

“Hit me up and we can get down”**U.S. youths’ risk behaviors and sexual self-disclosure in MySpace profiles**

Piotr S. Bobkowski, University of Kansas

Jane D. Brown, University of North Carolina at Chapel Hill

Deborah R. Neffa, Carolinas HealthCare System

Submitted for publication in the *Journal of Children and Media*

Abstract

Young people’s sexual self-disclosures in social media profiles can be problematic for those who produce them and for those who consume them. This study merged a content analysis with survey data to identify the characteristics of youth who engaged in online sexual self-disclosure. MySpace profiles belonging to 560 National Study of Youth and Religion respondents in the United States (18 to 23 years old) were analyzed (56,462 content units). A third of the profiles contained at least one sexual self-disclosure; their average incidence was less than one per profile. Online sexual self-disclosure was associated with offline sexual risk behaviors (e.g., sex with casual partners), and with increased frequency of alcohol consumption. Among sexually active females, it was associated with early sexual debut. In light of problem behavior theory, these findings suggest that online sexual self-disclosure may be considered a sexual risk behavior.

Keywords: adolescents, MySpace, new media, problem behavior theory, self-disclosure, self-presentation, sexual health, sexual self-concepts, social media

Young people today are producers as well as consumers of sexual media content. Mobile communication devices are the tools and social media are the platforms with which young people can create and broadcast sexually risqué messages. Previous studies have found that 1/4 of MySpace profiles belonging to 18-year-olds contain references to sex (Moreno, Parks, Zimmerman, Brito, & Christakis, 2009), and as many as 1/5 of teens report having engaged in “sexting,” that is, “sending, receiving, or forwarding sexually suggestive emails or text messages with a nude or nearly-nude photo” (Cox Communications, 2009; see also Lenhart, 2009).

Sexual self-disclosures – sexual messages that reference the self – can be problematic for individuals who produce them and for those who consume them. Sexual self-disclosures put young people at greater risk for online sexual solicitations and offline sexual encounters (Noll, Shenk, Barnes, & Putnam, 2009; Wolak, Finkelhor, & Mitchell, 2008; Ybarra, Mitchell, Finkelhor, & Wolak, 2007). By portraying themselves sexually in their online profiles or messages, young people may also be cementing in their minds a primarily sexualized version of themselves (e.g., Gonzales & Hancock, 2008).

Youth-produced sexual content, similar to professionally produced sexual media (e.g., Bleakley, Hennessy, Fishbein, & Jordan, 2008; Peter & Valkenburg, 2008) is also likely to have a negative impact on adolescents who consume it. Friend-produced sexual messages may influence peer norms about sexual behavior, which play a considerable role in adolescents’ timing of sexual debut (Kinsman, Romer, Furstenberg, & Schwarz, 1998).

Because of the novel nature of this phenomenon, research is needed to show the prevalence of sexual content in youth-produced media, to examine what personal characteristics are associated with sexual self-disclosure, and to consider whether online sexual self-disclosure fits the category of a sexual risk behavior. Thus, this study measured the quantity of sexual self-

disclosure in U.S. older adolescents' MySpace profiles and, drawing on problem behavior theory, analyzed the profile owners' survey responses to identify the characteristics of those who post sexual self-disclosures online. The study assessed the extent to which adolescents' sexual development, as measured by the timing of sexual debut, was associated with their online sexual self-disclosures in later years. Survey-based measures of sexual experience and casual sex may have further reflected respondents' sexual behaviors in adolescence.

Three characteristics of the data underscore this study's unique contribution to the literature. This study measured actual online content, not self-reports of sexual self-disclosure (e.g., Wolak, Finkelhor, & Mitchell, 2008). It examined online profiles that belonged to a sample of older adolescents who participated in a nationally representative survey. The study also conceptualized sexual self-disclosure as a continuous variable, in contrast to studies that have measured sexual self-disclosure dichotomously (i.e., displayer vs. non-displayer; e.g., Moreno, Brockman, Rogers, & Christakis, 2010). Sexual self-disclosure was thus evaluated in the context of a profile owner's other disclosures, offering a nuanced assessment of the overall prevalence of online sexual self-disclosure.

Theory and literature review

Problem behavior theory

A key question addressed in this study is whether online sexual self-disclosure fits the category of a sexual risk behavior. Problem behavior theory (Jessor & Jessor, 1977) suggests that adolescents' sexual risk behaviors cluster together with other risk behaviors in a "constellation" of problem behaviors (Lefkowitz & Gillen, 2006, p. 236). Some young people are oriented less conventionally than their peers, and they are thus more predisposed to risky, non-conventional behaviors. Research has linked adolescents' problematic sexual behaviors with other norm-

breaking activities such as alcohol and drug use, and delinquency (Costa, Jessor, Donovan, & Fortenberry, 1995; Siebenbruner, Zimmer-Gembeck, & Egeland, 2007; Zimmer-Gembeck & Helfand, 2008). Conversely, adolescents who take fewer sexual risks (e.g., regularly use contraceptives) are less likely to engage in other risk behaviors that are non-sexual in nature (Costa, Jessor, Fortenberry, & Donovan, 1996; Fortenberry, Costa, Jessor, & Donovan, 1997).

Problem behavior theory also suggests that adolescents with strong bonds to convention-maintaining institutions, such as school, family, and religion, are less likely to engage in risky sexual behaviors. Adolescents who engage in less risky sexual behaviors tend to get better grades in school, have closer relationships with parents, and be more religiously active, for instance (Donovan, Jessor, & Costa, 1988; Zimmer-Gembeck & Helfand, 2008).

If online sexual self-disclosure fits the category of a sexual risk behavior, it should cluster with other sexual and non-sexual problem behaviors, and be negatively correlated with protective behaviors. In order to determine the extent to which this is the case, this study examined the associations between online sexual self-disclosure and three offline sexual risk behaviors, three non-sexual risk behaviors, and three protective behaviors. The study also examined the extent to which males and females differ in online sexual self-disclosure.

