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## SPECIAL ISSUE ON SEXTING

# Sexting in Poland and the United States: A Comparative Study of Personal and Social- Situational Factors

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### Abstract

*The current study investigates personal and social-situational factors that influence sexting among samples of young adults in two countries with similar rates of technology use. Specifically, the study examines age, gender, and nationality, along with variables related to technology use, normalized intimate behavior occurring through technology, and exposure to risk via technology using data collected from college students in Poland and the United States who completed online questionnaires. The results indicate that social-situational factors explained greater variance in sexting than personal factors. The normalization of intimate behavior occurring through technology and risk exposure both significantly related to sexting, and post-hoc tests revealed gender and nationality differences in these social constructs, with male and American students having higher normalization scores and with female and American students having higher risk exposure scores. Communication preference was also significant. Additional tests revealed that, out of all social-situational factors, having known someone who sexted and having used technology to facilitate a “hook up” encounter were the strongest predictors of sexting. It is recommended that future research tests theoretical propositions of various theories and considers an integrated theory to explain individual, group, and societal variation in sexting.*

Keywords: Sexting, Technology, Sexual Behavior, Social Factors, Personal Factors.

### Introduction

Socially interactive technology (e.g., mobile phone text messaging, social network sites like Facebook and Twitter, etc.) has permanently changed our communication landscape, allowing users to interact electronically with one another in a way that was once inconceivable – being physically absent yet instantaneously accessible and connected.

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These new communication technologies have altered the ways we interact with one another, even in the most intimate of relationships. In recent years, we have come to observe documentation regarding the role that such technology plays in sexual behavior. Considerable attention has been given to the growing phenomenon of sexting, which refers to the sharing or transfer of nude/sexually suggestive photos, videos, and images through electronic means such as mobile phone text messaging services, smartphone apps (e.g., Tinder, Snapchat), or online services (e.g., emails, chat rooms, instant messages) via computer, tablet, and other electronic devices. Sexting is a modern method of sexual expression and intimate communication, and predilection for it seems to be on the rise. It is estimated that about 10% of cell phone users have sent a sext message and 20% received one, with smartphone users being over twice as likely as non-smartphone users to do so (Lenhart & Duggan, 2014), yet estimates of sexting vary based on other factors. Nevertheless, the capacity for smartphones to share photos and videos in text messages and to connect with others through mobile phone apps or on the Internet has paved the way for such immediate exchanges.

The purpose of the current study is to investigate personal and social-situational factors that may influence sexting. Specifically, the study examines whether: 1) age, gender, and nationality influence sexting, 2) technology factors relate to sexting, 3) the normalization of intimate behavior occurring through technology impacts sexting, and 4) risk exposure is associated with sexting.

## **Prior Research**

### ***a. Age***

Studies on the prevalence of sexting reveal its popularity with younger generations. When examining teenagers, one study found that 15% of cell-phone owners aged 12-17 received nude or nearly nude images while 4% sent such media to another (Lenhart, 2009), and another study found estimates to be substantially higher, with 40% of high school students reporting having received a sext and 18% having sent one (Strassberg et al., 2010). While much of the research focuses on teenagers, research on young adults is also growing and indicates that this age group is critical to study. Young adults have higher rates of these behaviors than teenagers, and they are also more likely to send, receive, and forward texts than older adults (Lenhart & Duggan, 2014). In one study, Benotsch and colleagues (2013) found that nearly half (44%) of the sample reporting engaging in sexting. Likewise, a PewResearch Poll revealed that nearly half of cell phone owners between the ages of 18-24 (44%) reported having received a sext and over one-quarter of those ages 25-34 (22%) reported having sent a sext. Nearly 10% of these young adults have even reported forwarded the sext to someone else. Outside of college populations, one study indicated that 70% of 18-24 year olds received some type of sexually suggestive content from someone, which was the largest percentage of all age groups (The Futures Company, 2014). Most of these images were shared with intimate partners.

Young adults represent the highest percentage of technology users. According to data from 2017, 100% of individuals between the ages of 18-29 have a mobile phone, with 92% own a smartphone (Mobile Fact Sheet, 2017), up from 86% of smart phone owners in 2015 (Anderson, 2015). The vast majority use social media/Internet (Greenwood et al., 2016). They are also at an age following adolescence where romantic feelings and sexual



intimacy grow more common (Miller & Benson, 1999). Thus, it is not surprising that young adults generally have higher rates of sending/receiving sexts than older adults. In recent times, electronic dating services, including web-based platforms such as Match.com and location-based smartphone apps like Tinder, have become popular means of “meeting” potential romantic interests; since 2013, persons between the ages of 18–24 have tripled their use, while use by older adults has also increased (Smith, 2016). Individuals who use online dating venues have been noted to have the highest rate of sending (31%) and receiving (55%) sexts (Lenhart & Duggan, 2014), as well as forwarding them; those who were “single and looking” followed. Taken together, most persons who sext are single and not in a relationship, but expressed interested in one, suggesting that sexting may be a way to communicate interest in another when looking for a potential partner.

