of sending sexual messages/pictures, frequency of receiving

sexual messages/pictures, frequency of receiving sexual messages/pictures that are

unwanted (i.e., spam, harassment), frequency of having viewed other people's sexual

messages/pictures without consent, frequency of sharing sexual messages/pictures

without consent, frequency of having one's own sexual messages/pictures shared without

consent, frequency of asking others to send sexual messages/pictures, and frequency of

being asked to send sexual messages/pictures. For example, one item from this set reads,

"How often do you send [sexual messages/pictures/video] of yourself to others?"

Respondents answer each item on a 6-point Likert-type scale, ranging from 1 (*never*) to 6

(*very frequently*). Higher scores on each of these items reflect greater exposure to and/or

greater frequency of involvement in sexting. Items which assess sending and receiving of

sexual messages/pictures also have sub-items asking the respondent to indicate with/from

whom the message/picture was sent/received. Additionally, items which assess sending of

sexual messages/pictures have a sub-item asking the respondent to indicate their

motivation for sending a message/picture, if the respondent had previously engaged in

sexting, or what they perceive to be others' motivation for sending messages/pictures, if

the respondent had not previously engaged in sexting. Sub-items assessing the senders and recipients of messages/pictures, as well as motivations and perceived motivations for engaging in sexting, were forced-choice items with several response categories, including an "Other" option. For example, response categories for the sub-items assessing senders and recipients of sexual messages/pictures included "Boyfriend/Girlfriend", "Someone I had a crush on", and "Someone I dated or hooked up with", among others. Response categories for the sub-items assessing motivations and perceived motivations for engaging in sexting included "Get a guy/girl's attention", "Pressured to send it", and "As a 'sexy present' for a boyfriend/girlfriend", among others. The final section of the COBQ consists of an open-ended item ("Please briefly tell us in your own words about one experience you have had with sexting (messages and/or pictures/video). It could be something that happened to you or to someone you know. If you have never had such an experience, you can write, 'I have never had an experience like this'. If you would prefer not to share your experience, you can write, 'I would prefer not to share my experience'"). Participants are asked to share, in their own words, if they wish, an experience that they have had related to sexting, including an experience of their own or an experience of someone else that they were privy to (e.g., a friend, someone at their school, etc.). These responses were then analyzed using a thematic analysis, the procedures of which are described in full later in the Methods section.

In the adolescent sample, internal validity of the subset of COBQ items assessing behaviour related to Written Sexual Messages (Cronbach's α = .87) and related to Sexual Pictures/Video (Cronbach's α = .89) were both within an acceptable range. Review of histograms indicated that responses for all interval-level COBQ items (e.g., "How often do

you […]?") were positively skewed, with most adolescents reporting less or infrequent

involvement in sexting behaviours (i.e., "never" or "very rarely"). This is consistent with

previous research, which has found that many of the behaviours measured in this

instrument are endorsed by a small, albeit important, minority of adolescents surveyed

(e.g., 20% of adolescents report sending photo sext messages, Dake et al., 2012; Strassberg

et al., 2013). Prevalence of selected sexting behaviours in the present study was compared

with estimates from recent research to provide an index of external validity for the sexting

instrument. Behaviours were selected for comparison based on whether comparable data

were available concerning the specific behaviour in recently published research, in which

the sexting behaviours were precisely defined, measured, and reported. In the present

study, 33.1% of the participants reported sending sexual images and 49.8% reported

receiving sexual images. To the author's knowledge, there is no published data on these

behaviours in Canadian adolescents, however, these estimates from the present study are

comparable to prevalence estimates in recent studies of adolescents in the United States, in

which 27.6% of participants were reported to have sent a sexual image (Temple et al.,

2012) and 41% of participants reported having received a sexual image (Strassberg et al.,

2013).

Results of previous studies in this area (i.e., Dake et al., 2012; Fleschler-Pesking et

al., 2013) have sometimes been obfuscated by the inclusion of several types of sexting

behaviours (i.e., forwarding, receiving) and types of media (i.e., text messages) in the

operational definition of 'sexting'. To lend greater clarity to the results, the primary

behaviour of interest in the present study was defined as the sending of sexual

images/videos only (Choi, Van Ouytsel, & Temple, 2016; Lounsbury et al., 2011).

Therefore, in the analyses predicting sexting, the outcome variable was item 16 of the Cell Phone and Online Behaviour Questionnaire (COBQ; "How often do you send sexual pictures/video to others?"), which provides an index of frequency of sending sexual images/videos.

   Attachment. The Experiences in Close Relationships – Relationship Structures scale (ECR-RS; Fraley et al., 2011) was used to assess adolescent attachment patterns. The ECR-RS consists of four sets of nine identical items. Respondents are asked to consider and rate their experiences across four different relational contexts including relationship with mother, father, best friend, and romantic partner, before providing overall ratings of their experience across relationships. For example, one of the relationship-specific items reads, "I don't feel comfortable opening up to this person." The fifth set of nine items asks respondents to report on their feelings about close relationships in general, without considering a specific relationship. For example, one item from this set reads, "I don't feel comfortable opening up to others." Responses from this fifth set of items are used to generate two continuous scores reflecting global attachment anxiety and global attachment avoidance in close relationships. Although only the global measures of attachment anxiety and avoidance were needed for the present study, the 9-item set used to assess global anxiety and avoidance has never been administered on its own (R.C. Fraley, personal communication, March 13, 2015). Therefore, for the present study, the complete set of 45 items (four relationship-specific sets of 9 items, one 9-item set of general items) was administered to participants.

   The ECR-RS has good psychometric properties. In a sample of 21,838 adults (*M* age = 31.35 years*, SD* = 11.28), the ECR-RS produced a clear two-factor structure (anxiety and

avoidance factors) across the mother, partner, friend, and partner relationship contexts

(Fraley et al., 2011). In addition, in a sample of 388 adults (*M* age = 22.59 years, *SD* = 6.27),

internal consistency for the subscales of the ECR-RS across the mother, father, friend, and

partner relationship contexts ranged from α = .83 to .87 for the anxiety subscale and from α

= .81 to .91 for the avoidance subscale (Fraley et al., 2011). Reliability for the global

anxiety scores was reported as α = .80, while reliability for the global avoidance scores was

α = .88 (Fraley et al., 2011). The psychometric properties of ECR-RS are similar when used

with adolescents (Donbaek & Elklit, 2014), as in a sample of 1,999 youth between 15 and

18 years of age, the two-factor structure identified in the validation study with adults

(Fraley et al., 2011) was replicated. Likewise, the internal consistency in this adolescent

sample was also acceptable, with Cronbach's alpha for the avoidance subscale (across

parental figure and best friend domains) reported as α = .81 and for the anxiety subscale

(across parental figure and best friend domains) reported as α = .86 (Donbaek & Elklit,

2014).

    In the adolescent sample of the present study, this measure also had good

psychometric properties. Consistent with previous research (Donbaek & Elklit, 2014;

Fraley et al., 2011), the internal reliability of both Global subscales was acceptable, as the

Cronbach's α for the ECR-RS Global Avoidance (ECR-RS-G Avoidance) subscale was .88, and

for the ECRRS Global Anxiety (ECR-RS-G Anxiety) subscale, α = .94. The Global subscale

scores are suitable for use independent of the relationship-specific subscale scores as an

indicator of an individual's overall, global attachment avoidance and anxiety across

relationship contexts (R.C. Fraley, personal communication, July 6, 2017). In lieu of

obtaining an average from a participant's scores across the relationship-specific subscales,

use of the global subscales does not assume a linear combination, or equal weighting, of the relationship-specific attachment representations for each participant (Fraley, 2014), providing an estimate of global attachment avoidance and anxiety in a manner that respects the unique profile of each participant. In the present study, the ECR-RS Global anxiety and avoidance subscales were well-correlated with each of the individual, relationship-specific subscales. Pearson correlations between the ECR-RS Global Avoidance subscale and all relationship-specific Avoidance subscales ranged from .36 to .53 (all $p < .01$), and Pearson correlations between the ECR-RS Global Anxiety subscale and all relationship-specific Anxiety subscales ranged from .40 to .62 (all $p < .01$). Additionally, the ECR-RS Global anxiety ($M = 2.88$, $SD = 1.85$) and Avoidance ($M = 2.83$, $SD = 1.35$) subscales were comparable to the average of participants' relationship-specific subscale scores ($M_{anxiety} = 2.75$, $SD = 1.69$; $M_{avoidance} = 2.24$, $SD = 1.08$).

Parental warmth. The warmth/affection subscale of the Parental Acceptance-Rejection Questionnaire (PARQ; Rohner, 2005) was used to assess adolescent experiences of parental warmth. The PARQ is a 60 item self-report questionnaire measuring individuals' perceptions of parental-acceptance rejection, or the warmth dimension of parenting (Rohner, 2005). The PARQ is composed of four subscales, *warmth/affection*, *hostility/aggression*, and *indifference/neglect*, and *undifferentiated rejection*. In the present study, the warmth/affection subscale of the Child PARQ standard form (C-PARQ; Rohner, 2005) was used. The warmth/affection subscale of the CPARQ contains 20 items, each of which describes a parental behaviour related to warmth/affection. There are separate C-PARQ scales for respondents to complete concerning their relationship with their mother and their relationship with their father, and in the present study, respondents completed

both the maternal and paternal version. Respondents answer each item on a 4-point Likert-type scale, ranging from 1 ("almost never true") to 4 ("almost always true"). For example, the fourth item reads, "My parent(s) make(s) it easy for me to tell him/her/them things that are important to me." Higher scores on this scale reflect greater experience of parental warmth/affection. This scale is designed to be administered to youth, and although no formal age range is noted, there exists a different version of the scale for use with preschoolers up to six years of age (Rohner, 2005), suggesting that the lower limit for use of this measure would be approximately seven years of age.

The youth version used in the present study has previously been employed in samples of adolescents and demonstrated adequate internal reliability. For example, in a sample of 300 youth between the ages of 9 and 16 years, the internal consistency of the Child PARQ Mother version was $\alpha = .81$ (Rohner, Kean, & Cournoyer, 1991). More generally, in a meta-analysis, Cronbach's α values for the Child PARQ: Mother version ranged from $\alpha = .69$ to $\alpha = .95$, with most studies finding $\alpha \geq .80$ (Khaleque & Rohner, 2002). Further, internal consistency of the warmth/affection subscale for the Child PARQ: Mother version is reported to be $\alpha = .90$ (Rohner, 2005). Rohner (2005) also reports convergent validity for the warmth/affection subscale of the PARQ, finding a significant correlation ($r = .83$; $p < .001$) between the warmth/affection PARQ subscale and the a*cceptance* subscale of the Children's Report of Parent Behavior Inventory (CRPBI; Schludermann & Schludermann, 1970). Further, the correlation between the warmth/affection PARQ subscale and the acceptance CRPBI subscale exceeded the correlation of the warmth/affection subscale with other PARQ subscales, providing evidence for discriminant validity (Rohner, 2005). In the present study, both the Mother

and Father versions of the warmth/affection PARQ subscale had excellent psychometric properties. Internal consistency of the maternal PARQ (PARQ-M) was α = .90 while the paternal version (PARQ-F) was α = .97. In the present study, a composite parental warmth score was created for each participant by summing scores from the warmth/affection subscale on the PARQ-M and the PARQ-F (PARQ-FM; Pearson's r = .44, p < .001).

Parental psychological control. The Psychological Control Scale (PCS; Barber, 1996) was used to assess adolescent experiences of parental psychological control. The PCS is an 8-item self-report instrument designed to measure the extent to which respondents perceive their parents as trying to control their thoughts and feelings. Respondents answer each item using a 3-point Likert-type scale, ranging from 1 ("not like her/him") to 3 ("a lot like her/him"). For example, the third item reads, "My parent(s) often interrupt(s) me" (Barber, 1996). Higher scores on this scale reflect respondents who perceive their parents as exercising higher levels of psychological control. Although there is no formal age range for this measure, internal consistency for the PCS in a sample of adolescents (Grades 5 through 8) was reported to range between α = .80 to α = .83 across males and female adolescents' reports (N = 933) of their mothers' and fathers' level of control (Barber, 1996). Similarly, internal consistency in a sample of 680 high school students (Grades 9 through 12; M_{age} = 16.5 years) in the southern United States was α = .78 (Kerpelman, McElwain, Pittman, & Adler-Baeder, 2013). Although this scale can be used to assess perceptions of psychological control for both maternal and paternal figures separately, it is often used in a single form. Internal consistency was reported to be α = .85 in a sample of college students (N = 294) who completed a singular version of the scale in which they were asked to consider the behaviour of both parents together (Pittman et al.,

2012), with similar results when a singular version of the scale was used in another sample

of college students (N = 556; .82 $\leq$ α $\leq$ .86; Luyckx et al., 2007) and a sample of high school

students (α = .78; Kerpelman, McElwain, Pittman, & Adler-Baeder, 2013). In the present

study, this measure also had good psychometric properties, as the eight items had an

internal consistency of α = .81.

Parent-child communication. The Family Communication Scale (FCS; Olson

Gorall, & Tiesel, 2004) was used to assess communication patterns between adolescents

and their parents. The FCS is based on the longer Parent-Adolescent Communication Scale

(Barnes & Olson, 1982), and was developed based on the need for a scale that was shorter

and assessed more general aspects of family communication in addition to parent-child

communication. The FCS consists of 10 items, which the respondent is asked to rate on a 5-

point Likert-type scale, ranging from "This does not describe my family at all" to "This

describes my family very well." For example, the second item reads, "Family members are

very good listeners." A higher total score on this scale reflects more open and functional

communication within the family. Olson and colleagues (2004) report an acceptable level

of internal consistency (α = .88) for the FCS based on research completed with a national

sample. A similar level of internal consistency (α = .92) was obtained in a study completed

with adolescents (N = 90) between the ages of 11 and 17 years (Smith, Freeman, &

Zabriskie, 2009). In the present study, this measure was completed by the adolescent

sample, where it demonstrated acceptable internal consistency (Cronbach's α = .90).

Parental monitoring. A modified version of the Stattin and Kerr Parenting

Questionnaire (2000) was used to assess parental monitoring of adolescent online and

cellphone activity. The modified version of this instrument was created by Law and

colleagues (2010), and is called the Parenting and the Internet Questionnaire (PIQ).

Analyses conducted on the PIQ have revealed two clear factors: (a) Parent Solicitation (PIQ-PS), and (b), Parental Knowledge (PIQ-PK; Law et al., 2010). Parent Solicitation items include four items assessing control (e.g., "To what extent do you have to tell your parents when you are going on the Internet?") and three items assessing parental solicitation (e.g., "How often do your parents talk to you about what you are doing online?"). The Parental Knowledge scale includes three items, such as "To what extent do you parents actually know about what you do and post on the Internet?" In addition to these two scales, the PIQ also includes three items assessing youth disclosure (PIQ-YD), such as "How often do you tell your parents about what you and your friends are doing on the Internet?" Respondents answer each of the items on a 5-point Likert-type scale ranging from "Never" to "All of the time", with the option "I don't know" available for each item. Finally, there are three additional scale items which assess whether adolescents believe parents install programs to monitor Internet activity ("Yes"/"No"/"I don't know" response options), and whether parents limit (a), time spent on computer, and (b), type of activities engaged in on the computer. The latter two items are scored on a 5-point Likert-type scale, ranging from "Never" to "All of the time".

Reliability for items loading onto the two identified factors (PIQ-PS and PIQ-PK) has been excellent in previous research. In a sample of 733 elementary and high school students from British Columbia, reliability of items on the Parent Solicitation scale was reported at α = .87 and reliability of items on the Parental Knowledge scale was reported at α = .80 (Law et al., 2010). In the present study, the internal reliability of the two primary factors was at an acceptable level, with the Parent Solicitation subscale at α = .88 and the

Parental Knowledge subscale at α = .79. In contrast, the three items measuring youth

disclosure (PIQ-YD) had an internal reliability of α = .57. These items included Item H

("How often do you tell your parents about what you and your friends are doing on the

Internet?"), Item I ("How often do you tell your parents about what you are chatting about

or posting on the Internet?"), and Item J ("How often do you hide what you are doing on the

Internet from your parents?"). After examination, removal of item J improved the internal

consistency of these items to an acceptable level, α = .87. Conceptually, this item appeared

to measure a different category of behaviour than the remaining two items, H and I. That

is, Item J appears to measure active deception of parents regarding online activities, while

Items H and I appear to measure proclivity to share information about online activities

with parents. Based on this conceptual distinction, as well as improved internal

consistency when item J was removed, only items H and I were used in the present study to

form a measure of youth disclosure (PIQ-YD). The PIQ-YD was formed by summing

responses to items H and I for each participant.

      Adolescent temperament.   Given that there is research to support that traits such

as impulsivity are associated with greater likelihood of sexting (Temple et al., 2014), it was

important to determine the relation of this variable with sexting in the present study, and

to control for this relation as necessary. *Effortful control* is characterized as one of four

primary temperamental factors, and this term refers, in part, to the ability to suppress

inappropriate behaviours, which is inversely related to impulsivity (Rothbart, Ahadi, &

Evans, 2000). Therefore, impulsivity was conceptualized in the present study as low

effortful control. The short form of the Adult Temperament Questionnaire (ATQ-SF;

Rothbart et al., 2000) was used to assess for effortful control. The ATQ-SF is a 77-item

instrument, and respondents rate each item on a 7-point Likert-type scale ranging from "extremely untrue of you" to "extremely true of you". The ATQ-SF has four subscales that map onto the four general temperamental factors, including effortful control, negative affect, extraversion/surgency, and orienting sensitivity (Rothbart et al., 2000). Each of these factors is comprised of subscales measuring the sub-constructs of the overall factor. Specifically, the effortful control factor is made up of subscales that measure attentional control (ability to focus or shift attention), inhibitory control (ability to suppress inappropriate responses or behaviours), and activation control (ability to perform an undesirable action; Rothbart et al., 2000). Although the full 77-item ATQ-SF was administered, only the score for the effortful control subscale (ATQ-EC) was used in the present study. This procedure is consistent with previous research that has used this measure (Lafreniere, Menna, & Cramer, 2013; Luyckx, Gandhi, Bijttebier, & Cles, 2015; Sportel, Nauta, de Hullu, de Jong, & Hartman, 2011). The psychometric properties of the ATQ are well established, including internal consistency of scales and subscales (α = .66 to .90) and evidence for convergent validity with personality measures (Evans & Rothbart, 2007). Additionally, the ATQ has been found to have good reliability in adolescent samples. In a sample of adolescents from the Netherlands (N = 1,806; M_{age} = 13.6, SD = .66) the attentional control subscale was found to have good internal consistency (α = .71; Sportel et al., 2011) and in a sample of female adolescents from Belgium (N = 348) the effortful control scale was documented as having good internal consistency (α = .79; Luyckx et al., 2015). In the present study, the effortful control scale (ATQ-EC) demonstrated acceptable internal consistency (α = .70).

Coding.   The goal of the qualitative portion of the study was to better understand Canadian adolescents' experiences of sexting, with a focus on exploring the nature of sexting-related experiences that a typical Canadian adolescent has lived (i.e., social context, outcomes, method of communication). Qualitative data were obtained from a single, open-ended item on the COBQ. This item was created by the author for the present study and stated the following:

Please briefly tell us in your own words about one experience you have had with sexting (messages and/or pictures/video). It could be something that happened to you or to someone you know. If you have never had such an experience, you can write, 'I have never had an experience like this'. If you would prefer not to share your experience, you can write, 'I would prefer not to share my experience'.

Qualitative responses to this item were coded using a thematic analysis approach (Braun & Clarke, 2006; Clarke & Braun, 2013). Of N = 304 participants who completed the survey, n = 109 provided a codable, qualitative response to the prompt.

To begin, responses were transcribed verbatim into a data file by two trained research assistants during the data entry process. The research assistants were undergraduate fourth-year Psychology majors. A combination of Microsoft Office (v. 15.32) and the Statistical Package for the Social Sciences version 24 (SPSS; IBM, 2016) programs were then used to organize and sort data extracts, compile and organize codes, and examine the data and themes.

Qualitative responses were analyzed using a thematic analysis approach (Braun & Clarke, 2006). Thematic analysis is defined as a method of identifying, organizing, and labeling patterns within qualitative data, which can be performed with or without a

theoretical basis or model to guide analysis and interpretation (Braun & Clarke, 2006). The

latter type of thematic analysis was employed in the present study, as this design is

particularly useful in research contexts in which there is limited information available on

which to base specific qualitative hypotheses (Braun and Clarke, 2006). Accordingly,

qualitative responses in the present study were analyzed using the approach outlined in

Braun and Clarke (2006) and Clarke and Braun (2013). Specifically, a semantic approach

was used to code the content of responses (Braun & Clarke, 2006), wherein themes and

codes were identified from explicit semantic content of responses.

The Braun and Clarke (2006; Clarke & Braun, 2013) approach to thematic analysis is

comprised of five steps, or phases. In the present study, during Phase 1 (familiarizing

yourself with the data), adolescents' qualitative responses were read through several times

by the principal investigator and potential codes were noted. A code was defined as any

unit of the qualitative response that appeared interesting or meaningful with respect to

goal of the analysis, which was to provide insight into Canadian adolescents' experiences

with sexting. For example, some preliminary codes identified in the data from the present

study included sexual harassment, police involvement, and use of social media. In Phase 2

(generating initial codes), a more comprehensive list of potential codes was created,

including those identified during Phase 1, as well as new codes that became apparent to the

researcher with re-reading. Coding criteria and definitions were also created and refined to

determine how to evaluate responses and data extracts. For example, in the present study,

although police involvement was identified as a potential code during Phase 1, it became

apparent that there were other types of authorities that could become involved in

adolescents' experiences and have a similar influence or effect, such as parents or

educators. Therefore, the name and definition for this code was updated to reflect inclusion of other types of authority involvement (*Authority Figure Involvement*). Phase 3 (searching for themes) involved beginning to organize the list of codes into possible themes, and reviewing how themes might fit together. For example, in the present study, the codes for having received a sext, having received a sext from an unknown sender (i.e., spam), and having received a request (being asked) to send a sext were identified as being similar in that they reflect unintentional or uninvited involvement in sexting, and these were organized under the theme of *Uninvited Involvement in Sexting*. Table 2 contains the final list of themes, codes, and criteria. Multiple codes were applied to each response, when appropriate. For example, the first bracketed and underlined passage in the following response was coded for being asked to send a sext, and the second bracketed and underlined passage was coded for declining to participate:

There was this guy it [*sic*] was just talking to him at a party that he invited me to out of nowhere [he asked me to send a picture of my breasts] [but I didn't send]. (Participant 411, Female, Age 15)

In the present study, during Phase 3, inclusionary and exclusionary criteria were also developed for some codes, as necessary (see Table 2). In Phase 4 (reviewing themes), criteria for themes identified in Phase 3 were refined and evaluated for internal homogeneity, or meaningful cohesion of criteria within a theme, and external heterogeneity, or clear distinctions between criteria for different themes (Patton, 1990). Coded extracts within each theme were re-read and re-organized as necessary, to ensure appropriate coding and placement of all extracts.

Table 2

List of Themes, Codes, and Coding Criteria Identified In Thematic Analysis

Theme			
Code		Coding Criteria	Example
Uninvited Involvement			
Passive Involvement		An experience in which a person directly received a sext, or was exposed to a sext (i.e., saw it on social media, was shown by another individual) from/by a person they knew, but did not engage or actively participate in sexting (i.e., they did not respond to any messages received)	"[…] Unfortunately, many guys I've had 'things' with send me unwanted sexual pictures." (ID# *321*)
Spam		An experience in which the person involved received a sext (image or message) from someone who was unknown to them.	"I always have guys I don't know […] send them to me even though I never asked for one." (ID# *139*)
Asked to Send		An experience in which a person received a request to send a sext. • Responses where a person was implicitly 'asked' to send a sext were excluded from this theme. • i.e., if a person repeatedly received unsolicited sexts that could be considered an attempt to pressure or coerce them into reciprocating, this was categorized under the theme 'Pressured'.	"A kid I just met online sent me pictures and asked me to send them too, but I didn't." (ID# *113*)
Negative Experiences			
Shared Without Consent		An experience in which a sext (image or message) was shared without the consent of the person who created the sext or was pictured in it.	"My friend once sent nudes to a boy who wouldn't stop asking her for them, he leaked them to his friends." (ID# *399*)

Table 2, continued

Theme			
	Code	Brief Description	Example
Negative Experiences (continued)			
	Bullying	An experience in which a sext was used to engage in peer manipulation and/or social aggression towards an individual. • Responses that describe sharing without consent but do not explicitly describe social distress were not included under this code.	"[…]This girl screenshot [the sext] and showed many people, and continued to bully her and make fun of her body." (ID# *438*)
	Authority Figure Involvement	An experience in which the outcome involved intervention by an authority figure, including police, school personnel, and/or parents/guardians.	"We eventually called the cops and they handled it from there." (ID# *219*)
	Pressured	An experience in which a person was exposed to pressure or coercion from another person to engage in sexting. • If a response describes an instance of <u>repeated</u> sending of sexts/messages from the same individual that could be considered an attempt to pressure or coerce the recipient into reciprocating, this is coded under the Pressured code.	"[…] a boy I was talking to was pressuring me into sending him pictures and if I didn't he would stop talking to me." (ID# *39*)
Social and/or Relational Purposes			
	Experimentation	The participant describes a sexting experience using words which suggest that the general purpose of engaging in sexting was experimentation, for fun, or to joke around.	"[…] the girl text him and asked if he wanted to "have fun"." (ID# *457*)
	Flirtation	An experience in which the goal of engaging in sexting was beginning or advancing a romantic relationship.	"A girl snapchatted me very flirty and sent a sexual message […]" (ID# *154*)

Table 2, continued

Theme			
	Code	Brief Description	Example
Social and/or Relational Purposes (continued)			
Continuing/Maintaining Relationship		A sexting experience which was reciprocal in nature (i.e., both parties actively participated) or which took place in the context of a romantic relationship, as demonstrated by the use of vocabulary such as "boyfriend", "girlfriend", or "partner" to describe the interaction.	"Got nudes from my ex when we were dating." (ID# *214*) "This lead to […] days where we sent nudes back and forth to each other." (ID# *95*)
Other Codes			
	Accidental	An experience in which a sext was accidentally sent/received, using the word "accident" or a word with a similar meaning.	"I've sent a sexual picture to a guy and accidentally sent it to another friend too." (ID# *38*)
Declined Participation		An experience in which a person responded to a request or to pressure to engage in sexting by declining to participate, either directly (e.g., responding no) or indirectly (e.g., by blocking the contact, deleting the person's message, ignoring).	"I once or twice have been asked to send pictures but I definitely didn't!" (ID# *353*)

In Phase 5 (defining and naming themes), extracts within each code and theme were re-examined to help name and define themes. A short definition for each theme was created (Table 2).

