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“Love on the Brain”: Exploring the Influence of Lyrics on Sexting

Savannah Leigh Kroff

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of
Master of Science

Sarah M. Coyne, Chair
Spencer L. James
Alex C. Jensen

School of Family Life
Brigham Young University

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ABSTRACT

“Love on the Brain”: Exploring the Influence of Lyrics on Sexting

Savannah Leigh Kroff
School of Family Life, BYU
Master of Science

While some research has been done on the influence of music lyrics on sexual behaviors in general, none has explored the lyrical influence on sexting. The goal of the current study is to explore the longitudinal influence of sexual and sexually objectifying lyrics on adolescent sexting behaviors. Participants were 125 14-year-old adolescents who were recruited from high schools in Texas. Participants completed questionnaires on music preferences, sexual behaviors and impulsivity and were given BlackBerry devices through which frequency of sexual text message utterances was obtained. Music preferences were then quantitatively analyzed using the Linguistic Inquiry Word Count (LIWC) software. Logistic regression analyses were conducted to explore the influence of both sexual and sexually objectifying lyrics on sexting behavior. Additionally, biological sex and impulsivity were explored as moderators. Analyses revealed that 40.65% of adolescents participated in some form of sexting at Time 3 (42.81% at Time 1) but that music lyrics had little direct influence on sexting. However, biological sex appeared to moderate the relationship between sexual lyrics and sexting such that males were much more likely to participate in sexting when exposed to sexual lyrics where females were not. These and other results are discussed as well as implications for parents and the need for further research on sexting and the behavioral influence of musical lyrics.

Keywords: sexting, music lyrics, sex, sexually objectifying, BlackBerry Project

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“Love On The Brain”: Exploring the Influence of Lyrics on Sexting

“These days, all I do is wonder if you bendin' over backwards for someone else...Doing things I taught you, gettin' nasty for someone else...” - Drake

“Hoes at my shows they be stripping off they clothes, and them college girls write a nigga name on they toes...” - A\$AP Rocky

Despite the American Academy of Pediatrics' efforts to encourage media programming to reflect realistic health consequences of sexual behavior and to portray more safe sexual behavior (Rich, 2005), unrealistic and unsafe sexual messages are common across media. In fact, television (Collins, 2011; Collins, et al., 2004), music videos (Flynn, Park, Morin, & Stana, 2015), video games (Dill, Gentile, Richter, & Dill, 2005), movies (Bufkin & Eschholz, 2000), and music (Flynn, Craig, Anderson & Holody, 2016) have glorified sex as inconsequential and casual. Further, these sexual messages are often objectifying-- portraying women as powerless objects to be used by men for sexual gratification (Flynn et al., 2016; Sommers-Flanagan, Sommers-Flanagan, & Davis, 1993). Sexual lyrics (i.e. those describing the act of sex or making other explicit or slang references to sexual intercourse) and sexually objectifying lyrics (i.e. those referring to women as sexual objects subordinated to the power of men) such as those referenced above are becoming increasingly pervasive in today's music. In fact, studies have suggested that almost 40% of top billboard songs contain sexual lyrics (Primack, Gold, Schwarz, Dalton, 2008), with percentages upwards of 65% for genres such as rap where sexually objectifying themes are increasingly common (Weitzer & Kurbin, 2009).

With artists like Drake receiving over 245 million streams in a week (Billboard, 2016) and adolescents spending between two and four hours every day listening to music (Lonsdale & North, 2011; Rideout, Foehr & Roberts, 2010), it is clear that the music industry is thriving and

