



Risks and Benefits of Adolescent Girls' Participation in Online Sexting Survey Research

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Abstract

The increasingly ubiquitous use of sexting among adolescent girls underscores the importance of empirical data on their sexting behaviors, motivations, and outcomes. To date, the majority of sexting studies have been conducted online; however, little is known about the extent to which responding to such socially sensitive questions may cause participant discomfort or distress. Research on this question is critical since in the absence of empirical data, institutional review boards (IRBs) may permit or place restrictions on online sexting studies based on an under- or overestimation of adolescent participation risk. The current online study asked 210 girls (aged 14–18 years, 55% non-Hispanic White, with sexting experience in the past 12 months) who previously registered to take online surveys on (1) their anticipated comfort in responding to a sexting survey include items on sexting motivations, positive and negative sexting consequences, and related sexual behaviors; (2) their perceptions of sexting research benefits/harms; and (3) comfort discussing similar topics in everyday life and with health professionals. Overall, participants were comfortable responding to sexting survey questions, rated sexting research as high benefits and low risks, and felt about the same as or more comfortable completing a sexting survey than discussing similar topics with peers, parents, or healthcare professionals. Findings suggest that anonymous online sexting studies can be classified as minimal risk research for adolescent girls and provide empirical support for IRB decisions to waive guardian permission for participation in such studies.

Keywords Adolescent girls · Sexting · Sexual behavior · Ethics · Minimal risk

Introduction

Sexting, the sending, receiving, and forwarding of sexually explicit or suggestive images, videos, and text messages via cell phone and other electronic devices, continues to increase among adolescents (Barrense-Dias et al., 2019; Madigan et al., 2018; Patchin & Hinduja, 2019; Strassberg et al., 2017). Although research has produced conflicting results regarding sex differences in the prevalence of teenage sexting (Cox Communication, 2009; Hinduja & Patchin, 2010; Mitchell et al., 2012; Rice et al., 2012), there is some evidence that girls face higher sexting-related levels of anxiety, online

bullying, substance use, and sexual risk behaviors (Burén & Lunde, 2018; Choi et al., 2016; Thomas, 2018; Van Ouytsel et al., 2015, 2018). Given the paucity and inconsistency in findings, further examination on both sexting motivations and outcomes is needed to help identify and reduce potential negative consequences of sexting among adolescent girls.

To date, online surveys have been the primary research method for examining adolescent sexting motivations and social, psychological, and health consequences (Bragard & Fisher, 2020; Mori et al., 2019). However, there is a paucity of studies on the extent to which responding to such questions may cause participant discomfort or distress. Research on this question is critical since, in the absence of empirical data, institutional review boards (IRBs) may permit or place restrictions on online sexting studies based on an under- or overestimation of adolescent participant risk. This is particularly relevant to IRB decisions regarding waiver of guardian permission for sexting studies which depend upon estimations that the probability of research harms meets the federal regulatory definition of minimal risk: The probability and

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magnitude of harm or discomfort anticipated in the research are not greater than that ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.

DHHS, 2019). Investigators and medical and social science organizations have called for guardian permission waivers for adolescent sexual and other risk behaviors as an essential means of increasing youth willingness to participate in studies critical to understanding and developing effective risk prevention programs (American College of Obstetricians & Gynecologists, 2016; American Psychological Association, 2018; Fisher & Mustanski, 2014; Mustanski, 2011; Mustanski & Fisher, 2016; Rosenthal et al., 2018; Society for Research in Child Development, 2021).

Although girls' reactions to participation in sexting research have not been examined, studies on adolescent responses to surveys on socially sensitive topics are informative. For example, data indicate that across gender the majority of adolescent participants are comfortable answering survey questions involving traumatic experiences, suicidal thoughts, and drug use (Fisher, 2003; Langhinrichsen-Rohling et al., 2006) although one study reported that girls compared to boys were more likely to refuse to answer survey questions on exposure to media violence and violence and aggressive behaviors (Ybarra et al., 2009). In addition, studies on adolescent participant reactions to HIV risk research involving sexual and gender minority (SGM) adolescents indicate the majority of youth, especially those with greater sexual experience, felt comfortable answering questions regarding their same-sex sexual experiences and perceived multiple research benefits (e.g., a sense of empowerment and comfort with one's sexual orientation although a minority reported potential harms, such as feeling embarrassed describing the first same-sex sexual experience) (e.g., Arrington-Sanders et al., 2017; Fisher et al., 2017). Studies specifically addressing the minimal risk question found that SGM adolescents reported that completing a sexual behavior survey would be equally or more comfortable for participants relative to everyday events and procedures meeting the minimal risk regulatory definition (Macapagal et al., 2017, 2019).