At the completion of the five phases of the thematic analysis, the principal researcher had created a list of codes and their definitions (Table 2). The list contained all possible codes, with a definition, and inclusionary/exclusionary criteria when appropriate, and this was used to code each qualitative response. To provide evidence for the reliability of the coding system, a research assistant familiar with the project (but blind to the specific research question and hypotheses) was tasked with coding 25% (n = 27) of the responses using the list of codes provided by the principal researcher. The research assistant was a fourth-year undergraduate Psychology major. The research assistant met initially with the principal researcher to review the coding system and definitions, and to code three randomly selected responses together. The research assistant then independently coded ten randomly selected responses. Initially, interrater agreement across the 13 different codes, on these 10 responses, ranged from 90% to 100% (Kappa statistic range 0.90). With discussion, interrater agreement between both coders reached 100% for all codes on these 10 responses. Subsequently, the research assistant coded the remaining 17 randomly selected responses (Kappa statistic 0.77). Overall, the Kappa statistic for interrater reliability of the 27 cases coded by both the research assistant and the principal researcher was 0.85.

CHAPTER III

Results

Overview

All statistical analyses, including data screening, data preparation, correlations, and regression analyses, were run using Statistical Package for the Social Sciences, Version 24 (IBM, 2016). Correlations or *t*-tests were used to assess the relations between sexting and demographic factors, including age, gender, and relationship status (Hypothesis 1). Categorical data concerning with whom sexual messages/images are sent and received, motivations, and perceived motivations for sending sexual messages/images were reviewed, described, and presented visually in tables (Hypothesis 1). Hypotheses 2 and 3 were then tested using stepwise, hierarchical regression analyses to explore the role of parenting practices and attachment anxiety and avoidance (respectively), over and above the influence of demographic variables known to be related to adolescent sexting, in prediction of adolescent sending of sexual images. Hypotheses 2(c) and 4 were tested using the PROCESS Macro (Hayes, 2013) to examine mediation models. These models explored the relation between parenting practices and adolescent sending of sexual images, and mediation of this relation by attachment anxiety, avoidance, and parental monitoring (knowledge). The PROCESS macro employs bootstrapping to reduce error in mediation analyses, through construction of many re-samples of the data (specified at 10,000 in the present study) using random samples with replacement, to simultaneously complete each step of Baron and Kenny's (1986) mediation model (Hayes, 2013). This method reduces error associated with testing mediation models in smaller samples or samples where the

normality assumption could be violated (Hayes, 2013). Qualitative data were analyzed using a thematic analysis approach (Braun & Clarke, 2006; Clarke & Braun, 2013).

Data Preparation

Prior to conducting the primary analyses, all demographic, independent, and dependent variables were examined for data entry errors, missing data, and outliers.

Missing data. Participants who completed less than 50% of the questionnaire battery were removed from the sample. As a result, four cases were deleted, which reduced the sample from 309 to 305. Across all variables in the dataset, the rate of missing data ranged from 0 to 26.6%. Most items were missing less than 5% of data, and only three items were missing more than 10% of data. These three items were the Maternal Employment Category (26.6%), Paternal Employment Category (24.9%), and item five on the COBQ ("On an average day, about how many text messages do you send and receive [...]?"; 22.3%). The Maternal and Paternal Employment Category data were not correlated with any predictor or outcome variables. In addition, item five on the COBQ ("On an average day, about how many text messages do you send and receive by cell phone, smart phone, and/or tablet (either your own device, or one that you borrow from someone else)?") was determined to be a poorly-structured item, as the range of the responses received was large ("0" to "300,000") and there was significant missing data (22.3%). Therefore, data from these three items were not used in any subsequent analyses.

The dataset was evaluated to determine the pattern of missing data. Identifying the pattern of missing data in a given dataset assists in determining the most appropriate method of dealing with the missing data. That is, likelihood-based methods of dealing with missing data, such as maximum likelihood estimation and multiple imputation, can

accurately estimate the parameters of the dataset if the pattern of missing data can be considered MCAR (Missing Completely at Random) or MAR (Missing at Random; Enders, 2010; Rubin, 1976). An MCAR pattern requires that missingness on a particular variable be completely unrelated to the data, while a MAR pattern requires that missingness on a particular variable is related to at least one other variable in the analysis model (Enders, 2010). On three measures (PCS, ECR-RS-Father, and ECR-RS-Partner), the pattern of missing data was determined to be MCAR based on non-significant results on Little's MCAR test. In order to guide selection of an appropriate method for filling in missing data, further analyses were conducted on all other variables to determine whether the missing data pattern was MAR or missing not at random (MNAR). Examination of correlations and separate variance *t*-tests for all other study measures confirmed that the pattern of missing data on these variables could be considered missing at random (MAR). Expectation-maximization (EM) is considered an appropriate method for imputing missing values when the missing data pattern is MCAR or MAR, and when the percentage of missing data is at or below 10-20% (Dong & Peng, 2013; Scheffer, 2002). All variables that required imputation for use in the analyses had 10% or less missing data, and satisfied MCAR or MAR conditions. Therefore, missing values on these quantitative, interval variables were imputed using the expectation-maximization approach.

Expectation-maximization was used to impute missing values for items on the Family Communication Scale (FCS), the Parental Acceptance and Rejection Questionnaire-Father Form (PARQ-F) and Parental Acceptance and Rejection Questionnaire-Mother Form (PARQ-M), the Psychological Control Scale (PCS), the Experiences in Close Relationships – Relationship Structures Scale (ECR-RS), the Adult Temperament Questionnaire (ATQ), the

Parenting Information Questionnaire (PIQ), and all interval-level items on the COBQ (i.e.,

not qualitative items). Before imputing values, all items from these scales were examined

for normality. The following items all exhibited significant positive skewness: COBQ items

13 ("Have you ever had a sexual message that you sent to someone shared with someone

other than the person(s) you originally meant it for?"), 20 ("Have you ever shared a sexual

picture/video with someone other than the person(s) it was originally meant for?"), and 21

("Have you ever had a sexual picture/video that you sent to someone shared with someone

other than the person(s) you originally meant it for?"), and PARQ-M item 8 ("Says nice

things to me when I deserve them"). Data for each of these items were subjected to a

logarithmic transformation (Howell, 2007; Tabachnick & Fidell, 2007). Post-

transformation, skewness and kurtosis values for all transformed items were within

normal limits. Therefore, the transformed data, as well as all other data not requiring

transformation, was subjected to expectation-maximization. An inclusive data strategy, as

described by Enders (2010), was employed. This involves, for each variable, selecting as

many variables as possible that are correlated with missingness on the predicted variable

to aid in the prediction of the missing values. Once missing values were imputed, variables

which had been transformed prior to imputation were transformed back to their original

form. The imputed data were then used in all analyses discussed from this point forward.

Data Screening

Testing of assumptions for multiple regression was conducted with the imputed

dataset. The data were examined for outliers on the independent and dependent variables.

Cases with standardized residuals of absolute value 3.29 or greater, and/or Hat's

(leverage) value greater than $3(k + 1)/n$, were further examined as potential outliers (Field,

2009; Tabachnick & Fidell, 2007). Across the main regressions used in the primary

analyses, three cases were identified as having a residual greater than 3.29. Of these three,

none were identified as being an influential outlier. That is, all three cases had a leverage

value and a Cook's Distance value within acceptable range (less than $3(k + 1)/n$ and less

than 1, respectively). In addition, standardized DFBetas and standardized DFFits were all

within acceptable range (+/- 2). When tested, removal of these cases did not significantly

change the variance accounted for in the models or the pattern of results (i.e., significance

of predictors), nor did it improve any other regression diagnostics (i.e., normality).

Therefore, these three cases were retained for all analyses.

To test the assumption of normality, skewness and kurtosis for all variables were

examined. Values of ±2 and ±3, respectively, were considered to be within normal limits.

The distribution for all measures was found to be within normal limits, with skewness

ranging from -.79 to 1.69 and kurtosis ranging from -.56 to 2.36. The Kolmogorov-Smirnov

(K-S) test was significant for the ECR-RS-Global (ECR-RS-G) Anxiety and Avoidance

subscales, sending sexual images variable (COBQ, item 16), sending sexual messages

variable (COBQ, item 8), the FCS total score, the PCS total score, and the PARQ-FM

composite score, suggesting that the distribution of these variables could be non-normal.

However, Field (2009) notes that as sample size increases, mild deviations from normality

can produce a significant K-S result even when the distribution is relatively normal. Given

these mixed results, and because the assumption of normality for linear regression

concerns the normality of the residuals, the residuals were examined to further investigate

normality. Although the K-S test was significant, skewness and kurtosis values for the

residuals were within normal limits and Q-Q plots suggested only mild deviations from

normality. Given that visual inspection and skewness and kurtosis values suggested that normality of residuals was approximately normal, no transformations were applied to the data.

The assumptions of linearity and homoscedasticity were tested by examining plots of standardized residuals vs. predicted values. The spread of the data within these plots did not form a curved shape, suggesting that the assumption of linearity was met. Further, the absence of a 'funnel-shaped' spread of data in the plots (i.e., wider spread of data points at one end of the plot) suggested that the assumption of homoscedasticity was met.

The assumption of multicollinearity among independent variables was tested by examining the tolerance and VIF values. Field (2009) suggests a cutoff of <0.1 for tolerance values. Tolerance values in the present sample were within normal limits, ranging from .50 to .94. Field (2009) also suggests a cutoff of >10 for VIF values, with VIF values higher than 10 being problematic. VIF values in the present sample were within normal limits, ranging from 1.07 to 1.99. Accordingly, the absence of multicollinearity in the data was confirmed.

The assumption of independence of errors was tested by examining the Durbin Watson statistic for all primary analyses, using a cutoff of $1<d<3$ (Field, 2009). Durbin-Watson values across all primary analyses were within normal limits, ranging from 1.95 to 1.97, confirming that errors were uncorrelated.

Preliminary Analyses

Prior to testing hypotheses 1A through 1D, data from the five technology-related items at the beginning of the Cell Phone and Online Behaviour Questionnaire were examined. These data are summarized in Table 3. Most participants reported having a cell phone (95.7%)

Table 3

Participant Characteristics (N = 305)

	Yes (%)	No (%)	Missing (%)
Item 1: Do you have a cell phone?	292 (95.7)	11 (3.6)	2 (0.7)
Item 2: Do you have a smart phone?	267 (87.5)	32 (10.5)	6 (2.0)
Item 3: Do you have a tablet?	149 (48.9)	153 (50.2)	3 (1.0)
Item 4: Do you have a computer in your bedroom?	219 (71.8)	84 (27.5)	2 (0.7)
Item 6: Do you ever use the Internet (i.e., by cellular data or WiFi) on a cell phone, smart phone, or tablet?	300 (98.4)	4 (1.3)	1 (0.3)
Item 7: Are you currently in a romantic relationship?	85 (27.9)	215 (70.5)	5 (1.6)

Note. Item 5 of this measure was excluded from analyses as it was determined to be a poorly-structured item and had significant missing data.

and/or a smart phone (87.5%). Roughly half of participants had a tablet device (48.9%), and most adolescents reported having a computer in their bedroom (71.8%). Approximately one-third of participants reported being in a romantic relationship (27.9%).

Nearly all participants reported using the Internet on a cell phone, smart phone, or tablet (98.4%). In order to potentially exclude participants who had not had opportunity to have experiences with sexting, the data for the four participants who reported not using the Internet on a cell phone, smart phone, or tablet device (COBQ Item #6) was examined to determine whether these individuals had Internet access or experience with sexting through another medium. All four of these participants reported having access to at least one of the following: a cell phone, smart phone, tablet device, and/or computer in their bedroom. In addition, all reported at least one experience (i.e., a score of "Very rarely" on the COBQ Likert-type response scale) for at least one of the sexting behaviours assessed in the COBQ. This suggests that even if these four participants did not access the Internet on a cell phone, smartphone, or tablet device, they may have had Internet access through another type of device (e.g., desktop computer), and therefore, had experiences related to sexting in that manner.

Research Question #1: Nature and Context of Sexting Among Canadian Adolescents

Hypothesis 1A: Associations between sexting and adolescent age. Pearson correlations indicated that older adolescents reported more frequent sending ($r = .30$, $p < .01$), receiving($r = .25$, $p < .01$), and forwarding ($r = .17$, $p < .01$) of messages.

Pearson correlations indicated that older adolescents also reported more frequent sending ($r = .24$, $p < .01$), receiving ($r = .20$, $p < .01$), and forwarding ($r = .19$, $p < .01$) of sexual images.

Hypothesis 1B: Associations between sexting and gender. There were no significant gender differences in adolescent reports of sending, receiving, and forwarding sexual messages (see Table 4).

Similarly, there were no significant gender differences in adolescent reports of sending and receiving sexual images (see Table 4). However, males reported significantly more forwarding of sexual images than did females (see Table 4).

Hypothesis 1C: Gender differences in asking for/being asked for sexual messages/images. Males reported asking for sexual messages significantly more frequently than did females (see Table 4). Additionally, females reported being asked to send a sexual message significantly more often than did males (see Table 4).

Males reported asking someone to send a sexual image significantly more often than did females (see Table 4). In addition, females reported being asked to send a sexual image significantly more often than did males (see Table 4).

Hypothesis 1D: Associations between sexting and adolescents' relationship status. Adolescents who were in a romantic relationship reported more frequent sending of sexual messages than did adolescents who were not in a romantic relationship (see Table 4). Adolescents who were in a romantic relationship also reported more frequent receipt of sexual messages than did adolescents who were not in a romantic relationship (see Table 4).

Adolescents who were in a romantic relationship also reported more frequent sending of sexual images than did adolescents who were not in a romantic relationship (see Table 4). Adolescents who were in a romantic relationship reported more frequent receipt of sexual images than did adolescents who were not in a romantic relationship (see Table

Table 4

Means and Standard Deviations for Sexting Behaviours by Gender and Relationship Status

	COBQ Item #	Gender			Relationship Status		
		Female (*n* = 158)	Male (*n* = 147)	*t*	Single (*n* = 215)	IAR (*n* = 85)	*t*
Messages							
Sending	8	1.91 (1.20)	2.11 (1.42)	-1.32	1.72 (1.13)	2.75 (1.47)	5.81**
Receiving	9	2.29 (1.32)	2.41 (1.48)	-.71	2.06 (1.30)	3.05 (1.39)	5.64**
Forwarding	12	1.36 (.87)	1.57 (1.17)	-1.79	1.43 (1.01)	1.54 (1.07)	.83
Asking for	14	1.25 (.79)	1.59 (1.08)	-3.17**	1.30 (.83)	1.72 (1.19)	3.02**
Being asked for	15	2.57 (1.52)	1.98 (1.32)	3.61**	2.08 (1.35)	2.78 (1.59)	3.59**
Images							
Sending	16	1.70 (1.19)	1.69 (1.19)	.03	1.43 (.94)	2.36 (1.47)	5.37**
Receiving	17	1.93 (1.23)	2.16 (1.46)	-1.52	1.81 (1.22)	2.63 (1.49)	4.49**
Forwarding	20	1.22 (.70)	1.46 (1.03)	-2.43*	1.27 (.77)	1.51 (1.12)	1.84
Asking for	22	1.24 (.70)	1.63 (1.15)	-3.57**	1.30 (.80)	1.75 (1.25)	3.08**
Being asked for	23	2.31 (1.43)	1.81 (1.16)	3.37**	1.88 (1.24)	2.54 (1.44)	3.74**

Note. Cells display mean with SD in parentheses; IAR = In a relationship; COBQ = Cellphone and Online Behaviour Questionnaire
*p < .05. **p < .01.

4). However, adolescents who were in a romantic relationship did not differ significantly from adolescents who were not in a romantic relationship in their report of forwarding sexual images (see Table 4).

Exploratory analysis of whom adolescents have sent and received sexual messages/images with and actual/perceived motivation for engaging in sexting. Data concerning with whom adolescents have sent and received sexual messages/images and actual/perceived motivation for engaging in sexting were analyzed using frequency counts and percentages (see Table 5 and Table 6).

Sending and receiving sexual messages/images. Adolescent report of whom they had sent sexual messages and sexual images to was assessed using COBQ Item 8A (messages) and COBQ Item 16A (images), "If you have sent a sexual message [picture(s)/video(s)], to whom have you sent a sexual message [picture(s)/video(s)]?" Adolescent report of whom they had received sexual messages/images from was assessed using COBQ Item 9A (messages) or COBQ Item 17A (images), "If you have received a sexual message [picture(s)/video(s)], from whom did you receive a sexual message [picture(s)/video(s)]?" Adolescents were provided with nine possible response categories for each of these items, including "Other", and were asked to mark all that were applicable. The list of categories, as well as adolescents' responses to these items, are included in Table 5.

Of those who responded to item 8A (sent messages to), adolescents most frequently reported sending a sexual message to a boyfriend or girlfriend (32.5%) followed by someone they had dated or hooked up with (16.4%), and someone they wanted to date or hook up with (14.1%). Of those who responded to item 16A (sent images to), adolescents most frequently reported sending a sexual picture/video to a boyfriend or girlfriend

Table 5

Adolescent Report of Whom Sexual Messages/Images Were Sent and Received With

	Sexual Messages		Sexual Images	
	Sent To (%)	Received From (%)	Sent To (%)	Received From (%)
Boyfriend/Girlfriend	32.5	31.8	24.6	24.6
Someone I Had a Crush On	12.8	12.8	7.9	11.1
Someone I Dated/Hooked Up With	16.4	20.0	10.5	14.1
Someone I Just Met	2.6	7.9	2.0	6.9
Someone I Wanted to Date/Hook Up With	14.1	13.8	6.9	11.1
One or More Good Friends	9.2	14.4	6.9	12.1
Someone I Only Knew Online	5.6	11.1	3.6	7.9
Prefer Not to Say	5.9	7.9	7.9	10.2
Other	3.0	3.6	4.3	4.6

Note. Entries in table represent percent of total adolescent sample (*N* = 305) who endorsed a given response option. Respondents were permitted to select >1 response.

(24.6%), followed by someone they had dated or hooked up with (10.5%), and someone

they had a crush on (7.9%).

Of those who responded to item 9A (received messages from), adolescents most

frequently reported having received a sexual message from a boyfriend or girlfriend

(31.8%) followed by someone they had dated or hooked up with (20.0%), and one or more

good friends (14.4%). Of those who responded to item 17A (received images from),

adolescents most frequently reported having received a sexual picture/video from a

boyfriend or girlfriend (24.6%), followed by someone they dated or hooked up with

(14.1%), and one or more good friends (12.1%).

Motivations and perceived motivations for sending sexual messages and images.

Adolescent report of motivations for sending sexual messages and sexual images were

assessed using COBQ Item 8B (messages) and COBQ Item 16B (images), which read "If you

have sent a sexual message [picture(s)/video(s)], please tell us the reason(s) you sent a

sexual message [picture(s)/video(s)]." Adolescent perceived motivations for sending

sexual messages and sexual images were assessed using COBQ Item8C (messages) and

COBQ Item 16C (images) which read "If you have never sent a sexual message

[picture(s)/video(s)], please tell us the reason(s) you think other people send sexual

messages[picture(s)/video(s)]." Adolescents were provided with 13 possible response

categories for each of these items, including "Don't Know" and "Other", and were asked to

mark all that were applicable. The list of categories, as well as adolescents' responses,

appear in Table 6.

Table 6

Adolescent Report of Motivation or Perceived Motivation for Sending Sexual Messages and

Images

	Sexual Messages		Sexual Images	
	Actual[1] (%)	Perceived[2] (%)	Actual[1] (%)	Perceived[2] (%)
Get a Guy/Girl's Attention	9.2	42.0	6.9	47.9
Pressured to Send It	6.2	31.8	6.2	35.4
As a "Sexy Present" For Boy-/Girlfriend	14.1	26.6	13.1	31.8
To Feel Sexy	7.5	16.4	7.2	22.0
Get a Guy/Girl to Like Me	4.3	24.6	3.9	29.2
As A Joke	17.7	15.7	8.2	15.1
To Get Positive Feedback	10.2	18.7	6.6	23.6
To Be Fun/Flirtatious	28.5	25.9	19.0	29.5
To Get Noticed	3.0	27.5	3.3	32.1
In Response to One Sent to Me	15.7	16.1	11.1	20.3
Don't Know	5.9	7.9	5.2	7.9
Prefer Not to Say	6.2	3.9	6.6	3.9
Other	4.3	1.0	3.3	1.0

Note. Entries in table represent percent of total adolescent sample (N = 305) who endorsed a given response option. Respondents were permitted to select >1 response.
[1]Responses from adolescents who reported having sent at least one message/image.
[2]Responses from adolescents who reported never having sent a message/image*.*

Among adolescents who reported having previously sent a sexual message, the most common reported motivation for doing so was "to be fun and flirtatious" (28.5%), followed by "as a joke" (17.7%), and "in response to one sent to me" (15.7%).

In contrast, among adolescents who reported never having sent a sexual message, the most common perceived motivation for engaging in this activity was "to get a guy or girl's attention" (42.0%), being "pressured to send it" (31.8%), and "to get noticed" (27.5%).

Among adolescents who reported having previously sent a sexual image, the most common reported motivation for doing so was "to be fun and flirtatious" (19.0%), followed by "as a sexy present for a boy- or girlfriend" (13.1%), and "in response to one sent to me" (11.1%). In contrast, among adolescents who reported never having sent a sexual image, the most common perceived motivation for engaging in this activity was "to get a guy or girl's attention" (47.9%), followed by feeling "pressured to send it" (35.4%), and "to get noticed" (32.1%).

Regression and Mediation Analyses

Preliminary analyses. Means, standard deviations, and ranges for study variables used in analyses related to hypotheses two, three, and four are shown in Table 7. Given the low number of cases in some categories within the demographic variables Parents' Marital Status, Maternal Education, and Paternal Education (see Table 1), several categories within these variables were collapsed for analytic purposes. For Parents' Marital Status data, the categories *Married* and *Living Together* were collapsed (new *n* = 222, 72.8%), and the categories *Divorced*, *Separated*, and *Remarried* (new *n* = 79, 25.9%) were collapsed.

Table 7

Means, Standard Deviations, and Range of Variables (N = 305)

Name of Measure					
Variable Name	Abbreviation	*M*	*SD*	Min	Max
Experiences in Close Relationships - Relationships Structures Scale (Fraley et al., 2011)					
Attachment Anxiety	ECR-RS-G Anx	2.88	1.85	1	7
Attachment Avoidance	ECR-RS-G Avoid	2.83	1.35	1	6.83
Parental Acceptance-Rejection Questionnaire (Rohner, 2005)					
Warmth/Acceptance	PARQ-FM	139.1	19.78	50	185.07
Psychological Control Scale (Barber, 1996)					
Psychological Control	PCS	13.04	3.63	8	24
Family Communication Scale (Olson, Gorall, & Tiesel, 2004)					
Family Communication	FCS	36.24	8.37	10	50
Parenting and the Internet Questionnaire (Law, Shapka, & Olson, 2010)					
Parental Solicitation	PIQ-PS	13.37	5.87	7	35
Parental Knowledge	PIQ-PK	8.78	2.93	3	15
Youth Disclosure	PIQ-YD	4.88	2.23	2	10
Adult Temperament Questionnaire - Short Form (Rothbart et al., 2000)					
Effortful Control	ATQ-EC	4.12	0.73	1.89	6.37

For Maternal Education data, the categories *Less than junior high school, Some junior high school, Some high school, Completed high school or equivalent, Some college or university,* and *Other* were collapsed into a new category called *Less than completed college/university* (new *n* = 71, 23.3%). Likewise, for Paternal Education data, the categories *Less than junior high school, Some junior high school, Some high school, Completed high school or equivalent,* and *Some college or university* were collapsed into a new category called *Less than completed college/university* (new *n* = 92, 30.2%). These variables were then used in the correlation, regression, and mediation analyses as binary variables.

Bivariate correlations and *t*-tests were conducted to evaluate the relations between demographic variables and independent, dependent, and mediator variables. A summary of these correlations can be found in Table 8 and relevant *t*-tests in Table 9. The independent variable was item 16 of the Cell Phone and Online Behaviour Questionnaire (COBQ; "How often do you send sexual pictures/video to others?"), which provides an index of frequency of sending sexual images/videos.

Older adolescents reported better family communication, higher warmth in their relationship with their parents, and more frequent sending of sexual images (see Table 8). Younger adolescents reported that parents engaged in more solicitation behaviours regarding their computer and cellphone use (Table 8).

Males reported higher effortful control than females (Table 9). Females reported higher psychological control, higher attachment anxiety, and more disclosure to parents regarding their online and cellphone activities than males (Table 9).

Table 8

Correlations Among Study Variables and Demographic Characteristics

	Age	Gender	PMS	MEd	PEd	EC
FCS	.15**	.04	.15**	-.05	.06	.25**
PCS	.05	-.13*	-.04	.09	.00	-.31**
PARQ-FM	.19**	.03	.19**	-.03	.03	.21**
ECR-RS-G Anx	.06	-.12*	-.09	.07	-.03	-.25**
ECR-RS-G Avoid	.08	-.06	-.11	.09	-.02	-.12*
PIQ-PS	-.17**	.04	.03	-.03	-.12*	.14*
PIQ-PK	-.09	-.06	.02	-.03	.03	.25**
PIQ-YD	.01	-.12*	-.02	-.04	.06	.20**
Sexting						
Sending Images	.24**	.00	-.19**	-.05	-.01	-.18**

Note. PMS = Parents' Marital Status; MEd = Maternal Education; PEd = Paternal Education; EC = ATQ Effortful Control subscale; FCS = Family Communication Scale; PCS = Psychological Control Scale; PARQ-FM = Warmth/Acceptance scale; ECR-RS-G Anx = Attachment Anxiety; ECR-RS-G Avoid = Attachment Avoidance; PIQ-PS = Parental Solicitation; PIQ-PK = Parental Knowledge; PIQ-YD = Youth Disclosure; Sending Images = COBQ Item 16. *N* ranged from 285 to 305.
*p < .05. **p < .01.

Table 9

Means and Standard Deviations of Study Variables by Demographic Variables (Selected)

Comparison Variable *Study Variable*	Groups	*n*	*M* (SD)	*t*	*df*
Gender					
PCS	Female	158	13.49 (4.07)	2.02	303
	Male	147	12.55 (3.02)		
Anxiety	Female	158	3.09 (1.89)	2.30	288.96[a]
	Male	147	2.66 (1.79)		
PIQ-YD	Female	158	5.13 (2.14)	2.08	303
	Male	147	4.60 (2.30)		
Parents' Marital Status					
PARQ-FM	Non-Intact	79	132.78 (20.84)	-2.70**	299
	Intact	222	141.46 (19.06)		
FCS	Non-Intact	79	34.23 (8.67)	-3.39**	299
	Intact	222	37.13 (8.08)		
Sexting (Sending Images)	Non-Intact	79	2.06 (1.34)	2.99**	115.40[a]
	Intact	222	1.56 (1.07)		
Paternal Education Level					
PIQ-PS	No C/U	92	12.37 (5.37)	-2.03*	283
	C/U	193	13.86 (6.03)		

Note. Intact = Married or Living Together; Non-Intact = Divorced, Separated, or Remarried; No C/U = Did not complete college or university program; C/U = Completed college or university program; Anxiety = ECR-RS-G Anx = Attachment Anxiety; PARQ-FM = Warmth/Acceptance scale; PCS = Psychological Control Scale; FCS = Family Communication Scale; PIQ-PS = Parental Solicitation; PIQ-YD = Youth Disclosure; Sexting = Sending Images = COBQ Item 16.
[a]Equal variances not assumed.
p < .05. **p* < .01.