Correlates of sexual self-disclosure

Sexual risk behaviors. If online sexual self-disclosure is a sexual risk behavior, it is likely to be more prevalent among youth who engage in other offline risky sexual behaviors. Sexual experience, early sexual debut, and casual sex were examined here. First, while for many adolescents sexual experience follows a common sequence that includes physically intimate, noncoital behaviors (e.g., kissing, above-waist touching), and leads up to sexual intercourse

(Crockett, Raffaelli, & Moilanen, 2003), the behaviors that involve sexual intercourse are most clearly associated with sexual risk (DiClemente & Crosby, 2003).

Second, while U.S. adolescents engage in first sexual intercourse, on average, between 15 and 17 years old (Zimmer-Gembeck & Helfand, 2008), youth who begin having sex earlier tend to engage in more risky sexual behaviors (DiClemente & Crosby, 2003; O'Donnell, O'Donnell, & Stueve, 2001). Individuals who experienced childhood sexual abuse also tend to be more preoccupied with sex and engage in riskier sexual behaviors than their non-abused peers (Noll, Trickett, & Putnam, 2003).

Third, the risk of acquiring a sexually transmitted disease or having an unplanned pregnancy is intensified in casual sexual encounters because individuals might not know much about their sexual partners' health histories (Paul & Hayes, 2002). Increased incidence of casual sex also has been shown to be negatively associated with psychological wellbeing (e.g., Grello, Welsh, & Harper, 2006; Paul & Hayes, 2002; Stinson, 2010). Given the risky nature of these three sexual behaviors, the first hypothesis was:

H 1 Increased online sexual self-disclosure will be associated with: (a) more sexual experience, (b) earlier sexual debut, and (c) a greater proportion of casual sex partners.

Non-sexual risk behaviors and protective factors. The problem behavior perspective also suggests that if online sexual self-disclosure is a sexual risk behavior, it may be associated with other risk and protective factors (Jessor & Jessor, 1977; Siebenbruner, et al., 2007; Zimmer-Gembeck & Helfand, 2008). This research examined how alcohol and illicit substance use, and delinquent behavior, were each associated with online sexual self-disclosure. With regard to protective behaviors, the research focused on the level of education, relationship with a parent, and religiosity. The following hypotheses were tested:

H 2 Increased online sexual self-disclosure will be associated with increased frequency of: (a) alcohol use, (b) marijuana use, and (c) physical fights.

H 3 Increased online sexual self-disclosure will be associated with lower: (a) education, (b) parent affinity, and (c) religiosity.

While grades have often been used as a measure of respondents' connection to school and as a predictor of fewer risk behaviors (DiClemente & Crosby, 2003), because of this study's focus on older adolescents, the respondents' level of schooling was used instead.

Demographic characteristics. Although previous research suggests that females would disclose more in general (Dindia & Allen, 1992), it is unclear whether males or females would self-disclose more sexual content online. Males tend to initiate intercourse earlier and engage in more casual sex than females (e.g., Grello, et al., 2003; Zimmer-Gembeck & Helfand, 2008), suggesting that they might self-disclose more sexually. On the other hand, women appear predisposed to communicate more about themselves, and about intimate and sexual topics in online venues (Moreno, Parks, et al., 2009; Stern, 2004). Given this conflicting evidence, we proposed a non-directional hypothesis:

H 4 There will be a gender difference in the quantity of sexual self-disclosure in older adolescents' online profiles.

There may be further gender differences in the correlates of sexual self-disclosure, since some of the factors that predict risky sexual behaviors (e.g., substance use, educational aspirations) differ between males and females (Zimmer-Gembeck & Helfand, 2008).

Accordingly, this analysis addressed the following research question:

RQ 1 Are sexual self-disclosures associated with different correlates for males and females?

As a way to account for the context of young people's sexual self-disclosure, the analysis controlled for the total number of a profile owner's online utterances. Longer profiles were expected to contain more sexual self-disclosures. Age, ethnicity, and family socioeconomic status were also controlled since these variables have been associated with adolescents' risky sexual behaviors (Blum, et al., 2000; DiClemente & Crosby, 2003; Lefkowitz & Gillen, 2006).

Methods

Sample

This study compared National Study of Youth and Religion (NSYR) survey data with its respondents' MySpace profile content. At baseline, the NSYR was a nationally representative sample of 3,290 U.S. teenagers (13–17 years old) surveyed in 2002–03. A random-digit dial telephone method was used to generate numbers representative of all household telephones in the 50 United States. Households eligible for the survey were those in which at least one teenager (13–17 years old) resided for at least six months of the year. When more than one teenager resided in a household, the teenager with the most recent birthday was interviewed. The study's third wave, examined here, was a re-survey of all Wave 1 respondents conducted by telephone in 2007–08. Wave 3 had 2,458 respondents (18–23 years old), yielding a 74.7% retention rate from Wave 1. See Smith (2005, 2009), and Pearce and Denton (2011) for summaries of NSYR findings.

MySpace profile data were collected from 560 active, publicly accessible profiles belonging to NSYR Wave 3 respondents (22.8% of Wave 3 respondents). NSYR staff maintained a record of respondents' MySpace URL addresses. Each profile used here was recorded within 60 days of the owner's Wave 3 survey interview.

This project aimed to unobtrusively observe online peer-to-peer self-disclosure, thus survey respondents were not informed that their publicly accessible profiles were studied. To ensure survey respondents' confidentiality, the research team conducting the content analysis did not have access to the survey data. The two datasets were linked by the project manager only when all identifying profile information was removed and the remaining profile data were in numeric form. All examples of self-disclosure used in this paper were taken from public profiles that were not part of the primary analysis but were collected for coder training purposes. These data collection, analysis, and reporting procedures were approved by the university's IRB.