### **b. Gender**

Research has produced inconsistent findings on gender differences in sexting rates. While it seems that there is consensus on males receiving sexts at higher rates than females (e.g. Hinduja & Patchin, 2011; Strassberg et al., 2010), some research has suggested that females are more likely than males to share sexts (Englander & McCoy, 2015; Mitchell et al., 2012; Wysocki, & Childers, 2011), yet other research suggests there are no gender differences in sending (Strassberg et al., 2010), that men send and receive sexts at higher rates than women (Baumgartner, Valkenburg, & Peter, 2010; The Futures Company, 2014), or that gender differences largely disappear in later adolescence (Ybarra & Mitchell, 2014). Nevertheless, men more commonly receive risqué photos than women, yet it should be noted that nearly all studies to date have focused on heterosexual relationships. In this context, such results may be a manifestation of “doing gender” whereby females express attraction, romantic interest, or desire via sexts– or the findings may be a byproduct of the “bros before hoes” mentality whereby males may feel compelled to share private images they were entrusted with or had access to with other males in order to fit in and gain acceptance as “one of the guys.” The former may be due to social pressure females face to use sexual prowess and gendered expectations to make themselves sexually desirable (especially in a culture where sexual objectification is evident), while the latter can be informed by male peer support in that males may encourage other males to engage in deviant behavior that builds their status in the group at the expense of others (see Schwartz et al., 2001; although this study focuses on campus sexual assault, it is also valuable in thinking about contemporary gender violence such as image-based abuse).

### **c. Cross-Cultural Studies**

Despite knowing more about the phenomenon of sexting, few studies have been conducted abroad. One study of European countries found that age, sensation seeking, and frequency of Internet use related to sexting for adolescents, along with traditionalism whereby boys engaged in sexting at higher rates than girls (Baumgartner et al., 2014). Research has also been conducted in specific countries such as Poland, which serves as an interesting contrast to the United States. Poland is similar to the United States with its integration of technology into daily lives. More households now have mobile phones than landlines in Poland (IT and telecommunications in Central and Eastern Europe, 2012) and the United States (Blumberg & Luke, 2009), and text messaging is a frequent mode of

communication used in place of verbal exchanges in both countries. Over 93% of Polish individuals ages 18–24 are Internet users (Centrum Badania Opinii Społecznej, 2013), representing the largest age group of users; this is analogous to data previously described for American counterparts. If sexting is about opportunity, it is expected that we would observe similar rates of behavior among American and Polish individuals; yet it is possible that various social factors may impact differences among samples in these groups.

While some have suggested that those residing in Poland hold more conservative views centering on relationship intimacy/sexuality than those in the United States, research has suggested that both countries are similar in attitudes about permissible sexual behavior (Widmer et al., 1998); their stances toward non-marital sex and other sexual behavior resemble conservative Catholic nations. Some research in Poland has drawn attention to the dangerousness of sexting (Izdebski & Żbikowska, 2014), and while this is true of research in the United States, there is also research on positive aspects of the behavior (e.g. Manning, 2015). Nevertheless, when it comes to sexting and other contemporary displays of sexual behavior, research suggests that there are some differences between the two nations. A study by Marganski and Fauth (2013) found that young American adults were substantially more likely to engage in sexual behaviors such as “hooking up” (i.e., an uncommitted sexual encounter between consenting persons) and sexting than their Polish counterparts, and that such behavior increased the odds of experiencing intimate partner cyber aggression, as elucidated by lifestyle–routine activities theory. It is therefore important to consider why such differences might exist.

#### ***d. Correlates of Sexting***

Technology use is believed to increase the likelihood of sexting. Young adults who are frequent texters have a preference toward electronic communications over voice communications (Smith, 2011). A recent report underscored findings that teenagers are more confident when talking to others via smartphones than in-person (Peacock & Sanghani, 2014), which may suggest that we have become “domesticated” with technology by integrating it into lives – and even replacing traditional behaviors. Research on teenagers has found that comfort and experience with text messaging as a form of communication plays a role in the likelihood of sexting. Specifically, the more text messages one sends and receives, regardless of the content, the more likely one is to sext (Strassberg et al., 2010). This suggests that technology use should be integrated in the study of sexting.

Research has also called for an examination of motivations to sext in order to gain a better understanding of why some choose to do so (Weiss & Samenow, 2010). Establishing technology users’ rationales for sexting can provide insight into why it may occur and what the disadvantages as well as advantages may be. Looking into benefits, it is possible that this behavior is a way to start a relationship or maintain a relationship with a significant other; a form of flirting or an expression of romantic desire, and that it might even improve relationships. Alternatively, it may be that some individuals sext out of social pressures. One study found that youth who feel lonely or disempowered with weaker social skills were significantly more likely to communicate online about intimate topics than their counterparts (Bonetti et al., 2010). Thus, this could be a type of compensation to build relationships that one might otherwise have trouble with in-person, or it may be a means of making friends and being accepted into peer groups.



Another social factor to consider is how normalized sexual behavior has become. The proliferation of sexualized context in everyday life, whether in fast food commercials or other types of mainstream mass media, or through easy or accidental access to online pornography, paves the way for the normalization of sexual behavior. These factors are thought to influence young adults' sexual expressions. Portrayals of sexuality everywhere you look – in the movies, television, magazines, music, and elsewhere, and such portrayals shape as well as reinforce sexual/relationship norms (Brown, 2010). Research has suggested that the Internet has an effect on sexuality, influencing negative patterns, but it can also have some positive connections (see Cooper, 1998). Nevertheless, sexually explicit materials are ubiquitous and have notable impacts on norms and attitudes (Koletić, 2017). The Internet also has an endless supply of easily accessible sexual suggestive material, including pornography. In a study by Carroll and colleagues (2008), an estimated 90% of college-aged males reported viewing pornography and two-thirds regarded viewed pornography as acceptable; for females, about one-third reported viewing it and close to half thought it was acceptable. Such use and acceptance were associated with risky sexual behavior and substance abuse. Risky sexual behavior has been linked to sexting (Benotsch, Snipes, Martin, & Bull, 2013).