With respect to family structure, adolescents from families where both parents resided in the same home (i.e., parents married or living together) reported better family communication, higher warmth in their relationship with their parents, and less sending of sexual images than adolescents from non-intact families (i.e., parents divorced, separated, or remarried (see Table 9).

Adolescents whose father had completed a college diploma or university degree reported higher levels of parental solicitation regarding their online and cellphone activity than adolescents whose father had not completed a college or university program (see Table 9).

Results concerning the measure of impulsivity, conceptualized in the present study as low effortful control, revealed that adolescents who scored high on effortful control (low impulsivity) reported better parent-child communication, higher parental warmth, more parental solicitation regarding their online activities, higher parental knowledge about their online activities, and a higher tendency to share information about their online activities with parents (see Table 8). In addition, adolescents who scored low on effortful control (high impulsivity) reported higher psychological control from their parents, greater attachment anxiety and avoidance, and more frequent sending of sexual images (see Table 8).

To evaluate the relations between participant characteristics and independent, dependent, and mediator variables, bivariate correlations and *t*-tests were conducted. Items assessing participant characteristics were included at the beginning of the COBQ. A summary of these correlations can be found in Table 10 and relevant *t*-tests in Table 11.

Adolescents who had a computer in their bedroom reported higher attachment anxiety than adolescents who did not have a computer in their bedroom (see Table 9).

In addition, adolescents who were not in a romantic relationship reported higher warmth in their relationship with their parents and less frequent sending of sexual images than adolescents who were in a romantic relationship.

All demographic variables in Table 8 and Table 10, including adolescent age, gender, race, parents' marital status, maternal level of education, paternal level of education, ownership of a cell phone, smart phone, or tablet, presence of computer in the bedroom, use of Internet on mobile devices, and relationship status were screened as possible covariates for the regression analyses testing hypotheses two, three, and four. Based on Pearson correlations and t-tests (see Tables 8, 9, 10, and 11), only adolescent age, parents' marital status, adolescents' effortful control, and adolescent romantic relationship status were significantly related to the dependent variable for the regression and mediation analyses, sending of sexual images (COBQ, Item 16). Therefore, these four variables were employed as covariates in the subsequent regression analyses.

Bivariate correlations were also calculated to examine relations between all study independent and dependent variables. These correlations are presented in Table 12.

Table 10

Correlations Among Study Variables and Participant Characteristics

	Cell	Smart	Tablet	Bedroom	Mobile	Relation
FCS	-.08	.04	-.10	-.02	-.03	.05
PCS	.06	-.02	-.02	-.08	.05	-.11
PARQ-FM	-.05	.02	-.07	.04	-.05	.13*
ECR-RS-G Anx	.09	.03	.10	-.12*	.06	-.03
ECR-RS-G Avoid	.07	-.05	.10	-.07	.09	.02
PIQ-PS	.05	.09	-.06	.10	-.03	.04
PIQ-PK	.00	.03	-.02	.01	-.11*	.04
PIQ-YD	.04	.09	-.06	-.11	-.02	-.02
Sexting						
Sending Images	-.10	-.10	-.07	-.05	.16**	-.35**

Note. Cell = Item 1 – Do you have a cell phone?; Smart = Item 2 – Do you have a smart phone?; Tablet = Item 3 – Do you have a tablet?; Bedroom = Item 4 – Do you have a computer in your bedroom?; Mobile = Item 6 – Do you ever use the Internet on mobile devices?; Relation = Item 7 – Are you currently in a romantic relationship?; FCS = Family Communication Scale; PCS = Psychological Control Scale; PARQ-FM = Warmth/Acceptance scale; ECR-RS-G Anx = Attachment Anxiety; ECR-RS-G Avoid = Attachment Avoidance; PIQ-PS = Parental Solicitation; PIQ-PK = Parental Knowledge; PIQ-YD = Youth Disclosure; Sending Images = COBQ Item 16. *N* ranged from 299 to 304.
*$p < .05$. **$p < .01$.

Table 11

Means and Standard Deviations of Study Variables by Participant Characteristics (Selected)

Comparison Variable *Study Variable*	Groups	*n*	*M* (SD)	*t*	*df*
Computer in Bedroom					
Anxiety	Yes	219	3.02 (1.87)	2.10*	301.00
	No	84	2.53 (1.78)		
Use the Internet on Mobile Device					
PIQ-PK	Yes	300	8.78 (2.92)	.13	3.04[a]
	No	4	8.50 (4.43)		
Sexting (Sending Images)	Yes	300	1.70 (1.19)	-.09	3.05[a]
	No	4	1.75 (1.50)		
Relationship Status					
PARQ-FM	IAR	85	134.77 (20.93)	-2.30*	298.00
	Single	215	140.60 (19.17)		
Sexting (Sending Images)	IAR	85	2.36 (1.47)	6.47***	298.00
	Single	215	1.43 (.94)		

Note. Computer in Bedroom = Item 4 – Do you have a computer in your bedroom?; Use the Internet on Mobile Device = Item 6 – Do you ever use the Internet on mobile devices?; Relationship Status = Item 7 – Are you currently in a romantic relationship?; Anxiety = ECR-RS-G Anx = Attachment Anxiety; PARQ-FM = Parental Warmth; PIQ-PK = Parental Knowledge of adolescents' online activities; Sexting = Sending Images = COBQ Item 16; IAR = In a Relationship; Single = Not in a Relationship.
[a]Equal variances not assumed.
*p < .05. **p < .01.

Table 12

Inter-Correlations Between Independent and Dependent Variables (N = 305)

	1	2	3	4	5	6	7	8
1. PARQ-FM		-.37**	.66**	.11	.17**	-.35**	-.36**	-.14*
2. PCS			-.47**	-.03	-.15*	.23**	.35**	.23**
3. FCS				.13*	.26**	-.36**	-.36**	-.23**
4. PIQ-YD					.54**	-.09	-.02	-.10
5. PIQ-PK						-.19**	-.13*	-.16**
6. Avoid							.47**	.17**
7. Anxiety								.16**
8. Sexting								

Note. PARQ-FM = Warmth/Acceptance scale; PCS = Psychological Control Scale; FCS = Family Communication Scale; PIQ-YD = Youth Disclosure; PIQ-PK = Parental Knowledge; ; Avoid = ECR-RS-G Avoid = Attachment Avoidance; Anxiety = ECR-RS-G Anx = Attachment Anxiety; Sexting = Sending Images = COBQ Item 16.
*$p < .05$. **$p < .01$.

Research Question #2: Relations Between Parental Warmth, Parent-Child Communication, Parental Psychological Control, Parental Monitoring, and Adolescent Sexting

Hypothesis 2A: Associations between parenting practices and adolescent sending of sexual images. It was hypothesized that higher report of parental warmth, lower parental psychological control, better family communication, and higher youth disclosure to parents would predict lower adolescent report of sending sexual images. Consistent with this hypothesis, as shown in Table 13, parental warmth was negatively related to adolescent report of sending sexual images, revealing that adolescents who reported greater warmth in their relationship with parents reported a lower frequency of sending sexual images. Likewise, parental psychological control was positively related to adolescent report of sending sexual images, suggesting that adolescents who perceive more psychological control from their parents report more frequent sending of sexual images. Parent-child communication was also negatively related to adolescent report of sending sexual images, revealing that adolescents who report better communication with their parents also report less frequent sending of sexual images. In contrast, adolescents' tendency to share information regarding their online activities with parents (youth disclosure) was not related to adolescent report of sending sexual images. Adolescent report of sending sexual images was also significantly correlated with adolescent age, parents' marital status, effortful control, and adolescent romantic relationship status (see Table 8 and 10), suggesting that these variables should be included as covariates in regression analyses with this dependent variable.

Table 13

Summary of Hierarchical Regression Analyses Predicting Sending Sexual Images with

Warmth, Psychological Control, and Communication (N = 289)

	B	*SE B*	β
Step 1			
Age	.15	.05	.17**
Parents' Marital Status	-.18	.15	-.07
Effortful Control	-.26	.09	-.16**
Adolescent Relationship Status	-.75	.15	-.29**
Step 2			
Age	.13	.05	.15**
Parents' Marital Status	-.16	.15	-.06
Effortful Control	-.17	.09	-.10
Adolescent Relationship Status	-.75	.15	-.29**
PARQ-FM	.01	.00	.12
PCS	.04	.02	.11
FCS	-.03	.01	-.20*
Step 3			
Age	.13	.05	.15**
Parents' Marital Status	-.17	.15	-.06
Effortful Control	-.17	.09	-.11
Adolescent Relationship Status	-.75	.15	-.29**
PARQ-FM	.01	.01	.13
PCS	.04	.02	.12
FCS	-.03	.01	-.19*
Warmth X Communication	.00	.00	.02

Note. FCS = Family Communication Scale; PCS = Psychological Control Scale; PARQ-FM = Warmth/Acceptance scale.

R^2 = .18, adjusted R^2 = .16 for step 1 ($p < .001$); ΔR^2 = .04, adjusted R^2 = .20 for step 2 ($p < .01$); ΔR^2 = .00, adjusted R^2 = .20 for step 3 ($p = .75$).

p < .05. **p* < .01.

A hierarchical regression analysis was conducted to determine whether parental warmth, parental psychological control, and parent-child communication could significantly predicted adolescent report of sending sexual images after controlling for age, parents' marital status, effortful control, and adolescent romantic relationship status. As Table 13 shows, parent-child communication accounted for a significant amount of variability in adolescents' sending of sexual images, over and above that accounted for by age, parents' marital status, effortful control, and adolescent relationship status, showing that adolescents who reported better communication with their parents tended to engage in less sending of sexual images. The standardized beta weights indicate that as ratings of parent-child communication increased by one standard deviation, adolescent report of sending of sexual images decreased by 0.19 standard deviations. Parental warmth and parental psychological control did not account for a significant amount of variability in sending of sexual images after controlling for demographic variables.

Hypothesis 2B: Interaction between warmth and communication in predicting sending of sexual images. It was hypothesized that parental warmth and communication would interact in predicting adolescents' report of sending sexual images.

As shown in Table 12, parental warmth was significantly positively correlated with parent-child communication. Given the hypothesized relation between warmth and communication, an interaction term for these two variables was created by centering the variables and multiplying the centered values for each participant (Cohen, Cohen, West, & Aiken, 2003). The centered interaction term was then entered as an additional variable in a third step in the hierarchical regression. As Table 13 shows, the interaction term did not account for a significant amount of variability in adolescents' sending of sexual images over

and above that accounted for by other predictor variables. Therefore, no further

exploration of an interaction effect was conducted.

Hypothesis 2C: Mediation of relation between youth disclosure and adolescent

engagement in sexting by parental knowledge.   It was hypothesized that the link

between youth disclosure of information regarding their online activities to parents and

adolescent sending of sexual images would be mediated by parental knowledge of

adolescents' online activities.

Figure 4 shows the mediation model hypothesized. In general, simple mediation

models are used to test the significance of an indirect effect of the independent variable

(IV) on the dependent variable (DV) through the mediator variable (M). This indirect effect

represents a causal sequence in which the IV influences M (path *a*), which in turn

influences the DV (path *b*). The direct effect of the IV on the DV, the pathway which does

not pass through M, is referred to as path *c'*, and represents the pure effect of the IV on the

DV when M is not included in the model. Hayes (2013) reports that to support a mediation

model, the correlation matrix must support a relation between the IV and M (path *a*) and a

relation between the M and the DV (path *b*). The PROCESS macro (Hayes, 2013) for SPSS

employs bootstrapping to test the indirect effect (path $a \rightarrow$ path *b*). Therefore, in the

present study, bootstrap confidence intervals were used to evaluate these direct and

indirect effects. Hayes indicates that use of bootstrap confidence intervals for inferences

related to direct and indirect effects is preferred over normal theory hypothesis tests

because "no assumptions about the shape of the sampling distribution of $a_i b_i$ are made, and

bootstrap confidence intervals tend to be more powerful than competing methods such as

the normal theory approach" (Hayes, 2013, p. 139). Direct and indirect effects are said to
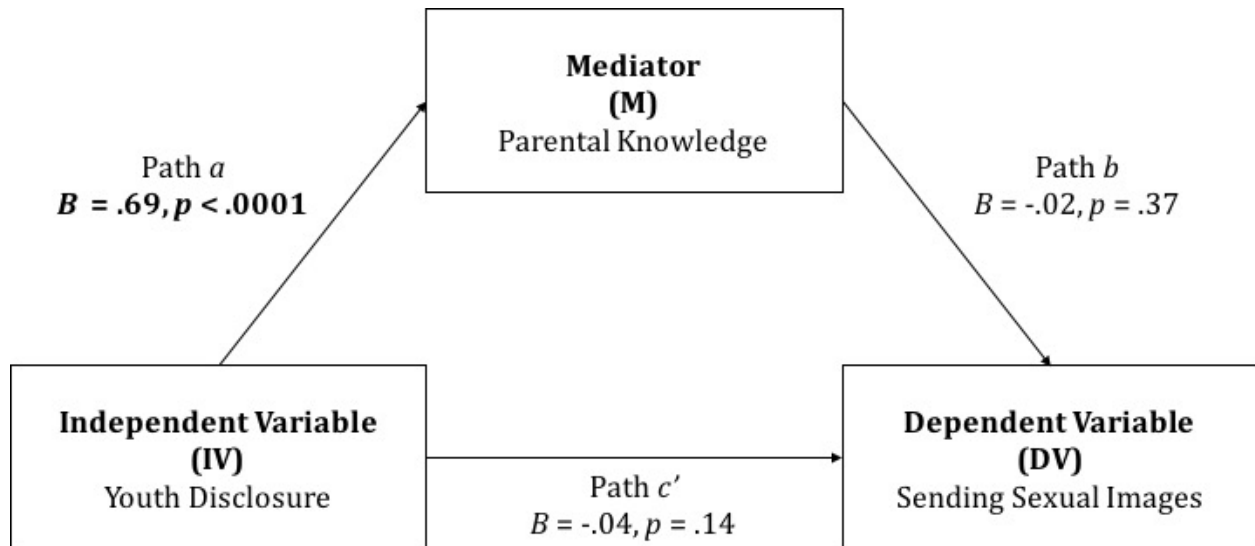
Figure 4. Hypothesis 2C simple mediation model (Hayes, 2013): Relations identified

between youth disclosure, parental knowledge, and adolescent sending of sexual images.

occur if the confidence interval does not contain zero (Hayes, 2013). As recommended by Hayes (2013), the number of bootstrap samples was set at 10,000 for the present study.

The model proposed in hypothesis 2C was a simple mediation model (Hayes, 2013), as described above. Significant correlations were identified between youth disclosure (IV) and parental knowledge (M), and between parental knowledge and adolescent sending of sexual images (DV). Given that age, adolescent effortful control, and adolescents' relationship status were found to be related to the DV (Table 13), sending of sexual images, these three variables were entered into the mediation analysis as covariates.

After controlling for covariates, the overall regression model was statistically significant ($R^2 = .19$, $p < .0001$). Results revealed that the direct effect of youth disclosure on sending of sexual images was not significant (Lower 95% CI = -.10, Upper 95% CI = .01). Although youth disclosure significantly predicted parental knowledge of adolescents' online activities (Lower 95% CI = .56, Upper 95% CI = .82), parental knowledge did not predict adolescent sending of sexual images (Lower 95% CI = -.08, Upper 95% CI = .03), and the indirect effect of youth disclosure on sending of sexual images through parental knowledge was not significant (Lower 95% CI = -.05, Upper 95% CI = .02). Therefore, this model was not supported.

Research Question #3: Relations Between Parental Warmth, Parent-Child Communication, Parental Psychological Control, Adolescent Attachment, and Adolescent Sexting

Hypothesis 3: Associations between attachment anxiety and avoidance and adolescent sending of sexual images. It was hypothesized that higher scores on attachment anxiety and avoidance would predict higher adolescent report of sending

sexual images. Consistent with this hypothesis, as seen in Table 12, adolescents who

reported higher attachment anxiety also reported more frequent sending of sexual images,

and adolescents who reported higher attachment avoidance also reported more frequent

sending of sexual images. Adolescent report of sending sexual images was also significantly

correlated with adolescent age, parents' marital status, effortful control, and adolescent

romantic relationship status (see Table 8 and 10), suggesting that these variables should be

included as covariates in regression analyses with this dependent variable.

A hierarchical regression analysis was conducted to determine whether attachment

anxiety and avoidance could significantly predict adolescent report of sending sexual

images after controlling for age, parents' marital status, effortful control, and adolescent

romantic relationship status. As Table 14 shows, attachment avoidance accounted for a

significant amount of variability in adolescents' sending of sexual images, over and above

that accounted for by age, parents' marital status, effortful control, and adolescent

relationship status, showing that adolescents who reported high attachment avoidance

tended to send sexual images to others more frequently. The standardized beta weights

indicate that as ratings of attachment avoidance increased by one standard deviation,

adolescent report of sending of sexual images also increased by .12 standard deviations.

Attachment anxiety did not account for a significant amount of variability in sending of

sexual images, after controlling for demographic variables.

Hypothesis 4A: Mediation of relation between parental warmth and

adolescent engagement in sexting by attachment anxiety and avoidance. It was

hypothesized that the link between parental warmth and adolescent sending of sexual

Table 14

Summary of Hierarchical Regression Analyses Predicting Sending Sexual Images with

Attachment Anxiety and Avoidance (N = 289)

	B	*SE B*	β
Step 1			
Age	.15	.05	.17**
Parents' Marital Status	-.18	.15	-.07
Effortful Control	-.26	.09	-.16**
Adolescent Relationship Status	-.75	.15	-.29**
Step 2			
Age	.14	.05	.16**
Parents' Marital Status	-.14	.15	-.05
Effortful Control	-.23	.09	-.14*
Adolescent Relationship Status	-.76	.15	-.29**
ECR-RS-G Anx	.02	.04	.03
ECR-RS-G Avoid	.11	.05	.12*

Note. ECR-RS-G Anx = Attachment Anxiety; ECR-RS-G Avoid = Attachment Avoidance.
R^2 = .18, adjusted R^2 = .17 for step 1 (p < .001); ΔR^2 = .02, adjusted R^2 = .18 for step 2 (p < .05).
*p < .05. **p < .01.

images would be mediated by adolescents' attachment anxiety and attachment avoidance.

Hayes' (2013) procedures and SPSS macro, as described in hypothesis 2 mediation testing, were used to test hypothesized mediation models. However, hypotheses 4A, 4B, and 4C were parallel multiple mediator models (Hayes, 2013). That is, the independent variable (IV) was predicted to have a direct effect on the dependent variable (DV), as well as an indirect effect through two or more mediators (M_1, $M_{2, [...]}$ M_i), where none of the mediators have a causal influence on one another. A parallel multiple mediation model was appropriate for these analyses because there were two hypothesized mediators, attachment anxiety and attachment avoidance, and these variables were significantly correlated with one another ($r = .47$, $p < .01$, Table 12), and are not believed to causally influence one another. Given that, in regressions testing hypotheses 2A (Table 13) and hypothesis 3 (Table 14), age, adolescent effortful control, and adolescents' relationship status were found to be related to the sending of sexual images variable, these three variables were entered into the mediation analyses as covariates. A summary of results and models for hypotheses 4A, 4B, and 4C can be found in Figures 5, 6, and 7.

For the first multiple mediation model (hypothesis 4A; Figure 5), significant correlations were identified between parental warmth (IV) and attachment anxiety (M_1), between parental warmth (IV) and attachment avoidance (M_2), between attachment anxiety (M_1) and sending of sexual images (DV), and between attachment avoidance (M_2) and sending of sexual images (DV).

After controlling for covariates, the overall regression model was statistically significant ($R^2 = .19$, $p < .001$). Results revealed that the direct effect of parental warmth on
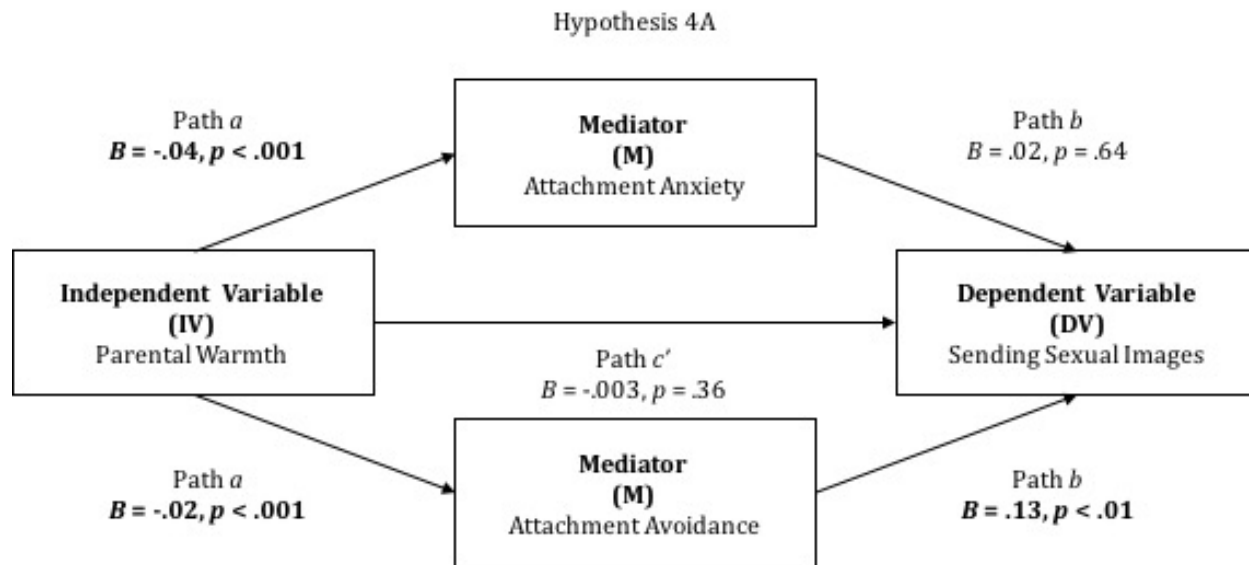
Hypothesis 4A

Figure 5. Hypothesis 4A parallel multiple mediation models (Hayes, 2013) depicting

relations between parental warmth, attachment anxiety, attachment avoidance, and

adolescent sending of sexual images.

sending of sexual images was not significant (Lower 95% CI = -.01, Upper 95% CI = .003).

Parental warmth significantly predicted adolescents' attachment anxiety (Lower 95% CI =

.04, Upper 95% CI = -.02) and adolescents' attachment avoidance (Lower 95% CI = -.03,

Upper 95% CI = -.02), and attachment avoidance significantly predicted sending of sexual

images (Lower 95% CI = .02, Upper 95% CI = .23). However, adolescents' attachment

anxiety did not predict sending of sexual images (Lower 95% CI = -.06, Upper 95% CI =

.10). The indirect effect of parental warmth on sending of sexual images through

attachment anxiety was not significant (Lower 95% CI = -.004, Upper 95% CI = .002).

However, the indirect effect of parental warmth on sending of sexual images through

attachment avoidance was statistically significant (Lower 95% CI = -.007, Upper 95% CI = -

.0001). Therefore, these findings suggest that parental warmth had an indirect effect on

adolescent sending of sexual images through attachment avoidance, wherein parental

warmth contributed to lower adolescent attachment avoidance, which, in turn, contributed

to less adolescent sending of sexual images.

Hypothesis 4B: Mediation of relation between parental psychological control

and adolescent engagement in sexting by attachment anxiety and avoidance. It was

hypothesized that the link between parental psychological control and adolescent sending

of sexual images would be mediated by adolescents' attachment anxiety and attachment

avoidance (Figure 6). For the second multiple mediation model (hypothesis 4B; Figure 6),

significant correlations were identified between parental psychological control (IV) and

attachment anxiety (M_1), between parental psychological control (IV) and

Figure 6. Hypothesis 4B parallel multiple mediation models (Hayes, 2013) depicting

relations between parental psychological control, attachment anxiety, attachment

avoidance, and adolescent sending of sexual images.

attachment avoidance (M_2), between attachment anxiety (M_1) and sending of sexual images (DV), and between attachment avoidance (M_2) and sending of sexual images (DV).

After controlling for covariates, the overall regression model was statistically significant ($R^2 = .21$, $p < .001$). Results revealed that the direct effect of parental psychological control on sending of sexual images was significant (Lower 95% CI = .01, Upper 95% CI = .09). Parental psychological control significantly predicted adolescents' attachment anxiety (Lower 95% CI = .08, Upper 95% CI = .20) and attachment avoidance (Lower 95% CI = .03, Upper 95% CI = .12), and attachment avoidance significantly predicted sending of sexual images (Lower 95% CI = .009, Upper 95% CI = .22). However, adolescents' attachment anxiety did not significantly predict adolescent sending of sexual images (Lower 95% CI = -.08, Upper 95% CI = .08). Similarly, although the indirect effect of parental psychological control on sending of sexual images through attachment anxiety was not significant (Lower 95% CI = -.01, Upper 95% CI = .02), the indirect effect of psychological control on sending of sexual images through attachment avoidance was statistically significant (Lower 95% CI = .0001, Upper 95% CI = .02). Therefore, these findings suggest that parental psychological control had an indirect effect on adolescent sending of sexual images through attachment avoidance, wherein higher parental psychological control contributed to higher adolescent attachment avoidance, which, in turn, contributed to more frequent adolescent sending of sexual images.

Hypothesis 4C: Mediation of the relation between parent-child communication and adolescent engagement in sexting by attachment anxiety and avoidance. It was hypothesized that the link between parent-child communication and adolescent sending of sexual images would be mediated by adolescents' attachment anxiety and attachment

avoidance (Figure 7). For the third multiple mediation (hypothesis 4C; Figure 7, significant

correlations were identified between parent-child communication (IV) and adolescents'

attachment anxiety (M_1), between parent-child communication (IV) and attachment

avoidance (M_2), between attachment anxiety (M_1) and sending of sexual images (DV), and

between attachment avoidance (M_2) and sending of sexual images (DV).