The Current Study

The increasingly ubiquitous use of sexting among adolescent girls and the need for national surveys examining the motivations and consequences of sexting behaviors call for empirical data on how girls perceive the risks and benefits of responding to sexting survey questions. To meet this need, the current study conducted an anonymous online survey to assess adolescent girls' comfort responding to an online sexting survey, their evaluation of sexting survey risks and benefits, and a comparison of their comfort level responding to sexting survey questions with their comfort level discussing

similar topics in everyday life (with peers and parents) and during routine medical examinations (with healthcare professionals). We hypothesized the following:

1. Older adolescent girls with higher levels of sexting frequency, more sexual experience, and positive evaluations of sexting experience would report higher comfort levels answering questions on an anonymous online sexting survey.
2. Higher levels of perceived research participation benefits would be positively associated, and perceived research participation risks would be negatively associated with adolescent girls' comfort levels participating in an anonymous online sexting survey.
3. Adolescent girls would report higher levels of comfort responding to questions on an anonymous online sexting survey than discussing similar issues with parents, educators, or healthcare professionals.

Method

Participants

Adolescent girls, 14–18 years of age ($N = 210$, $M = 16.13$, $SD = 1.17$) participated in an anonymous online survey. Eligible participants were in high school, identified as cisgender female, assigned female at birth, were attracted to boys/men (not necessarily exclusively), had sexted a boy/man at least once during the past 12 months, lived in the USA, and could read English at an eighth-grade level.

Procedure

Recruitment was conducted by Qualtrics XM. Qualtrics XM is an aggregator of survey panel websites and can recruit individuals who have signed up to take paid surveys across multiple sites. Participants are paid in points which they can exchange for gift cards. For the current study, Qualtrics XM sent emails to female adolescents aged 14–18 who had previously signed up to receive online survey invitations. The e-mail offered compensation worth \$15 converted into the Qualtrics points system. Clicking on the link in the e-mail redirected participants to a brief description of the study and a screener hosted on another Qualtrics site. The screener asked that participants identify their gender, assigned sex at birth, attraction to males/females, age, current US state and zip code, and whether they had sexted a boy/man at least once during the past 12 months.

The following definition of sexting was provided: "Sexting refers to the sending of nude, semi-nude, sexually suggestive or provocative text messages, photos, or videos by SMS, iMessage, WhatsApp, Snapchat, Kik, Instagram, Facebook,

Twitter, or email.” The screener also included a brief assessment of English language competency. A Qualtrics system feature excluded participants who did not meet eligibility criteria and prevented them from re-entering the screener: 4791 participants took the screener, 244 met eligibility requirements, 220 (90.16%) completed the survey, and 210 (95.45%) passed the validity check. Eligible individuals provided informed consent by reading through an online information page and selecting “I agree” at the bottom of the page. They were then directed to the main survey which consisted of 98 items and took approximately 15–25 min to complete.

The study was approved by the university IRB with a waiver of guardian permission. Participants were able to quit the survey at any time by closing the survey window and their data were not included in the analysis. At the end of the survey, online and social media resources on sexting, sexual health, and intimate relationship were provided. The identity of participants and their contact information were unknown to the investigators so there was no identifiable linkage with demographic or survey data. Qualtrics uses unique identification numbers for each participant so that identifiable information and survey data are not stored on Qualtrics servers. Targeted sampling was applied to yield adequate representation across age. To check the quality of data, Qualtrics first conducted a soft launch of the survey and collected data from 20 participants. Manual data validation protocols were established and checked by the investigators prior to the launch to identify and exclude fraudulent or repeat participants, consistency between age and date of birth, comparison of the reported city in which the survey was taken and zip code, and elimination of responses with identical IP addresses. Qualtrics also included a speeding check to exclude participants who responded in less than half the time of the median survey response. Incentive was given by the panel provider for the agreed-upon amount to participants within seven days after they completed the survey to allow for data quality checks.

Measures

Demographics and Sexting and Sexual Experience

As part of the screening, participants completed items assessing age, race and ethnicity, gender identity, male/female sexual attractions, grade just completed (since the survey was conducted at the end of the school year), and the state in which they lived and as a validity check city and state in which they were completing the survey. In the main survey, participants were asked two questions on the highest level of education completed by their primary and secondary caregiver, one question on their living situation, an open-ended questions on sexting frequency in the past 12 months, one 5-point Likert-type item on general sexting experience

(“Overall, to what extent were your sexting experiences positive or negative?”), and four yes/no items asking if they had the following experiences: kissing/sexual touching/oral sex/sexual intercourse with a boy/man. Participants were able to select “I do not want to answer” for questions regarding sexting/sexual experience.

Comfort with Sexting Survey Questions (CSSQ)

A 19-item scale was constructed to assess the extent to which participants believed they would or would not feel comfortable responding to questions asked on an anonymous online survey. All items were drawn from a prior adolescent online sexting study involving adolescent girls (Bragard & Fisher, 2020). Fourteen of the items were directly related to sexting behaviors (e.g., whom they sexted to), motivations (e.g., sexting for flirting/hooking up), and consequences (e.g., whether they were ashamed) of sexting and five items tapped sexual experience, pubertal development, and substance use items that may be related to sexting motivations. Participants indicated comfort level on a 4-point Likert-type scale (1 = *very comfortable*, 4 = *very uncomfortable*). The exact wording of each item is shown in Table 1.