Young adults have higher rates of technology use than older adults and higher rates of sending/receiving sexts than older adults, and they are also exposed to sexual content online as well as in college life (consider contemporary “hook up culture” –e.g. Garcia et al., 2012). As reliance on technology climbs in a sex-saturated world, rates of sexting may rise, reflecting transference of intimate behavior instigated by the blurred lines that once separated the real and the virtual worlds. Sexting may now be an acceptable and normative way to communicate amorous yearnings or to keep passion in existing relationships alive. It may also be seen as a modern method of seduction. In a world where technology has always been an integral part of their lives, young adults may find such behavior standard or to be expected.

The power technology has in influencing social relationships is often overlooked. Lenhart and Duggan (2014) found that nearly half of Internet users in serious relationships reported that the Internet has had an impact on their relationships. Over 40% of young adults in serious relationships reported feeling closer to partners thanks to technology and about one-quarter used it to resolve arguments, suggesting that technology has the capacity to facilitate intimacy and closeness. Yet, approximately the same percent of respondents felt partners were distracted by technology, and about one-fifth reported tension in relationships as a result of technology use. Studies have documented issues such as infidelity facilitated via technology (Wysocki & Childers, 2011), among other concerns. Unanticipated consequences may also occur including privacy violations when one who was trusted with a personal photo shares, or threatens to share, the image with others; this can be to gain compliance or power over another, or it may be motivated by numerous other factors such “bragging rights” among peers, an attempt to humiliate another or exact revenge on an ex partner, etc. – a phenomenon referred to as image-based sexual abuse (McGlynn, Rackley, & Houghton, 2017).

In a study by Renfrow and Rollo (2014), narratives were examined to consider the meaning sexting had for those who did and did not sext. The study emphasized that both groups were aware of the risks of sexting (e.g. the recipient sharing the image with another without one's consent), but that risks were minimized with content control

strategies like “keeping it fun”, looking at the benefits, and pointing to the normalcy of the behavior. Likewise, studies on young adults suggest that this group may overlook potential psychological (e.g. anxiety, depression), interpersonal (e.g. bullying, harassment, shaming, etc.), and legal consequences associated with sexting. In other words, they recognize that these exist, but act in a manner as if it would not happen to them, despite the potential for it. One study found that many youths were aware of potential serious legal consequences of sexting, yet about one-third still reported sexting while acknowledging that there could be serious costs (Strassberg et al., 2010). Thus, they may be limited capacity to think in the long-term.

Research has posited low self-control as a possible explanation for teen sexting, suggesting the individual does not consider long-term consequences, but rather acts impulsively and seeks immediate gratification (see Marcum et al., 2014). Yet youth differ from young adults in many ways; the latter of whom are thought to be more rational in decisions-making processes. In contrast to teenagers, young adults are thought to have more advanced cognitive abilities for future outlooks and may consider possible consequences. At the same time, knowing that consequences to behavior exist is not always enough to deter the behavior; history can tell us that making things illegal does not make them go away – in the case of sexting, it is not necessarily illegal until certain barriers are broken (e.g. underage, image-based abuse, etc.). So, knowing there may be consequences may be a shoddy measure of deterrence. A better indicator might be whether one knows someone that has been hurt or harmed by technology, which makes things more personal. According to learning theories (see Akers, 1990; Bandura, 1977), people learn by observing the actions of others and the outcomes associated with the behavior. Further, people are thought to learn through influential models, such as friends who offer examples of actions that may subsequently be encoded and enacted. Along these lines, Sutherland’s differential association theory suggests that people learn in the process of communication and via interaction in small, intimate groups, with the most important part of behavior being learned through close friends (Sutherland, 1947). Therefore, people may be more important in understanding behavior than other measures of deterrence.

In summation, research has focused on the prevalence of sexting, along with demographic variables and risk factors. Overall, the findings generated from the studies underscore the importance of individual factors in understanding sexting, yet research on social-situational factors that impact sexting among young adults is relatively scant.

### **The Present Study**

The current study aims to offer a more complete picture of variables that may be particularly influential to sexting, and it seeks to learn which variables might serve as the strongest predictors. Based on the research, it was hypothesized that:

H<sub>1</sub>: Age and nationality influence sexting rates.

H<sub>1,1</sub>: Young adults are more likely to engage in sexting than older adults.

H<sub>1,2</sub>: Americans are more likely to sext than their counterparts.

No prediction was made regarding the relationship between gender and sexting, given mixed findings in the research base.

H<sub>2</sub>: Individuals reporting high technology use and those who report preference for technology are more likely to engage in sexting relative to individuals reporting low levels of technology use or preference for in-person communications.



H<sub>3</sub>: The normalization of intimate behaviors occurring through technology positively relates to sexting so that persons with higher scores (e.g. knowing someone who sexted, using technology to facilitate hookup encounters, etc.) are more likely to sext than those with lower scores

H<sub>4</sub>: There is an inverse relationship between risk exposure and sexting so that individuals with low risk exposure (e.g. not witnessing negative relationship encounters) are more likely to sext than individuals with high risk exposure.