that adolescents are eager to listen. Research has suggested that popular entertainment such as music provide important commentary about sexuality from which adolescents derive ideologies that can influence their behavior (Rideout, Foehr & Roberts, 2010). Accordingly, it is important to understand what influence these lyrical messages are having on adolescent behavior. Although there has been some research done in this area, most studies are cross-sectional and few have used truly valid measures to assess the extent with which both sexual and sexually objectifying lyrics are used in popular music. Of the studies that have been done exploring the influence of sexual musical lyrics, scholars report that the messages are associated with risky sexual behavior, an increase in unintended pregnancies, and a higher likelihood of acquiring an STI in adolescence (Martino, et al., 2006; Wingood et al., 2003). Because sexting is also associated with these types of risky sexual behaviors (Dake, Price, Maziarz & Ward, 2012) and other negative consequences such as cyberbullying (Kowalski et al., 2007) and decreased emotional and social well-being (Selkie, Kota, Chan, & Moreno, 2015), it is important to understand what predicts sexting among adolescents. However, scholars have yet to explore the influence of sexual and sexually objectifying lyrics on sexting behaviors. Accordingly, the aim of our study is to assess the longitudinal impact of sexual and sexually objectifying lyrics on sexting behavior among adolescents.

Musical Lyrics

Adolescents use music for a variety of different reasons, from mood management to identity development to just passing the time (e.g., Lonsdale & North, 2011; North, Hargreaves, & O'Neill, 2000). Music can be beneficial for adolescents—helping them cope with stress and anxiety and improving sleep quality (Västfjäll, Juslin & Hartig, 2012). Music has been shown to increase blood flow in various areas of the brain including the orbitofrontal cortex (Blood &

Zatorre, 2001) which is related to risk-taking behaviors and is less developed during adolescence (Galvan, et al., 2006). Combined with large volume of music that adolescents are using compared to other populations (Nielsen, 2012), it is clear that adolescents are quite vulnerable to the messages contained therein. In their 2011 study, Lonsdale and North reported that adolescents spend more time listening to music than they do on most other leisure activities including watching television, playing computer games, or even working on their favorite hobby. In the same study, the authors suggest that music is a significantly more important means of adolescent self-expression than any other type of media. Accordingly, the messages portrayed in musical lyrics have the potential to be significantly impactful on the ways in which adolescents will self-express.

Common themes found in musical lyrics include alcohol and drug use, violence, sexuality and sexual objectification. Although these messages are common across genres, rap/hip-hop, rock and country music are the most likely to include these lyrical themes (Primack, Dalton, Carroll, Agarwal & Fine, 2008; Weitzer & Kurbin, 2009). In fact, the rap music industry has gained a particularly bad reputation for its advocacy of sexual and sexually objectifying lyrics (Barongan & Hall, 1995). One study indicates that rap songs are more than twice as likely as other genres to mention sex (Holody, Anderson, Craig, & Flynn, 2016) and other scholars and activists have asserted that male rap artists depict women as sexual objects (e.g., Adams & Fuller, 2006; Pinn, 1996; Shelton, 1997). While sexual messages may encourage sexual behavior and risk taking, sexually objectifying lyrics send a message of power over and subordination of women. One reason that this type of sexual domination and objectification may be more common in rap music is that rap originated as an expression of the experiences of inner city, disadvantaged Black neighborhoods where sexuality had strong implications for social status and

esteem (Rose, 1994). In his book, a well-known sociologist Elijah Anderson explains that “because of the implications sex has for...local social status and esteem, the young men are ready to be regaled with graphic tales of one another’s sexual exploits” (p. 154). Regarding the sexually objectifying messages, he continues, “the goal of the sexual conquests is to make a fool of the young women. [The male] incurs sanctions [from his peers] for allowing a girl to ‘rule’ him or gains positive reinforcement for keeping in her in line... In many cases the more the young man seems to exploit the young women, the higher is his regard within the peer group” (p. 154). One ethnographic scholar has made similar assertions about the presence of sexually objectifying lyrics in southern rock and country music, explaining that the hegemonic masculinity that is historically common in Southern culture is expressed through country music lyrics (Eastman, 2012).