The subsample of respondents with public MySpace profiles was representative of the full Wave 3 panel based on comparisons of the distributions for gender, race, region, education, religious attendance, and frequency of social network website use. There were no statistically significant demographic or religious differences between survey respondents who did and did not have public profiles.

Survey measures

Gender was coded with "male" (53.0%) as the comparison category. *Ethnicity* was a dichotomous measure, with "non-white" (29.8%) set as the comparison category. Control variables included *age* ($M = 20.03$, $SD = 1.42$), *family income* (1 = < \$10K ... 11 = > \$100K; $M = 6.11$, $SD = 2.70$), and overall *self-disclosure quantity*.

Sexual risk behaviors included sexual experience, early sexual debut, and casual sex. *Sexual experience* was an index based on whether the respondent had engaged in sexual touching, oral sex, and sexual intercourse (0 = none ... 3 = sexual intercourse; $M = 2.50$, $SD = 1.03$). *Early sexual debut* was a categorical variable indicating respondent's age at first sexual intercourse, with higher values indicating earlier sexual debut (1 = 19 or older ... 4 = 14 or

younger; $M = 2.62$, $SD = .84$). *Casual sex* was a categorical variable derived from the quotient of the respondent's sexual partners with whom the respondent was not in a serious relationship, and the total number of the respondent's sexual partners (0 = no casual sexual partners ... 4 = all sexual partners were casual; $M = 1.25$, $SD = 1.21$).

Non-sexual risk behaviors included respondents' frequency of *alcohol use* (0 = never ... 6 = once a day or more; $M = 2.52$; $SD = 1.87$), *marijuana use* (0 = never ... 6 = once a day or more; $M = .94$; $SD = 1.83$), and the number of serious *physical fights* they participated in during the previous two years (0 = none ... 3 = more than five; $M = .32$; $SD = .65$).

Protective factors included highest level of *education* achieved (1 = "less than high school diploma" ... 4 = "college graduate or higher"; $M = 2.44$; $SD = .78$). *Parent affinity* measured the level of closeness to the parent with whom the respondent felt closest (0 = feeling not close at all ... 5 = feeling extremely close; $M = 4.13$, $SD = .97$). *Religiosity* was a composite measure that consisted of four dichotomous items: religious salience, belief in God, religious service attendance, and prayer. These items formed a reliable measure ($\alpha = .82$; range: 0 to 4; $M = 2.73$, $SD = 1.49$).

Missing values (4.5% of cases on *income*; two cases or fewer on the other variables) were imputed with Amelia II, a multiple imputation program (Honaker, King, & Blackwell, n.d.). Multiple imputation is the least biased method for compensating for missing data (King, Honaker, Joseph, & Scheve, 2001). This method entails predicting missing values from observed values using multiple regression over a series of iterations. The method assumes that social scientific data are rarely missing completely at random, that systematic bias from missing data on key variables may lead to false inferences about relationships in the data, and that existing relationships between observed variables may be used to predict the values of the missing data.

Results of analyses performed on unimputed and imputed datasets were comparable. We report here the analyses performed on a dataset with imputed values.

Content analysis measures

Coders coded all content featured in the front page of a MySpace profile, with the exception of “Friends” and “Friend Comments” sections. The content in these sections was generated by other users, so it was not considered to constitute self-disclosure.

The coding process comprised four steps. First, coders unitized all content by dividing each profile into a series of “utterances.” In text, an utterance was defined as a complete phrase or a series of words, or a single word, that signified a unique action (Holsti, 1969; Slobin, 1993). Each photo or graphic was also coded as a single utterance. Thus, phrases such as “Hello” and “My Baby Boo is my only interest at the moment,” were each identified as a unique utterance. Intercoder reliability was calculated using 130 randomly selected profiles (23.2% of the sample) and two coders. For closed-ended fields, observed agreement (*OA*) was .98, Krippendorff’s $\alpha = .96$ (Hayes & Krippendorff, 2007); for open-ended fields, the correlation between the number of utterances identified in each profile by two coders was $r = .99, p < .01$; Krippendorff’s $\alpha = 1.00$. Second, coders eliminated interjections (e.g., “OMG”) and other utterances that could not communicate something about the profile owner. Intercoder reliability was excellent: *OA* = .99, Krippendorff’s $\alpha = .87$.

Third, coders identified sexual utterances using “sexual innuendo,” “nudity/partial nudity,” and “promiscuity” definitions from a previous analysis of sexual media content (Pardun, L’Engle, & Brown, 2005). “Sexual innuendos” were explicit or implicit depictions of sexual desire, seductive language, or symbols associated with sexual activity. These included statements such as, “I’m sexy,” and “I’m a boob girl”; and photographs of women suggestively licking

lollipops. “Nudity/partial nudity” were depictions of unclothed individuals, or of body parts that are usually clothed. These included photographs of men with low-rise shorts and no shirts, and of women wearing short skirts and low-cut shirts. “Promiscuity” encompassed references to having multiple sexual partners or having sex outside a committed relationship. Examples included male respondents identifying their occupation as “pimp” or “women,” and photographs of profile owners in sexual poses with more than one other person.

Textual utterances were coded into only one of the sexual categories. Because photos and graphics typically were more expressive than textual utterances, these could be coded into more than one sexual category (i.e., promiscuity *and* nudity/partial nudity). Intercoder reliability between two coders for the sexual utterance categories was good: $OA = .95$, Krippendorff’s $\alpha = .82$.

In the final step, coders determined whether the sexual utterances constituted self-disclosures. Moreno, et al.’s (2010) definition of explicit online sexual reference as one “in which the profile owner reference[s] personal sexual behaviors or display[s] personal revealing images” (p. 420) was used to develop this category. Sexual text and graphics or photographs that referenced others (e.g., boyfriends/girlfriends, celebrities), and those that did not explicitly reference the profile owner were excluded from the analysis. Intercoder reliability between two coders was excellent: $OA = .95$, Krippendorff’s $\alpha = .90$.