## Methodology

Data for the current study came from a subset of existing data gathered by Marganski (2012) as part of a cross-cultural study examining the role of technology in intimate relationships. The data contained respondents from graduate and undergraduate programs at several different institutions in the United States and Poland who were recruited through convenience sampling over a three-month period in the latter part of 2012. For purposes of the current study, only undergraduate students from a small southeastern college in the U.S and a small northern college in Poland who completed online self-report surveys were included (N = 430). The institutions were comparable in size and offered course work leading up to bachelor degrees. All surveys were completely voluntary and anonymous, and the project was reviewed / approved by the review boards from the institutions involved. The surveys were identical with the exception of the language they were written in—surveys distributed in the United States were in English while surveys distributed in Poland were in Polish (note: survey translation was proofed by researchers in Poland, as recommended by conventions in their field of cross-cultural research - see Brislin, 1983). Since research has noted that the age groups of 18-24 and 25-34 represent those most likely to send, receive, and forward sexts, the current study also restricted the sample to students ages 18-34. The final sample size was 381.

The majority of student respondents in the study resided in the United States (85.3%, n = 325), were female (71.1%, n = 270), and predominantly White (70.6%, n = 267). The age of the participants ranged from 18 to 34 with a mean of 21.4 years (s.d. = 3.0). All respondents reported having recently used mobile phones and/or SN sites. Since the Polish sample was smaller than the American sample, differences between groups were examined. The results revealed that Polish and American samples generally contained similar characteristics; most respondents were White (100% and 65.5%, respectively), female (60.7% and 72.8%), and young adults ( $\bar{x} = 21.6$ , s.d. = 3.1 and  $\bar{x} = 20.2$ , s.d. = 2.0, respectively). However, the groups significantly differed on race (Poland was homogeneous at 100% White versus 65.5% in the American sample and therefore this variable was not retained for later analyses).

## Measures

Questions relating to demographic variables and other characteristics were used, along with variables of interest that include normalized intimate behavior occurring through technology and risk exposure. For demographics, measures included demographics such as age (continuous variable), gender (0 = Male, 1 = Female), and nationality (0 = United States, 1 = Poland). Other variables included the number of hours spent on social network sites, the number of text messages sent/received per day, the number of calls per day, communication preferences, and communication meaningfulness. Communication

preference was a categorical measure that asked whether respondents find it easier to talk to someone they are attracted to or interested in face-to-face or through socially interactive technology communication like text messaging or social network sites (0 = in-person, 1 = text messaging and/or social network sites, 2 = I think they are equally comfortable). Communication meaningfulness refers to whether technology is seen to be as meaningful as in-person communications (0 = No, 1 = Yes, 2 = Unsure).

*Normalization of intimate behavior occurring through technology:* Normalization of intimate behavior occurring through technology included several items that asked about the behaviors of peers that occurs through socially interactive technology (e.g., whether the respondent knew of a friend who has “hooked up”, meaning have an intimate sexual encounter with another person, as a result of communicating through social network sites, regardless of whether this was a one-time encounter without any commitment or whether it led to a series of intimate events; whether they knew of someone who “hooked up” by using text messaging; whether they knew someone who has sexted, defined as having shared nude photos, videos or images with another through text messaging or the Internet) as well as their own behavior (e.g., whether they themselves have used text messaging or social network sites to “hook up” or have a sexual encounter with others; whether respondents identified the primary reason for use of technology as a means to date or find potential romantic partners; whether respondents had ever began an intimate relationship online. All responses were dichotomized (0 = No, 1 = Yes). A summary score was also created, which ranged from zero to six, depending on whether the respondent answered affirmatively to the items. Cronbach’s alpha was computed and suggested acceptable reliability for the variables comprising this concept ( $\alpha = .61$ ).

*Risk exposure:* Risk exposure refers to whether respondents have observed or experienced electronic transgressions against intimate partners. It is measured by asking respondents about various items (e.g., whether respondents have seen anyone mistreated by a partner on social network sites through derogatory name-calling, gossiping or rumors, etc. on social networking sites; whether they have seen someone be unfaithful to their partner; whether they have known of someone who became overly obsessive with tracking a romantic interest or viewing that person’s social network page; whether they have known of relationship breakups attributed to technology use; whether the respondent has experienced an act of aggression by someone they were intimate/romantically involved with). Responses were dichotomized (0 = No, 1 = Yes) and a summary score was also created based on the five items (ranging 0-5). Cronbach’s alpha was computed and suggested good reliability for the variables comprising this measure ( $\alpha = .74$ ).

*Sexting:* Sexting was the dependent variable, defined as sharing nude photos, videos or image of one’s self with another person through text messaging or the Internet. Respondents were asked if they had ever engaged in such behavior (0 = No, 1 = Yes).



## Results

### a. Descriptive Statistics

Table 1 presents descriptive statistics. On average, respondents reported that they had sent and/or received five phone calls per day ( $\bar{x}$  = 4.9, s.d. = 5.5), sent and/or received 77 text messages per day ( $\bar{x}$  = 77.2, s.d. = 106.5), and spent about three hours on social networking sites ( $\bar{x}$  = 2.6, s.d. = 2.4). For communication preference, 43.6% reported being equally comfortable talking with others in-person, followed by similar rates reporting feeling more comfortable talking in-person only (30.4%) and through text messaging and/or social networking only (26.0%). As for communication meaningfulness, most respondents reported that communications facilitated by socially interactive technology were not as meaningful as in-person encounters (69.5%), but 18.3% reported that they were just as meaningful while 12.2% were unsure.