One assumption in these explanations, however, is that the majority of sexual and sexually objectifying lyrics are being written or performed by men. While male artists are significantly more likely to reference sex and to sexually objectify women (Rasmussen & Densley, 2016), over time, women have begun using more sexually self-objectifying lyrics themselves (Dukes, Bisel, Borega, Lobato, & Owens, 2003). Scholars of black feminism have been particularly interested in this paradoxical conundrum. Oware (2009) asserts that, although most female rap artists have songs with “pro-women” messages, their positive influence has been nullified by other songs performed by the *same* artists with messages that encourage hegemonic ideals of masculinity. Beyoncé provides an illustrative example of this contradiction. A self-identifying feminist (Weidhase, 2015), Beyoncé has performed empowering lyrics such as, “*Boy I know you love it how we’re smart enough to make these millions; strong enough to bear the children then get back to business*” in her song “Who Run the World (Girls).” However, songs

like “Partition” send more misogynistic and sexually-objectifying messages with lyrics such as “*Oh he so horny, he want to f**k. He bucked all my buttons, he ripped my blouse. He Monica Lewinski all on my gown.*” Both male and female musical artists, across genres, commonly fill their songs with sexual and sexually objectifying lyrics. Because both sex and sexual objectification are common themes in musical lyrics that may have similar but slightly different messages regarding women, it is important to consider the implications that exist for the adolescents who listen to either or both messages.

Theoretical Background

To make sense of the implications that sexual and sexually objectifying lyrics may have on adolescent audiences, I turn to Bandura’s social learning theory (Bandura, 1977). Social learning theory argues that individuals learn behaviors by modeling that of others, regardless of how they encounter these examples (reality, media, etc.). The theory is particularly helpful in understanding the influence of musical lyrics on sexual behavior as its origins are specifically focused on media exposure.

Bandura’s initial experiments were performed with children watching adults, in real life and on television, interacting with a toy that the children were then given an opportunity to interact with themselves. His findings indicated that the children who had watched the adult behave aggressively toward the toy were, in every case, more likely to be aggressive toward that toy themselves than were the children who witnessed an adult playing gently with the toy (Bandura, Ross & Ross, 1963). Although initially the theory mainly explored how *aggression* is socially influenced, it has been expanded to encompass a wide variety of behaviors (e.g., gender roles, Perry & Bussey, 1979; substance use, Krohn, Skinner, Massey & Akers, 1985; sexuality, Hogben & Byrne, 1997, etc.) and has been applied to several different mediums.

In our case, adolescents would be modeling behavior portrayed through musical lyrics. Although this exposure is auditory rather than visual as it was in Bandura's studies, one recent meta-analysis found that the effect of sexual media is consistent regardless of whether it is experienced visually or auditorially (Coyne, et al., *under review*). Music contains more sex messages than any other media content (Pardun, L'Engle, & Brown, 2005) except pornography and social learning theory supports the idea that these sexual messages could influence adolescents' sexual behaviors. Additionally, because the celebrity culture surrounding the music industry is pervasive, behaviors portrayed in popular music lyrics are further encouraged by the actual behavior of the artists writing them--providing adolescents both lyrical and behavioral examples.

Behavioral Implications

Sexting. Past research has suggested that exposure to sexual and sexually objectifying music lyrics has been linked to increased sexual behavior (Brown et al., 2006; Martino, et al., 2006). One type of sexual behavior for which we currently have a very limited understanding is "sexting," (i.e. sending or receiving nude/partially-nude pictures or sexually explicit messages to others via texting, social network sites, apps, or other forms of communication such as email). There has been little research regarding the effect of any type of media on sexting behaviors in adolescence, and none regarding the influence of musical lyrics. Additionally, the work that has been done to understand sexting has been almost exclusively self-report in the form of either survey responses or qualitative interviews. This study will add to the current literature by using observational data, bringing a new methodology to what has already been done on the topic, and by longitudinally exploring the influence of sexual and sexually objectifying lyrics on sexting among adolescents. Indeed, exploration of gender and sexuality is developmentally normative

for many late adolescent and emerging adult individuals (Lefkowitz & Gillen, 2006). Because sexual behaviors are likely to change during the course of adolescence, it is important to consider the impact that sexual and sexually objectifying lyrics may have over time, rather than at one stage in an adolescent's development.