       After controlling for covariates, the overall regression model was statistically

significant ($R^2 = .21$, $p < .001$). Results revealed that the direct effect of parent-child

communication on sending of sexual images was significant (Lower 95% CI = -.04, Upper

95% CI = -.008). Parent-child communication significantly predicted adolescents'

attachment anxiety (Lower 95% CI = -.09, Upper 95% CI = -.05) and attachment avoidance

(Lower 95% CI = -.07, Upper 95% CI = -.04). However, neither attachment anxiety (Lower

95% CI = -.08, Upper 95% CI = .08) nor attachment avoidance (Lower 95% CI = -.01, Upper

95% CI = .20) significantly predicted sending sexual images. Consistent with this, the

indirect effect of parent-child communication on sending sexual images through

attachment anxiety (Lower 95% CI = -.008, Upper 95% CI = .007) and the indirect effect of

parent-child communication on sending sexual images through attachment avoidance

(Lower 95% CI = -.01, Upper 95% CI = .001) were not significant. These findings suggest

that there was no indirect effect of parent-child communication on sending of sexual
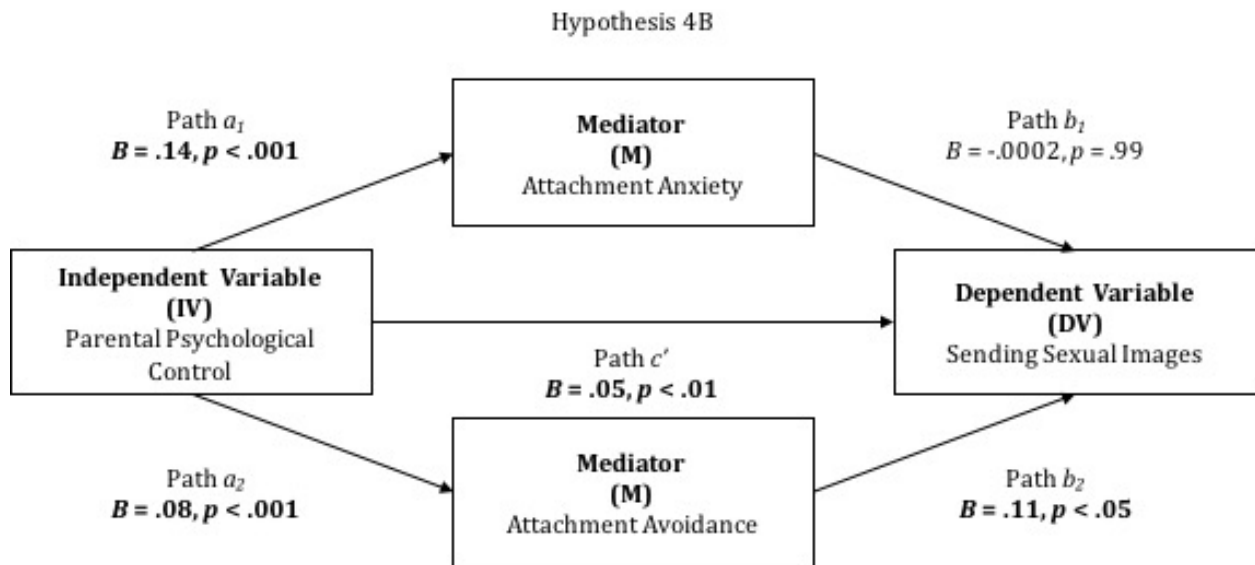
images through attachment anxiety and avoidance.
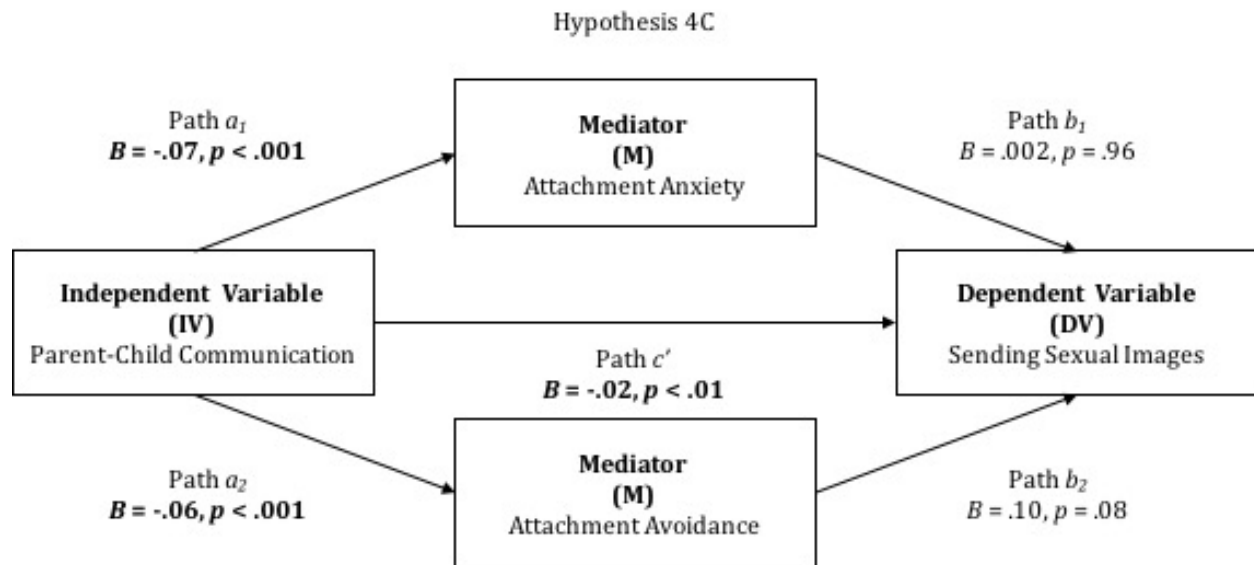
Figure 7. Hypothesis 4C parallel multiple mediation model (Hayes, 2013) depicting

relations between parent-child communication, attachment anxiety, attachment avoidance,

and adolescent sending of sexual images.

Qualitative Analysis Results

Table 15 displays selected demographic information of these 109 participants who provided a codable, qualitative response to the prompt. Although it was not coded as a theme in the data, as a matter of interest for analytic and interpretative purposes, participant responses were coded according to whether they included a personal, first-hand experience (e.g., "A kid I just met online sent me pictures […]", Participant 113) or second-hand knowledge of a sexting-related event (e.g., "[…] A friend of mine sent a picture to her boyfriend. […]", Participant 338). Results indicated that most respondents ($n = 59$, 54.1%) shared a personal experience, while 35.8% ($n = 39$) of respondents shared an experience that was second-hand knowledge, including experiences that had occurred to friends and peers within their school. In 11 cases (10.1%), it was not possible to determine whether the experience was personal or second-hand knowledge (e.g., "They simply sent one and that was it.", Participant 168).

The predominant themes identified from the qualitative responses included *(1) uninvited involvement in sexting, (2) experiences of sexting that resulted in a negative outcome, (3) experiences of sexting being used for a specific social and/or relational purpose, (4) other themes,* including *sexting experiences of declining to participate or engage in sexting* and *accidental participation in sexting* (Table 16). Each of these themes contained several sub-themes (codes), which are described below, along with exemplar quotes to illustrate the depth and breadth of the codes.

Table 15

Selected Demographic Characteristics of Participants Who Provided Qualitative Data (n = 109)

	N	%
Gender		
Female	67	61.5
Male	42	38.5
Age		
14	8	7.3
15	17	15.6
16	37	33.9
17	28	25.7
18	17	15.6
Missing	2	1.8
Ethnic Background		
Arab	4	3.7
Black	2	1.8
Chinese	2	1.8
Filipino	3	2.8
Latin American	5	4.6
Other	4	3.7
Southeast Asian	2	1.8
West Asian	1	0.9
White	86	78.9

Table 16

Number and Proportion of Responses Containing Qualitative Themes (N = 109)

	N		
	Females (%[b]) (*n* = 67)	Males (%[b]) (*n* = 42)	%[a]
Uninvited Involvement in Sexting	35 (52.2)	23 (54.8)	53.2
• Passive Involvement	14 (20.9)	19 (45.2)	30.3
• Spam	6 (9.0)	2 (4.8)	7.3
• Asked to Send	15 (22.4)	2 (4.8)	15.6
Negative Experience	27 (40.3)	7 (16.7)	31.2
• Shared Without Consent	24 (35.8)	5 (11.9)	26.6
• Bullying	9 (13.4)	1 (2.4)	9.2
• Authority Figure Involvement	7 (10.4)	3 (7.1)	9.2
• Pressured	13 (19.4)	3 (7.1)	14.7
Sexting for Specific Social and/or Relational Purpose	20 (29.9)	18 (42.9)	34.9
• Experimentation	4 (6.0)	5 (11.9)	8.3
• Flirtation	9 (13.4)	7 (16.7)	14.7
• Continuing Relationship	12 (17.9)	9 (21.4)	19.3
Other			
• Declined Participation	10 (14.9)	4 (9.5)	12.8
• Accidental	3 (4.5)	1 (2.4)	3.6

[a] Percentage of total qualitative responses (*N* = 109) containing this theme.
[b] Percentage of total Female or Male responses containing this theme.

A small subset of the qualitative responses (*n* = 3) provided an account that was determined not to be a meaningful or accurate account of a sexting experience, and these responses were coded as Not a Serious Response. For example, one participant provided the following response, which was categorized under this code:

I have not had sexual relations with that women [sic] Mrs. Monica Lewinsky.

(Participant 37, Male, Age 16)

Uninvited involvement in sexting. When asked to share an experience related to sexting, 53.2% of qualitative respondents described an experience wherein someone became involved in sexting without having initiated the interaction, and in some cases, without wanting to be involved in sexting. For example, about one-third of qualitative respondents (30.3%) reported *passive involvement* in sexting, wherein a person directly received, or was shown, a sext from a sender they knew, but did not engage or actively participate in sexting. For example, in this response, the participant received messages and photos directly from a peer:

He was horny and I was not. I started getting sent texts and photos, but I just left it

be. (Participant 259, Female, Age 17)

In other responses coded for *passive involvement*, instead of receiving a sext directly, an individual was shown or otherwise exposed to (e.g., viewed on social media) a sext. For example, this respondent describes a group of his peers showing him a picture:

I was on the school bus and some of the girls in the back of the bus asked me and a

few of my friends if we wanted to see a "funny" picture. We said yes and then they

showed us a nude picture of a male. (Participant 35, Male, Age 17)

A relatively smaller proportion of participants (7.3%) described an experience wherein a person received a sext from someone who was not known to them. These messages were generally considered to be *spam*:

> Maybe once or twice I've had random people I do not know send me sexual pictures.
> Many of which who I know nothing about and somehow find my information.
> (Participant 348, Female, Age 17)

Approximately 15.6% of participants reported an experience in which a person was expressly asked for a sext, that is, they were *asked to send* a picture or a message to the person making the request:

> A few times in the past, a guy that went to my school but was older than me asked for me to send him inappropriate pictures of myself but I told him no. (Participant 223, Female, Age 15)

Negative experiences. A second over-arching theme apparent in adolescents' responses was that of an instance of sexting being a negative experience or having a negative outcome. The most prevalent type of negative experience (26.6%) was a sexual picture or message being *shared without the creator and/or the subject's consent*, with someone other than the intended recipient. For example, one participant recounted a story of a friend whose intimate photo was shared by her partner with school peers:

> I knew a very good friend who was promised by the boy that he would not tell
> anyone about her naked picture. Instead, he let his entire team in on the picture and
> everyone in school(s) saw it. (Participant 80, Female, Age 18)

In some of the qualitative responses (9.2%), the experience recounted by the participant included a specific example of *bullying* and/or social aggression arising from sexting. For

example, this participant reported an experience in which rumors and gossip were used to denigrate the creator and subject of a sexual image:

> A girl at my school sent a boy a nude and the guy showed his friends and they said
>
> her boobs/nipples looked like Hershey's kisses. She cried and everyone found out.
>
> Ps. The police got involved. Very bad =((Participant 9, Female, Age 15)

As in the above example, several responses (9.2%) described an *authority figure becoming involved* in a sexting event. Although in many cases, this was considered a positive resolution to the situation described, it was coded as a negative experience because authority figure involvement was often required due to events that would be considered distressing for the person(s) implicated:

> One of my friends (a girl) was blackmailed to send pictures of herself to a guy. She
>
> showed me what he sent because she didn't know what to do. We eventually called
>
> the cops and they handled it from there. (Participant 219, Female, Age 16)

Approximately 14.7% of participants described a negative experience in which a person was exposed to *pressure* or coercion from someone to engage in sexting:

> My friend felt that if she did not send nudes that she will lose her boyfriend.
>
> (Participant 239, Female, Age 18)

Sexting for specific social and/or relational purposes. A third over-arching theme evident in the qualitative descriptions of adolescent sexting was the use of sexting to help achieve a variety of social goals within romantic, or potentially romantic, relationships. The most prevalent use of sexting within such relationships (19.3%) was sexting for the purpose of *continuing or maintaining a relationship* (i.e., with a boyfriend or girlfriend):

One night my friend and her boyfriend decided to send sexual messages for fun and she said it was because they trust each other. (Participant 148, Female, Age 16)

In addition to more 'established' relationships, such as with a boy/girlfriend, experiences coded under the sub-theme of continuing a relationship also included reciprocal exchange of sexts between two parties in a relationship which was not defined in the traditional sense (e.g., casual hookups, friends with benefits):

One time me and this guy were sexting for a while, and then we hooked up, and then we stopped sexting. (Participant 32, Female, Age 16)

In addition, in a number of the experiences reported by adolescents (14.7%), sexting was described as being used for initiating or advancing a romantic relationship (*flirtation*):

A classmate had sent a sexual image with a person they were trying to hook up with. This person rejected my classmate and shared the photo with other students. I only heard of the incident and did not see the image. (Participant 17, Male, Age 17)

In a relatively smaller number of experiences reported by adolescents (8.3%), sexting was described as being used for purposes of *experimentation*, for fun, or as a way of joking around:

The only experience I've ever had was with a group of friends where we were just having a fun role play session in chat. It was all just for fun, and nothing bad happened in the end. (Participant 309, Male, Age 18)

Other. Finally, there were two codes which were relevant for several cases within the data, but which did not fit theoretically within the previous three over-arching themes identified. The first was a code for participants (3.6%) who reported someone having been exposed to a sext in a manner described as *accidental*:

I received an unwanted inappropriate pic from a boy in my class. He told me he

didn't mean to send it to me though and that it was an accident. (Participant 111,

Female, Age 16)

In addition, in several responses (12.8%), the participant described an experience in which

someone was asked or pressured to engage in sexting, but *declined*. In some cases, the

person involved declined the invitation directly:

A few times in the past, a guy that went to my school but was older than me asked

for me to send him inappropriate pictures of myself but I told him no. (Participant

223, Female, Age 15)

However, in other cases, the person involved declined the invitation indirectly, such as

through ignoring the request or blocking the individual's ability to contact them:

A girl Snapchatted me very flirty and sent a sexual message, I opened and didn't

respond to her, I blocked her. (Participant 154, Male, Age 16)

Summary of Results

A summary of the main quantitative findings related to the study hypotheses is

found in Table 17. In addition, adolescents' responses indicate that they have most

commonly sent and received sexual messages and pictures with a boy/girlfriend, someone

they dated or hooked up with, someone they wanted to date or hook up with, someone they

had a crush on, and/or one or more good friends. With respect to motivations for sending

sexual messages and sexual images, adolescents who had previously engaged in these

behaviours most commonly reported doing so to be fun/flirtatious, as a 'sexy present' for a

boy/girlfriend, as a joke, or in response to a message/image they had received.

Adolescents who had not previously engaged in sending of sexual messages and/or sexual

images most commonly reported perceptions that others engaged in this behaviour to seek

attention, to get noticed, or because of pressure to do so. The primary themes identified

from adolescents' qualitative reports of an experience they had had related to sexting

included uninvited sexting (i.e., passive involvement, receiving spam, receiving a request to

sext), negative experiences with sexting (i.e., a sext being shared without consent, bullying

related to sexting, involvement of authority figures, and being pressured to sext), sexting in

the context of social relationships (i.e., experimentation, flirtation, continuing a

relationship), declining to participate in sexting, and accidental involvement in sexting.

Table 17

Summary of Quantitative Findings

Study Hypotheses	Result
Hypothesis 1A	
• Age will be positively related to reports of sending, receiving, and forwarding of sexual messages and sexual images	*Supported*
Hypothesis 1B	
• Reports of sending, receiving, and forwarding sexual messages and images will not differ by gender	*Partially Supported*
○ Males reported more forwarding of sexual images than females	
Hypothesis 1C	
• Males will more often report asking for sexual messages and sexual images	*Supported*
• Females will more often report being asked for sexual messages and images	*Supported*
Hypothesis 1D	
• Reports of sending, receiving, and forwarding sexual messages and sexual images will be higher among adolescents who were in a romantic relationship	*Supported*
Hypothesis 2A	
• Higher parental warmth, lower parental psychological control, better parent-child communication, and higher youth-initiated disclosure to parents will predict lower report of sending sexual images	*Partially Supported*
○ Parent-child communication predicted lower report of sending sexual images	
Hypothesis 2B	
• At high levels of parental warmth, better parent-child communication will predict less sending of sexual images, while at low levels of parental warmth, parent-child communication will not predict sending of sexual images	*Not Supported*
Hypothesis 2C	
• The relation between youth disclosure to parents and sending sexual images will be mediated by parental knowledge of youth online activity	*Not Supported*
Hypothesis 3	
• Higher attachment anxiety and attachment avoidance will predict higher adolescent report of sending sexual images	*Partially Supported*
○ Attachment avoidance predicted sending sexual images	

Table 17 Continued

Study Hypotheses	Result
Hypothesis 4A	
• Attachment anxiety and attachment avoidance will mediate the relation between parental warmth and sending of sexual images	*Partially Supported*
o Attachment avoidance mediates relation between parental warmth and sending sexual images	
Hypothesis 4B	
• Attachment anxiety and attachment avoidance will mediate the relation between parental psychological control and sending of sexual images	*Partially Supported*
o Attachment avoidance mediates relation between parental psychological control and sending sexual images	
Hypothesis 4C	
• Attachment anxiety and attachment avoidance will mediate the relation between parent-child communication and sending of sexual images	*Not Supported*

Additional Analyses

Results from hypothesis 3 indicated that while attachment avoidance was a significant predictor of sending sexual images, attachment anxiety was not a significant predictor of this behaviour (Table 14). This is consistent with some past research (e.g., Drouin & Landgraff, 2012) which has found that anxious attachment predicts sending sexual messages only. Therefore, follow-up analyses were undertaken to explore the prediction of sending sexual messages from attachment anxiety and/or avoidance, after controlling for age, parents' marital status, effortful control, and adolescent romantic relationship status. As Table 18 shows, attachment anxiety accounted for a significant amount of variability in adolescents' sending of sexual messages, over and above that accounted for by age, parents' marital status, effortful control, and adolescent relationship status, showing that adolescents who report high attachment anxiety tended to send sexual messages to others more frequently. The standardized beta weights indicated that as ratings of attachment anxiety increased by one standard deviation, adolescent report of sending of sexual messages also increased by .19 standard deviations. Attachment avoidance did not account for a significant amount of variability in sending of sexual messages after controlling for demographic variables.

Table 18

Summary of Hierarchical Regression Analyses Predicting Sending Sexual Messages with

Attachment Anxiety and Avoidance (N = 288)

	B	*SE B*	β
Step 1			
Age	.23	.05	.23***
Parents' Marital Status	-.14	.16	-.05
Effortful Control	-.33	.09	-.19***
Adolescent Relationship Status	-.84	.16	-.29***
Step 2			
Age	.23	.05	.23***
Parents' Marital Status	-.08	.16	-.03
Effortful Control	-.29	.10	-.16**
Adolescent Relationship Status	-.82	.16	-.28***
ECR-RS-G Anx	.15	.07	.19**
ECR-RS-G Avoid	-.10	.05	-.08

Note. ECR-RS-G Anx = Attachment Anxiety; ECR-RS-G Avoid = Attachment Avoidance.
R^2 = .22, adjusted R^2 = .21 for step 1 ($p < .001$); ΔR^2 = .03, adjusted R^2 = .24 for step 2 ($p < .01$).
**$p < .01$. *** $p < .001$.

Given previous research suggesting that both gender and age may affect adolescents' motivations for engaging in sexting (e.g., Lippman & Campbell, 2014; Villacampa, 2017), and significant findings in the present study regarding age-related differences in sending, receiving, and forwarding sexual images and messages, adolescents' report of motivations for sending sexual messages and sexual images were examined for gender- and age-related differences. These data were obtained from COBQ Items 8B and 16B ("If you have sent a sexual message [image] or messages [images], please tell us the reason(s) you sent a sexual message [image] or messages [images]"). For these items, adolescents were provided with 13 possible response categories, including "Don't Know" and "Other", and were asked to mark all that were applicable.

When split by gender, results revealed almost no differences in adolescents' motivations for sending sexual messages or sexual images, with one exception. Gender was significantly associated with sending sexual messages to be fun and flirtatious, with proportionately more male adolescents (n = 50) than female adolescents (n = 37) reporting sending sexual messages for this reason (χ^2 (df_1) = 4.19, p < .05).

To examine age-related differences, the sample was split into two age groups. The younger group comprised adolescents between the ages of 14-16 years, whereas the older group comprised adolescents between the ages of 17-18 years. This split was selected to achieve roughly equal groups ($n_{younger}$ = 180, n_{older} = 121). Results suggested a number of age-related associations with adolescents' motivations for sending sexual messages and sexual images (Table 19). With respect to sending sexual messages, age was significantly associated with sending such messages because of pressure to do so, as a 'sexy present' for a boy/girlfriend, to feel sexy, to get a guy/girl to like them, to get positive feedback, to be

fun/flirtatious, to get noticed, and in response to a message received, with proportionately more of the older adolescents than the younger adolescents endorsing these motivations. With respect to sending sexual images, age was significantly associated with sending such images in order to get a guy/girl's attention, because of pressure to do so, as a 'sexy present' for a boy/girlfriend, to feel sexy, to get positive feedback, to be fun/flirtatious, and in response to a message received, with proportionately more of the older adolescents than the younger adolescents endorsing these motivations.

Table 19

Age-Related Differences in Adolescents' Motivations for Sending Sexual Messages and Images

	Sexual Messages			Sexual Images		
	14-16 years (n = 180)	17-18 years (n = 121)	$\chi^2 (df_1)$	14-16 years (n = 180)	17-18 years (n = 121)	$\chi^2 (df_1)$
Get a Guy/Girl's Attention	13	15	2.30	7	14	6.58*
Pressured to Send It	5	14	9.46**	6	13	6.72*
As a "Sexy Present" For Boy-/Girlfriend	18	25	6.72*	15	25	9.54**
To Feel Sexy	8	15	6.49*	6	16	10.45**
Get a Guy/Girl to Like Me	3	10	7.62**	4	8	3.64
As A Joke	28	24	.93	8	15	6.48*
To Get Positive Feedback	12	19	6.40*	7	13	5.48*
To Be Fun/Flirtatious	42	44	6.02*	25	32	7.43**
To Get Noticed	2	7	5.45*	3	7	3.82
In Response to One Sent to Me	22	26	4.63*	13	21	7.42**
Don't Know	9	9	.77	8	7	.28
Prefer Not to Say	14	5	1.63	14	6	.93
Other	6	6	.50	4	5	.91

Note. Responses are from adolescents who reported having sent at least one message/image. Respondents were permitted to select >1 response.
*p < .05. **p < .01.

CHAPTER IV

Discussion

Sexting, or the exchange of sexual images and messages via a variety of Internet-mediated communication tools, between adolescents presents a growing concern for many parents and educators (PSHE Association, 2016). Early research in this area has produced data concerning prevalence, trends, demographic characteristics, and risks related to adolescent sexting (Dake et al., 2012; Doring, 2014; Mitchell et al., 2012; Peskin et al., 2013; Strassberg et al., 2013; Temple et al., 2012). However, there has been more limited research focused on understanding the social processes that contribute to adolescent sexting. As sexting is a social behaviour, occurring in the context of social relationships, there has been a push for research to explore the social and relational context of adolescent sexting (Hasinoff, 2012; Walker, Sanci, & Temple-Smith, 2013). In the literature examining adolescent offline sexual behaviours, it has been found that parenting practices and adolescent attachment patterns have important implications for sexual development (Fletcher et al., 2004; Kotchick, Shaffer, Forehand, & Miller, 2001; Li, Feigelman, & Stanton, 2000; Miller, 2002; Rodgers, 1999; Tracy et al., 2003). Therefore, the present study adds to the parenting, attachment, and sexting literature by examining the role of parenting practices and adolescent attachment in a newer, online form of adolescent sexual behaviour: adolescent sending of sexual images. In addition, to the author's knowledge, there is no known published research concerning sexting among Canadian adolescents. Therefore, findings from the present study offer insight into the nature of sexting experiences in this population of youth.

Nature and Context of Sexting Among Canadian Adolescents

The first objective of this study was to collect and explore data related to sending, receiving, and forwarding of sexually suggestive messages and images by Canadian adolescents. It was hypothesized that reports of sending, receiving, and forwarding sexual messages and images would be more common among older adolescents. This hypothesis was supported, as the present study found that older adolescents reported more frequent sending, receiving, and forwarding of sexual messages and images. This is consistent with previous research (Dake et al., 2012; Klettke et al., 2014; Mitchell et al., 2012; Rice et al., 2012; Temple et al., 2012; Villacampa, 2017).

In a recent study of adolescents (14-18 years of age) from Spain, Villacampa (2017) found that the likelihood of having participated in the production of pictures or videos and receiving them was higher among older adolescents. In this study, which used a school-based, paper-and-pencil questionnaire methodology similar to the present study, it was also noted that engagement in sexting tended to encompass passive behaviours (i.e., receiving) among younger adolescents, while older adoelscents reported more active engagement in sexting (i.e., self- and third-party production) with age. For example, 14- to 15-year-olds were most likely to receive pictures/videos, 16-year-olds were most likely to have taken nude or nearly nude images of themselves, and 17-year-olds were most likely to have taken images of themselves, or others, or allowed someone else to take such images of themselves. This pattern of involvement with sexting becoming more common as adolescents grow older is consistent with research indicating that, in general, higher rates of participation in offline sexual activity becomes more common among older adolescents

(Finer & Philbin, 2013). This suggests that online and offline sexual behaviour are more similar than previously thought (Baumgartner, Sumter, Peter, & Valkenburg, 2012), and that adolescents may consider sexting to be another form of sexual activity (Temple & Choi, 2014). Taken together, findings from the present study and from other recent work in this area (Dake et al., 2012; Klettke et al., 2014; Mitchell et al., 2012; Rice et al., 2012; Temple et al., 2012; Villacampa, 2017) suggest that sexting becomes more common throughout adolescence.

It was also hypothesized that reports of sending, receiving, and forwarding sexual messages and images would not differ by gender. This hypothesis was generally supported in the present study, as sending, receiving, and forwarding sexual messages did not differ by gender, and sending and receiving sexual images did not differ by gender. This is consistent with the majority of past research in this area, which suggests that there are no gender differences in rates of sending sexual pictures/video (Campbell & Park, 2014; Dake et al., 2012; National Campaign, 2008; Rice et al., 2012; Strassberg et al., 2013; Temple et al., 2012; Villacampa, 2017) or receiving sexual pictures/video (Cox Communications, 2009; Villacampa, 2017). However, other findings from the present study suggest that there are gender differences in adolescents' participation in sexting with respect to forwarding sexual images, asking others to send sexual messages and images, and being asked to send sexual messages and images.