Reactions to Research Participation Questionnaire (RRPQ)

The RRPQ-R (Newman et al., 2001) is a 23-item scale developed to assess participants’ general reactions to research participation in terms of key research ethics criteria, including participation benefits and risks, burden, confidentiality, voluntary participation, and informed consent. Thirteen items from the RRPQ were adapted to assess participants’ perceptions of the risks and benefits of participating in the sexting survey. Given participants’ age, we revised the language of items and eliminated those tapping redundant content to reduce the survey length. The adapted scale included items on participation benefits and risks, participation burden, confidentiality, voluntary participation, age appropriateness of questions, and informed consent (see Table 2 for exact wording for each item). Participants rated the extent to which they agreed or disagreed with each item on a 5-point Likert-type scale (1 = *strongly agree* to 5 = *strongly disagree*). Higher scores indicated less favorable reactions toward the research process.

Comfort with Discussing Sexting and Sexual-Related Topics with Friends, Parents, and Health Professionals (MACCREE)

According to federal regulations (DHHS, 2019, §46.102(j)), minimal risk is defined as the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or

Table 1 Means, SDs, Percent Agreement, and Factor Loading for Items on the Comfort with Sexting Survey Questions (CSSQ)

Item	<i>M</i>	<i>SD</i>	%	Factor Loadings	
				1	2
Factor 1: Sexting Motivations					
...whether you sexted to be like everyone else your age	3.03	0.98	76.67	.73	.23
...whether a boy/man persisted in asking you to sext him even though he knew you didn't want to	2.71	1.16	62.38	.88	.16
...whether a boy/man made you feel obligated to sext him	2.77	1.06	65.24	.81	.22
...whether you were ashamed because of sexting	2.83	1.03	66.19	.80	.24
...whether you became less accepting of your body because of sexting	2.79	1.02	66.67	.79	.23
...whether you had problems with a boy/man because of sexting	2.89	1.02	70.95	.76	.20
...whether your sexts were shared/forwarded without your permission	2.68	1.17	60.95	.73	.33
Factor 2: Sexting Vulnerabilities					
...how often you sexted	2.96	.78	76.19	.16	.81
...who you sexted to	2.92	1.02	68.57	-.009	.76
...whether you sexted to know whether you were sexually attractive	2.97	0.84	73.81	.45	.58
...whether you sexted for flirting or hooking up	2.98	0.88	77.61	.50	.58
...whether you found sexting sexually arousing	2.86	0.94	70.00	.27	.74
...whether you became emotionally closer to the boy/man you were sexting	3.16	0.81	85.24	.31	.62
...whether you became more accepting of your body because of sexting	2.99	0.92	74.29	.43	.54
Sexual Health					
...whether you have engaged in sex with a boy/man	2.89	1.08	70.48		
...your sexual needs or desires	2.74	1.09	65.71		
...your breast development	2.84	1.06	65.71		
...whether you used alcohol or drugs	2.81	1.13	69.52		
...whether you had started your period	3.22	0.94	80.47		

Total $N=210$. Scores range from 0 to 4. Higher scores indicate higher levels of comfort. Percentages represent proportions of participants who felt comfortable with questions. The extraction method was principal component analysis with a varimax rotation

Factor loadings above .50 are in bold

psychological examinations or tests. To explore whether anticipated comfort with answering sexting and sexting-related survey questions meets criteria for minimal risk, we adapted 21 items from the Measure of Adolescent Comfort with Clinical, Research, and Everyday Events (MACCREE) (Macapagal et al., 2019) to determine the level of comfort or discomfort (Likert-type scale ranging from 1 = *very comfortable* to 4 *very uncomfortable*) experienced in daily life (e.g., discussing sexting and sexuality with peers, parents, practitioners, and in school settings) and receiving general and sexual health examinations or tests (see Table 3 for exact wording for each item).

Social Desirability Scale

The Short-Form of the Crandell Social Desirability Test for Older Children (Carifio, 1992) was included to control for participant response bias. Example items included “When I make a mistake, I always admit that I am wrong” and “Sometimes I say things just to impress my friends.”

Response options were 1 (true) or 2 (false). Total scores ranged from 0 to 12. Higher scores represent higher levels of social desirability.