Most studies report sexting rates around between 17 and 22% (Dake, et al., 2012; Houck, et al., 2014; Kopecký, 2012; Lippman & Campbell, 2014; Mitchell, Finkelhor, Jones & Wolak, 2012; Rice, et al., 2012; Strassberg et al., 2013) and have shown that adolescents as young as 10 to 12 years old are being affected by sexting whether through sending, receiving, or forwarding (Mitchell, Finkelhor, Jones & Wolak, 2012; Rice, et al., 2012).

Sexting not only has legal ramifications such as punishments for child pornography, but also brings with it implications for related sexual behaviors and substance use (Dake, et al., 2012). Because of the forwarding capacity of today's technology, adolescents who participate in sexting behaviors also risk having their private photos shared with unintended others, yet rarely appreciate this problem (Kowalski et al., 2007) until after it has occurred. This sext forwarding is a form of cyberbullying that is relatively common among teens (Mishna, Khoury-Kassabri, Gadalla, & Daciuk, 2012) and has social and emotional implications for the teen's well-being (Selkie, et al., 2015). Aside from cyberbullying and legal ramifications, studies have also suggested that sexting is related to other risky sexual behaviors such as being sexually active, having multiple sex partners and not using contraception during intercourse (Dake et al., 2012; Temple, et al., 2012).

Because sexting affects children from a young age, can lead to cyberbullying, and is associated with risky sexual behaviors, it is important to understand what predicts adolescents sexting behaviors. As mentioned before, sexual and sexually objectifying lyrics have been

associated with adolescent risky sexual behaviors. Because sexting is closely related to risky sexual behavior, it is highly likely that exposure to these types of lyrics may have a similar influence on adolescent participation in sexting.

Potential Moderators

Impulsivity. In 1986, Wober suggested that studying media influences would not generate a fullness of understanding without the inclusion of the individual's personality. Studies exploring the influence of personality on media preference have found differences between personality types (Wober, 1986) and have created an important space in the literature for the exploration of personality moderators. Accordingly, in an attempt to more fully understand the relationship between music lyrics and sexual and sexting behaviors, I will consider the moderating effect of impulsivity.

Impulsivity has been defined as being hasty, spontaneous and reckless (Parker & Bagby, 1997) and although it is not considered as one of the Big Five personality traits, previous research has suggested that the combination of low conscientiousness and high extraversion breeds an impulsive personality (Vollrath & Torgersen, 2002). Impulsivity has been related to both music preference (Twomey, Burns & Morris, 1998; Weisskirch & Murphy, 2004) and sexual behavior (including sexting, Temple, et al., 2014; Dir, Cyders & Coskunpinar, 2013) in several important ways. Research has suggested that higher levels of impulsivity are related to more sexual risk taking in men (McCoul & Haslam, 2001) and women (Kahn, Kaplowitz, Goodman & Emans, 2002), and that low levels of impulsivity can be a protective factor for adolescents who otherwise may engage in high levels of sexual activity (Donohew, et al., 2000). In fact, one meta-analysis regarding personality factors found that sensation-seeking was an

important moderator, explaining 64% of the variance in effect sizes of sexual-risk taking behaviors (Hoyle, Fejfar, & Miller, 2000).