Findings from the present study indicate that adolescent report of forwarding sexual images was more common among males, which stands in contrast to what was hypothesized. There is limited published research that has reported on the prevalence of forwarding sexual images by gender; however, the findings of Wood and colleagues (2015)

indicate that male adolescents reported sharing an image they had received more frequently than female adolescents across five European countries. The gender difference was statistically significant only for the sample from Bulgaria; however, together with findings from the present study, this suggests a trend of increased likelihood of forwarding sexual images by adolescent males.

These findings may further be interpreted together with additional findings from the present study that support the influence of the sexual double standard with respect to adolescents' participation in sexting. That is, it was hypothesized in the present study that males would more often report asking others to send sexual messages and images, and that females would report more often being asked by others to send sexual messages and images. This hypothesis was supported, as males reported more frequent asking for sexual messages and images than females, and females reported more frequently being asked to send sexual messages and images than males. These findings are in line with previous research that suggests a sexual double standard operates to differentially influence male and female participation in sexting, wherein the association of males with sexting is considered socially desirable and rewarded, while the association of females with sexting is viewed negatively or as a poor decision (AP-MTV, 2009; Temple at al., 2012; Temple et al., 2014; Lippman & Campbell, 2014; Livingstone & Gorzig, 2012). For example, as reported earlier in the literature review, research suggests that even adolescents' perceptions of sexting in general reveal a gender bias, with young males describing sexting as a desirable behaviour (e.g., 'hot'), while young females are more apt to describe sexting in harmful or risky terms (e.g., 'slutty', 'stupid', 'dangerous'; AP-MTV, 2009). Consistent with this, in a qualitative investigation of adolescent sexting, it was found that adolescent females were

likely to be negatively evaluated regardless of whether they opted to engage in sexting or to decline, while males were generally exempt from criticism around sexting behaviours (Lippman & Campbell, 2014).

This body of research supports that when it comes to sexting, adolescent males may be socially rewarded for their participation, whereas adolescent females are more apt to be the target of negative social judgments for the same behaviours (AP-MTV, 2009; Temple at al., 2012; Lippman & Campbell, 2014; Livingstone & Gorzig, 2012). Therefore, in the present study and others like it (e.g., Temple et al., 2014), adolescent males may report more frequently asking others to send images because they are motivated by the social rewards for doing so and are less concerned about criticism of their actions. Findings from the present study also indicate that males report more frequent forwarding of sexual images to others. This may similarly reflect an attempt to increase social status through, for example, demonstrating their involvement in sexting to others and/or the attractiveness or the number of individuals willing to send them sexual content. In contrast, adolescent females, who are wary of negative social evaluation for such behaviours, may be less likely to ask others to send sexual images or share any images received.

It was also hypothesized that reports of sending, receiving, and forwarding sexual messages and images would be higher among adolescents who reported being in a relationship. This hypothesis was partly supported, as adolescents who were in a relationship reported more frequent sending and receiving of sexual messages and images than adolescents who were not in a relationship. Consistent with this finding, when asked to whom they most frequently sent sexual messages and images, adolescents in the present study identified "a boyfriend or girlfriend", "someone I dated or hooked up with", "someone

I wanted to date or hook up with", and/or "someone I had a crush on" as the most common

recipients. Similarly, when asked whom they had received sexual messages or images

from, adolescents identified "a boyfriend or girlfriend", "someone I dated or hooked up

with", and/or "one or more good friends" as the most common senders.

These findings are consistent with previous research in this area, which has found that

sexting among adolescents typically occurs in a relationship context. Results from an online

survey conducted by the National Campaign to Prevent Teen and Unplanned Pregnancy

(2008) revealed that 71% of female adolescents and 67% of male adolescents who had sent

sexual content to someone identified a boyfriend or girlfriend as the recipient. Further, in a

qualitative telephone survey of adolescents in the United States and their parents,

adolescents who reported at least one instance of involvement in sexting cited *romance as*

part of an existing relationship as the most common reason for sexting (Mitchell, Finkelhor,

Jones, & Wolak, 2012). Similarly, Lippman and Campbell (2014), in an analysis of written

responses from adolescents, found that 72% of the sample reported that sexting occurs

within a relational context. Of those individuals, 81% further specified that sexting

occurred in a romantic or sexual context, or both. Therefore, together, findings from the

present study and from past research in this area support that sexting among adolescents

is most common among those in a romantic and/or sexual relationship.

However, in contrast to what was hypothesized, forwarding of sexual messages and

forwarding of sexual images were not related to adolescents' relationship status. One

possible reason for this finding is a failure to distinguish between what has been referred

to as consensual and non-consensual sexting (Powell & Henry, 2014). Sending and

receiving of messages and images were identified as more common among adolescents in

romantic relationships, however, there was no distinction made between behaviours that might commonly occur in a reciprocal fashion within a relationship (i.e., exchange of messages and images in a consensual fashion), and behaviours that could be considered a breach of trust or a form of sexual violence (i.e., sharing pictures of an individual without their consent). Wolak and Finkelhor (2011) reviewed of 550 cases of sexting that were brought to the attention of law enforcement agencies in the United States in order to inform the creation of a typology of adolescent sexting. Indeed, in the resultant model, the first level distinguishes between instances of *aggravated sexting*, involving criminal abusive elements beyond simple creation, sending, or possession of sexual images, and *experimental sexting*, involving creation and/or sending of sexual images without any criminal or abusive elements (Wolak & Finkelhor, 2011). Similarly, some researchers have advocated for use of a different term to refer to abusive or criminal sexting-related behaviours, such as forwarding or sharing images without consent, on the basis that continuing to include such behaviours under a single definition of 'sexting' may contribute to victim-blaming (Powell & Henry, 2014). Therefore, in the present study, it may be that the variable *forwarding of sexual content* (i.e., messages and images) behaves differently than the variables for *sending* and *receiving of sexual content* because the former represents an abusive, non-consensual behaviour. These findings may represent a 'floor' effect, in that all adolescents, whether in a relationship or not, report low engagement in forwarding of sexual images because they are at least minimally aware that it is an unacceptable and potentially punishable behaviour. Indeed, in the present study, mean reports of forwarding sexual messages and forwarding sexual images were lower than mean reports of sending and receiving sexual messages and images, suggesting that forwarding behaviour occurs

less frequently, in general. These findings support that consensual and non-consensual

sexting behaviours should be clearly delineated and examined separately (Hasinoff, 2015).

Future research in this area should work to establish the prevalence of consensual and

non-consensual sexting, both in and outside of romantic relationships, to help determine

whether this is an isolated finding or part of a larger pattern.

     In the present study, there were no specific hypotheses with respect to adolescent

motivations for engaging in sexting. This was due to limited published research on which

to base such hypotheses at the time the study was conducted (Drouin, Vogel, Surbey, &

Stills, 2013; Lippman & Campbell, 2014; National Campaign, 2008). Findings from the

present study suggest that, among adolescents who reported having previously sent a

sexual message or image, the most common motivations for doing so included "to be fun

and flirtatious", "as a joke", "in response to one that was sent to me", and "as a sexy present

for a boy- or girlfriend". Among adolescents who had not previously sent sexual messages

or images, the most common perceived motivations for doing so included "to get a

guy's/girl's attention", "feeling pressured to send it", and "to get noticed". These findings

are consistent with the limited work that has been published on this topic, previously. For

example, in an online survey which employed a similar questionnaire as the present study,

conducted by the National Campaign to End Teen and Unplanned Pregnancy, the three

most common motivations for having previously sent sexual content were "to be fun and

flirtatious", "as a sexy present for a boy- or girlfriend", and "in response to one that was

sent to me" (National Campaign, 2008). Lippman and Campbell (2014) reported that

adolescent females' motivations for sending sexual images were frequently based on

pressure from others and/or a desire for approval from peers. Similar to these studies of

adolescents, in a sample of college students, the most common motivations for sending

sexual pictures and videos included "flirtation", "partner asked me to", "wanted to initiate

sex", and "partner was far away" (Drouin et al., 2013). However, the present study builds

upon previous findings by providing insight into perceived motivations for sexting in

adolescents who had never sent sexual content.

The pattern of results in the present study revealed that adolescents without a

history of sending sexual messages and/or images most commonly perceived that others

who engaged in these behaviours did so because of motivations that reflected negatively on

the person (e.g., attention-seeking, "to get a guy's/girl's attention") or implied an

undesirable situation that caused the person to engage in sexting (e.g., coercion, "feeling

pressured to send it"). In contrast, adolescents who had previously engaged in the sending

sexual messages and/or images most commonly reported more positive or experimental

motivations for doing so (e.g., "fun", "flirtatious", "as a joke"). These results could suggest

that sexting among adolescents is often motivated by a desire to explore different ways of

being romantic or sexual. For example, previous research has identified that a common

theme in adolescents' qualitative responses about sexting is that sexting is a way for two

people to make their sexual interest in one another apparent (Lippman & Campbell, 2014).

At the same time, this pattern might indicate that sexting among adolescents can be

motivated by more negative factors (e.g., pressure to engage in the behaviour), but that

subjective experience with sexting results in reframing of one's motivation in a more

positive light. Additionally, the finding that adolescents who have not engaged in sexting

tend to view those who have done so in a negative light (i.e., as attention-seeking) may

have practical implications for how they treat these individuals. For example, this type of

attribution might result in negative perceptions of or attitudes towards victims of non-consensual sexting, or victim-blaming (e.g., Grubb & Turner, 2012). However, as this is one of the first studies to examine actual and perceived adolescent motivation for sexting, future research should examine this topic in more depth to determine whether this discrepancy between actual and perceived motivations for sending sexual messages and images is consistent across samples, geographic locations, and time.

Additionally, among adolescents who had previously engaged in sexting, motivations for engaging in this behaviour were examined by gender and age. In the present study, there were almost no gender differences in motivations reported for engaging in sexting, with one exception. More male adolescents than female adolescents reported sending sexual messages to be fun and flirtatious, which is consistent with previous research which has found that male motivations for sexting are generally positive (e.g., a means to social status; Walker et al., 2013). However, the present findings stand in contrast with previous research, which has found that motivations for sexting among female adolescents are often related to pressure from a partner, or a desire for approval and social acceptance (Lippman & Campbell, 2014). This discrepancy may be due to methodological differences in the present study, in which motivations were assessed using forced-choice categorical response items. Previous studies have employed open-ended written items and focus group discussions to assess motivations for sexting (Lippman & Campbell, 2014; Walker et al., 2013). Although the response choices provided in the present study offered responses that incorporated findings from previous research (e.g., desire for attention, approval), it may be that adolescents do not consciously recognize some of these motivations in themselves, and that gender differences become apparent

only when adolescents are permitted to speak or write freely and responses are later coded and analyzed by researchers. The awareness of adolescents regarding gender differences in motivations for sexting, as well as the role of methodological differences on reporting of such motivations, is an interesting avenue for future research.

Examination of adolescent motivations for engaging in sexting by age groups revealed that older adolescents more often reported sexting (sending sexual messages and/or images) because of pressure to do so, as a means of getting attention or approval, for oneself (i.e., "to feel sexy"), for fun or experimentation, and/or for romantic purposes (e.g., "as a 'sexy present' for a boy-/girlfriend"). There were no age-related differences observed in sending of sexual messages to get attention or as a joke, or in sending sexual images to be liked or to get noticed. This suggests that younger and older adolescents both use sexting as a rudimentary strategy for gaining attention, which may or not be romantic attention. However, older adolescents appear to report more sophisticated and complex relationship-based motivations for engaging in sexting, such as pressure to do so, or sexting for relationship-building purposes. These findings are consistent with previous research which has found that adolescents are more likely to report sexting in a romantic or sexual context as they get older (Lippman & Campbell, 2014).

Qualitative findings. Themes that emerged in the thematic analysis provide further information which helps to understand the nature and context of sexting typically experienced by Canadian adolescents. The most common theme identified in adolescents' responses about an experience that they had lived related to sexting involved uninvited, or non-volitional, involvement in sexting. Generally, these experiences were more common among females than males, which is consistent with findings from the present study,

reported above, that females report being asked to send a sext more often than males. This theme is also consistent with previous qualitative work which suggests that adolescent girls often feel coerced, pressured, or bribed by others to participate in sexting (Lippman & Campbell, 2014; Ringrose et al., 2012; Walker et al., 2013). Together, these findings support that adolescents' participation in sexting is influenced by a sexual double standard, and that young women may be most at risk of becoming involved in sexting without wanting or intending to.

Findings from the qualitative portion of the present study also revealed that the second most common theme in adolescents' written responses was sexting for the purpose of advancing an established or desired romantic relationship, or for experimentation with such a relationship. This is consistent with some research which has advocated for viewing sexting through the lens of normative sexual behaviour during adolescence (Hasinoff, 2013; Campbell & Park, 2014; Temple & Choi, 2014). That is, in the present study, adolescents often reported using sexting as way of flirting with others, keeping in touch with a relationship partner, or simply as a joke between friends or partners. These characterizations of sexting suggest that sexting is occurring as a substitute, or perhaps as a prelude (e.g., Temple & Choi, 2014), to typical sexual activity within adolescent relationships. In addition, this theme provides evidence that not all sexting between adolescents is experienced negatively.

Another theme emerged from adolescents' qualitative descriptions of experiences with sexting wherein sexting was described as a negative experience, such as an image being shared without consent, bullying of an individual related to a sexual message/image, involvement of authority figures such as parents or police, and/or being pressured to

participate in sexting. As with the theme of involvement in sexting, these negative

descriptions were generally provided more often by adolescent girls, providing further

evidence for the gender dynamics at play in adolescent sexting, particularly with respect to

negative experiences or outcomes. This theme is consistent with previous qualitative

research which has identified that the potential for negative experiences is particularly

salient for girls involved in sexting (e.g., Ringrose et al., 2012).

Two other codes emerged from the qualitative data which were not easily classified

under one of the three main themes, but which provide important insight into Canadian

adolescents' experiences of sexting. Several adolescents noted accidental involvement in

sexting, both in the context of being the recipient of a message that was accidentally sent,

and being a sender who accidentally transmitted a message or image to someone else. This

might reflect the association of effortful control with sending of sexual images, in that

accidental transmission of sexual content may be related to having low impulse control

(Temple et al., 2014; van Ouytsel et al., 2014). At the same time, this finding suggests that

both exercising caution around sending of content to others, and discretion upon receipt of

an accidental transmission from someone, may be worthwhile topics of discussion as part

of sexual health education programs. In addition, a number of adolescents explicitly

described declining to participate in sexting when they were asked to engage. This may

indicate that there is a subgroup of adolescents who remain uncomfortable with the idea of

sending and/or receiving sexual content via Internet-mediated communication tools, at

least in some contexts or with certain individuals. Future research is necessary to explore

the relation of accidental sexting with impulse control and the correlates of declining to

participate in sexting in larger, more diverse samples of adolescents.

Relations Between Parental Warmth, Parent-Child Communication, Parental

Psychological Control, Parental Monitoring, and Sexting

The second objective of the study was to determine whether parental warmth,

parent-child communication, parental psychological control, and parental monitoring

would be predictive of adolescent sending of sexual images. It was hypothesized that

higher parental warmth, lower parental psychological control, better parent-child

communication, and higher youth disclosure to parents would predict lower adolescent

report of sending sexual images. This hypothesis was partially supported. The present

study found that adolescents who reported better parent-child communication reported

lower frequency of sending sexual images to others. This finding is consistent with, and

expands upon, past research concerning the role of parent-child communication in

adolescent sexual behaviour (Dutra et al., 1999; Fasula & Miller, 2006).

Fasula and Miller (2006) found that adolescents who reported higher

responsiveness in communication with their mothers (e.g., "My mother and I talk openly

and freely") reported lower likelihood of engaging in sexual activity. Although Fasula and

Miller did not examine risky sexual activity, only likelihood of engaging in sexual activity

within the next year, these findings support the link between parent-child communication

processes and adolescent sexual activity. Similarly, Dutra and colleagues (1999) found that

adolescents who reported more open and honest communication with parents, and greater

breadth of sexual topics covered in parent-child communication, scored lower on an index

of sexual risk behaviour, measured by number of sexual partners and use of contraceptives.

Findings from the present study are consistent with this literature and expand upon

previous work by extending the relation between parent-child communication and

adolescent sexual behaviour to include adolescent online sexual behaviours, such as sending sexual images. These findings are explored in greater depth below, in the context of the findings concerning parental warmth and parental psychological control.

In the present study, parental warmth and parental psychological control were not predictive of adolescent sending of sexual images. Although there has been limited research on these parenting practices as they relate to adolescent online behaviour, the present findings stand in contrast to past research concerning the link between these parenting variables and adolescents' offline sexual behaviour (Kan et al., 2010; Kincaid et al., 2011; Kerpelman et al., 2013; Parkes et al., 2011). For example, higher adolescent ratings of parental psychological control have been linked with earlier age at first sexual activity, higher number of sexual partners, shorter length of time knowing a partner prior to engaging in sexual activity, and early alcohol consumption, suggesting that the presence of this parenting behaviour generally has a negative influence adolescent sexual behaviour (Kincaid et al., 2011; Kerpelman et al., 2013). Additionally, higher levels of parental warmth have been linked with more positive adolescent sexual development, including fewer sexual partners, delayed first intercourse, and more frequent use of contraception (Kan et al., 2010; Parkes et al., 2011). The present findings concerning parental warmth also stand in contrast to previous research which has linked parenting higher in warmth with less risky adolescent behaviour on a social media website (Rosen et al., 2008). There are several factors that may help to account for the discrepancy in findings.

Many studies that have documented an association between parental warmth or parental psychological control and adolescent sexual behaviour have used samples composed of higher-risk groups of adolescents (Kan et al., 2010; Kincaid et al., 2011;

Kerpelman et al., 2013). Kincaid and colleagues (2011) found that higher levels of

maternal psychological control predicted four times higher odds of early alcohol

consumption and early age at sexual activity in a sample of African American adolescents

from single-parent families. Similarly, Kerpelman and colleagues (2013) documented a

link between higher psychological control and sexual behaviour (e.g., younger age at sexual

debut, higher number of sexual partners) in a sample of adolescents who reported being

sexually experienced (i.e., having had sexual intercourse). In a sample of adolescents where

over half of the sample reported low maternal education (i.e., high school diploma or less),

Kan and colleagues (2010) found that parental warmth was associated with less sexual-risk

taking behaviour. Similarly, Parkes and colleagues (2011) found parental warmth to be

linked with delayed intercourse and more frequent use of contraception; however, this was

identified in a sample of youth drawn from secondary schools participating in study of an

enhanced sexual health education program, in which 40% of the sample had at least one

parent who had not completed high school. Although the present study did not assess any

offline sexual-risk behaviours of participants, demographic information indicates that

participants in the present sample were typically White (83%), came from two-parent

families (84.5%), and had parents who were college- or university-educated (63-72.1%),

suggesting that the present sample differed in important ways from those used in previous

research. This may indicate that the relation of parental warmth and parental

psychological control with adolescent sending of sexual images is stronger in samples of

youth who are ethnically diverse, who demonstrate high baseline levels of sexual risk

behaviour, or who come from families where there is a low level of parental educational

achievement.

Although the link between parent-child communication and adolescent offline sexual behaviour has also been previously identified in youth who are ethnically diverse and come from families with low parental education (e.g., a sample of Black and Hispanic youth in which the average level of maternal education was completion of high school; Dutra et al., 1999), there is some research to support that the effect of parental communication on adolescent sexual behaviour is equally strong in culturally and socioeconomically diverse samples (Hutchinson, 2002). For example, in a sample composed of roughly equal proportions of Hispanic-Latina, African American, and White females, there was no difference in the effect of parent-child communication on adolescent sexual behaviour based on race and ethnicity or based on residing in a suburban vs. urban environment (Hutchinson, 2002). These findings, in combination with those from the present study, suggest that the role of parent-child communication in the prediction of adolescent sexual behaviour may be stronger or more universal than that of parental warmth or psychological control, resulting in significant prediction of adolescents' sending of sexual images in the current sample which is composed primarily of White adolescents from middle/upper middle-class socioeconomic backgrounds.

In addition to universality of effect across culturally and socioeconomically diverse samples, parent-child communication may have a more direct protective effect on adolescent sexual behaviours than other parenting practices due to its mechanism of influence. Parent-child communication is believed to operate on adolescent sexual behaviours through a model based in the theory of planned behaviour (Ajzen, 1991; Hutchinson & Wood, 2007;). Hutchinson and Wood (2007) describe this model as a parent-based expansion of the theory of planned behaviour (PETPB), based in

Bronfenbrenner's (1989) model of human development. That is, the actions and

development of individuals are influenced by other individuals in their environment, and

by the nested set of systems in which they live, including the microsystem, macrosystem,

and exosystem (Bronfenbrenner, 1989). In the context of this model, the set of systems

governing an adolescent's development and behaviour includes the family, the community,

and the larger society in which they live, with the family being one of the most proximal

and influential systems in an adolescent's life (Hutchinson & Wood, 2007). Within the

PETPB, adolescents' intention to engage in sexual behaviour, including risk behaviours, is

conceptualized as the primary determinant of engaging in such behaviour (Hutchinson &

Wood, 2007). These intentions are, in turn, determined by adolescents' beliefs about

sexual behaviours. Accordingly, all environmental factors (i.e., parenting practices) that

are studied in relation to adolescent sexual behaviour are conceptualized as having their

influence through an effect on adolescents' beliefs, and subsequently, their intentions to

engage in behaviours. Therefore, results from the present study suggest that parent-child

communication may have a stronger and/or more direct influence than parental warmth or

parental psychological control on adolescent beliefs and intentions related to sexting

behaviours. That is, parent-child communication may directly influence adolescent beliefs

and intentions about sexting, while parental warmth and parental psychological control

may operate on adolescent beliefs and intentions through other intermediary variables

(i.e., working models of relationships, attachment representations). Support for this

supposition is found in research indicating that parent-teen sexual risk communication is

one of the most significant influences on adolescent sexual risk behaviours (Hutchinson et

al., 2003; Hutchinson, 2002; Krauss & Miller, 2012), recent research suggesting that

parental warmth has an indirect effect on adolescent sexual behaviour (Simons, Sutton, Simons, Gibbons, & Murry, 2016), and research documenting the importance of parent-child communication in children's media use (Kirwil, 2009; Krcmar, 1996).

Hutchinson (2002) found that young women who reported higher levels and greater quality of communication with their mothers were 60% more likely to report consistent use of contraception compared to other young women. In a similar study, Hutchinson and colleagues (2003) reported that each 1-point increase in mother-daughter communication was associated with an 11% reduction in number of sexual episodes, and a 19% reduction in number of episodes of sexual intercourse without use of contraception. Although these findings come from studies of adolescent females, they suggest a powerful effect of parent-child communication, especially as it relates to adolescent sexual behaviour. In addition, the effect of parent-child communication has been documented in samples of higher-risk adolescent females (e.g., inner city adolescents; Hutchinson et al., 2003) and samples that include urban and suburban groups, as well as diverse racial and ethnic groups, of adolescent females (e.g., Hutchinson, 2002). In the latter study, no effects of race/ethnicity, nor urbanicity, on the role of parental communication in adolescent report of sexual behaviour were identified (Hutchinson, 2002), suggesting that parental communication may have a strong, universal effect on adolescent sexual behaviour that transcends cultural and socioeconomic differences. Indeed, most public-health interventions designed to target significant sexual health risks in adolescents, such as HIV/AIDS, target parent-child communication as the primary intervention method, which supports that change in this parenting practice is one of the most direct and expeditious methods for reducing adolescent sexual risk (Krauss & Miller, 2012). Accordingly, the significance of parental

communication as a predictor of adolescent sending of sexual images in the present study, over and above other parenting variables which were hypothesized to be important for prediction of this behaviour, may reflect the strength and universality of the effect of parent-child communication on adolescent sexual behaviour.

Additionally, recent research has identified that the role of parental warmth in adolescents' sexual behaviour can occur through an influence on adolescents' working model of relationships (Simons et al., 2016). In a sample of adolescents from Iowa and Georgia, Simons and colleagues (2016) had participants respond to questionnaires about parenting practices, sexual development, sexual attitudes, self-control, working models of relationships, and risky behaviour (e.g., substance use, lifetime sexual partners, frequency of contraception use).   Data were collected over three time points, approximately 2-3 years apart each time. Youth were, on average, 12.5, 15.5, and 18 years of age at the time(s) of data collection. Simons and colleagues' (2016) findings revealed that experiencing parental warmth indirectly reduced the likelihood of adolescent risky sexual behaviour through promoting a less cynical model of relationships among adolescents, supporting an indirect role of parental warmth in adolescent sexual risk behaviour. This is consistent with other findings from the present study, in which the role of parental warmth and parental psychological control in adolescents' sending of sexual images was limited to an indirect relationship, in both cases through adolescents' attachment avoidance. Together, these past and present findings support that parental warmth and psychological control may demonstrate poor predictive utility for adolescent sending of sexual images when mediating variables are not accounted for.

There is also research to support that parent-child communication is an influential

factor in determining children and adolescents' media usage (Kirwil, 2009; Krcmar, 1996).

Krcmar (1996) observed parent-child dyads during completion of a structured task in

which they were asked to select a television program to watch from a list of programs with

content ranging from neutral to inappropriate (e.g., violent programs, programs with

parental advisories). Parent-child discussion during this decision-making task was

videotaped and later coded, and outcomes such as child compliance with the decision made

during the parent-child discussion were assessed during a portion of the interaction where

the parent was absent from the room. Krcmar (1996) found that a more open

communication style reported by parents was associated with parents providing more

opportunities for child input during discussion, and with children who were more directive

(i.e., expressing direct wishes and preferences), suggesting that a more open

communication style within the family leads to more child input and involvement in

decision-making related to media usage. Of note, children who perceived less open

communication within the family (e.g., endorsing items such as "What parents say goes")

were less likely to be compliant with the parent-endorsed choice of television programs

once the parent had left the observation room, suggesting that more open communication

may also promote greater child compliance with parental wishes or directives related to

media usage. Krcmar's (1996) work supports an important role of parent-child

communication in determining how youth use technology and media, and is consistent

with more recent research documenting a similar effect in the context of child and

adolescent Internet use (Kirwil, 2009). For example, Kirwil (2009) found that, across data

from 18 European countries, social mediation of child and adolescent Internet use by

parents, defined as co-use and communication about Internet and media rules between parents and children, was more effective than restrictive mediation (i.e., time restriction, website restriction, technical restriction) at protecting youth from online risk. Together, these previous findings support that parent-child communication is highly influential in determining children and adolescents' use of technology and media, and in protecting from online risk.

In sum, although previous studies have found that parental warmth, psychological control, and parent-child communication are linked with adolescent offline sexual behaviour, the results of the present study suggest that only parent-child communication is a significant, direct predictor of adolescent sending of sexual images. There may be several reasons for this discrepancy. First, previous research suggests that the relation of parental warmth and psychological control with adolescent sexual risk behaviour is stronger in samples of culturally and socioeconomically diverse youth, which may have made the effects of these variables difficult to observe in the present sample, which was comprised largely of White adolescents from socioeconomically-advantaged families. Additionally, research supports that the effect of parent-child communication on adolescent sexual behaviour may be stronger and more universal than that of other parenting practices. Past research, in combination with other findings from the present study, also supports that the effect of parental warmth and parental psychological control on adolescent sexual behaviour likely occurs through an indirect pathway only. Finally, there is evidence to support that parent-child communication is particularly influential with respect to children and adolescents' media usage.