Data Analysis

Statistical analyses were conducted using SPSS 25. Items on the CSSQ, RRPQ, and MACCREE were reverse coded so that higher scores represented higher levels of comfort or agreement. Frequencies and descriptive analyses were first computed for individual scale items and demographic variables. This was followed by exploratory factor analyses using the principal component factor extraction to examine the factor structure of the three scales. Following the factor analysis, inter-item reliabilities were conducted to confirm that dimensions identified by the factor analyses yielded reliable scale and subscale scores. To assess Hypothesis 1, Pearson product-moment correlation analyses, Spearman rank correlation analyses, and independent sample t tests were used to assess relationships among age, sexting, and sexual experience with

Table 2 Means, SDs, Percent Agreement, and Factor Loadings for Items on Reactions to Research Participation Questionnaire (RRPQ)

Item	<i>M</i>	<i>SD</i>	%	Factor Loadings	
				F1	F2
Factor 1: Perceived Benefits and Trust					
I would gain insights about how I feel about my sexting experiences	3.88	.94	70.48	.54	-.18
I like the idea that I would contribute to research on the experiences of teenage girls	4.45	.89	90.00	.72	.006
I would feel that the questions asking about my sexting behavior are respectful to girls my age	3.86	1.00	67.62	.54	-.047
I would trust that my replies from the survey would be kept private	4.36	.99	84.29	.60	.040
The Informed Consent information at the beginning of the survey would let me know what to expect of the survey questions	4.49	.77	88.10	.73	-.033
I would read through all of the Informed Consent information before participating in the survey	4.37	1.00	84.29	.68	-.045
I would feel I could stop participating in the survey at any time	4.42	1.00	84.29	.55	.001
I would look at the online resources about sex and relationships recommended at the end of the survey	3.80	1.17	65.71	.65	-.16
Factor 2: Perceived Risks					
The questions would raise emotional issues for me	1.99	.75	71.43	.035	.60
The survey would take too long	2.07	.81	70.47	-.041	.65
The survey would make me think about things I don't want to think about	1.87	.70	68.09	-.16	.67
I would find participating in the survey boring	1.88	.72	67.14	-.12	.64
I would find the questions too personal	1.96	.72	71.90	.023	.69

Total $N=210$. Scores range from 0 to 5. Higher means scores represent higher levels of agreement with perceived benefits/risks. Percentages represent proportions of participants agreed with the benefits or disagreed with the risks. The extraction method was principal component analysis with a varimax rotation. Factor loadings above .50 are in bold

the CSSQ. To test Hypothesis 2, Pearson product-moment correlation analyses assessed the relationship between RRPQ and CSSQ subscales to examine whether adolescent girls reported comfort with answering online sexting survey questions related to their perceived risks and benefits of research participation. To test Hypothesis 3, a Friedman Test comparing means among CSSQ and MACCREE subscales was conducted to assess whether participation in an anonymous online sexting survey involving adolescent girls meet the criteria for minimal risk. Power analysis with G*Power 3 (Faul et al., 2007) for a repeated-measure ANOVA with two measures yielded a requirement for 90 participants to achieve an effect size (f^2) of 0.15, a power of 0.80, and alpha of 0.05. With a total sample size of 210, sufficient statistical power was achieved.

Results

Demographics, Sexting, and Sexual Behavior

As shown in Table 4, the majority of participants were Non-Hispanic White or Hispanic/Latinx. More than half reported parents with at least one year in college. During the screening, all participants indicated they had sexted at least once during the past year. On average, participants sexted 14.21 times ($SD=14.16$, Range=4–54) in the past 12 months based

on those who reported overall sexting frequency ($N=188$, 89.52%). More than half (60.0%) of the participants rated their sexting experience as extremely or slightly positive, and 15.2% reported sexting experiences as extremely or slightly negative. Most participants had engaged in kissing or sexual touching, and a little less than half reported sexual intercourse or oral sex. For each participant, we created a sexual experience score by adding the number of “yes” responses to the four sexual experience items ($M=2.74$, $SD=1.64$, Range=1–4).

Descriptive Statistics and Factor Analyses

In this section, we provide descriptive statistics for the CSSQ, RRPQ, and MACCREE, followed by exploratory factor analyses (EFA) with principal component analysis (PCA) and varimax rotation identifying relevant dimensions, followed by inter-item reliability and mean scores for resulting subscales.

Comfort with Sexting Survey Questions (CSSQ)

Overall, the majority of participants would feel comfortable or very comfortable responding to the survey items (see Table 1). Girls indicated they would be least comfortable answering questions concerning unwanted sexting pressure or sexts forwarded without permission and most comfortable

Table 3 Means, SDs, Percent Agreement, and Factor Loadings for Items on Comfort with Discussing Sexting and Sexual-Related Topics with Friends, Parents, and Health Professionals (MACCREE)