Information processing theory (Salancik & Pfeffer, 1978) offers a few suggestions as to why varying levels of impulsivity may be associated with differences in behavior. The theory suggests that individuals rely on social scripts to guide behavior (some of which may originate from media examples; Huesmann, 1988). The theorized process for encoding and enacting these scripts involves the following: observing a model behavior (whether from the media or in real life; e.g. listening to a song about having sex), encoding the behavior (e.g. storing the lyrics in short-term memory), rehearsing the script (e.g. thinking about the lyrics) and encountering a cue (e.g. receiving a flirtatious text message) which would provide the individual with an opportunity to review behavior scripts and make a decision about how to act (e.g. deciding whether to send a sext message in response to the flirtatious text). The theory suggests that individuals then draw upon their memory of the behavior script and evaluate whether or not that behavior is an appropriate response to the current situation, which ultimately leads to their behavior (Huesmann, 1986). One important element of the evaluation stage is that it gives individuals an opportunity to consider whether enacting the script is an appropriate response to the situation, and whether it would lead to a desirable or an undesirable outcome. However, for individuals who are more impulsive, this part of the process may be bypassed altogether (Kendall & Wilcox, 1979), meaning impulsive individuals may enact inappropriate scripts that lead to undesirable outcomes more often than those who are non-impulsive. It may reasonably be, then, that non-impulsive individuals, who evaluate the appropriateness of the sexual cues they receive from music lyrics (e.g., unprotected sex, sexual exploits, multiple partners, etc.), may be less likely to demonstrate sexual behaviors than adolescents who bypass the evaluation process.

Biological Sex. Boys and girls receive very different messages regarding sexuality. For example, while boys learn that sexual freedom is positive (Popp, Donovan, Crawford, Marsh & Peele, 2003), that sexual advances are considered accomplishments (Kehily, 2001) and that sex is for individual pleasure (Masters et al., 2013), females often are taught that sex is unacceptable outside of a committed relationship, are encouraged to participate in fewer sexual behaviors (Shibley-Hyde & Durik, 2000) and learn that the most important aspect of sexuality is relationship quality (Masters et al., 2013).

During adolescence, sexual identities and behavior patterns are influenced and created through socialization processes and peer acceptance (Dishion & Dodge, 2005; Hibbard & Buhrmester, 1998). However, due to differences in the messages *sent*, sexual socialization may be *received* differently by each sex. This may, in turn, influence the relationship between sexual and sexually objectifying lyric exposure and adolescent's subsequent sexual behavior. For example, even though females perceive less peer pressure for sex (DeGaston, Weed & Jensen, 1996), they are more likely to believe that a larger proportion of their peers are engaging in sexual activities than their male counterparts (Leland & Barth, 1992). Such perceptions may lead to a higher relative risk that the female adolescent is sexually active (Potard, Courtois & Rusch, 2008). Media messages can contribute to the perception that more peers are having sex (Gerbner, Gross, Morgan & Signorielli, 1986) and, as a result, it may be that females are more susceptible to the influence of sexual lyrics than are males.

However, because males already perceive more peer pressure for sex and less support for waiting than their female counterparts (DeGaston, Weed & Jensen, 1996; Maas, Shearer, Gillen & Lefkowitz, 2015), it may be that exposure to sexual lyrics is especially influential for male sexual behavior patterns. Additionally, research suggests that, when exposed to sexually

objectifying lyrics, males are more likely than females to act aggressively toward and have negative attitudes about females (Fischer & Greitemeyer, 2006). While the results of this study do not specifically speak to male's subsequent *sexual* behavior, when combined with the notion that males are more likely than females to discuss aggression as a common characteristic of their sexual behavior (Maas, et al., 2015), these results may suggest that male sexual behavior could be more susceptible to the influence of sexually objectifying lyrics than that of their female counterparts.

The Current Study

Previous research suggests that music preference is one important predictor of adolescent sexual behavior. Although scholars have already begun to explore the influence of music lyrics on adolescent behavior, most studies have been cross-sectional and have focused on popular music of the time rather than adolescent's individual music preference. Additionally, very few studies have been able to use more quantifiable measures such as quantitative text analysis to assess lyrical content but, instead, have implemented more loosely interpretable measures such as rating systems. Further, of the studies that have explored the influence of sexual and sexually objectifying lyrics on sexual behavior, none have explored the moderating influence of impulsivity and few have explored sex differences. Accordingly, the aim of the current study is to longitudinally examine the influence of sexual and sexually objectifying lyrics on adolescent sexting. My hypotheses are as follows:

Hypothesis 1: Adolescents who prefer musical artists using high amounts of sexual lyrics at Time 1 will display higher levels of sexting over 3 years than adolescents who do not.