For normalization of intimate behaviors via technology, the data show that the majority of respondents knew someone who used socially interactive technology to “hook up” and to sext. Over 80% knew of someone who “hooked up” due to social networking of the Internet (81.1%) and a similar percentage reported knowing someone who used text messaging to facilitate hook up encounters (77.7%). About three-quarters of the sample knew of someone who sexted (77.4%), showing how common these behaviors are among young adults. When looking at risky behavior of one’s self, 30.1% reported using socially interactive technology to facilitate a sexual encounter. Additionally, 20.2% reported that they used social networking sites to date, hook up, or meet potential partners, and 33.8% began a relationship online. When looking at summary scores of all items that comprise this measure, the average score was 3.3 (s.d. = 1.5).

Risk exposure was subsequently examined. For exposure to the mistreatment of others, 62.7% reported seeing someone mistreat their partner via socially interactive technology. The same percent reported knowing about someone else’s infidelity through seeing it on a social network site (64.0%). Most individuals (86.1%) also reported knowing someone who became overly involved with looking at another’s profile/posts. Additionally, about three-quarters knew of relationships that ended as a result of technology use (74.0%). Last, 64.3% of respondents reported experiencing intimate partner cyber aggression. When looking into the types of technology used to aggress, most respondents reported victimization experiences that occurred through both text messaging and social network posts (37.1%), followed by text messaging only (21.6%) and social network posts only (5.5%). The summary score of all items that comprise the risk measure was 3.5 (s.d. = 1.6).

When looking at the dependent variable, sexting, data show that half of the respondents have reported sending someone a personal nude photo, video, or image through text messaging or social networking sites (50.0%), which is higher than estimates noted from the Pew Research Studies and from students on high school students previously noted, but similar to rates found by Benotsch and colleagues (2013). It should be noted that respondents were asked if they *ever* sexted, rather than asking about this behavior in the past year alone, which may account for some observed differences in findings across research studies.

Tables 2 and 3 report correlational results among the items used to measure 1) the normalization of intimate behavior occurring through technology, and 2) risk exposure variables. The tests show that multicollinearity is not an issue.

**Table 1. Descriptive Statistics (N = 381)**

<b>Measure</b>	<b>Mean/%</b>	<b>SD</b>	<b>Min</b>	<b>Max</b>
Age	21.4	3.0	18	34
Gender				
Female	71.1			
Nationality				
American	85.3			
# texts per day	77.2	106.5	0	1000
# phone calls per day	4.9	5.5	0	50
# hours on social network sites	2.6	2.4	0	15
Communication preference				
In-person	30.4			
Technology	26.0			
No preference	43.6			
Communication meaningfulness				
No	69.5			
Yes	18.3			
Not sure	12.2			
<b>Normalization intimate behavior via tech.</b>	3.3	1.5	0	6
Know social network “hook up”	81.1			
Yes				
Know text “hook up”	77.7			
Yes				
Know sext	77.4			
Yes				
Used technology “hook up”	30.1			
Yes				
Purpose technology date	20.2			
Yes				
Relationship began online	33.8			
Yes				
<b>Risk exposure</b>	3.5	1.6	0	5
Know mistreatment				
Yes	62.7			
Know cheating				
Yes	64.0			
Know obsession				
Yes	86.1			
Know breakup				
Yes	74.0			
IPCA Victimization				
Yes	64.3			
Sexted				
Yes	50.0			



**Table 2. Correlation Coefficients for Normalization of Intimate Variables (N = 381)**

Measure	(1)	(2)	(3)	(4)	(5)	(6)
1. Known social network “hookup”	1.0					
2. Known text “hookup”	.37**	1.0				
3. Known sext	.28**	.42**	1.0			
4. Used technology “hook up”	.20**	.26**	.24**	1.0		
5. Purpose technology date	.16**	.11*	.08	.17**	1.0	
6. Began relationship online	.233**	.17**	.20**	.25**	.20**	1.0

\*\*Correlation is significant at the .01 level (2-tailed)

\*Correlation is significant at the .05 level (2-tailed)

**Table 3. Correlational Table for Risk Exposure Variables (N = 381)**

Measure	(1)	(2)	(3)	(4)	(5)
1. Known mistreatment	1.0				
2. Known cheat	.43**	1.0			
3. Known obsession	.37**	.39**	1.0		
4. Known breakup	.38**	.42**	.30**	1.0	
5. IPCA Victimization	.38**	.42*	.33**	.22**	1.0

\*\*Correlation is significant at the .01 level (2-tailed)

\*Correlation is significant at the .05 level (2-tailed)

### b. Multivariate Analyses

Given the dichotomous dependent variable, binary logistic regression was employed using the enter method to assess the influence of the personal and social-situational factors on sexting. This type of regression analysis is appropriate for exploratory analysis since it is more robust with fewer violations of assumptions for unequal or small samples sizes than other tests (Tabachnick & Fidell, 2007). Multicollinearity, which was previously checked with correlational tables, was not an issue according to Tolerance (and VIF) statistics that were also performed. According to Freund and Wilson (2002), Tolerance should be over .20 (and VIF less than 5), which was true in all cases.