Item	<i>M</i>	<i>SD</i>	%	Factor Loadings	
				F1	F2
Factor 1: Peers and Practitioner					
Talking about sex with your friends	3.17	0.82	81.90	.39	.19
Talking about sexting with your friends	2.69	0.98	57.62	.39	.17
Talking about dating with your school counselor	2.53	0.92	52.86	.53	.35
Talking about sex with your psychotherapist	2.30	0.98	45.71	.59	.48
<i>Talking about sexting with your psychotherapist^a</i>	2.22	0.96	39.04	.51	.54
Talking about dating with your psychotherapist	2.82	0.98	67.62	.63	.24
Talking about sex with a doctor	2.51	0.97	53.81	.70	.37
<i>Talking about sexting with a doctor^a</i>	2.12	0.93	32.86	.50	.56
Talking about your alcohol and/or drug use with a doctor	2.82	0.98	66.19	.52	.16
Talking to a doctor about STI prevention or contraception	3.08	0.93	77.14	.75	.17
Getting an STI test at a doctor's practice or sexual health clinic	2.86	1.01	66.19	.81	.014
Getting a pregnancy test at a doctor's practice or sexual health clinic	2.83	1.05	62.38	.70	.16
Having a doctor do a full-body skin examination for spots that could be cancerous	2.63	1.11	56.67	.67	.14
Factor 2: Parents and Educators					
Talking about sex in a health class at school	2.70	0.93	55.71	.26	.56
Talking about sexting in a health class at school	2.39	0.96	41.90	.15	.61
Talking about sex with your parent or guardian	1.74	0.88	18.57	.19	.67
Talking about sexting with your parent or guardian	1.49	0.83	11.90	.079	.77
Asking your parents for permission to participate in a research study about your sexual behavior	2.04	1.05	32.86	.16	.70
Asking your parents for permission to participate in a research study about sexting	1.97	1.04	30.95	.15	.72
Talking about sex with your school counselor	1.73	0.88	17.62	.37	.67
Talking about sexting with your school counselor	1.67	0.87	14.29	.29	.74

Total $N=210$. Scores range from 0 to 4. Higher scores indicate higher levels of comfort. Percentages represent proportions of participants who felt comfortable with questions

^aThe item was removed from the scale due to similar loadings on both factors

Factor loadings above .50 are in bold

answering whether sexting drew them emotionally closer to a boy/man or whether they used drugs or alcohol.

The EFA on the 14 CSSQ items directly related to sexting suggested a two-factor model, accounting for 61.95% of the variance (see Table 1). Where items loaded on both factors, we grouped the item with the dimension where factor loading exceeded the threshold of 0.50 (Howard, 2016; Peterson, 2000; Yong & Pearce, 2013). The first factor (explained variance = 36.91%) consisted of seven items reflecting negative or peer/partner pressures related to sexting experiences (e.g., whether they were ashamed or had problems with their boyfriends due to sexting). The resulting "Sexting Vulnerabilities" subscale yielded a Cronbach's $\alpha = 0.92$, $M = 2.81$, $SD = 0.88$. The seven items loading on the second factor (explained variance = 25.03%) reflected neutral or positive sexting experiences items (e.g., whom they sexted to, whether they became more accepting of their body). The resulting "Sexting Motivations" subscale yielded

a Cronbach's $\alpha = 0.85$, $M = 2.98$, $SD = 0.64$. The two subscales were positively correlated, $r[210] = 0.64$, $p < .001$. The EFA on the 5 CSSQ items reflecting sexual experience, pubertal development, and substance use suggested a single factor model (explained variance = 55.91%), The resulting "Sexual Health" subscale yielded a Cronbach's $\alpha = 0.80$, $M = 2.90$, $SD = 0.79$. This scale was positively related to Sexting Vulnerabilities, $r[210] = 0.58$, $p < .001$, and Sexting Motivations, $r[210] = 0.73$, $p < .001$. A repeated-measure ANOVA was conducted to compare mean differences of the three subscales and yielded a significant main effect, $F(1.75, 368.85) = 6.15$, $MSE = 0.26$, $p = .004$ ($\eta^2_p = 0.029$). A Greenhouse–Geisser adjustment of degrees of freedom was conducted in anticipation of sphericity assumption violation. Post hoc comparison with Bonferroni adjustment ($p = .002$) indicated that participants' comfort with items on the Sexting Motivations subscale was significantly higher than their comfort with Sexting Vulnerabilities.

Table 4 Percent Agreement for Items Assessing Sociodemographic Characteristics, Quality of Sexting Experience, and Sexual Behavior