Results

Descriptive statistics

Coders identified 56,462 utterance units, ranging from 1 to 805 per profile ($M = 100.82$, $SD = 84.94$), after interjections and other irrelevant utterances were eliminated. Of these, coders identified 906 (1.61%) sexual utterances; 611 (1.08%) were sexual self-disclosures. Sexual self-

disclosures ranged from 0 to 203 ($M = 1.09$, $SD = 8.69$) per profile. More than 2/3 of the profiles ($N = 379$, 68%) contained no sexual self-disclosures. A visual inspection of the data indicated that the highest value (203) was an extreme outlier, so that case was excluded from further analysis. In the final sample ($N = 559$), sexual self-disclosures ranged from 0 to 14 per profile ($M = .73$, $SD = 1.57$). Table 1 presents sexual self-disclosure frequencies within gender, race, age, income, education, and the three sexual risk behavior variables.

[Table 1 about here]

Analytic strategy

Negative binomial regression models were used to test the hypotheses because the dependent variable was a highly skewed count variable. To facilitate interpretation of a negative binomial regression equation, independent variable coefficients can be expressed as incidence rate ratios (IRR). These indicate the rate (or count) change of the dependent variable associated with a one-unit increase in the independent variable (Coxe, West, & Aiken, 2009).

Regression models were first computed for the whole sample and then, to address RQ 1, separately for the male and female samples. The full-sample regression models are presented in Table 2; gender-specific models are not shown. The first model in each of the three sets included all respondents and examined whether sexual experience was associated with sexual self-disclosure (H 1a). The second model was limited to respondents who were sexually active, and measured whether early sexual debut (H 1b) and casual sex (H 1c) were associated with sexual self-disclosure. Indicators of non-sexual risk behaviors (H 2) and protective factors (H 3) were included in all models.

[Table 2 about here]

Hypothesis tests

Being more sexually experienced was associated with increased sexual self-disclosure ($B = .34, SE = .11, p < .001$). A one-unit increase in sexual experience (e.g., increase from “touching” to “oral sex”) was associated with a 41% increase in the rate of online sexual self-disclosure. An increased rate of casual sex, as reported in the survey, was also associated with an increased rate of online sexual self-disclosure ($B = .17, SE = .08, p = .03$). Those who only had casual sex, sexually disclosed at a 20% higher rate than those who only had sex in committed relationships.

Among sexually active females, increased sexual self-disclosure was associated with early sexual debut ($B = .30, SE = .14, p = .036$), and increased rate of casual sex ($B = .21, SE = .10, p = .039$). A one-unit increase in the early sexual debut measure (e.g., increase from “17 or 18” to “15 or 16”) was associated with a 35% increase in the rate of sexual self-disclosure. Females who only had casual sex disclosed at a 25% higher rate than those who only had sex in committed relationships. These offline sexual risk behaviors were not associated with online sexual self-disclosure among sexually active males.

Of the non-sexual risk behaviors, self-reported alcohol use was associated with online sexual self-disclosure in the whole sample ($B = .15, SE = .05, p = .008$), and among males ($B = .23, SE = .09, p = .007$). Regardless of gender, a one-unit increase in alcohol use (e.g., increase from “about once a week” to “a few times a week”) was associated with a 16% increase in online sexual self-disclosure. Among males, this rate of increase was 26%. Marijuana use and physical fights were not associated with online sexual self-disclosure.

Of the protective factors, higher education was associated with a lower rate of online sexual self-disclosure among sexually active females ($B = -.38, SE = .18, p = .032$). A one-unit increase in education was associated with a 32% decrease in sexual self-disclosure among the

sexually active females. Parental affinity and religiosity were not associated with online sexual self-disclosure.

Gender was associated with online sexual self-disclosure among all respondents ($B = .77$, $SE = .18$, $p < .001$), and among those who were sexually active ($B = .65$, $SE = .19$, $p = .001$). The rate of online sexual self-disclosure was 115% higher among females than among males. Among sexually active females, the rate was 67% higher than among sexually active males.

Discussion

Overall, this study found that while some young people portray themselves sexually in their online profiles, most do not engage in extensive online sexual self-disclosure. About one-third of the MySpace profiles analyzed here contained at least one sexual self-disclosure. Considering all the other content these young people displayed in their profiles – more than 56,000 statements analyzed here – fewer than 2% were sexual in nature and even fewer explicitly referenced the profile owner. Put another way, while a young person's MySpace profile featured, on average, about 100 statements, only about one of these was a sexual self-disclosure.

Despite its relative infrequency, sexual self-disclosure is of concern because of the potential detrimental implications for the minority of young people who produce them, and for their peers who consume them. The findings reported here show that the incidence of sexual self-disclosure is more likely among specific types of youth. In light of problem behavior theory (Jessor & Jessor, 1977), online sexual self-disclosure may be classified as a risk behavior by virtue of its close association with offline risky sexual behaviors and, to a lesser extent, by its association with other non-sexual risk behaviors and protective factors. Individuals who are more sexually experienced and those who engage in casual sex are more likely to self-disclose sexually in their online profiles. A female's early sexual debut in adolescence appears to be

associated with her online sexual self-disclosure in later years: sexually active young women who experienced early sexual debuts present more sexual self-disclosures than those who were able to delay first sex. Young women who engage in higher rates casual sex also present more sexual self-disclosures.

Online sexual self-disclosure appears to be more modestly associated with a broader pattern of non-sexual risk behaviors. Individuals who drink alcohol more frequently, self-disclose sexually more in their online profiles than those who drink less or not at all. Frequencies of physical fights and marijuana use do not appear to be related to online sexual self-disclosure. Of the protective factors, only education among sexually active females is associated with less online sexual self-disclosure. Having a close bond with a parent or being more religious does not appear to be associated with online sexual self-disclosure.