Hypothesis 2: Adolescents preferring musical artists who use high amounts of sexually objectifying lyrics at Time 1 will report higher levels of sexting over 3 years than adolescents who do not.

Hypothesis 3: This relationship will be moderated by the adolescent's levels of impulsivity such that those with higher levels of impulsivity will display more sexual behavior related to music artist preference than will adolescents who display low levels of impulsivity.

Hypothesis 4: This relationship will be moderated by the adolescent's biological sex.

Method

Participants and Procedure

Data for this study was from The BlackBerry Project (Underwood, et al., 2012). Participants were recruited from a public school district in Texas using parental permission letters administered in their public school classrooms and included 125 adolescents (49.46% female) between the ages of 13 and 18. Participants at Time 1 were mostly in the 10th grade ($M = 10.05$, $SD = .98$). Racially, the sample was fairly representative with 52.9% of the sample being Caucasian, 19.4% African American, 17.1% Hispanic, 1.2% Asian, and 9.4% mixed or other. Forty-six percent of families in the sample made over \$76,000 per year, with 22% making between \$26,000 and \$75,000 per year and a little over 12% at a total annual household income of less than \$25,000. Most children came from two-parent homes (65.8%). From 2009 to 2011, between each school year (3 years), family visits were made with each adolescent and their family either in the family's home or in a laboratory setting. In these interviews, adolescents completed measures assessing various aspects of their life, including their sexual behaviors, musical preferences and level of impulsivity.

Additionally, participants were provided with BlackBerry devices equipped with paid service plans including data plans, which provided direct internet access and unlimited texting. Although not prohibited from communicating online or on other devices, participants were encouraged to use the BlackBerry as their primary cell phone. Content of the text messages sent using the BlackBerries was stored on a BlackBerry Enterprise server that was maintained by Ceryx and archived by Global Relay—two companies specializing in data security. Procedures for the use of text message content was reviewed carefully by the university's Institutional Review Board along with other scientific review groups at the National Institutes of Health (Underwood et al., 2012). Both the participants and their parents were made fully aware that the participant's electronic communication was being stored and used for research purposes. Although the monitoring could have deterred adolescents from using the BlackBerry devices as a main form of communication, a two-day sample of the text messaging (Underwood et al., 2012) indicated that participants were using the BlackBerries to send text messages at similar rate as has been found in other self-report studies (Bryant, Sanders-Jackson & Smallwood, 2006; Lenhart et al., 2010).

Measures

Musical Preference. For three years, adolescents were asked to report their top three favorite musical artists, totaling 636 different artists across all three time points. Subsequently, the three most popular songs for each musical artist listed were obtained using data first from Wikipedia, or iTunes if no data was available on Wikipedia. 1,908 songs were found, with only 7.6% of all songs being found from iTunes as opposed to Wikipedia. A team of undergraduate research assistants then found the lyrics from each of those 1,908 songs and created files containing lyrics from each artist's top three songs at every year they were mentioned. For

example, Taylor Swift was mentioned as a favorite musical artist by adolescents at Time 1, 2, and 3. After finding her top three songs for Time 1 (i.e., You Belong with Me, Fifteen and Fearless), research assistants gathered the lyrics from each and created one document containing lyrics from all three songs. This process was repeated for Taylor Swift at Times 2 and 3. During this process a total of 636 files were created—reflecting the musical artists that were mentioned at all three time points.