	<i>N</i>	%
Age		
14	19	9.05
15	50	23.81
16	51	24.29
17	65	30.95
18	25	11.90
Grade		
9th	29	13.81
10th	55	26.19
11th	62	29.52
12th	64	30.48
Sexual Attraction		
Males Only	114	54.29
Males and Females Equally	32	15.24
Mostly Males and Some Females	57	27.14
Mostly Females and Some Males	7	3.33
Race		
White	116	55.23
Hispanic/Latino	43	20.47
Black/African American	27	12.86
Asian	9	4.29
American Indian/Alaska Native	4	1.90
Native Hawaiian or Other Pacific Islander	2	.95
Other	9	4.28
Highest Education Level of Primary Parent/Guardian		
8th grade or less	5	2.38
Partial high school	39	18.57
High school graduate	23	10.95
Partial college (at least one year)	30	14.29
Undergraduate college degree	28	13.33
Graduate degree	71	33.81
Missing or I don't know	14	6.67
Sexting Experience		
Extremely positive	53	25.24
Slightly positive	73	34.76
Neutral	50	23.81
Slightly negative	22	10.48
Extremely negative	10	4.76
Do not wish to answer	2	.95
Sexual Experience		
Kissing	162	77.14
Sexual Touching	146	69.52
Oral Sex	104	49.52
Sexual Intercourse	90	42.86
Do not wish to answer	27	12.86

N = 210. Participants were on average 16.13 years old (*SD* = 1.17)

Reactions to Research Participation Questionnaire (RRPQ)

Most participants endorsed items reflecting research benefits and trust in participant protections associated with the sexting study and generally disagreed with items reflecting participation risks (see Table 2).

The EFA on the 13 RRPQ items yielded a two-factor model, accounting for 41.57% of the variance. Factor loadings are shown in Table 2. The first factor (explained variance = 24.83%) was composed of eight items reflecting Research Benefits and Trust (e.g., gaining insights about their sexting experiences, contributing to research on adolescent girls), Cronbach's $\alpha = 0.78$, $M = 4.21$, $SD = 0.60$. The 5 items composing the second factor (explained variance = 16.74%) reflected Research Risks (e.g., whether questions would raise emotional issues, questions would be too personal), Cronbach's $\alpha = 0.66$, $M = 1.95$, $SD = 0.48$. The two factors were negatively correlated, $r[210] = -0.16$, $p = .020$.

Comfort with Discussing Sexting and Sexual-Related Topics with Friends, Parents and Health Professionals (MACCREE)

Participants reported different levels of comfort when discussing sexting and sexually related topics with others. As indicated in Table 3, they would feel most comfortable talking about sex with friends and talking to a doctor about STI prevention or contraception and least comfortable talking about sexting with a parent/guardian or school counselor.

The EFA on the 21 MACCREE items suggested a two-factor model (explained variance = 48.62%). We grouped the item with the dimension where factor loading exceeded the threshold of 0.50 (Howard, 2016; Peterson, 2000; Yong & Pearce, 2013). Since two items (e.g., Talking about sexting with a doctor) loaded on both factors (> 0.50), they were removed from the scale. As shown in Table 3, the first factor included 11 items reflecting comfort talking about sexting-related topics with peers or practitioners (explained variance = 24.59%). The resulting "Peers and Practitioner" subscale yielded a Cronbach's $\alpha = 0.87$, $M = 2.75$, $SD = 0.64$. The second factor included eight items reflecting comfort talking about sexting-related topics with parents or educators (explained variance = 24.03%). The resulting "Parents and Educators" subscale yielded a Cronbach's $\alpha = 0.87$, $M = 1.97$, $SD = 0.67$. The two subscales were positively correlated, $r[210] = 0.58$, $p < .001$.

Relationship Between CSSQ and Demographics, Sexting, and Sexual Experience

To control for possible effects of response bias, we conducted Pearson product-moment correlations between the Social Desirability Scale and the three CSSQ subscales. Only the correlation between Social Desirability and Sexting Vulnerabilities was significant, $r[210] = 0.18, p = .009$, and was entered as a covariate in partial correlation analyses on that subscale.

As shown in Table 5, correlational tests supported the hypothesis that older participants, higher levels of sexting frequency, positive evaluation of sexting experiences, and more sexual experience would be associated with higher scores on the three subscales of the CSSQ. However, evaluation of sexting experience and sexual experience was unrelated to Sexting Vulnerabilities. In addition, results of independent sample *t* test indicated that girls who refused to answer the question regarding sexual experience ($N = 27$) had significantly lower levels of comfort with questions on Sexting Motivations ($M = 2.56, SD = 0.72$) than girls who responded to that question ($N = 188, M = 3.04, SD = 0.61$), $t(208) = 3.75, p < .001$, and Sexual Health subscales ($M = 2.41, SD = 0.70, M = 2.97, SD = 0.78$, respectively), $t(208) = 3.55, p < .001$.

Relationship Between CSSQ and RRPQ

As shown in Table 5, Pearson product-moment correlations supported the hypothesis that comfort answering sexting-related questions on all three CSSQ subscales would be positively correlated with perceived benefits and trust in the study and perceived study risks and benefits. However, contrary to our hypothesis, there was no significant relationship between the Research Risks and CSSQ subscales, which may be a

function of the low scores and lack of variability in responses to the research risk items.