The overall gender differences apparent in the results are worth noting. Females were more likely than males to sexually self-disclose: 40% female vs. 26% male profiles contained at least one sexual self-disclosure. On average, females also included more sexual self-disclosures than males (.97 vs. .52 per profile). This pattern is in line not only with research showing that females self-disclose more in offline contexts (Dindia & Allen, 1992), but also with studies that have found young women to be more likely than their male counterparts to present intimate information online (Stern, 2004; Moreno, Parks, et al., 2009). The difference we observed is particularly striking in light of our statistical controls for demographics, sexual experience, and non-sexual risk taking.

Why are young women, other things being equal, more sexually expressive in their online profiles than men? It may be that these young women have internalized the ubiquitous sexualized images of girls and women in popular media and find these to be culturally acceptable and even

expected (Fredrickson & Roberts, 1997). If this is the case, it may be beneficial for media literacy efforts aimed at young women not only to address the sexualization of the female body in the mass media (American Psychological Association, 2007), but also to speak to the suitability and risks of sexual self-disclosure in social media. Such programs might be especially beneficial for young women with less formal education, particularly if respondents' education level as measured in this study also indicates their level of computer and social media literacy (Hargittai, 2010). Young men may also benefit from learning about sexual self-disclosure risks. Given the associations between sexual self-disclosure and alcohol use – which may point to an engagement in a “party culture” that celebrates both alcohol and promiscuity – promoting healthier pastimes and means of self-expression may be beneficial for both genders.

Overall, this study's findings suggest that online sexual self-disclosure may be an outgrowth of offline risky sexual behaviors. Conversely, however, the findings may be interpreted to show that online disclosure promotes and reinforces riskier offline sexual behaviors. Youth may shift their offline identities to correspond with their online personas (e.g., Gonzales & Hancock, 2008). The nature of our data, however, prevents causal relationship claims. Problem behavior theory suggests that the links between problem behaviors are complex, and that these behaviors likely reinforce one another. Future studies that measure adolescents' offline and online sexual self-disclosures concurrent with events marking their sexual development may establish more precisely the degree to which risky offline and online behaviors influence one another. Since young people use their social media profiles not only to communicate their actual selves but also their ideal, aspirational selves (Manago, Graham, Greenfield, & Salimkhan, 2008), such data would also allow researchers to estimate the extent to which adolescents' sexual self-disclosures correspond to their desired or actual offline behaviors.

Regardless of causal direction, the association between sexual behaviors offline and online suggests an amplification of risk and increased likelihood of detrimental consequences. Young people's sexual risk behaviors are associated with increased potential for sexually transmitted infections and unplanned pregnancies (DiClemente & Crosby, 2003; Lefkowitz & Gillen, 2006), and online sexual self-disclosures are associated with increased risk for online solicitation and victimization (Wolak, Finkelhor, & Mitchell, 2008; Ybarra, et al, 2007). Even more broadly, young people's sexual self-disclosure – whether it corresponds to desired or actual offline behavior – may influence the norms in their peer groups, heightening the importance of sex among their online friends and increasing the likelihood of sexual initiation among members of the peer group (Kinsman, et al., 1998). The opposite may also be true, of course, in that peer norms may dictate not only how sexually young people present themselves in their profiles but also how they behave offline. As digital communication technologies become more ubiquitous, these norms may be increasingly expressed through online forums.

Offline risky sexual behaviors may also be associated with online sexual self-disclosure because a third factor or set of factors, for which this study did not account, promotes both activities. The sexual self-concept perspective, for instance, may help explain the incidence of online sexual self-disclosure among youth with a history of offline risky sexual activities. Young people for whom sexual identity is a more important component of the self-concept may be likely to engage in more sexual self-disclosure and more likely to engage in risky sexual behaviors than their peers for whom sexuality is less important (e.g., Buzwell & Rosenthal, 1996). This perspective casts sexual self-disclosure in a broader, less negative light than problem behavior theory, recognizing that some young people are, by virtue of various personal characteristics and circumstances, more sexual than others and thus may be more likely than

their peers to sexually self-disclose in their online profiles. It may be valuable for future research to measure sexual self-concept (e.g., Andersen, Cyranowski, & Espindle, 1999) to address its role in shaping young people's online sexual self-disclosure.

Limitations and future research

The NSYR survey, on which we performed a secondary analysis, did not measure whether respondents identified as heterosexual or not. Critics have noted that research on sexual patterns among adolescents has generally glossed over differences between youth of various sexual orientations (e.g., Savin-Williams & Diamond, 2004). Given the limitations of the available data, this study continues in this unfortunate trend despite the fact that gay-identified youth have been shown to be at greater risk for online victimization (Wolak, Finkelhor, Mitchell, & Ybarra, 2008).

The young people included in this study were 18 to 23 years old when their online disclosures were analyzed. Although some might not consider them "children" or even still "adolescents," many youth-serving organizations (e.g., the W. T. Grant Foundation) now consider childhood and adolescence as extending into the early 20s. The study relied on data from respondents in this older age group because these data were available and accessible, whereas comparable data (both survey and online content) from a sample of minors would have been substantially more difficult to collect. By including a measure of sexual debut, the study did address how an adolescent's sexual development might be associated with his or her sexual self-disclosure in later adolescence. For those who initiated sexual activity during adolescence, the other measures of sexual offline behaviors (i.e., sexual experience, casual sex) may also point to an association between these behaviors in adolescence and online sexual disclosure in later years. Future work should examine sexual self-disclosure in younger samples, as children and younger

adolescents are developmentally different than older adolescents and young adults. They also may be less aware than older youth of inherent online risks, and be more impulsive about what they self-disclose online.