In the present study, it was also hypothesized that parental monitoring would be related to adolescent report of sending sexual images. Specifically, it was hypothesized that youth disclosure would predict lower adolescent report of sending sexual images, and that parental knowledge would mediate the relation between youth disclosure and adolescent sending of sexual images. However, findings from the present study suggest that neither youth disclosure nor parental knowledge were predictive of adolescent sending of sexual images. These results are consistent with one previous study which found no relation between parent-initiated monitoring of mobile phone use and sexting (Campbell & Park, 2014). However, the present findings are in contrast with what was hypothesized and with research which has found that a broad measure of parental monitoring is linked with lower sexual risk taking in adolescents (e.g., Huebner & Howell, 2003) and that the youth-initiated component of parental monitoring is linked with less aggressive online messaging (Law, Shapka, & Olson, 2010). There are some discrepancies between these studies and the present study which may help to account for these different findings.

Previous research concerning the relation between parental monitoring and adolescent sexual behaviour has generally measured parental monitoring that is not specific to adolescent online behaviour (DiClemente et al., 2001; Li et al., 2000; Huebner & Howell, 2003). For example, measures used in these studies have included questions such as, "When I go out at night, my parent(s) know where I am" and "I tell my parents who I'm going to be with before I go out" (DiClemente et al., 2001; Li et al., 2000; Huebner & Howell, 2003). The present study used a measure of parental monitoring specific to online behaviour of adolescents which had been previously validated and found to predict online behaviour (e.g., aggressive online messaging; Law, Shapka, & Olson, 2010). Although there

is no known published research which has directly explored the relation of general

parental monitoring with parental monitoring specific to online behaviours, the results of a

recent study using a measure of general parental monitoring and a measure of parental

Internet restriction may offer some insight into differences between these two constructs

(Khurana, Bleakley, Jordan, & Romer, 2015). As part of a study evaluating media use of

parents and their children, Khurana and colleagues (2015) collected data from 629

adolescents regarding their experiences of online harassment, parental Internet restriction

(i.e., "How often has a parent forbidden or blocked certain websites you might use?"),

parental monitoring (i.e., "How often do your parents know what you are doing during your

free time?"), and other Internet use variables. Results suggested that general parental

monitoring had a direct, protective effect on adolescents' report of online harassment. In

contrast, parental Internet restriction, although positively correlated with parental

monitoring, had only an indirect effect on reduced online harassment, through less Internet

access in the bedroom and consequent reduced use of social networking websites. This

suggests that the effect of Internet- or mobile device-specific parental monitoring may be a

more distal factor in influencing online behaviours than general parental monitoring.

Accordingly, the absence of findings in the present study related to prediction of adolescent

sexting from parental monitoring of online activity may reflect that intermediary variables

between monitoring and online activity were not included in the study model (i.e.,

adolescent use of social networking websites, or use of different types of technology).

Future research should explore the relation between these two types of parental

monitoring and their mechanisms of influence on adolescent behaviour in more depth.

Additionally, Law, Shapka, and Olson (2010) identified a link between parental monitoring of online activity and youth engagement in cyberbullying behaviours. This study assessed pre-teens' and teens' experiences of parental monitoring of online activity, as well as engagement in several cyberbullying behaviours. Findings indicated that higher scores on items measuring parental knowledge of children and adolescents' online/cell phone activities and of online friendships predicted lower youth report of online aggressive messaging (Law et al., 2010). In contrast, the present study employed the same monitoring questionnaire, but did not find that parental knowledge or youth disclosure were predictive of adolescent sending sexual images. It is possible that the different outcome behaviours in these two studies may account for the discrepancy in results. For example, in Law and colleagues' (2010) work, although parental knowledge of online activity was predictive of sending aggressive online messages, the same parental knowledge variable was not predictive of posting/commenting on embarrassing pictures. The authors ascribe this finding to a difference between the two outcome behaviours, suggesting that posting/commenting on pictures online does not reflect the same intent to harm as the act of sending aggressive messages (Law et al., 2010). Similarly, in the present study, it may be that parenting behaviours identified in previous research as being relevant for reducing adolescent engagement in online bullying behaviour (i.e., sending aggressive online messages) are not influential for reducing adolescent engagement in a behaviour whose purpose is to attract a partner or develop a relationship further, as in the case of the present study. The similarities and dissimilarities between adolescent sexting and other online behaviours, as well as their respective relations with family and parenting variables, should be a target for future research.

In the present study, it was hypothesized that warmth and communication would interact in the prediction of adolescent sending of sexual images. Specifically, based on previous research documenting the importance of a good parent-child relationship for effective communication, it was thought that in the presence of warmth in the parent-child relationship, good communication would predict less adolescent engagement in sexting. Likewise, it was hypothesized that in the context of low warmth, communication would have little effect on sexting. The results of the present study suggest that this interaction does exist, in the direction predicted, but that it was not significant in the prediction of adolescent engagement in sexting. This is in contrast with previous research, which has documented an interaction between warmth and communication in prediction of adolescent sexual behaviours (Dutra et al., 1999; Rodgers, 1999). The discrepancy in findings between past research and the present study may be related to methodological differences.

In a sample of 375 adolescents, Rodgers (1999) documented an interaction between parent-child communication and parental warmth in prediction of sexual behaviour among adolescent males. However, in Rodgers' study, parent-child communication was assessed as frequency of parent-child discussions about a variety of sexual issues (e.g., frequency with which adolescents had a good talk in the past year with parents about [sexual issue]), with higher scores reflecting more frequent discussions about such topics. In contrast, in the present study, the scale used to assess parent-child communication assessed both content of communication (e.g., "Family members are able to ask each other for what they want") and the relationship context of communication more generally (e.g., "Family members try to understand each other's feelings", "Family members express affection to

each other"). Therefore, it may be that, in the present study, ratings on the parent-child communication scale incorporate both an assessment of content and an assessment of the warmth and support in the parent-child relationship. This may have confounded the analysis of an interaction between warmth and communication by making it difficult to estimate the effect of communication in the absence of warmth. However, the significance in the present study of the parent-child communication variable, which assessed both content and context of communication, for predicting adolescent sending of sexual images is consistent with the findings of Dutra and colleagues (1999), who identified that both process and content of parent-child communication are important for predicting adolescent engagement in sexual risk behaviours. Thus, although identification of an interaction between warmth and communication was confounded by measurement of these variables in the present study, results nonetheless support previous research which has found that both constructs are relevant for predicting adolescent sexual behaviour.

Relations Between Parental Warmth, Parent-Child Communication, Parental Psychological Control, Adolescent Attachment, and Adolescent Sexting

The third objective of the study was to determine whether adolescent attachment anxiety and attachment avoidance would be predictive of sending sexual images. It was hypothesized that higher adolescent attachment anxiety and higher attachment avoidance would be predictive of higher adolescent report of sending sexual images. This hypothesis was partially supported. The present study found that adolescents who reported higher attachment avoidance reported higher frequency of sending sexual images to others. However, there was no significant relation between adolescent attachment anxiety and

sending sexual images to others. There is mixed support for these findings from previous work in this area (Drouin & Landgraff, 2012; Weisskirch & Delevi, 2011).

In two different college student samples, Weisskirch and Delevi (2011) and Drouin and Landgraff (2012) each found that attachment anxiety predicted sending sexual text messages, but not sending of sexual pictures. Consistent with this research, in the present study, attachment anxiety was not predictive of sending sexual images but was found to be a significant predictor of sending sexual messages in the supplementary analyses. Therefore, combined with previous research (Drouin & Landgraff, 2012; Weisskirch & Delevi, 2011), findings from the present study suggest a relation between attachment anxiety and sending of sexual messages, but not sexual images.

With respect to prediction of sending sexual images, the significance of attachment avoidance as a predictor of this behaviour in the present study is consistent with Drouin and Landgraff's (2012) study of these variables in college students. That is, Drouin and Landgraff (2012) found that college students higher in attachment avoidance were more likely to send sexual pictures, but that attachment anxiety was not a significant predictor of sending sexual pictures. Together, the results of the present study and Drouin and Landgraff's (2012) work suggest a link between avoidant attachment and sending of sexual pictures in particular. The relation between attachment anxiety and sending of sexual messages, and the relation between attachment avoidance and sending of sexual images, may be situated in the context of attachment theory as it relates to motivation for sexual activity and intimate relationships. It has been reported that individuals who score highly on measures of attachment avoidance cite external factors as motivation for engaging in intimate behaviours, such as gaining social status or power (Mikulincer & Shaver, 2007).

For example, adolescents who are high in attachment avoidance are more likely to engage in first intercourse due to a desire to lose their virginity (Tracy et al., 2003). The act of sending sexual images to others fits well with this type of motivation, as sending sexual pictures would typically leave a digital "trail" or evidence that can be shown to others or may be discussed by others, which helps accomplish the goal of increasing social status. On the other hand, it has been reported that individuals who score high on measures of attachment anxiety cite motivations for engaging in intimate behaviours that relate to a need for love and security, or fear of being abandoned (Mikulincer & Shaver, 2007). For example, adolescents who are high in attachment anxiety are more likely to engage in first intercourse because they fear their partner will leave them if they do not (Tracy et al., 2003). As attachment anxiety was not related to sending of sexual images in the present study, nor in a previous study (Drouin & Landgraff, 2012), but was significantly related to sending of sexual messages, this may reflect that sending sexual messages better satisfies the needs of individuals who are high in attachment anxiety within romantic relationships. For example, written, verbal messages of an intimate nature may better satisfy the needs of these individuals related to love and security than visual images of this type.

Adding to this, there is evidence that among anxiously-attached individuals, sexting may occur under a very specific set of circumstances. Drouin and Tobin (2014) found that for those high in attachment anxiety, sending of sexual messages and/or images was likely to occur under duress, in response to a request from a relationship partner (Drouin & Tobin, 2014). In particular, it was identified that among women, anxious attachment significantly predicted engaging in unwanted but consensual sexting (i.e., willingly engaging in unwanted sending of messages/images when they did not actually want to),

and that this was often done to avoid an argument (Drouin & Tobin, 2014). Drouin and

Tobin (2014) used precise wording in their measurement of unwanted but consensual

sexting (e.g., "How often have you consented to sexting with a committed relationship

partner when you actually did not want to sext?") to clearly differentiate this behaviour

from general sending of sexual images. Therefore, the absence of a significant relationship

between attachment anxiety and sending sexual images in the present study, and in other

previous studies (Drouin & Landgraff, 2012; Weisskirch & Delevi, 2011), may reflect

discrepancies in measurement and specification of the outcome behaviour. That is, when

sending of sexual images is measured more generally, without specifying conditions of

duress, the relationship between this behaviour and attachment anxiety may be masked.

Together, these past and present findings appear to suggest that a relation between

attachment and sending sexual pictures exists for adolescents high in avoidant attachment,

in that this group is more likely to send sexual images. Findings related to anxiously

attached adolescents and sending of sexual images are not entirely clear, however, there is

evidence that attachment anxiety may be more closely linked with sending of sexual

messages.

In the present study, the relations between attachment anxiety and avoidance and

sending of sexual images were subsequently assessed in the context of parenting practices

that are relevant for adolescent attachment, including parental warmth, parent-child

communication, and parental psychological control (Etzion-Carasso & Oppenheim, 2000;

Gungor & Bornstein, 2010; Pittman et al., 2012). It was hypothesized, in six separate

mediation models, that attachment anxiety and avoidance would mediate the relation of

parental warmth, parental psychological control, and parent-child communication, with

sending of sexual images (Figures 5, 6, and 7). There was mixed support for these hypotheses.

It was predicted that the relation between each of the parenting practices and sending of sexual images would be mediated by attachment anxiety. This was not supported. In all models, although parental warmth, parental psychological control, and parent-child communication were each associated with attachment anxiety, there was no link between attachment anxiety and the outcome, sending of sexual images. That is, higher levels of parental warmth were associated with less attachment anxiety, higher levels of parental control were associated with greater attachment anxiety, and better parent-child communication was associated with less attachment anxiety, but in all cases, there was no significant association between attachment anxiety and sending of sexual images. Findings of significant relations between parental warmth, parental psychological control, and parent-child communication, and attachment anxiety are consistent with past research which has found that these parenting practices are influential in the development of attachment representations (Etzion-Carasso & Oppenheim, 2000; Gungor & Bornstein, 2010; Pittman et al., 2012). Although not consistent with what was hypothesized, the absence of mediation in these models is in line with other findings, reported above, from the present study, which suggest that the link between attachment anxiety and sending of sexual images is weak and that other outcome variables, such as unwanted but consensual sending of sexual images (e.g., Drouin & Tobin, 2014), may be more closely associated with attachment anxiety. Therefore, although results from the present study do not support mediation of the relation between parenting practices and adolescent sending of sexual images by attachment anxiety, future research should explore such mediation models using

alternate sexting behaviours, which may be more relevant for individuals high in attachment anxiety, as the outcome.

It was also predicted that the relation between each of the parenting practices and sending of sexual images would be mediated by attachment avoidance. In the first model (Figure 5), it was hypothesized that attachment avoidance would mediate the relation between parental warmth and adolescent sending of sexual images. The present results did not support the hypothesized mediation model, but an indirect causation model was revealed. Higher levels of parental warmth were associated with lower adolescent report of attachment avoidance, and in turn, lower attachment avoidance was associated with less sending of sexual images. That is, parental warmth did not have a direct effect on adolescent report of sending sexual images, but it did have an indirect effect on sending sexual images through its association with attachment avoidance.

To the author's knowledge, the present study is the first to test the link between parental warmth, attachment avoidance, and adolescent sending of sexual images. The absence of a direct relation between parental warmth and adolescent sending of sexual images is consistent with other results from the present study, reported earlier, and may reflect that the strength of this relation varies in low- and high-risk samples of youth, and/or that parental warmth has a less direct or influential role in predicting adolescent sexual behaviour than other parenting variables studied. Indeed, the mediation analyses confirm an indirect role of parental warmth on adolescent sexual behaviour through adolescents' attachment avoidance, suggesting that parental warmth may have its effect on adolescent behaviour through intermediary variables, such as attachment. This finding is also consistent with previous research indicating that low levels of parental warmth

promote development of insecure attachment (Gungor & Bornstein, 2010), and research

indicating that attachment avoidance is linked with more frequent sending of sexual

images (Drouin & Landgraff, 2012). The present findings expand on previous work by

suggesting a relational mechanism through which parental warmth may operate to

influence adolescent online sexual behaviour. Together, past and present findings provide

evidence that parental warmth is relevant, in the context of attachment avoidance, for

influencing adolescent sexting.

In the second model employing attachment avoidance as a mediator (Figure 6), it

was hypothesized that attachment avoidance would mediate the relation between parental

psychological control and sending of sexual images. The present results supported a

mediation model for this effect. Higher levels of parental psychological control were

associated with higher adolescent report of attachment avoidance, and in turn, higher

attachment avoidance was associated with more frequent sending of sexual images. In

addition to this indirect effect, parental psychological control also had a direct effect on

sending sexual images, wherein higher levels of psychological control were associated with

higher adolescent report of sending sexual images. The direct effect was significant even in

the presence of the mediator, suggesting that the effect of parental psychological control on

adolescent sending of sexual images operates through both the direct and indirect

pathways (Hayes, 2013).

To the author's knowledge, this study is the first to find a link between parental

psychological control, attachment avoidance, and adolescent sending of sexual images. The

existence of a direct relation between parental psychological control and adolescent

sending of sexual images stands in contrast to earlier results from the present study, as it

was not a significant predictor of sending sexual images when it was entered simultaneously with parental warmth, parent-child communication, and youth disclosure as predictors. Therefore, as in the results pertaining to parental warmth reported earlier, these findings from the mediation analyses could suggest that, relative to other parenting variables considered, the role of parental psychological control in adolescent sending of sexual images is apparent only when considered in the context of an intermediary variable. That is, parental psychological control was a significant predictor of sending sexual images in the present study only when considered in the context of attachment avoidance. These results are consistent with those of past research indicating that parental psychological control promotes development of insecure attachment representations (Pittman et al., 2012), and that attachment avoidance is linked with more frequent sending of sexual images (Drouin & Landgraff, 2012). However, the present findings build on previous research by linking psychological control with adolescent online sexual behaviour through avoidant attachment, increasing understanding of potential relational mechanisms that may influence adolescent sexting.

Finally, in the third model employing attachment avoidance as a mediator (Figure 7), it was hypothesized that attachment avoidance would mediate the relation between parent-child communication and sending of sexual images. The present results did not support a mediation model for this effect. Although better parent-child communication was associated with lower adolescent report of attachment avoidance, and directly with adolescent sending of sexual images, there was no indirect effect of parent-child communication as the link between attachment avoidance and sending sexual images was not significant.

The present study is the first to explore attachment avoidance as a mediator between parent-child communication and adolescent sending of sexual images. The existence of a direct effect of parent-child communication on adolescent sending of sexual images in the present study, and the absence of an indirect effect through attachment avoidance, is consistent with research indicating that parent-child communication has a strong, direct, influence on adolescent sexual behaviour (Hutchinson, 2002; Hutchinson et al., 2003; Hutchinson & Wood, 2007; Krauss & Miller, 2012). That is, previous research suggests that parent-child communication is a strong factor with a direct influence in adolescent sexual behaviour. Therefore, in the present study, the absence of an indirect relation between parent-child communication and sending of sexual images, via attachment avoidance, may signify that the parent-child communication variable accounts for most of the variance in adolescent sending of sexual images through a direct relation. Together, the results from the mediation models exploring attachment avoidance as a mediator support that parent-child communication has direct implications for adolescent sending of sexual images, while parental warmth and parental psychological control each have an indirect relation with sexting through attachment avoidance.

Study Limitations

The primary limitation of the present study is the sample that was used. Demographic information collected in the present study indicates that the sample was primarily composed of White adolescents from two-parent families, whose parents were college- or university-educated, and this may have hindered the ability to detect a relation of parental warmth and parental psychological control with the outcome variable, adolescent sending of sexual images. The link between parental warmth, psychological

control, and adolescent sexual behaviour has generally been identified in samples of

adolescents from more diverse sociocultural backgrounds, and who engage in other types

of risk behaviours, such as substance use or unprotected sexual activity (Kan et al., 2010;

Kerpelman et al., 2013; Kincaid et al., 2011). There were no data collected in the present

study to provide information about the general risk behaviour of the adolescents in this

sample (e.g., alcohol consumption habits, number of sexual partners), and therefore, the

specific risk profile of this sample may be different from that of previous samples studied.

Accordingly, results in the present study may be generalized only to samples of adolescents

similar to those in the present study. In particular, future exploration of the link between

parental warmth and parental psychological control with adolescent sending of sexual

images in more diverse samples of adolescents may uncover a different pattern of

association among these variables.

Another methodological limitation of the present study is that a cross-sectional

design was used. Based on past research that has established a causal link between

parental behaviours and adolescent risk behaviour (e.g., Zimmer-Gembeck & Helfand,

2008), between parental behaviour and adolescent attachment (e.g., Beijersbergen, Juffer,

Bakermans-Kranenburg, & van Ijzendoorn, 2012), and between adolescent attachment and

motivations for sexual behaviour (Tracy et al., 2003), the present study assumed these

causal links between variables. However, findings from the present study cannot provide

insight regarding developmental changes that occur in these processes through time, and

future research would benefit from incorporating a longitudinal approach.

In addition, the present study used adolescent self-reports of sexting, but the

reliability and validity of these reports is not known and social desirability bias was not

assessed. Accordingly, this self-report data on sexting could be problematic, as adolescents have been found to inflate rates of engaging in sexual and sexual risk behaviour in self-administered questionnaires relative to other methods of data collection, such as face-to-face interviews (Davoli et al., 1992). However, at present, self-report is the most time- and cost-effective method for collecting data on sexting, as there are a number of methodological and ethical difficulties associated with collecting objective data on adolescent mobile device usage and sexting (e.g., access to data regarding usage and content of mobile communications). These can include working around the privacy and confidentiality of such usage data, the cost-prohibitive nature of providing participants with devices, disruption of organic behaviour processes due to observation, and/or the selection of a mobile messaging application that is feasible for use by adolescents and compatible with the goals of the research (e.g., Ringrose et al., 2012). In addition, although self-report of mobile phone usage is sometimes discrepant from behavioural observation (vanden Abeele, Buellens, & Roe, 2013), it is typically high-frequency behaviours that are poorly recalled, whereas low-frequency behaviours are reported with greater accuracy (vanden Abeele et al., 2013). Results of the present study suggest that sexting is a low-frequency behaviour, as the average report of frequency of sending sexual images was 1.7 on the 6-point Likert-type response scale (between "Never" and "Very rarely"). Therefore, adolescent estimation of their sexting behaviour may be more accurate than report of other mobile device activities that they engage in more frequently. Nonetheless, the development of more precise methods of observation of adolescent sexting will enhance future research.

The single-informant nature of the present study also presents a limitation, as only adolescents provided ratings of parenting and attachment. Measurement of parenting and attachment may have benefited from a multi-informant approach (e.g., parent- and adolescent-report) to better understand whether the relations identified vary according to the perspective of the informant. Although the comparison of parent- and adolescent-reports of parenting in the prediction of sexting has not been explored, research does support that by adolescence, reports of parenting from youth can be considered reliable and valid (Frick, Barry, & Kamphaus, 2010). Additionally, a review of several parent-report measures of parenting indicates generally moderate concordance ($r = .23-.37$) between parent- and child-ratings of parenting (Morsbach & Prinz, 2006). Nonetheless, as present findings reflect only the association between parenting, attachment, and sexting from the adolescent's perspective, future research would benefit from exploring sexting using a multi-informant approach.

The single outcome variable, sending of sexual images, was also a limitation of the present study. That is, findings with respect to parenting and attachment variables may not generalize to other sexting behaviours, such as forwarding messages/images or taking sexual images of others. Although sexting can encompass a wide variety of behaviours, including sending, receiving, and forwarding, only sending of sexual images was explored in relation to parenting and attachment variables. The reason for this two-fold: first, because a criticism of previous sexting research has been the use of inconsistent terminology and of composite sexting variables, making it difficult to compare study findings (Lounsbury et al., 2011; Wood et al., 2015). Accordingly, in the present study, a single behaviour, rather than a composite variable, was chosen as the outcome to allow for

a greater degree of precision in findings and suggested implications. In addition, there has

been a call for researchers to study this particular behaviour, sending of sexual images, due

to the greater potential for risk and consequences associated with sexual images (e.g., in

some areas, nude or nearly nude photos of adolescents 17 years of age or younger are

illegal; Lounsbury et al., 2011) and, therefore, a more urgent need to develop our

understanding of this behaviour. However, supplemental analyses from the present study

revealed that attachment anxiety may be more closely related to the behaviour of sending

sexual messages than to sending sexual images. Therefore, our findings suggest that

sending of sexual messages may also be linked with adolescents' emotional health (i.e.,

attachment insecurity) and that this may be an important area for future research.

Finally, the present study did not assess adolescent beliefs and intentions about

sexting. In the context of the model used in the present study to understand the role of the

parenting variables in adolescent sending of sexual images (Hutchinson & Wood, 2007),

adolescent beliefs and intentions about sexting are the primary determinants of sexting

behaviour, and parenting variables have their effect by operating on these beliefs and

intentions, whether directly or indirectly. Therefore, whereas the present study has

provided evidence for a direct link between parent-child communication and sending of

sexual images, as well as an indirect link between parental warmth and parental

psychological control with sending of sexual images, these results can only be hypothesized

to fit within the context of Hutchinson and Wood's (2007) model until the relation of these

parenting variables with adolescent intentions and beliefs about sexting are explored

directly.

Directions for Future Research

Several findings from the present study offer important new insights into adolescent sexting which provide many avenues for further research in this area. In the present study, forwarding of sexual messages and sexual images did not differ by relationship status, but the behaviours of sending and receiving sexual messages and sexual images were found to be more common among adolescents who reported being in a romantic relationship. To the author's knowledge, the present study is the first to report on these behaviours separately and to discover this pattern of differences in sending, receiving, and forwarding among individuals who are and are not in a romantic relationship. Accordingly, there is little other data available to aid in the interpretation of this finding. However, it may be that the sending and receiving of sexual messages and sexual images reported in the present study were generally consensual or reciprocal sexting behaviours, typically engaged in with a trusted partner, and that these types of consensual behaviour were more common among individuals in a romantic relationship due, in part, to the ready availability of trusted partner. Supporting this, adolescents in the present study who reported having sent or received a sexual message or image most commonly reported doing so with a relationship partner or someone with whom they wanted to be in a relationship (e.g., boyfriend, girlfriend, someone they wanted to hook up with).

In contrast, forwarding of sexual messages and images is not a consensual behaviour requiring a trusted partner, and therefore, may occur with equal frequency among individuals who are and are not in romantic relationships. However, the prevalence of consensual (i.e., sending, receiving) and non-consensual (i.e., forwarding) sexting behaviours, both within and outside of romantic relationships, should be a target for future

research to help determine whether results from the present study generalize to other samples.

In addition, to the author's knowledge, the present study is the first to examine adolescents' actual and perceived motivations for engaging in sexting. Findings revealed that adolescents who had previously engaged in sending of sexual messages and images reported doing so for reasons such as experimentation or intentions to start or maintain a romantic relationship (e.g., to be fun, flirtatious, as a sexy present). In contrast, findings revealed that adolescents who had not previously engaged in sexting reported perceptions that people who engaged in this behaviour did so for reasons that generally reflected negatively on the participant (e.g., attention-seeking). As this is one of the first studies to find differences between actual and perceived motivations for sexting, future research should continue to examine motivations for and perceptions of sexting in a variety of samples and age groups. Additionally, longitudinal research could inform models of change in perceptions of sexting due to subjective experience. For example, the observed difference between perceptions of sexting, in those who have never sexted, and actual motivation, reported by those who have sexted previously, may reflect a change in perception of sexting that occurs with personal experience.

In some cases, findings from the present study were not consistent with past research, and future research will be helpful for understanding subtle differences between parenting and sexting variables, as well as in the way they operate in models of influence on adolescent behaviour. Although parental monitoring of adolescents' online activities has been previously associated with sending of aggressive online messages (Law et al., 2010), the same parenting behaviours were not associated with sending of sexual images in the

present study. It has been suggested that there are subtle differences in the variety of online behaviours that adolescents engage in that may influence the way these behaviours interact with, and are influenced by, parenting (Law et al., 2010). For example, the difference between the intention behind sending of aggressive messages and sending of sexual images may suggest the role of parental monitoring in determining these two behaviours is quite different. Accordingly, it would be helpful to know how adolescent sending of sexual images, as well as other sexting behaviours (i.e., forwarding of sexual images), are related to other online behaviours and characteristics of adolescents, such as amount of time spent on social media and engagement in cyberbullying, as well as how each of these behaviours are related to parental monitoring. In addition, there is evidence from past research that general parental monitoring (e.g., "*How often do your parents know what you are doing during your free time?*") may be a better predictor of adolescent online behaviour than Internet-specific forms of parental monitoring (Khurana et al., 2015). Therefore, future research comparing the role of general parental monitoring and Internet-specific parental monitoring in adolescent online behaviour could inform different models of influence for these two types of parental monitoring, as well as variations in their effect on adolescent online behaviour.