Comparison Between CSSQ and MACCREE

Since tests for normality indicated the MACCREE Parents and Educators subscale was moderately skewed (skewness = 0.90), a Friedman Test was conducted to compare mean levels of comfort on the CSSQ and MACCREE subscales. The analyses yielded a significant main effect, $\chi^2(4) = 263.96, p < 0.001$. Post hoc analysis with Wilcoxon signed-rank tests and Bonferroni adjustment ($p < 0.005$) indicated participants' comforts with all three subscales of CSSQ were significantly higher than talking about sexting-related topics with Parents and Educators ($p < 0.001$). Responses to the Sexual Health subscale were also significantly higher than talking about sexting-related topics with Peers and Practitioners subscale ($p < 0.001$). There was no significant difference between Sexting Motivations and Sexting Vulnerabilities and MACCREE Peers and Practitioners subscale ($p = 0.10$ and 0.01 , respectively).

Discussion

Studies on the motivations and positive and negative consequences of sexting are critical for understanding the potential health-related risks and identifying appropriate strategies for reducing such risks (Bragard & Fisher, 2020; Burén & Lunde, 2018; Mori et al., 2019; Van Ouytsel et al., 2019). At the same time, it is important to understand the extent to which such studies do or do not pose research risks so that protections can be put in place to mitigate such risks and that IRBs can have the empirical data they need to avoid under-

Table 5 Correlations between CSSQ, RRPQ, and MACCREE

Variable	N	M	SD	1	2	3	4	5	6
1. CSSQ—Sexting Motivations ^a	210	2.98	.64						
2. CSSQ—Sexting Vulnerabilities ^a	210	2.81	.88	.64**					
3. CSSQ—Sexual Health	210	2.90	.79	.73**	.58**				
4. RRPQ—Research Benefits and Trust ^a	210	4.21	.60	.32**	.30**	.37*			
5. RRPQ—Research Risks ^a	210	1.95	.48	-.11	.00	-.08	-.16*		
6. MACCREE—Peers and Practitioners ^a	210	2.66	.64	.29**	.21**	.39**	.28**	-.19**	
7. MACCREE—Parents and Educators ^a	210	1.97	.67	.18**	.053	.20**	.15*	-.16*	.63**
8. Age ^a	210	16.13	1.17	.18**	.19**	.15**			
9. Sexting Frequency ^a	188	14.21	14.16	.35**	.25**	.26**			
10. Sexting Experience ^b	208			-.28**	-.10	-.28**			
11. Sexual Experience ^b	183	2.74	1.64	.23**	.080	.24**			

^a Pearson product-moment correlation

^b Spearman rank correlation

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

over-estimating such risks (American College of Obstetricians & Gynecologists, 2016; American Psychological Association, 2018; Society for Research in Child Development, 2021). To address this need, the current study examined girls' comfort level participating in a sexting survey, their perceptions of sexting survey risks and benefits, and whether responding to an anonymous sexting survey met the regulatory definition of minimal risk.

The data supported our first hypothesis: Older participants with more sexting and sexual experience and who reported more positive evaluations of their own sexting experience would be more comfortable with responding to sexting survey items. Older participants with higher levels of sexting frequency reported higher comfort levels on all three subscales of the sexting survey (sexting vulnerabilities, sexting motivations, and sexual health). This is consistent with previous studies on adolescents' positive reactions to sexuality questions (Catalozzi et al., 2017; Priebe et al., 2010) and findings that survey questions related to interpersonal victimization may not elevate emotional risks for most adult participants (Overstreet et al., 2018). Participants with more sexual experience and who positively evaluated their own sexting experiences also reported higher levels of comfort answering sexual motivation and sexual health items, although no significant differences emerged for responding to sexting vulnerability items. Unexpectedly, we found that girls who refused to answer the questions describing their own sexual experience tended to report lower comfort levels in response to both sexting motivations and sexual health items compared to other participants. As discussed below, refusal to answer questions about sexually sensitive topics may be an indirect measure of discomfort with such questions and calls for further study (Ybarra et al., 2009).

Assessment of participants' evaluations of risks and benefits of participation in the sexting study indicated high levels of agreement with items reflecting research benefits and trust and minimal agreement with research risk items. The RRPQ was focused on how participants would feel about participating in this research study on sexting behaviors, how they might perceive in advance the risks and benefits of participation, and whether they would look at the online resources about sex and relationships recommended at the end of the survey. Participants were told that for this type of sexting study, the participants would not be expected to benefit directly but that the findings would hopefully contribute to increased understanding of sexting-related issues for girls their age. The most endorsed benefit was altruism, i.e., contributing to research on teenage girls' experiences, which is consistent with research on SGM youth (Fisher et al., 2018). Consistent with our second hypothesis, participants who perceived more research benefits and trust had higher levels of comfort answering all three subscales in the sexting survey. However, no significant effect for perceived research risks

was found, which may be due to the lack of response variance given the low levels of respondent endorsement of research risk items.