This study focused on publicly accessible online profiles. Demographically, the public profile sample examined did not differ from the full NSYR panel. It is possible, however, that the content of public profiles did not match that of the private profiles not analyzed here. Research has suggested that adolescents communicate in less sexually explicit and vulgar ways when they are aware that an adult may be monitoring their disclosures (Moreno, VanderStoep, Parks, Zimmerman, Kurth, & Christakis, 2009; Subrahmanyam, Smahel, & Greenfield, 2006). Future work should investigate the extent to which online users' sexual self-disclosure in profiles shifts in relation to the perceived or real privacy of the content.

Researchers have argued that the measurement of self-disclosure needs to better account for the contextualized, dynamic, and dialogical nature of what people say about themselves to others (Dindia, 1997). Although our work is one step in this direction, we were still not able to assess the content at more than one time point, or to include analysis of chat or comments back and forth between profile owners and their friends. Future work should rely on more sophisticated measurement approaches to effectively account for how online self-disclosures change over time, and the factors that influence how they develop.

As technologies evolve quickly and continually, young people are consistently introduced to new modes of communicating their identities. The future of technology-mediated interpersonal communication appears to reside in hand-held devices, texting, and social web applications. It is imperative that researchers and educators anticipate such technological innovations and, equipped with solid evidence and effective educational methods, engage young

people about safe and rewarding new technology practices as these technologies are being introduced, not when users have already established behavior patterns. The history of this research program illustrates the need for such anticipatory research. When this study was initiated in 2007, MySpace was the third most visited website in the United States according to alexa.com, a website that tracks Internet traffic. At the time of this writing in 2010, MySpace is the 13th most visited website in the United States, lagging considerably behind Facebook, its social media rival, which is currently ranked second in traffic. While the findings presented here are likely generalizable to a range of technologies other than MySpace through which young people present themselves to others, it is not clear to what extent young people today are more careful than this study's sample about what they self-disclose online.

Access may be the primary challenge that communication technology researchers face in the future. Since the time this research began, users have likely become more aware of social media privacy issues. As users take advantage of their privacy controls – a positive development that will lessen some of the risks associated with online self-disclosure – it may become increasingly difficult to comprehensively assess young people's online behaviors as extensively and unobtrusively as we were able to in this study. Nevertheless, understanding the online environment for the purpose of helping young people safely conduct their lives online will remain an important challenge.

References

- American Psychological Association. (2007). Report of the APA Task Force on the Sexualization of Girls. Washington, DC: American Psychological Association. Retrieved from <http://www.apa.org/pi/wpo/sexualization.html>
- Andersen, B. L., Cyranowski, J. M., & Espindle, D. (1999). Men's sexual self-schema. *Journal of Personality and Social Psychology*, *76*, 645–661.
- Bleakley, A., Hennessey, M., Fishbein, M., & Jordan, A. (2008). It works both ways: The relationship between exposure to sexual content in the media and adolescent sexual behavior. *Media Psychology*, *11*, 443–461.
- Blum, R., Beuhring, T., Shew, M., Bearinger, L., Sieving, R., & Resnick, M. (2000). The effects of race/ethnicity, income, and family structure on adolescent risk behaviors. *American Journal of Public Health*, *90*, 1879–1884.
- Buzwell, S. & Rosenthal, D. (1996). Constructing a sexual self: Adolescents' sexual self-perceptions and sexual risk-taking. *Journal of Research on Adolescence*, *6*, 489–513.
- Costa, F. M., Jessor, R., Donovan, J. E., & Fortenberry, J. D. (1995). Early initiation of sexual intercourse: The influence of psychosocial unconventionality. *Journal of Research on Adolescence*, *5*, 93–121.
- Costa, F. M., Jessor, R., Fortenberry, J. D., & Donovan, J. E. (1996). Psychosocial conventionality, health orientation, and contraceptive use in adolescence. *Journal of Adolescent Health*, *18*, 404–416.
- Cox Communications. (2009). Teen online & wireless safety survey: Cyberbullying, sexting, and parental controls. Research findings. Retrieved July 2, 2010 from http://www.cox.com/takeCharge/includes/docs/2009_teen_survey_internet_and_wireless_safety.pdf

- Coxe, S., West, S. G., & Aiken, L. S. (2009). The analysis of count data: A gentle introduction to Poisson regression and its alternatives. *Journal of Personality Assessment, 91*, 121–136.
- Crockett, L. J., Raffaelli, M., & Moilanen, K. L. (2003). Adolescent sexuality: Behavior and meaning. In G. R. Adams & M. D. Berzonsky (Eds.), *Blackwell handbook of adolescence* (pp. 371–392). Malden, MA: Blackwell.
- DiClemente, R. J. & Crosby, R. A. (2003). Sexually transmitted diseases among adolescents: Risk factors, antecedents, and prevention strategies. In G. R. Adams & M. D. Berzonsky (Eds.), *Blackwell handbook of adolescence* (pp. 573–605). Malden, MA: Blackwell.
- Dindia, K. (1997). Self-disclosure, self-identity, and relationship development: A transactional/dialectical perspective. In S. Duck (Ed.), *Handbook of personal relationships: Theory, research and interventions* (pp. 411–426). New York: John Wiley & Sons.
- Dindia, K., & Allen, M. (1992). Sex differences in self-disclosure: A meta-analysis. *Psychological Bulletin, 112*, 106–124.
- Donovan, J. E., Jessor, R., & Costa, F. M. (1988). Syndrome of problem behavior in adolescence: A replication. *Journal of Consulting and Clinical Psychology, 56*, 762–765.
- Fortenberry, J. D., Costa, F. M., Jessor, R., & Donovan, J. E. (1997). Contraceptive behavior and adolescent lifestyles: A structural modeling approach. *Journal of Research on Adolescence, 7*, 307–329.
- Fredrickson, B. L., & Roberts, T. A. (1997). Objectification theory: Towards understanding women's lived experience and mental health risks. *Psychology of Women Quarterly, 21*, 173–206.

Gonzales, A. L., & Hancock, J. T. (2008). Identity shift in computer-mediated environments.

Media Psychology, 11, 167-185.