These files were subsequently uploaded to and analyzed by a quantitative text analysis software called Linguistic Inquiry and Word Count (LIWC; Pennebaker, 2011). LIWC provides a more quantifiable approach to content analyzing lyrics than other methods (Mehl, 2006; Tausczik & Pennebaker, 2010), and has been commonly used by linguistic scholars and social scientists (Hirsh & Peterson, 2009; Margola, Facchin, Molgora & Revenson, 2010) as a way to scientifically observe the frequency of various word used in any particular text. Although this approach has limitations—especially when looking at something as nuanced as sexual and sexually objectifying lyrics—quantitative text analysis allows for the lyrics to speak for themselves rather than having them be coded by an observer as is normally the case in this type of analysis.

Using dictionaries provided by either LIWC or the user, LIWC produces a percentage of total words within a text that reflect different parts of speech. For example, if LIWC produces 10% as the result of the analyses, this means that of all the words in the text provided, 10% of these words were in the dictionary provided. To assess the percentage of sexual and sexually objectifying lyrics used by each of the musical artists mentioned, I created dictionaries reflecting sexual and sexually objectifying words.

It should be noted that, although there was a wide variety of artists and bands nominated by participants as a favorite at Time 1, the top five were Lil Wayne, Drake, Eminem, Taylor Swift, and Beyoncé.

Sexual lyrics. For the purposes of our study, sexual words were defined as any word that denotes any form of intimacy or sex including anatomical or slang references to the act of sex, the result of sex, foreplay, and sexual body parts. Examples of sexual words include boob, penis, erotic, fetish, screw, tap, slot, etc. The full dictionary can be found in Appendix A. This dictionary was created using a three-step process. First, I acquired the dictionary created and validated by the LIWC creators that outlined a list of sexual words. Based on information gathered from internet sites such as Urban Dictionary, I then added other notably “slang” words that fit within the definition previously provided. Third, a group of undergraduate research assistants went through 10% of the songs in our sample and, using the definition above, identified sexual words in the sample music lyrics. Through this process, combined with the already provided dictionary of sexual words from LIWC and the words acquired from internet sites, I created a custom dictionary of sexual words used in our text analysis.

Sexually objectifying lyrics. I defined sexually objectifying words as any that refer to women as sexual objects or that refer to sex in a way that objectifies women. Examples of sexually objectifying words are whore, loose, knees, pussy, ram that, cooch, etc. The full dictionary can be found in Appendix B. Following a similar three-step procedure as was used to create the sexual words dictionary, I looked through the LIWC sexual dictionary and pulled out words that fit the operational definition of sexual objectification provided above. I then used internet sites such as Urban Dictionary to identify more commonly used slang terms associated with sexual objectification. Finally, undergraduate research assistants were trained to identify

sexually objectifying words in the same 10% of the songs from our study. Those words, combined with words selected from LIWC's provided sexual dictionary and those gathered from online resources, were used to create a custom dictionary for sexually objectifying lyrics.

Clearly, there was overlap between sexual and sexually objectifying lyrics but 72% of the words used in the sexual objectification dictionary were unique from the words in the sexual dictionary.

Sexting. Observational data regarding sexting behaviors was obtained using the stored and monitored text messages sent from the BlackBerry devices provided to participants and these data are available for all three waves. While sexting has been defined as sending or receiving nude/partially-nude pictures or sexually explicit messages to others via texting, due to IRB concerns and other ethical constraints my methods allowed us only to account for sexually explicit messages. Pictures sent on the devices were not stored in the server. To code for sexually explicit messages sent on these devices, each utterance, or complete thought, was coded for time, sender, receiver, and content. Although the language and spelling used by the adolescents in text message were at times difficult to decipher, ongoing coding meetings were conducted to assure that the entire coding team could come to a consensus about the meaning of each utterance. When completely indecipherable, the text message would be coded as neutral. Otherwise, the sexts were coded as either sent or received, and were then separated into groups of either sex that was actually taking place (e.g. masturbation) or hypothetical sexual encounters (e.g. detailing sexual fantasies or requesting sexual favors). For the purposes of our analyses, sexting was considered as any sext message, actual or hypothetical, that was sent or received by the participant (Time 1 and 2, $\alpha = .88$; Time 3, $\alpha = .85$). Although research has established that sexting is common among adolescents (Temple, et al., 2012), the frequency with which sext

messages are sent is relatively low (Drouin & Landgraff, 2012). This pattern was reflected in our data as descriptive statistics revealed that the distribution was heavily left skewed—with 59.4% of participants having sent 0 sext messages at Time 3. Because the distribution of this variable was heavily left skewed with a very large range (Time 3 = 0 - 179), I decided to code the variable dichotomously. In this case, “0” reflected that the participant had not sent or received a sext message during that time point and “1” reflected that the participant had sent or received at least one sext messages during that time point.