Consistent with our third hypothesis and findings involving GSM youth's response to sexual health and behavior items (Macapagal et al., 2017, 2019), participant's comfort with all three subscales of CSSQ (sexting motivation, sexting vulnerability, and sexual health) was significantly greater than discussing similar topics with parents or educators.

Responses also indicated girls were more comfortable answering survey questions about sexual health than discussing these issues with peers or practitioners, but there were no differences in comfort levels for items reflecting sexting motivations and vulnerabilities. These findings provide empirical support for classifying anonymous sexting survey research involving adolescent girls as minimal risk.

Limitations and Future Directions

This study found that adolescent girls believed that responding to an anonymous sexting survey would create minimal discomfort and could offer some benefits and few risks. In this study, we asked girls for opinions about how comfortable they would be responding to sexting experiences. Although this study offers some support for classifying such studies as minimal risks, at least for girls represented by this sample, future research can help inform IRBs regarding equally important issues such as the protection against confidentiality risks of online sexting data collection and the capabilities of the research team to protect online data and to identify respondents who may be more vulnerable to questions regarding sexting or sexual behaviors. In this regard, we found a small percentage of girls who refused to answer the questions describing their own sexual experience and these girls tended to report lower levels of comfort in response to both sexting motivations and sexual health items compared to other participants. Refusal to answer questions about their own sexual experiences may be an indirect measure of discomfort with such questions and, by implication, an indication of discomfort with sexting questions and calls for further study (Ybarra et al., 2009). However, the current study did not include any questions to examine why those girls refused to answer questions about their sexual experience. This suggests both limitations in our own study specifically and challenges for future sexting studies that must develop procedures to recruit and understand girls who may have had negative sexting and sexual experiences in ways that minimize their discomfort and promote their well-being.

The Qualtrics online data collection and recruitment methods yielded a national sample of adolescent girls who have previously registered to complete online questionnaires and as such may not represent adolescent girls who were new to online surveys. Meanwhile, the majority of our sample were

sexually active and had highly educated parents. Thus, the sample may not reflect adolescent girls without sexual experience or from lower socioeconomic backgrounds. Although 20% identified as Latinx, most participants identified as non-Hispanic white, and other equally affected racial/ethnic minority groups were not as well represented. The extent to which these findings generalize to more diverse racial/ethnic adolescent girls is important for future investigations. Finally, although previous research suggests girls face higher sexting-related levels of anxiety, online bullying, substance use, and sexual risk behaviors (Burén & Lunde, 2018; Choi et al., 2016; Thomas, 2018; Van Ouytsel et al., 2015, 2018), both boys' and girls' participation in online sexting study needs further examination by future studies.

Conclusion

Although our sample was limited to a US population, there is evidence that sexting among adolescents is becoming ubiquitous across different countries, and adolescent sexting research is emerging internationally (Burén & Lunde, 2018; Madigan et al., 2018; Mori et al., 2019). To date, however, there is a paucity of evidence on the social and behavioral health implications of sexting for youth, although there is some evidence that girls face higher sexting-related levels of anxiety, online bullying, substance use, and sexual risk behaviors (Burén & Lunde, 2018; Choi et al., 2016; Thomas, 2018; Van Ouytsel et al., 2015, 2018). This underscores the need for empirical data on girls' sexting behaviors, motivations, and positive and negative consequences (Bragard & Fisher, 2020; Burén & Lunde, 2018; Mori et al., 2019). It is equally important to ensure that studies are designed to meet federal regulations for minimal risk in ways that maximize participation benefits and minimize risks. Research on the minimal risk question is critical since in the absence of empirical data, IRBs may permit or place restrictions on online sexting studies based on an under- or overestimation of adolescent participant risk. This is particularly relevant to IRB decisions regarding waiver of guardian permission for sexting studies as an essential means of increasing youth willingness to participate in studies critical to understanding and developing effective risk prevention programs (American College of Obstetricians & Gynecologists, 2016; American Psychological Association, 2018; Society for Research in Child Development, 2021). Our data provide support for the view that online sexting studies meet the federal definition of minimal risk for adolescent girls represented in the current sample: Girls indicated they were comfortable responding to sexting survey questions, perceived such studies as having research benefits and few risks, and were more or as comfortable with such surveys as discussing similar issues in daily life or with healthcare professionals. We also found that a small subset of participants who refused to answer

questions regarding their sexual experiences, also indicated greater discomfort with sexting items. Such findings may be indirect evidence that these girls have experienced more negative sexting consequences; however, the current study did not assess why these adolescent girls felt discomfort when answering sexting questions. This suggests that efforts are required in future studies to further understand the experiences of girls who are reluctant to answer such questions and to design studies in ways that are sensitive to and supportive of their concerns.

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Declarations

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval This study has been approved by the Fordham University Institutional Review Boards and conforms to all federal and APA Ethics Code Research Guidelines.

Consent to Participate Informed consent was obtained from all individual participants included in the study.

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