Some of the findings from the present study were consistent with past research, but nonetheless provide avenues for future research. Consistent with past findings, (Drouin & Landgraff, 2014; Weisskirch & Delevi, 2011), findings from the present study suggest that attachment anxiety is not linked with sending of sexual images, but is predictive of sending sexual messages. However, other research has found attachment anxiety to be linked with very specific sexting behaviours, including unwanted but consensual sending of messages

and images (Drouin & Tobin, 2014). Although the present study sought to address discrepancies in the literature by examining the behaviours of sending, receiving, and forwarding of sexual messages and images separately, it may be that the outcome behaviour in the present study, sending of sexual images, is too broad. That is, the absence of a link between attachment anxiety and sending of sexual images in the present study may be due to a need to parcel out sending that is unwanted but consensual (Drouin & Tobin, 2014). For example, it may be necessary to obtain data from participants concerning how often they have sent sexual images to others when they wished to do so, as well as how often they have sent sexual images to others when they felt pressured or coerced into doing so. As unwanted but consensual sexting has been associated with individuals who are high in attachment anxiety in previous studies (Drouin & Tobin, 2014), this is a direction for future research concerning sexting and attachment in adolescents.

Finally, at present, there is at least one study that has included sexual orientation as a variable of study. In a sample of 1,839 12- to 18-year-olds LGBTQ status was found to be associated with the greater likelihood of having sent sexual pictures (Rice et al., 2012). This is consistent with research which has found that adolescents who identify as LGBTQ endorse risky sexual behaviour, in general, at higher rates than heterosexual adolescents (Blake et al., 2001; Garofalo, Wolf, Kessel, Palfrey, & DuRant, 1998). This may be a result of greater focus on sexual identify formation in the LGBTQ population (Blake et al., 2001). However, sexual orientation was not assessed in the present study, and these results are therefore limited in their applicability to adolescents from non-heterosexual populations. Given that previous research has found some variation in sexting with LGBTQ status, this is a necessary area for future research.

Practical Applications

Findings from the present study have several implications for design and delivery of public health and education programs around sexting and use of technology within relationships for adolescents. Results of the present study revealed that adolescents generally report sending sexual messages and pictures to relationship partners, or to individuals with whom they would like to be in a relationship. This provides information as to the typical context of adolescent sexting, suggesting that these behaviours usually take place in the context of a desired or established romantic relationships. This may help to allay some concerns about 'stranger danger', or fear that sexting will garner the attention of anonymous online predators (Hasinoff, 2013). While sending a sexual image via digital means does make it possible for the image to be posted or made available online, research suggests that this type of online sexual violence is most often perpetrated by acquaintances and intimate partners (Mitchell et al., 2005; Wolak et al., 2008; Hasinoff, 2013). Accordingly, findings from the present study support that educational programs aimed at educating adolescents about the potential risks involved in sexting should focus these conversations on the context of a romantic relationship, rather than solely on risks related to anonymous strangers.

Relatedly, findings from the present study support previous research concerning the gender dynamics at play in adolescent sexting and the role of a sexual double standard influencing adolescents' engagement in sexting. That is, in the present study, males reported more frequently asking others to send sexual content, and forwarding sexual content to others, while females reported more frequently being asked by others to send sexual content. This pattern of more active participation in sexting (i.e., asking others to

participate, forwarding content to others) by adolescent males, and more passive involvement in sexting by adolescent females, could reflect that females are more wary of experiencing negative social judgment for participation in sexual behaviours (Lippman & Campbell, 2014; Livingstone & Gorzig, 2012; Walker et al., 2013). These findings also have important implications with respect to the design and content of public health and education programming for adolescents related to use of technology within relationships. For example, educating youth as to the dangers and risks of sexting may not be effective in prevention, as many youth report being aware of the risks and participating in sexting regardless of this knowledge (Lippman & Campbell, 2014). Therefore, a more effective approach to public health education and intervention may involve a comprehensive program providing adolescents with information about consent within a sexual ethics framework (Carmody, 2009), especially as it relates to digital content. Given the gender dynamics at play in sexting behaviours, it will also be important to educate adolescents using the "bystander approach", as this model involves helping participants to recognize violence against women and enabling them to intervene and prevent sexual violence from happening (Banyard, Moynihan, & Plante, 2007; Burn, 2009; Senn & Forrest, 2016). In particular, in the context of findings suggesting that adolescent males more frequently engage in forwarding or sharing of sexual images, this gender-based approach may be effective in reducing non-consensual sexting behaviours.

In addition, results of the present study suggest that adolescents who have not engaged in sexting tend to view those have done so in a negative light (e.g., as attention-seeking). Although this was not examined in-depth in the present study, this might have implications for how adolescents without a history of sexting treat their peers who have

sexted. For example, this type of attribution might result in negative attitudes towards

victims of unauthorized distribution of sexual images, similar to "victim-blaming" in cases

of sexual assault (e.g., Grubb & Turner, 2012). Accordingly, public health and education

programs around sexting may be enhanced by inclusion of material related to issues

around consent in digital communication, as well as increasing empathy and understanding

for victims of online sexual violence.

Finally, the exploration of parenting and attachment-related variables in relation to

adolescent sexting provides insight into some of the social and relational mechanisms that

may be effective as targets for intervention in public health programming. Results of the

present study suggest that parent-child communication has a strong, direct role in

determining adolescents' engagement in sending of sexual images. In the context of the

parent-based expansion of the theory of planned behaviour (Hutchinson & Wood, 2007),

which models the mechanism of influence for parenting in adolescent sexual behaviour, it

is likely that this is due to parent-child communication being influential in determining

adolescents' beliefs and intentions related to sending of sexual images. Indeed, these

results are consistent with interventions for reducing adolescent sexual risk behaviour

related to HIV/AIDS, where parent-child communication is one of the primary target

behaviours and mechanisms of influence (Krauss and Miller, 2012). In the context of

sexting, this suggests that parents should be a target of public health education programs

and that the role of communication with adolescents about safer sexting practices should

be emphasized. For example, Hasinoff (2015) suggests that one pathway to safer sexting

for adolescents is through increased understanding of the difference between consensual

and non-consensual sexting behaviours, as well as understanding of the importance of

consent in all sexual behaviours, including electronic behaviours. Parent-child communication may offer one avenue through which adolescents can be educated about this difference, and about consent as it relates to electronic sexual communication, both of which may contribute to safer sexting practices (e.g., asking consent prior to taking or sending images).

Similarly, attachment avoidance was identified as an important predictor of adolescent sending of sexual images in the present study, both directly, and as a mediator for more distal parenting variables. This suggests that adolescents' attachment representations can be important in determining their sexting behaviour, particularly for those adolescents with insecure working models. Adolescents who exhibit high attachment avoidance may engage in sexting for reasons that are related to this type of working model, for example, because sexting allows them to engage in sexual activity without the level of intimacy required for physical contact, or because sexting may help to increase their social status. Accordingly, public health programs around adolescent sexting may benefit from inclusion of material to educate adolescents about healthy models of relationships, ways to relate to one's romantic partner (e.g., nature and importance of communication and intimacy), and the importance of giving and receiving consent freely for all sexual activities, including those mediated by technology.

Conclusion

The present study sought to better understand some of the social and relational pathways through which adolescent sexting occurs. These findings represent an important contribution to the current literature, as past research has addressed prevalence, risks, and psychosocial/legal consequences related to adolescent sexting and there is a need for

research to explore the larger social context of this behaviour (Hasinoff, 2012; Walker et al., 2013). The current study indicated that parent-child communication may be one of the most direct ways for parents to influence their adolescents' sexting practices. However, findings also suggest that adolescent attachment is influential in adolescent sexting, and that parental behaviours, including warmth and psychological control, can operate indirectly through influencing attachment representations to determine adolescents' likelihood of engaging in sexting. This study also supports that the sexual double standard influences adolescents' experiences of and participation in sexting. These findings highlight the relevance of social and relational influences in adolescent sexting, which can inform the design and content of sexual health education programs. Future research is needed to explore some of the nuances both within and between different types of adolescent sexting behaviours, as well as their differential associations with parenting- and attachment-related constructs, and to extend these findings to more diverse populations of adolescents.

REFERENCES

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Erlbaum. https://doi.org/10.4324/9781315802428

Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behavior and Human Decision Processes, 50*, 179–211. https://doi.org/10.4135/9781412952576.n208

Armsden, G. C., & Greenberg, M. T. (1987). The inventory of parent and peer attachment: Individual differences and their relationship to psychological well-being in adolescence. *Journal of Youth and Adolescence*, *16*(5), 427-454. https://doi.org/10.1007/bf02202939

Associated Press & MTV. (2009). 2009 AP-MTV Digital Abuse Study: Executive Summary. Retrieved January 11, 2015, from http://www.athinline.org/MTV-AP_Digital_Abuse_Study_Executive_Summary.pdf

Banyard, V. L., Moynihan, M. M., & Plante, E. G. (2007). Sexual violence prevention through bystander education: An experimental evaluation. *Journal of community psychology*, *35*(4), 463-481. https://doi.org/10.1002/jcop.20159

Barber, B. K. (1996). Parental psychological control: Revisiting a neglected construct. *Child Development*, *67*(6), 3296-3319. https://doi.org/10.2307/1131780

Barber, B. K. (2002). Reintroducing parental psychological control. In B.K. Barber (Ed.), *Intrusive Parenting: How Psychological Control Affects Children and Adolescents* (pp. 3-14). Washington, DC: APA. https://doi.org/10.1037/10422-001

Barber, B. K., & Harmon, E. L. (2002). Violating the self: Parental psychological control of children and adolescents. In B.K. Barber (Ed.), *Intrusive Parenting: How*

Psychological Control Affects Children and Adolescents (pp. 15-52). Washington, DC: APA. https://doi.org/10.1037/10422-002

Barber, B. K., Stolz, H. E., Olsen, J. A., Collins, W. A., & Burchinal, M. (2005). Parental support, psychological control, and behavioural control: Assessing relevance across time, culture, and method. *Monographs of the Society for Research in Child Development*, i-147.

Barnes, H. L., & Olson, D. H. (1982). Parent-adolescent communication scale. In D. H. Olson et al., *Family inventories: Inventories used in a national survey of families across the family life cycle* (pp. 33-48). St. Paul: Family Social Science, University of Minnesota. https://doi.org/10.2307/1129732

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, *51*(6), 1173. https://doi.org/10.1037//0022-3514.51.6.1173

Baumeister, L. M., Flores, E., & Marín, B. V. (1995). Sex information given to Latina adolescents by parents. *Health Education Research*, *10*(2), 233-239. https://doi.org/10.1093/her/10.2.233

Baumgartner, S. E., Sumter, S. R., Peter, J., & Valkenburg, P. M. (2012). Identifying teens at risk: Developmental pathways of online and offline sexual risk behavior. *Pediatrics*, *130*(6), e1489-e1496. https://doi.org/10.1542/peds.2012-0842

Beijersbergen, M. D., Juffer, F., Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2012). Remaining or becoming secure: Parental sensitive support predicts

attachment continuity from infancy to adolescence in a longitudinal adoption study. *Developmental psychology*, *48*(5), 1277. https://doi.org/10.1037/a0027442

Birnbaum, G. E., Svitelman, N., Bar-Shalom, A., & Porat, O. (2008). The thin line between reality and imagination: Attachment orientations and the effects of relationship threats on sexual fantasies. *Personality and Social Psychology Bulletin, 34*(9), 1185-1199. https://doi.org/10.1177/0146167208319692

Blake, S. M., Ledsky, R., Lehman, T., Goodenow, C., Sawyer, R., & Hack, T. (2001). Preventing sexual risk behaviors among gay, lesbian, and bisexual adolescents: The benefits of gay-sensitive HIV instruction in schools. *American Journal of Public Health*, *91*(6), 940. https://doi.org/10.2105/ajph.91.6.940

Bost, K. K., Shin, N., McBride, B. A., Brown, G. L., Vaughn, B. E., Coppola, G., ... & Korth, B. (2006). Maternal secure base scripts, children's attachment security, and mother–child narrative styles. *Attachment & Human Development,8*(3), 241-260. https://doi.org/10.1080/14616730600856131

Bowlby, J. (1958). The nature of the child's tie to his mother. *International Journal of Psychoanalysis, 39*, 350-373.

Bowlby, J. (1969/1982). *Attachment and loss: Vol. 1. Attachment* (2nd ed.). New York: Basic Books. (Original work published 1969) https://doi.org/10.2307/2798963

Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anxiety and anger.* New York: Basic Books. https://doi.org/10.2307/583128

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, *3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2013). *Successful qualitative research: A practical guide for beginners*. Sage.

Bronfenbrenner, U. (1989). Ecological systems theory. *Annals of Child Development, 6,* 556–581. https://doi.org/10.1037/10518-046

Brown, L. S., & Wright, J. (2001). Attachment theory in adolescence and its relevance to developmental psychopathology. *Clinical Psychology & Psychotherapy*, *8*(1), 15-32. https://doi.org/10.1002/cpp.274.abs

Bruce, S. (2014). Young man enters guilty plea in high-profile Nova Scotia child porn case. *Halifax Chronicle Herald.* Retrieved from: http://thechronicleherald.ca/metro/1238106-young-man-enters-guilty-plea-in-high-profile-nova-scotia-child-porn-case

Burn, S. M. (2009). A situational model of sexual assault prevention through bystander intervention. *Sex Roles*, *60*(11-12), 779-792. https://doi.org/10.1007/s11199-008-9581-5

Campbell, S. W., & Park, Y. J. (2014). Predictors of mobile sexting among teens: Toward a new explanatory framework. *Mobile Media & Communication*,*2*(1), 20-39. https://doi.org/10.1177/2050157913502645

Carmody, M. (2009). *Sex and Ethics: The Sexual Ethics Education Program for Young People*. South Yarra, Vic.: Palgrave.

Carroll, J. L., Volk, K. D., & Hyde, J. S. (1985). Differences between males and females in motives for engaging in sexual intercourse. *Archives of Sexual Behavior*, *14*(2), 131-139. https://doi.org/10.1007/bf01541658

CCSO Cybercrime Working Group (2013). Cyberbullying and the Non-consensual

    Distribution of Intimate Images. Retrieved from: http://www.justice.gc.ca/eng/rp-

    pr/other-autre/cndii-cdncii/

Choi, H., Van Ouytsel, J., & Temple, J. R. (2016). Association between sexting and sexual

    coercion among female adolescents. *Journal of adolescence*, *53*, 164-

    168. https://doi.org/10.1016/j.adolescence.2016.10.005

Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*(1), 1551-59.

    https://doi.org/10.1037//0033-2909.112.1.155

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation*

    analysis for the behavioral sciences. Mahwah, NJ: Lawrence Erlbaum Associates.

    https://doi.org/10.4324/9780203774441

Cox Communications. (2009). Teen online and wireless safety survey: Cyberbullying,

    sexting, and parental controls: Research findings . Retrieved from

    http://www.cox.com/wcm/en/aboutus/datasheet/takecharge/2009-teen-

    survey.pdf

Criminal Code, R.S.C. 1985, c.46, s.163(1)

Crosby, R. A., DiClemente, R. J., Wingood, G. M., Cobb, B. K., Harrington, K., Davies, S. L., et al.

    (2001). HIV/STD-protective benefits of living with mothers in perceived supportive

    families: A study of high- risk African American female teens. *Preventative Medicine,*

    33, 175–178. https://doi.org/10.1006/pmed.2001.0868

Dake, J. A., Price, J. H., Maziarz, L., & Ward, B. (2012). Prevalence and correlates of sexting

    behavior in adolescents. *American Journal of Sexuality Education*, *7*(1), 1-15.

    https://doi.org/10.1080/15546128.2012.650959

Davis, D. (2006). Attachment-related pathways to sexual coercion. In M. Mikulincer & G.S. Goodman (Eds.), *Dynamics of romantic love: Attachment, caregiving, and sex* (pp. 293-336). New York, NY: Guilford Press.

Davis, D., Shaver, P. R., & Vernon, M. L. (2004). Attachment style and subjective motivations for sex. *Personality and Social Psychology Bulletin*,*30*(8), 1076-1090. https://doi.org/10.1177/0146167204264794

Davoli, M., Perucci, C. A., Sangalli, M., Brancato, G., & Dell'Uomo, G. (1992). Reliability of sexual behavior data among high school students in Rome. *Epidemiology*, 531-535. https://doi.org/10.1097/00001648-199211000-00013

Delevi, R., & Weisskirch, R. S. (2013). Personality factors as predictors of sexting. *Computers in Human Behavior*, *29*(6), 2589-2594. https://doi.org/10.1016/j.chb.2013.06.003

DiClemente, R. J., Wingood, G. M., Crosby, R., Sionean, C., Cobb, B. K., Harrington, K., ... & Oh, M. K. (2001). Parental monitoring: Association with adolescents' risk behaviors. *Pediatrics*, *107*(6), 1363-1368. https://doi.org/10.1542/peds.107.6.1363

Donbaek, D., & Elklit, A. (2014). A validation of the Experiences in Close Relationships-Relationship Structures scale (ECR-RS) in adolescents. *Attachment & Human Development*, *16*(1), 58-76. https://doi.org/10.1080/14616734.2013.850103

Dong, Y., & Peng, C. Y. J. (2013). Principled missing data methods for researchers. *SpringerPlus*, *2*(1), 222-239. https://doi.org/10.1186/2193-1801-2-222

Döring, N. (2014). Consensual sexting among adolescents: Risk prevention through abstinence education or safer sexting? *Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 8*(1), article 9. https://doi.org/10.5817/CP2014-1-9

Drouin, M., & Landgraff, C. (2012). Texting, sexting, and attachment in college students' romantic relationships. *Computers in Human Behavior*, *28*(2), 444-449. https://doi.org/10.1016/j.chb.2011.10.015

Drouin, M., & Tobin, E. (2014). Unwanted but consensual sexting among young adults: Relations with attachment and sexual motivations. *Computers in Human Behavior*, *31*, 412-418. https://doi.org/10.1016/j.chb.2013.11.001

Drouin, M., Vogel, K. N., Surbey, A., & Stills, J. R. (2013). Let's talk about sexting, baby: Computer-mediated sexual behaviors among young adults. *Computers in Human Behavior*, *29*(5), A25-A30. https://doi.org/10.1016/j.chb.2012.12.030

Dutra, R., Miller, K. S., & Forehand, R. (1999). The process and content of sexual communication with adolescents in two-parent families: Associations with sexual risk-taking behavior. *AIDS and Behavior*, *3*(1), 59-66. https://doi.org/10.1023/A:1025419519668

Enders, C. K. (2010). *Applied missing data analysis*. New York: The Guilford Press.

Etzion-Carasso, A., & Oppenheim, D. (2000). Open mother–pre-schooler communication: Relations with early secure attachment. *Attachment & human development*, *2*(3), 347-370. https://doi.org/10.1080/14616730010007914

Evans, D. E., & Rothbart, M. K. (2007). Developing a model for adult temperament. *Journal of Research in Personality*, *41*(4), 868-888. https://doi.org/10.1016/j.jrp.2006.11.002

Fasula, A. M., & Miller, K. S. (2006). African-American and Hispanic adolescents' intentions to delay first intercourse: Parental communication as a buffer for sexually active

peers. *Journal of Adolescent Health*, *38*(3), 193-200.

https://doi.org/10.1016/j.jadohealth.2004.12.009

Fauld, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical

power analysis program for the social, behavioral, and biomedical sciences. *Behavior

Research Methods, 39*, 175-191. https://doi.org/10.3758/bf03193146

Field, A. (2009). *Discovering Statistics Using SPSS*. Sage publications.

Finer, L. B., & Philbin, J. M. (2013). Sexual initiation, contraceptive use, and pregnancy

among young adolescents. *Pediatrics*, *131*(5), 886-891.

https://doi.org/10.1542/peds.2012-3495

Fleschler Peskin, M., Markham, C. M., Addy, R. C., Shegog, R., Thiel, M., & Tortolero, S. R.

(2013). Prevalence and patterns of sexting among ethnic minority urban high school

students. *Cyberpsychology, Behavior, and Social Networking*, *16*(6), 454-459.

https://doi.org/10.1089/cyber.2012.0452

Fletcher, A. C., Steinberg, L., & Williams-Wheeler, M. (2004). Parental influences on

adolescent problem behavior: Revisiting Stattin and Kerr. *Child development, 75*(3),

781-796. https://doi.org/10.1111/j.1467-8624.2004.00706.x

Fox, G. L., & Inazu, J. K. (1980). Patterns and outcomes of mother-daughter communication

about sexuality. *Journal of Social Issues*, *36*(1), 7-29.

https://doi.org/10.1111/j.1540-4560.1980.tb01896.x

Fraley, R. C., Heffernan, M. E., Vicary, A. M., & Brumbaugh, C. C. (2011). The Experiences in

Close Relationships - Relationship Structures Questionnaire: A method for assessing

attachment orientations across relationships. *Psychological Assessment*, *23*(3), 615-

625. https://doi.org/10.1037/t08412-000

Fraley, R.C. (2014). Scoring manual for the Experiences in Close Relationships –

    Relationships Structures Scale. University of Illinois at Urbana-Champaign:

    Champaign, IL. Retrieved July 23, 2017, from

    https://internal.psychology.illinois.edu/~rcfraley/measures/relstructures.htm.

Frick, P.J., Barry, C.T., & Kamphaus, R. W. (2010). *Clinical assessment of child and adolescent*

    personality and behavior. (3rd ed.). New York: Springer Science & Business Media.

    https://doi.org/10.1007/978-1-4419-0641-0

Furman, W., & Buhrmester, D. (1985). Children's perceptions of the personal relationships

    in their social networks. *Developmental Psychology, 21*, 1016–1024.

    https://doi.org/10.1037//0012-1649.21.6.1016

Garofalo, R., Wolf, R. C., Kessel, S., Palfrey, J., & DuRant, R. H. (1998). The association

    between health risk behaviors and sexual orientation among a school-based sample

    of adolescents. *Pediatrics*, *101*(5), 895-902.

    https://doi.org/10.1542/peds.101.5.895

Gentzler, A. L., & Kerns, K. A. (2004). Associations between insecure attachment and sexual

    experiences. *Personal Relationships*, *11*(2), 249-265.

    https://doi.org/10.1111/j.1475-6811.2004.00081.x

Gillespie, A. A. (2008). Adolescents accessing indecent images of children. *Journal of Sexual*

    Aggression, *14*(2), 111–122.   http://dx.doi.org/10.1080/13552600802248122

Griffin, D. W., & Bartholomew, K. (1994). Models of the self and other: Fundamental

    dimensions underlying measures of adult attachment. *Journal of personality and*

    social psychology, *67*(3), 430-445. https://doi.org/10.1037//0022-3514.67.3.430

Grossmann, K., Grossmann, K. E., & Kindler, H. (2005). Early care and the roots of attachment and partnership representations. *Attachment from infancy to adulthood: The major longitudinal studies* (pp. 98-136). New York: Guilford Press.

Grubb, A., & Turner, E. (2012). Attribution of blame in rape cases: A review of the impact of rape myth acceptance, gender role conformity and substance use on victim blaming. *Aggression and Violent Behavior*, *17*(5), 443-452. https://doi.org/10.1016/j.avb.2012.06.002

Güngör, D., & Bornstein, M. H. (2010). Culture-general and-specific associations of attachment avoidance and anxiety with perceived parental warmth and psychological control among Turk and Belgian adolescents. *Journal of Adolescence*, *33*(5), 593-602. https://doi.org/10.1016/j.adolescence.2009.12.005

Harvey, S. M., & Spigner, C. (1995). Factors associated with sexual behavior among adolescents: A multivariate analysis. *Adolescence, 30*, 253-264.

Hasinoff, A. A. (2012). Sexting as media production: Rethinking social media and sexuality. *new media & society*, https://doi.org/10.1177/1461444812459171.

Hasinoff, A. A. (2015). *Sexting panic: Rethinking criminalization, privacy, and consent*. University of Illinois Press.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, *76* 408-420. https://doi.org/10.1080/03637750903310360

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.

Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment

    process. *Journal of Personality and Social Psychology*, *52*(3), 511.

    https://doi.org/10.1037/0022-3514.52.3.511

Henrich, C. C., Brookmeyer, K. A., Shrier, L. A., & Shahar, G. (2006). Supportive relationships

    and sexual risk behavior in adolescence: An ecological–transactional

    approach. *Journal of Pediatric Psychology*, *31*(3), 286-297.

    https://doi.org/10.1093/jpepsy/jsj024

Hinduja, S., & Patchin, J. W. (2010). Sexting: A brief guide for educators and

    parents. *Cyberbullying Research Center*. Retrieved from:

    http://pershingpto.org/files/2014/04/Sexting-Fact-Sheet.pdf

Hirschi, T. (1969). Causes of delinquency. *Berkeley, CA: University of California*.

Hofferth, S.L. (1987). Factors affecting initiation of sexual intercourse. In Hofferth, S.L. and

    Hayes, C.D., eds., *Risking the Future: Adolescent Sexuality, Pregnancy, and*

    Childbearing (Vol. 2, pp. 7-35). Washington, D.C.: National Academy Press.

Hoffman, M. L. (1975). Moral internalization, parental power, and the nature of parent-

    child interaction. *Developmental Psychology*, *11*(2), 228.

    https://doi.org/10.1037/h0076463

Howell, D. C. (2007). Statistical methods for psychology (6th ed.). Belmont, CA: Thomson

    Wadsworth.

Huebner, A. J., & Howell, L. W. (2003). Examining the relationship between adolescent

    sexual risk-taking and perceptions of monitoring, communication, and parenting

    styles. *Journal of Adolescent Health*, *33*(2), 71-78. https://doi.org/10.1016/s1054-

    139x(03)00141-1

Hutchinson, K.M., & Wood, E. B. (2007). Reconceptualizing adolescent sexual risk in a

parent-based expansion of the theory of planned behavior. *Journal of Nursing*

Scholarship, *39*(2), 141-146. https://doi.org/10.1111/j.1547-5069.2007.00159.x

Hutchinson, M. K. (2002). The influence of sexual risk communication between parents and

daughters on sexual risk behaviors. *Family Relations*, *51*(3), 238-247.

https://doi.org/10.1111/j.1741-3729.2002.00238.x

Hutchinson, M. K., Jemmott, J. B., Jemmott, L. S., Braverman, P., & Fong, G. T. (2003). The role

of mother–daughter sexual risk communication in reducing sexual risk behaviors

among urban adolescent females: a prospective study. *Journal of Adolescent*

Health, *33*(2), 98-107. https://doi.org/10.1016/s1054-139x(03)00183-6

IBM Corp. (2016) IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp.