Grello, C. M., Welsh, D. P., & Haper, M. S. (2006). No strings attached: The nature of casual sex in college students. *The Journal of Sex Research, 43*, 255–267.

Hargittai, E. (2010). Digital na(t)ives? Variation in Internet skills and uses among members of the “net generation.” *Sociological Inquiry, 80*, 92–113.

Hayes, A. F. & Krippendorff, K. (2007). Answering the call for a standard reliability measure for coding data. *Communication Methods and Measures, 1*, 77–89.

Holsti, O. R. (1969). *Content analysis for the social sciences and humanities*. Reading, MA: Addison–Wesley.

Honaker, J., King, G., & Blackwell, M. (n.d.) Amelia II: A program for missing data. Retrieved September 25, 2009 from Gary King’s Web site, <http://gking.harvard.edu/amelia>

Jessor, R. & Jessor, S. L. (1977). *Problem behavior and psychological development: A longitudinal study of youth*. New York: Academic Press.

King, G., Honaker, J., Joseph, A., & Scheve, K. (2001). Analyzing incomplete political science data: An alternative algorithm for multiple imputation. *American Political Science Review, 95*, 49–69.

Kinsman, S. B., Romer, D., Furstenberg, F. F., & Schwarz, D. F. (1998). Early sexual initiation: The role of peer norms. *Pediatrics, 102*, 1185–1192.

Lefkowitz, E. S. & Gillen, M. M. (2006). “Sex is just a normal part of life”: Sexuality in emerging adulthood. In J. J. Arnett & J. L. Tanner (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 235–256). Washington, DC: American Psychological Association.

- Lenhart, A. (2009). Teens and sexting: How and why minor teens are sending sexually suggestive nude or nearly nude images via text messaging. Washington, DC: Pew Internet & American Life Project. Retrieved from <http://www.pewinternet.org/Reports/2009/Teens-and-Sexting.aspx>
- Manago, A. M., Graham, M. B., Greenfield, P. M., & Salimkhan, G. (2008). Self-presentation and gender on MySpace. *Journal of Applied Developmental Psychology, 29*, 446–458.
- Moreno, M. A., Brockman, L., Rogers, C. B., & Christakis, D. A. (2010). An evaluation of the distribution of sexual references among “Top 8” MySpace friends. *Journal of Adolescent Health, 47*, 418–420.
- Moreno, M. A., Parks, M. R., Zimmerman, F. J., Brito, T. E., & Christakis, D. C. (2009). Display of health risk behaviors on MySpace by adolescents: Prevalence and associations. *Archives of Pediatric and Adolescent Medicine, 163*, 27–34.
- Moreno, M. A., VanderStoep, A., Parks, M. R., Zimmerman, F. J., Kurth, A., & Christakis, D. C. (2009). A randomized pilot intervention to reduce at-risk adolescents’ online risk behavior display on a social networking web site. *Archives of Pediatrics and Adolescent Medicine, 163*, 35–41.
- Noll, J. G., Trickett, P. K., & Putnam, F. W. (2003). A prospective investigation of the impact of childhood sexual abuse on the development of sexuality. *Journal of Consulting and Clinical Psychology, 71*, 575–586.
- Noll, J. G., Shenk, C. E., Barnes, J. E., & Putnam, F. W. (2009). Childhood abuse, avatar choices, and other risk factors associated with Internet-initiated victimization of adolescent girls. *Pediatrics, 123*, e1078-e1083.

- O'Donnell, L., O'Donnell, C., & Stueve, A. (2001). Early sexual initiation and subsequent sex-related risks among urban minority youth: the Reach for Health Study. *Family Planning Perspectives, 33*, 268-275.
- Pardun, C. J., L'Engle, K. L., & Brown, J. D. (2005). Linking exposure to outcomes: Early adolescent consumption of sexual content in six media. *Mass Communication and Society, 8*, 75-91.
- Paul, E. L., & Hayes, K. A. (2002). The casualties of 'casual' sex: A qualitative exploration of the phenomenology of college students' hookups. *Journal of Social and Personal Relationships, 19*, 639-661.
- Pearce, L. D., & Denton, M. L. (2011). *A faith of their own: Stability and change in the religiosity of America's adolescents*. New York: Oxford University Press.
- Peter, J., & Valkenburg, P. M. (2008). Adolescents' exposure to sexually explicit Internet material, sexual uncertainty, and attitudes toward uncommitted sexual exploration: Is there a link? *Communication Research, 35*, 579-601.
- Savin-Williams, R. C. & Diamond, L. M. (2004). Sex. In R. M. Lerner & L. Stenberg (Eds.), *Handbook of adolescent psychology* (2nd ed., pp. 189-231). Hoboken, NJ: John Wiley & Sons.
- Siebenbruner, J., Zimmer-Gembeck, M. J., & Egeland, B. (2007). Sexual partners and contraceptive use: A 16-year perspective study predicting abstinence and risk behavior. *Journal of Research on Adolescence, 17*, 179-206.
- Slobin, D. I. (1993). Coding child language data for crosslinguistic analysis. In J. A. Edwards & M. D. Lampert (Eds.), *Talking data: Transcription and coding in discourse research* (pp. 207-219). Hillsdale, NJ: Lawrence Erlbaum.