Nested models were used to examine the independent effects of personal and social-situational factors. The first model included control variables of age, gender, and nationality variables. Model two included variables relating to technology. Model three included the normalization of intimate behaviors occurring through technology measure and Model four included the risk exposure measure. For categorical measures, reference categories were updated so contrasts include: for gender, male; for nationality, Poland; for communication preferences, in-person; for communication preferences, no; for communication meaningfulness, no. See Table 4.

**Table 4. Binary Logistic Regression Results of Personal and Social-Situational Factors on Sexting (N = 381)**

Variable	Model 1			Model 2			Model 3			Model 4		
	B	SE	Exp(B)	B	SE	Exp(B)	B	SE	Exp(B)	B	SE	Exp(B)
Age	-.03	.04	.97	-.05	.04	.95	-.05	.04	.96	-.03	.04	.97
Gender	-.10	.26	.91	-.21	.27	.81	-.03	.29	.97	-.21	.30	.81
Nationality	1.72***	.44	5.59	1.60***	.47	4.9	1.35**	.49	3.84	1.17*	.50	3.23
# Texts per day	-	-	-	.00	.00	1.00	-.00	.01	1.00	-.00	.01	1.00
# Calls per day	-	-	-	.03	.02	1.03	.02	.02	1.02	.02	.02	1.02
# Hours on social network sites	-	-	-	.02	.05	1.02	-.02	.05	.98	-.05	.05	.95
Communication Pref. (omit In-Person)												
Technology	-	-	-	.83*	.33	2.28	.75*	.34	2.12	.84*	.35	2.32
No preference	-	-	-	.66*	.30	1.94	.59*	.30	1.81	.66*	.31	1.93
Communication Meaningfulness (omit No)												
Yes	-	-	-	.18	.31	1.20	.19	.32	1.21	.30	.32	1.35
Not sure	-	-	-	.07	.36	1.08	.06	.37	1.06	.01	.37	1.01
Normalization of Intimate Behavior	-	-	-	-	-	-	.40***	.09	1.49	.32***	.09	1.37
Risk Exposure	-	-	-	-	-	-	-	-	-	.27**	.10	1.31
Nagelkerke R Square	.076			.115			.194			.219		
Model $\chi^2$	19.179, df = 3, p < .001			29.742, df = 10, p < .001			51.642, df = 11, p < .001			59.137, df = 12, p < .001		
in $\chi^2$	10.563			21.900			7.495					

NOTE: Entries are unstandardized coefficients.

\*p < .05, \*\* p < .01, \*\*\*p < .001

Results reveal that the final model was statistically significant ( $\chi^2 = 59.14$ ,  $df = 12$ ,  $p < .001$ ), explaining 21.9% of variance in sexting. The improvement of fit statistic ( $\chi^2$ ) from Model 1 to Model 2 and Models 3 through 4 signals the predictive power of the variables beyond covariates alone. Notably, the difference in Chi-Square statistic signals that adding the normalization of intimate behaviors occurring through technology measure, and adding the risk exposure measure, significantly improved the overall model fit.

Using a .05 criterion of statistical significance, nationality, communication preference, normalization of intimate behaviors occurring through technology, and risk exposure variables had significant effects in the final model. The odds ratio for nationality indicates that when holding all other variables constant, American students had 3.2x the odds of engaging in sexting when compared to Polish students (in other words, being American increased the odds of sexting by approximately 223%). Also, in comparison to individuals who prefer in-person communication, those who prefer communication through technology had 2.3x the odds of sexting and those who had no preference had 1.9x the odds of it. When it comes to social-situational factors, each additional increase in the normalization of intimate behaviors occurring through technology increased the odds of sexting by approximately 37%, and each additional increase in risk exposure increased the odds of sexting by about 31%, holding other variables constant.

The addition of variables in each model improved the model fit and, interestingly, nationality's effect weakened when the social variables (i.e., normalization of intimate behaviors occurring through technology and risk exposure) were included.

Independent sample t-tests were subsequently performed to learn more about differences between groups in normalization of intimate behaviors occurring through socially interactive technology and risk exposure. See Table 5. When looking at gender, normalization of intimate behaviors differed significantly between groups ( $t = 2.27$ ,  $p < .05$ ), with male college students reporting greater levels of normalized behaviors ( $\bar{x} = 3.60$ ,  $s.d. = 1.54$ ) when compared with female college students ( $\bar{x} = 3.19$ ,  $s.d. = 1.46$ ). Additionally, risk exposure differed between males and females ( $t = -4.44$ ,  $p < .01$ ), with female college students reporting greater levels of risk ( $\bar{x} = 3.73$ ,  $s.d. = 1.46$ ) when compared with male college students ( $\bar{x} = 2.93$ ,  $s.d. = 1.72$ ).



When looking at nationality, normalization of intimate behaviors differed significantly between groups ( $t = 3.94, p < .001$ ), with American college students reporting greater levels of normalization of intimate behaviors ( $\bar{x} = 3.41$  s.d. = 1.45) when compared with Polish college students ( $\bar{x} = 2.41, s.d. = 1.54$ ). Likewise, for risk exposure ( $t = 7.44, p < .001$ ), American college students reported greater levels of risk ( $\bar{x} = 3.75$  s.d. = 2.10) when compared with Polish college students ( $\bar{x} = 2.10, s.d. = 1.75$ ).