Ito, M., with Horst, H., & Antin, J., Finn, M., Law, A., Manion, A.,…Yardi, S. (2010). *Hanging*

out, messing around, and geeking out: Kids living and learning with new media.

Cambridge, MA: MIT Press.

Jaccard, J., Dittus, P. J., & Gordon, V. V. (1996). Maternal correlates of adolescent sexual and

contraceptive behavior. *Family Planning Perspectives*, *28*, 159-185.

https://doi.org/10.2307/2136192

Kan, M. L., Cheng, Y. H. A., Landale, N. S., & McHale, S. M. (2010). Longitudinal predictors of

change in number of sexual partners across adolescence and early

adulthood. *Journal of Adolescent Health*, *46*(1), 25-31.

https://doi.org/10.1016/j.jadohealth.2009.05.002

Kerpelman, J. L., McElwain, A. D., Pittman, J. F., & Adler-Baeder, F. M. (2013). Engagement in risky sexual behavior: Adolescents' perceptions of self and the parent-child relationship matter. *Youth & Society*, https://doi.org/10.1177/0044118x13479614.

Kerr, M., & Stattin, H. (2000). What parents know, how they know it, and several forms of adolescent adjustment: further support for a reinterpretation of monitoring. *Developmental psychology*, *36*(3), 366. https://doi.org/10.1037//0012-1649.36.3.366

Khaleque, A., & Rohner, R. P. (2002). Perceived Parental Acceptance-Rejection and Psychological Adjustment: A Meta-Analysis of Cross-Cultural and Intracultural Studies. *Journal of Marriage and Family*, *64*(1), 54-64. https://doi.org/10.1111/j.1741-3737.2002.00054.x

Khurana, A., Bleakley, A., Jordan, A. B., & Romer, D. (2015). The protective effects of parental monitoring and Internet restriction on adolescents' risk of online harassment. *Journal of youth and Adolescence*, *44*(5), 1039-1047. https://doi.org/10.1007/s10964-014-0242-4

Kincaid, C., Jones, D. J., Cuellar, J., & Gonzalez, M. (2011). Psychological control associated with youth adjustment and risky behavior in African American single mother families. *Journal of Child and Family Studies*, *20*(1), 102-110. https://doi.org/10.1007/s10826-010-9383-6

Kirwil, L. (2009). Parental mediation of children's Internet use in different European countries. *Journal of Children and Media*, *3*(4), 394-409. https://doi.org/10.1080/17482790903233440

Klettke, B., Hallford, D. J., & Mellor, D. J. (2014). Sexting prevalence and correlates: a

systematic literature review. *Clinical Psychology Review*, *34*(1), 44-53.

https://doi.org/10.1016/j.cpr.2013.10.007

Koen, V. (2009). *The parent-adolescent relationship and the emotional well-being of*

adolescents (Unpublished Master's thesis). North-West University, Vanderbijlpark,

South Africa. Retrieved July 23, 2017, from

https://repository.nwu.ac.za/handle/10394/4825.

Kotchick, B. A., Shaffer, A., Miller, K. S., & Forehand, R. (2001). Adolescent sexual risk

behavior: A multi-system perspective. *Clinical Psychology Review*,*21*(4), 493-519.

https://doi.org/10.1016/s0272-7358(99)00070-7

Krauss, B.J., and Miller, K.S. (2012). Parents as HIV/AIDS educators. In W. Pequegnat & C.C.

Bell, Eds., *Family and HIV/AIDS* (pp.97-120). Springer: New York.

https://doi.org/10.1007/978-1-4614-0439-2_4

Krcmar, M. (1996). Family communication patterns, discourse behavior, and child

television viewing. *Human Communication Research*, *23*(2), 251-277.

https://doi.org/10.1111/j.1468-2958.1996.tb00394.x

Lafreniere, K., Menna, R., & Cramer, K. M. (2013). Rebelliousness, effortful control, and risky

behavior: Metamotivational and temperamental predictors of risk-taking in older

adolescents. *Journal of Motivation, Emotion, and Personality*, *1*, 17-26.

https://doi.org/10.12689/jmep.2013.103

Laible, D. J., & Thompson, R. A. (2000). Mother–child discourse, attachment security, shared

positive affect, and early conscience development. *Child Development*, *71*(5), 1424-

1440. https://doi.org/10.1111/1467-8624.00237

Law, D. M., Shapka, J. D., & Olson, B. F. (2010). To control or not to control? Parenting behaviours and adolescent online aggression. *Computers in Human Behavior*, *26*(6), 1651-1656. https://doi.org/10.1016/j.chb.2010.06.013

Leland, N. L., & Barth, R. P. (1993). Characteristics of adolescents who have attempted to avoid HIV and who have communicated with parents about sex. *Journal of Adolescent Research*, *8*(1), 58-76. https://doi.org/10.1177/074355489381005

Lenhart, A. (2015). Teen, Social Media, and Technology Overview 2015. Pew Research Centre, April 9, 2015. Retrieved from http://www.pewInternet.org/2015/04/09/teens-social-media-technology-2015/

Lenhart, A., Ling, R., Campbell, S. & Purdell, K. (2010). Teens and mobile phones. Pew Internet & American Life Project, April 20, 2010. Retrieved from http://www.pewInternet.org/2010/04/20/teens-and-mobile-phones/

Lewis, C., & Fabos, B. (2005). Instant messaging, literacies, and social identities. Reading Research Quarterly, 40, 470–501. https://doi.org/10.1598/RRQ.40.4.5

Li, X., Feigelman, S., & Stanton, B. (2000). Perceived parental monitoring and health risk behaviors among urban low-income African-American children and adolescents. *Journal of Adolescent Health*, *27*(1), 43-48. https://doi.org/10.1016/s1054-139x(99)00077-4

Ling, R. (2005). Mobile communications vis-à-vis teen emancipation, peer group integration and deviance. In R. Harper, A. Taylor, & L. Palen (Eds.), *The inside text: Social perspectives on SMS in the mobile age* (pp. 175–189). London, UK: Klewer. https://doi.org/10.1007/1-4020-3060-6_10

Lippman, J. R., & Campbell, S. W. (2014). Damned if you do, damned if you don't... if you're a girl: Relational and normative contexts of adolescent sexting in the United States. *Journal of Children and Media*, *8*(4), 371-386. https://doi.org/10.1080/17482798.2014.923009

Livingstone, S., & Gorzig, A. (2012). "Sexting": The exchange of sexual messages online among European youth. In S. Livingstone, L. Haddon, & A. Gorzig (Eds.), Children, Risk and Safety on the Internet: Kids Online in Comparative Perspective (pp. 151–164). Bristol: Polity. https://doi.org/10.1332/policypress/9781847428837.003.0012

Lounsbury, K., Mitchell, K. J., & Finkelhor, D. (2011). The true prevalence of "sexting". *Crimes Against Children Research Center*, 1-9. Retrieved March 7, 2017, from http://scholars.unh.edu/ccrc/64/.

Luster, T., & Small, S. A. (1994). Factors associated with sexual risk-taking behaviors among adolescents. *Journal of Marriage and the Family*, 622-632. https://doi.org/10.2307/352873

Luyckx, K., Gandhi, A., Bijttebier, P., & Claes, L. (2015). Non-suicidal self-injury in female adolescents and psychiatric patients: A replication and extension of the role of identity formation. *Personality and Individual Differences*, *77*, 91-96. https://doi.org/10.1016/j.paid.2014.12.057

Main, M. (1995). Recent studies in attachment: Overview, with selected implications for clinical work. In S. Goldberg, R. Nuir & J. Kerr (Eds), *Attachment theory: Social, developmental and clinical perspectives* (pp. 407–474). Hillsdale, NJ: Analytic Press.

Maticka-Tyndale, E. (2001). Sexual health and Canadian youth: how do we measure up?. *Canadian Journal of Human Sexuality*, *10*(1/2), 1-18.

Maximo, S. I., Tayaban, H. S., Cacdac, G. B., Cacanindin, M. J. A., Pugat, R. J. S., Rivera, M. F., & Lingbawan, M. C. (2011). Parents' communication styles and their influence on the adolescents' attachment, intimacy and achievement motivation. *International Journal of Behavioral Science (IJBS)*, *6*(1).

Mayseless, O., & Scharf, M. (2009). Too close for comfort: Inadequate boundaries with parents and individuation in late adolescent girls. *American Journal of Orthopsychiatry*, *79*(2), 191-202. https://doi.org/10.1037/a0015623

Mikulincer, M., & Shaver, P. R. (2010). *Attachment in adulthood: Structure, dynamics, and change*. New York, NY: Guilford Press.

Miles, J., & Shevlin, M. (2001). *Applying Regression and Correlation: A Guide for Students and Researchers*. Sage.

Miller, B. C. (2002). Family influences on adolescent sexual and contraceptive behavior. *Journal of Sex Research*, *39*(1), 22-26. https://doi.org/10.1080/00224490209552115

Mitchell, K. J., Finkelhor, D., Jones, L. M., & Wolak, J. (2012). Prevalence and characteristics of youth sexting: A national study. *Pediatrics, 129*, 13–20. https://doi.org/10.1542/peds.2011-1730

Moore, K. A., Miller, B.C., Glei, D., & Morrison, D.R. (1995). *Adolescent Sex, Contraception, and Childbearing: A Review of Recent Research.* Washington, D.C.: Child Trends Inc.

Morsbach, S. K., & Prinz, R. J. (2006). Understanding and improving the validity of self-report of parenting. *Clinical Child and Family Psychology Review*, *9*(1), 1-21. https://doi.org/10.1007/s10567-006-0001-5.

Muehlenhard, C. L., & Cook, S. W. (1988). Men's self-reports of unwanted sexual activity. *Journal of Sex Research*, *24*(1), 58-72. https://doi.org/10.1080/00224498809551398

Mueller, K. E., & Powers, W. G. (1990). Parent-child sexual discussion: Perceived communicator style and subsequent behavior. *Adolescence*, *25*, 469-482.

National Campaign to Prevent Teen and Unplanned Pregnancy (2008). Sex and tech survey. http://www.thenationalcampaign.org/sextech/PDF/Sex Tech_Summary.pdf.

Nelson, K. (1998). *Language in cognitive development: The emergence of the mediated mind*. New York: Cambridge University Press.

Newcomer, S. F., & Udry, J. R. (1985). Parent-child communication and adolescent sexual behavior. *Family Planning Perspectives*, *17,* 169-174. https://doi.org/10.2307/2135242

Olson, D. H., Gorall, D. M., & Tiesel, J. W. (2004). *Faces IV Package*. Minneapolis, MN: Life Innovations.

Ontario Ministry of Education. (2015). *The Ontario Curriculum, Grades 9 to 12: Health and Physical Education.* Retrieved from http://www.edu.gov.on.ca/eng/curriculum/secondary/health.html

Parkes, A., Henderson, M., Wight, D., & Nixon, C. (2011). Is Parenting Associated with Teenagers' Early Sexual Risk-Taking, Autonomy And Relationship with Sexual

Partners?. *Perspectives on sexual and reproductive health*, *43*(1), 30-40.

https://doi.org/10.1363/4303011

Patterson, G. R., & Dishion, T. J. (1985). Contributions of families and peers to

delinquency. *Criminology*, *23*(1), 63-79. https://doi.org/10.1111/j.1745-

9125.1985.tb00326.x

Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park,

CA: Sage.

Peskin, M., Markhan, C., Addy, R., Shegog, R., Thiel, M., & Tortolero, S. (2013). Prevalence

and patterns of sexting among ethnic minority urban high school

students. *Cyberpsychology, Behavior, and Social Networking*, *16*, 454-459.

http://dx.doi.org/10.1089/cyber.2012.0452

Pittman, J. F., Kerpelman, J. L., Soto, J. B., & Adler-Baeder, F. M. (2012). Identity exploration

in the dating domain: The role of attachment dimensions and parenting

practices. *Journal of Adolescence*, *35*(6), 1485-1499.

https://doi.org/10.1016/j.adolescence.2012.04.006

Powell, A., & Henry, N. (2014). Blurred lines? Responding to 'sexting'and gender-based

violence among young people. *Children Australia*, *39*(2), 119-124.

https://doi.org/10.1017/cha.2014.9

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect

effects in simple mediation models. *Behavior research methods*, *36*(4), 717-731.

https://doi.org/10.3758/bf03206553

Price, M. N., & Hyde, J. S. (2009). When two isn't better than one: predictors of early sexual

    activity in adolescence using a cumulative risk model. *Journal of Youth and*

    Adolescence, *38*(8), 1059-1071. https://doi.org/10.1007/s10964-008-9351-2

PROTECT Our Children Act, 18 U.S.C. § 2256 *et seq*. (2008)

PSHE (Personal, Social, Health, and Economic Education) Association. (2016). *Parents call*

    for education to address sexting by children and young people. Retrieved May 2017

    from https://www.pshe-association.org.uk/news/parents-call-education-address-

    sexting-children.

R v Sharpe, (2001) 1 S.C.R. 45, 2001 SCC 2

Random Picker System, v. 5.0. [Computer software]. Available from

    www.randompicker.com.

Resnick, M. D., Bearman, P. S., Blum, R. W., Bauman, K. E., Harris, K. M., Jones, J., ... & Udry, J.

    R. (1997). Protecting adolescents from harm: findings from the National

    Longitudinal Study on Adolescent Health. *JAMA*, *278*(10), 823-832.

    https://doi.org/10.1001/jama.278.10.823

Reyns, B. W., Burek, M. W., Henson, B., & Fisher, B. S. (2013). The unintended consequences

    of digital technology: exploring the relationship between sexting and

    cybervictimization. *Journal of Crime and Justice*, *36*(1), 1-17.

    https://doi.org/10.1080/0735648x.2011.641816

Rice, E., Rhoades, H., Winetrobe, H., Sanchez, M., Montoya, J., Plant, A., & Kordic, T. (2012).

    Sexually explicit cell phone messaging associated with sexual risk among

    adolescents. *Pediatrics*, *130*(4), 667-673. https://doi.org/10.1542/peds.2012-

    0021d

Ringrose, J., Gill, R., Livingstone, S., & Harvey, L. (2012). A qualitative study of children, young people and sexting. London: NSPCC. Retrieved July 23, 2017, from http://eprints.lse.ac.uk/44216/.

Robbins, R. N., & Bryan, A. (2004). Relationships between future orientation, impulsive sensation seeking, and risk behavior among adjudicated adolescents. *Journal of Adolescent Research*, *19*(4), 428-445. https://doi.org/10.1177/0743558403258860

Rodgers, K. B. (1999). Parenting processes related to sexual risk-taking behaviors of adolescent males and females. *Journal of Marriage and the Family*, 99-109. https://doi.org/10.2307/353886

Rohner, R. P. (1986). The warmth dimension. *Beverly Hills, CA: Sage*.

Rohner, R. P., & Khaleque, A. (2005). *Handbook for the study of parental acceptance and rejection*. Storrs, CT: Rohner Research Publications.

Rohner, R.P., Kean, K.J., & Cournoyer, D.E. (1991). Effects of corporal punishment, perceived caretaker warmth, and cultural beliefs on the psychological adjustment of children in St. Kitts, West Indies. *Journal of Marriage and the Family, 53*, 681-693. https://doi.org/10.2307/352743

Roisman, G. I., Madsen, S. D., Hennighausen, K. H., Sroufe Sr, A.L., & Collins, A.W. (2001). The coherence of dyadic behavior across parent–child and romantic relationships as mediated by the internalized representation of experience. *Attachment & Human Development*, *3*(2), 156-172. https://doi.org/10.1080/14616730110056946

Rosen, L. D., Cheever, N. A., & Carrier, L. M. (2008). The association of parenting style and child age with parental limit setting and adolescent MySpace behavior. *Journal of*

Applied Developmental Psychology, *29*(6), 459-471.

https://doi.org/10.1016/j.appdev.2008.07.005

Rothbart, M. K., Ahadi, S. A., & Evans, D. E. (2000). Temperament and personality: origins

and outcomes. *Journal of personality and social psychology*,*78*(1), 122-135.

https://doi.org/10.1037//0022-3514.78.1.122

Rubin, D. B. (1976). Inference and missing data. *Biometrika*, *63*(3), 581-592.

https://doi.org/10.2307/2335739

Schachner, D. A., & Shaver, P. R. (2004). Attachment dimensions and sexual

motives. *Personal Relationships*, *11*(2), 179-195.

https://doi.org/10.1037/e633912013-231

Schaefer, E. S. (1965). A configurational analysis of children's reports of parent

behavior. *Journal of Consulting Psychology*, *29*(6), 552-557.

https://doi.org/10.1037/h0022702

Scheffer, J. (2002). Dealing with missing data. *Research Letters in the Information and

Mathematical Sciences,* 3, 153-160. Retrieved December 6, 2017, from

http://hdl.handle.net/10179/4355.

Schludermann, E., & Schludermann, S. (1970). Replicability of factors in children's report of

parent behavior (CRPBI). *The Journal of Psychology*, *76*(2), 239-249.

https://doi.org/10.1080/00223980.1970.9916845

Senn, C. Y., & Forrest, A. (2016). "And then one night when I went to class...": The impact of

sexual assault bystander intervention workshops incorporated in academic

courses. *Psychology of Violence*, *6*(4), 607. https://doi.org/10.1037/a0039660

Simons, L. G., Sutton, T. E., Simons, R. L., Gibbons, F. X., & Murry, V. M. (2016). Mechanisms that link parenting practices to adolescents' risky sexual behavior: A test of six competing theories. *Journal of youth and adolescence*, *45*(2), 255-270. https://doi.org/10.1007/s10964-015-0409-7

Smith, K. M., Freeman, P. A., & Zabriskie, R. B. (2009). An examination of family communication within the core and balance model of family leisure functioning. *Family Relations*, *58*(1), 79-90. https://doi.org/10.1111/j.1741-3729.2008.00536.x

Spencer, S. (2015). Sexting on the rise, police raise awareness in Plymouth. *WSBT-TV*. Retrieved from http://www.wsbt.com/news/local/sexting-on-the-rise-police-raise-awareness-in-plymouth/32167254

Sportel, B. E., Nauta, M. H., de Hullu, E., de Jong, P. J., & Hartman, C. A. (2011). Behavioral inhibition and attentional control in adolescents: Robust relationships with anxiety and depression. *Journal of child and family studies, 20*(2), 149-156. https://doi.org/10.1007/s10826-010-9435-y

Stanton, B., Cole, M., Galbraith, J., Li, X., Pendleton, S., Cottrel, L., Marshall, S., Wu, Y., & Kaljee, L. (2004). Randomized trial of a parent intervention: parents can make a difference in long-term adolescent risk behaviors, perceptions, and knowledge. *Archives of Pediatrics & Adolescent Medicine*, *158*(10), 947-955. https://doi.org/10.1001/archpedi.158.10.947

Stattin, H., & Kerr, M. (2000). Parental monitoring: A reinterpretation. *Child Development, 71*, 1072–1085. https://doi.org/10.1111/1467-8624.00210

Strassberg, D. S., McKinnon, R. K., Sustaíta, M. A., & Rullo, J. (2013). Sexting by high school

students: An exploratory and descriptive study. *Archives of Sexual Behavior*, *42*(1).

https://doi.org/10.1007/s10508-012-9969-8

Tabachnick, B.G., & Fidell, L.S. (2007). *Using multivariate statistics: Fifth edition*. New York,

NY: Pearson.

Temple, J. R., & Choi, H. (2014). Longitudinal association between teen sexting and sexual

behavior. *Pediatrics*, *134*(5), e1287-e1292. https://doi.org/10.1542/peds.2014-

1974d

Temple, J. R., Le, V. D., van den Berg, P., Ling, Y., Paul, J. A., & Temple, B. W. (2014). Brief

report: Teen sexting and psychosocial health. *Journal of Adolescence*, *37*(1), 33-36.

https://doi.org/10.1016/j.adolescence.2013.10.008

Temple, J. R., Paul, J. A., van den Berg, P., Le, V. D., McElhany, A., & Temple, B. W. (2012).

Teen sexting and its association with sexual behaviors. *Archives of Pediatrics &*

Adolescent Medicine, *166*(9), 828-833. https://doi.org/10.1542/peds.2014-1974

Thompson, R. A. (2000). The legacy of early attachments. *Child development*,*71*(1), 145-152.

https://doi.org/10.1111/1467-8624.00128

Tomasello, M. (2009). *The cultural origins of human cognition*. Cambridge, MA: Harvard

University Press.

Tracy, J. L., Shaver, P. R., Albino, A. W., & Cooper, M. L. (2003). Attachment styles and

adolescent sexuality. In P. Florsheim (Ed.), *Adolescent romantic relations and sexual*

behavior: Theory, research, and practical implications (pp. 137-159).

Vanden Abeele, M., Beullens, K., & Roe, K. (2013). Measuring mobile phone use: Gender, age

and real usage level in relation to the accuracy and validity of self-reported mobile

phone use. *Mobile Media & Communication*, *1*(2), 213-236.

https://doi.org/10.1177/2050157913477095

van IJzendoorn, M. H., & Bakermans-Kranenburg, M. J. (2004). Maternal sensitivity and

infant temperament in the formation of attachment. In G. Bremner & A. Slater (Eds.),

Theories of infant development (pp. 231-257). Malden, MA: Blackwell.

Van Ouytsel, J., Van Gool, E., Ponnet, K., & Walrave, M. (2014). Brief report: The association

between adolescents' characteristics and engagement in sexting. *Journal of*

Adolescence, *37*(8), 1387-1391. https://doi.org/10.1016/j.adolescence.2014.10.004

Villacampa, C. (2017). Teen sexting: Prevalence, characteristics and legal

treatment. *International Journal of Law, Crime and Justice*, *49*, 10-21.

https://doi.org/10.1016/j.ijlcj.2017.01.002

Walker, S., Sanci, L., & Temple-Smith, M. (2013). Sexting: Young women's and men's views

on its nature and origins. *Journal of Adolescent Health*, *52*(6), 697-701.

https://doi.org/10.1016/j.jadohealth.2013.01.026

Weeks after posting haunting YouTube video on hers of torment at classmates' hands, 15-

year-old B.C. girl commits suicide. (2012, Oct. 12). *The National Post.* Retrieved from

http://news.nationalpost.com/news/canada/amanda-todd-suicide-2012

Weinstein, M., & Thornton, A. (1989). Mother-child relations and adolescent sexual

attitudes and behavior. *Demography*, *26*(4), 563-577.

https://doi.org/10.2307/2061258

Weisskirch, R. S., & Delevi, R. (2011). "Sexting" and adult romantic attachment. *Computers*

in Human Behavior, *27*(5), 1697-1701. https://doi.org/10.1016/j.chb.2011.02.008

Welch-Ross, M. K. (1997). Mother–child participation in conversation about the past: Relationships to preschoolers' theory of mind. *Developmental Psychology*,*33*(4), 618-629. https://doi.org/10.1037//0012-1649.33.4.618

Woelfel, J., & Haller, A. O. (1971). Significant others, the self-reflexive act and the attitude formation process. *American Sociological Review, 36*(1), 74-87. https://doi.org/10.2307/2093508

Wolak, J. and Finkelhor, D. (2011). Sexting: A typology. Durham, NH: Crimes against Children Research Center. Retrieved July 21, 2017, from http://scholars.unh.edu/ccrc/48/

Wood, M., Barter, C., Stanley, N., Aghtaie, N., & Larkins, C. (2015). Images across Europe: The sending and receiving of sexual images and associations with interpersonal violence in young people's relationships. *Children and Youth Services Review*, *59*, 149-160. https://doi.org/10.1016/j.childyouth.2015.11.005

Wood, R. H. (2009). Failure of Sexting Criminalization: A Plea for the Exercise of Prosecutorial Restraint. *Michigan Telecommunications and Technology Law Review*, *16* (1), 151-200.

Ybarra, M. L., & Mitchell, K. J. (2014). "Sexting" and its relation to sexual activity and sexual risk behavior in a National Survey of adolescents. Journal of Adolescent Health, 55(6), 757e764. http://dx.doi.org/10.1016/j.jadohealth.2014.07.012.

Young, E. W., Jensen, L. C., Olsen, J. A., & Cundick, B. P. (1991). The effects of family structure on the sexual behavior of adolescents. *Adolescence*, *26*(104), 977.

Zhou, Q., Eisenberg, N., Losoya, S. H., Fabes, R. A., Reiser, M., Guthrie, I. K., ... & Shepard, S. A. (2002). The Relations of Parental Warmth and Positive Expressiveness to Children's

Empathy-Related Responding and Social Functioning: A Longitudinal Study. *Child Development*, *73*(3), 893-915. https://doi.org/10.1111/1467-8624.00446

Zimmer-Gembeck, M. J., & Helfand, M. (2008). Ten years of longitudinal research on US adolescent sexual behavior: Developmental correlates of sexual intercourse, and the importance of age, gender and ethnic background. *Developmental Review*, *28*(2), 153-224. https://doi.org/10.1016/j.dr.2007.06.001

APPENDIX A

Teen Background Information Questionnaire

1. When is your birthday? Please give month and year (example: June 1990)

    My birthday is _____ _____.
                       (month)   (year)

2. How old are you in years? (example: I am 14 years old)

    I am _____ years old.

3. What is your gender? _____

4. What grade are you in?

    ☐ Grade 9
    ☐ Grade 10
    ☐ Grade 11
    ☐ Grade 12

5. Which ethnic category best describes you? (Please choose one)

    ☐ Caucasian
    ☐ Black/African
    ☐ Carribbean
    ☐ Hispanic
    ☐ Filipino
    ☐ Arab (e.g., Lebanese, Palestinian, Egyptian, etc.)

    ☐ Asian/Pacific
    ☐ Aboriginal (e.g., North American Indian, Metis, Inuit, etc.)
    ☐ Latin American
    ☐ Native
    ☐ Other – please specify: _____

6. Are your parents _____? (Please choose one)

    ☐ Married
    ☐ Divorced
    ☐ Separated
    ☐ Living together
    ☐ None of the above

7. What is the highest education level your mother completed? (Please choose one)

□ Elementary School (Grades 1-6)
□ Middle School (Grades 7-8)
□ High School (Grades 9-12)
□ Some university or college, or CEGEP
□ University or College
□ Graduate School
□ Other

8. What is the highest education level your father completed? (Please choose one)

□ Elementary School (Grades 1-6)
□ Middle School (Grades 7-8)
□ High School (Grades 9-12)
□ Some university or college, or CEGEP
□ University or College
□ Graduate School
□ Other

9. Is your mother currently employed?

□ Yes
□ No

What is/was your mother's occupation? _____

10. Is your father currently employed?

□ Yes
□ No

What is/was your father's occupation? _____

VITA AUCTORIS

Julie Norman was born in 1988 in Ottawa, Ontario. She graduated from Lester B. Pearson Catholic High School (Ottawa, Ontario) in 2006. She then attended the University of Ottawa (Ottawa, Ontario) where she obtained a B.Sc. with specialization in Psychology in 2010. From there, she went on to the University of Windsor (Windsor, Ontario), where she completed her M.A. in Clinical Psychology (Child) in 2012. She is currently a candidate for the Ph.D. in Clinical Psychology (Child) at the University of Windsor and will graduate in Fall 2017.