- Smith, C. (with Denton, M. L.) (2005). *Soul searching: The religious and spiritual lives of American teenagers*. New York: Oxford University Press.
- Smith, C. (with Snell, P.) (2009). *Souls in transition: The religious & spiritual lives of emerging adults*. New York: Oxford University Press.
- Stern, S. R. (2004). Expressions of identity online: Prominent features and gender differences in adolescents' World Wide Web home pages. *Journal of Broadcasting & Electronic Media*, 28, 218–243.
- Stinson, R. D. (2010). Hooking up in young adulthood: A review of factors influencing the sexual behavior of college students. *Journal of College Student Psychotherapy*, 24, 98–115.
- Subrahmanyam, K., Smahel, D., & Greenfield, P. (2006). Connecting developmental constructions to the Internet: Identity presentation and sexual exploration in online teen chat rooms. *Developmental Psychology*, 42, 395–406.
- Wolak, J., Finkelhor, D., & Mitchell, K. (2008). Is talking online to unknown people always risky? Distinguishing online interaction styles in a national sample of youth Internet users. *CyberPsychology & Behavior*, 11, 340–343.
- Wolak, J., Finkelhor, D., Mitchell, K. J., & Ybarra, M. L. (2008). Online “predators” and their victims: Myths, realities, and implications for prevention and treatment. *American Psychologist*, 63, 111-128.
- Ybarra, M. L., Mitchell, K. J., Finkelhor, D., & Wolak, J. (2007). Internet prevention messages: Targeting the right online behaviors. *Archives of Pediatric and Adolescent Medicine*, 161, 138–145.

Zimmer-Gembeck, M., & Helfand, M. (2008). Ten years of longitudinal research on U.S. adolescent sexual behavior: Developmental correlates of sexual intercourse, and the importance of age, gender and ethnic background. *Developmental Review*, 28, 153–224.

Table 1

Percent Frequencies and Means of Sexual Self-Disclosure by Levels of Independent Variables (N = 559)

		% profiles with at least one sexual self- disclosure	Mean sexual self- disclosures per profile (<i>SD</i>)
Full sample		32.4	.73 (1.58)
Demographic, control variables, and education			
Gender	Male	25.7	.52 (1.34)
	Female	40.0	.97 (1.78)
Ethnicity	White	28.5	.60 (1.45)
	Not white	41.6	1.04 (1.80)
Age	18	33.0	.89 (1.89)
	19	28.4	.53 (1.08)
	20	40.4	.97 (1.87)
	21	26.3	.56 (1.38)
	22–23	34.7	.69 (1.47)
Family income ¹	< \$10K to \$30K	39.8	.80 (1.40)
	\$30K to \$60K	32.1	.73 (1.65)
	\$60K to \$90K	27.7	.70 (1.53)
	more than \$90K	32.1	.69 (1.67)
Education	Less than high school	35.1	.78 (1.61)
	High school diploma	33.0	.80 (1.67)
	Some college	33.0	.69 (1.51)
	College graduate or higher	14.8	.44 (1.45)
Sexual risk behaviors			
Sexual experience	None	13.4	.25 (0.72)
	Touching	34.8	.70 (1.19)
	Oral sex	12.9	.16 (0.45)
	Intercourse	36.5	.85 (1.71)
Early sexual debut	19 or older	21.1	.50 (1.37)
	17 or 18	34.4	.69 (1.45)
	15 or 16	38.2	.90 (1.84)
	14 or younger	46.1	1.28 (2.03)
Casual sex ¹	None	29.0	.61 (1.40)
	At least some	41.3	.99 (1.87)

¹ Income and casual sex categories collapsed for parsimony

Table 2

Negative Binomial Regression Estimates of Sexual Self-Disclosure Quantity in MySpace Profiles

	All profile owners				Sexually active profile owners			
	<i>B</i>	<i>SE</i>	IRR	<i>p</i>	<i>B</i>	<i>SE</i>	IRR	<i>p</i>
Demographic and control variables								
Female	.77	.18	2.15	< .001	.65	.19	1.67	.001
White	-.73	.19	.48	< .001	-.55	.20	1.13	.007
Age	-.08	.07	.92	.262	-.08	.08	.93	.328
Family income	-.04	.03	.96	.188	-.04	.04	.96	.303
Total self-disclosures	.01	< .00	1.01	< .001	.01	.00	1.01	< .001
Sexual risk behaviors								
Sexual experience	.34	.11	1.41	< .001	—	—	—	—
Early sexual debut	—	—	—	—	.16	.12	1.23	.172
Casual sex	—	—	—	—	.17	.08	1.20	.029
Non-sexual risk behaviors								
Alcohol use	.15	.05	1.16	.006	.13	.06	1.11	.024
Marijuana use	.05	.05	1.06	.228	.02	.05	1.03	.644
Physical fights	.16	.14	1.18	.244	.07	.14	1.03	.647
Protective factors								
Education	-.05	.13	.95	.704	-.15	.14	.86	.308
Parent affinity	.17	.09	1.18	.054	.12	.09	1.11	.196
Religiosity	.03	.06	1.03	.628	.02	.06	1.06	.785
<i>N</i>	559				438			
<i>df</i>	12				13			
Likelihood Ratio	90.33 < .001				64.35 < .001			

Acknowledgment

An earlier version of this paper was presented at the Society for Research on Adolescence Biennial Meeting. Generous financial support for this research was provided to Jane Brown of the Carolina Population Center by the John Templeton Foundation. The National Study of Youth and Religion, www.youthandreligion.org, whose data were used by permission here, was funded by the Lilly Endowment Inc., under the direction of Christian Smith, of the Department of Sociology at the University of Notre Dame and Lisa D. Pearce, of the Department of Sociology at the University of North Carolina at Chapel Hill.

Author bios

Piotr S. Bobkowski (Ph.D., University of North Carolina at Chapel Hill, 2010) is Assistant Professor in the William Allen White School of Journalism and Mass Communications at the University of Kansas. His research focuses on adolescents' and emerging adults' uses and effects of new media and social media.

Jane D. Brown (Ph.D., University of Wisconsin–Madison, 1978) is James L. Knight Professor in the School of Journalism and Mass Communication at UNC Chapel Hill. Her research focuses on the effects of the media on adolescents' health.

Deborah R. Neffa (MA, University of North Carolina at Chapel Hill, 2011) is an intern with Carolinas HealthCare System. She is interested in social marketing, health campaigns and

preventive health. Her master's thesis analyzed the factors stakeholders believed led to the successful implementation of a healthy food environment in hospitals.