**Table 5. Means and Standard Deviations of Social-Situational Factors by Gender and Nationality (N = 381)**

	Gender		t	Nationality		t
	Male $\bar{x}$ (s.d.)	Female $\bar{x}$ (s.d.)		USA $\bar{x}$ (s.d.)	Poland $\bar{x}$ (s.d.)	
Normalization of intimate behavior	3.60 (1.54)	3.19 (1.46)	2.27*	3.41 (1.45)	2.41 (1.54)	3.94***
Safety/risk factors	2.93 (1.72)	3.73 (1.46)	-4.44**	3.75 (2.10)	2.10 (1.75)	7.44**

\* $p < .05$ , \*\*  $p < .01$ , \*\*\* $p < .001$

No statistically significant relationship existed between age and normalization of intimate behaviors occurring through technology, or age and risk exposure.

A separate and nearly identical logistic regression equation was conducted to examine all individual items comprising the normalization of intimate behaviors occurring through technology measure and the risk exposure measure using similar nested models (i.e., instead of the continuous social-situational measures, individual items were included; for each of the items, no experiences served as the comparison group). As previously found, each model significantly improved the overall fit (only the final model is shown in Table 6). The final the model was statistically significant ( $\chi^2 = 102.44, df = 21, p \leq .001$ ), explaining 35.7% of variance in sexting. Interestingly, the final model found that significance of nationality disappeared when all of the individual social-situational variables were included. Significant predictors in the final model included communication preference, having hooked up, and having known someone who sexted. Individuals who reported preference for communication via technology, or who expressed equal comfort with technology and in-person encounters, had over 2x the odds of sexting when compared to those who preferred in person communication encounters. Also, in comparison to those who did not use technology to initiate hook up encounters, those who have had nearly 2.4x the odds of sexting. The most significant and robust predictor, however, was knowing someone who sexted. In comparison to those who did not know anyone who sexted, those who knew someone who sexted had over 16x the odds of sexting.

**Table 6. Binary Logistic Regression Results of Individual Normalization and Risk Items on Sexting (N = 381)**

Variable	Model 4		
	B	SE	Exp(B)
Age	-.01	.05	.99
Gender	.16	.33	1.18
Nationality	.92	.55	2.51
# Texts per day	-.00	.00	1.00
# Calls per day	.02	.02	1.02
# Hours on social network sites	-.04	.06	.96
Communication Pref. (omit In-Person)			
Technology	.98*	.39	2.66
No preference	.79*	.34	2.21
Communication Meaningfulness (omit No)			
Yes	.41	.36	1.51
Not sure	-.02	.41	.98
<b>Normalization of Intimate Behavior</b>			
Know social network “hook up”	-.68	.40	.51
Know text “hook up”	-.35	.42	.71
Know sext	2.79***	.55	16.35
Used technology “hook up”	.86**	.31	2.37
Purpose technology date	-.02	.34	.98
Relationship began online	.31	.29	1.36
<b>Risk Exposure</b>			
Know mistreatment	.36	.34	1.44
Know cheating	.31	.34	1.37
Know obsession	-1.01	.55	.37
Know breakup	.61	.37	1.84
Experienced partner aggression	.24	.33	1.27
Nagelkerke R Square	.357		
Model $\chi^2$	102.439 df = 21, p < .001		

NOTE: Entries are unstandardized coefficients.

\*p < .05, \*\* p < .01, \*\*\*p < .001

## Discussion

This study examined various factors that may influence sexting. The hypothesis that age was related to sexting ( $H_{1,1}$ ) was not supported, but nationality was found to predict sexting (supporting  $H_{1,2}$ ). In contrast to the research suggesting that technology use relates to sexting (e.g. Baumgartner et al., 2014; Strassberg et al., 2010), this study did not find technology use (i.e., number of text messages per day, number of phone calls per day, and number of hours spend on social network sites per day) to relate to sexting, but did find that communication preference predicted sexting (providing partial support for  $H_2$ ). Additionally, the findings indicated that the normalization of behaviors occurring through technology significantly related to sexting (supporting  $H_3$ ), as did risk exposure (supporting  $H_4$ , although this relationship was in the direction opposite of the prediction).

Interestingly, the hypothesis that American students were more likely to sext than Polish students was supported, albeit these effects diminished when social-situational factors were considered. Post-hoc tests showed that gender and nationality differences emerged in the normalization of intimate behaviors occurring through technology and risk exposure, with males and Americans having higher scores for normalization and with females and Americans having higher risk exposure than their counterparts. Taken together, this may imply that there are gender- and culturally-specific pathways to sexting.



It is therefore recommended that future research investigate possible underlying processes that may be at work (e.g. interactions between gender/nationality and social-situational variables).

Further research is needed to learn more about why there are differences across groups in normalization of intimate behaviors occurring through technology and in risk exposure. For example, it may be possible that young adults in Poland have not yet fully integrated technology into their lives in the same manner that Americans have, which can impact the perceived acceptability of behaviors as well as observance of transgressions. There may be distinct differences for technology's use, and there may be more of a separation between one's private and electronic worlds. This requires further research.

Having known someone who sexted and having used technology to facilitate a “hook up” encounter predicted sexting, suggesting that these factors should continue to be studied in future research. These variables served as the strongest predictors of having sent a sext. With shifting communication strategies, there is also a shift in dating culture. Sharing sexts may be a new social norm, reflective of evolving sexual expression or “fun” in romantic relationships. It may be a means to find a partner for some, whether for dating or hooking up. As the data suggests, knowing someone who has engaged in sexting was the most important predictor of sexting, indicating that peers may play a critical role in shaping the perceived acceptability of behavior; in other words, one may learn from peers. It implies that social processes are essential to study and that sexting may be a normative behavior for individuals with like-minded peers who have “experimented” with it. Yet further research is necessary to test propositions of learning theories to see if one takes on the values, attitudes, beliefs, and behaviors of peers. Bandura (1977) suggested this may occur, regardless if the behavior is considered “acceptable” or not and even in the absence of direct reinforcement, when models are perceived to be similar to one's self. Along these lines, Sutherland's differential association theory (1947) may provide insight into the acquisition of such behavior, so this framework too should be reviewed. Likewise, Aker's social learning theory (1990), which extends on these social learning theories by fusing together components of operant and respondent conditioning and rational choice (see Akers et al., 1979; Burgess & Akers, 1966), may prove astute.

Alternatively, given that “hooking up” was related to sexting, this may point to a penchant for sexting that is part of a larger continuum of risky sexual behaviors. The significance of having “hooked up” may point to a routine activities-lifestyle theory framework whereby sexting is associated with dabbling in other risky practices. Routine activities theory (Cohen & Felson, 1979) draws attention to structural opportunities that form when a motivated offender (i.e., the sexter), suitable target (i.e., the recipient of the sext), and a lack of capable guardian (i.e., no outsiders to intercept the message) converge in time and space. Further, research suggests that outcomes are not randomly distributed, but rather coincide with lifestyles (Cohen, 1981; Cohen & Felson, 1979), and the college campus provides an environment where sexual exploration takes place. Interestingly, the relationship between risk exposure and sexting was positive, meaning that higher risk exposure was associated with the behavior, so this too may offer support for lifestyle-routine activities theory. Nevertheless, the lifestyle-routine activities approach falls short in that it does not consider *how/why* the offender becomes motivated in the first place, so it should be integrated into other theories that are mindful of underlying social process mechanisms.

As for technology use, it is possible that the number of text messages, phone calls, and hours spend on social network sites were not significant due to living in a technologically saturated world whereby individuals have grown increasingly accustomed to technology in everyday encounters. For communication preference, however, it is logical to think that one who prefers to communicate via technology, or enjoys technology as much as in-person exchanges, has greater odds of sexting than those who prefer in-person interactions. Some persons may be more confident communicating through technology (Peacock & Sanghani, 2014) and thereby feel assured when communicating intimately over technology. It is possible that the number of text messages, phone calls, and hours spend on social network sites were not significant.

### **Limitations and Directions for Future Research**

The findings of the current study are not without limitations. First, they were based on a non-probability sample of students and relied on self-report data. The response rate was also unknown. Therefore, generalizability is limited and the accuracy of reports cannot be validated. It should also be noted that one sample was more demographically diverse than the other, yet this is consistent with the makeup of the countries (Poland is comparatively homogenous). Nevertheless, the anonymity afforded by the online survey is thought to increase honesty in reporting, and this work represents a preliminary study that aims to understand factors associated with sexting in the hopes that it will help direct future research in considering a broad range of influences. However, temporal order was also an issue. Respondents were not asked if the sext was sent before or after a friend engaged in this activity (i.e., sexting), or before or after the respondent “hooked up” with romantic interest. Even with these limitations, it would be interesting to know how these findings may relate to findings in other cultural contexts that are similar and different, and how varying methodologies may yield greater understanding. Further research should utilize probability sampling techniques and derive samples from various groups. Longitudinal research would also be beneficial in comprehending the development of various intimate behaviors (electronic and in-person) from adolescence into young adulthood.

Another limitation falls in the measures used. The study relied on data that was collected for another purpose, so it was limited in the types of questions that could be included in this investigation. Having additional measures that ask about personal benefits and social rewards, formal and informal sanctions, rationalizations, and other factors could have produced different findings to expand awareness beyond factors considered here. Further, rather than relying on items that measure whether or not one observed certain events (for risk exposure), measuring the attitudes/beliefs about such events (e.g. asking about their acceptability or justification) could provide increased awareness on learning dynamics and normative definitions that influence behavior. Other specific sources that may shape behavior (e.g., media) could be asked about. Additionally, another limitation is that those respondents were not asked: whom the sext was sent to (e.g. an intimate partner, an acquaintance, or a stranger), whether they were the ones to initiate a sext or whether they sent one in response to one received for reciprocity, the recipient’s reaction to the sext, or the frequency of sexting behavior. Learning more about the aforementioned areas could help researchers peer into theoretical principles of theories that shed light on norm formation, expectations, and other critical factors. Qualitative approaches can also aid in acquiring such understanding.



The study generates thought for future directions of sexting research. Social-situational factors such as the normalization of technologically driven sexual behavior and risk seem exposure appear to activate sexting more so than other factors. Accordingly, it is recommended that researchers fully test theoretical propositions of social learning theories while also considering competing frameworks like lifestyle-routine activities theory. By doing so, an integrated theory on the underlying forces/processes that shape such behavior may develop that better illuminates individual, group, and societal variation and affords a deeper understanding.

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