Impulsivity. Impulsivity was measured at Time 1, 2 and 3 using three items from the My Actions scale developed by Underwood in 2009 (Time 1, $a = .78$; Time 2, $a = .89$; Time 3, $a = .89$). Questions assessed whether or not adolescents did or said things without stopping to think, whether they considered themselves an impulsive person, and other’s reactions to their impulsive behaviors (e.g., “*Do you often get into trouble because you do things without thinking?*”; “*Do you usually think carefully before doing anything?*”). Responses to each of the three questions were coded as dichotomous with “yes” as 0 and “no” as 1. Subsequently, responses to each of the three questions were totaled for each participant such that scores ranged from 0 to 6 with higher numbers indicated higher levels of impulsivity.

Biological sex. Biological sex was measured using one question addressing the biological sex with which the participant most identified. Male and female were the only two categories available for participants to select between, with *male* as 0 and *female* as 1.

Controls. In my analyses, I included parental income and race as control variables. To assess income, one of the adolescent’s parents responded to a question regarding their household combined annual income with response categories ranging from *lower than \$25,000* (1) to *more than \$101,000* (5). This variable was measured at Time 2 as it was unavailable a Time 1. Race

was assessed as participants responded to an open-response question regarding their race/ethnicity. The responses were subsequently coded to reflect categories of White (1), Black (2), Hispanic (3), Asian (4), mixed (6), or other (7).

Plan of Analysis

Because the dependent variable, sexting, was coded as dichotomous, I used several logistic regression analyses to test my hypotheses. Additionally, models were run with sexual and sexually objectifying lyrics separately in order to avoid issues of collinearity as correlations between these variables were high ($r = .71, p < .001$). These analyses were run using Stata15 (StataCorp, 2017).

Results

Overview of Data and Preliminary Analyses

All assumptions were tested before analyses were computed. No models were found to have evidence of specification error, nor was there evidence of multicollinearity or influential observations and outliers. Some models had slight issues with heteroscedasticity. However, because the heteroscedasticity was small and because of the nature of logistic regression, the fact that the model is correctly specified and unclustered, and because I do not intend to use counterfactual interpretations, I did not correct for these issues (Sribney, n.d.). Table 1 contains correlations variables at both time points. Means for sexual and sexually objectifying lyrics at Time 1 were 1.50 ($SD = .64$) and 1.45 ($SD = .70$), respectively, indicating that most adolescents were listening to low and medium levels of sexual and sexually objectifying lyrics. Frequencies indicated that 43% of participants had sent or received a sext messages at Time 1, compared to 41% of participants at Time 3.

Correlation analyses revealed that there was no association between sexting at Time 1 and Time 1 lyric preference for either boys (sexual lyrics, $r = .02, p = .85$; sexually objectifying lyrics, $r = .16, p = .17$) or girls (sexual lyrics, $r = -.18, p = .12$; sexually objectifying lyrics, $r = .10, p = .41$). However, sexting at Time 3 was correlated with sexual ($r = .30, p = .009$) and sexually objectifying lyric ($r = .23, p = .048$) preference at Time 1 for boys, but not for girls (sexual lyrics, $r = -.07, p = .57$; sexually objectifying lyrics, $r = -.03, p = .82$). Impulsivity at Time 1 was related to sexting at Time 1 for both boys ($r = .42, p < .001$) and girls ($r = .26, p < .001$). This relationship persisted longitudinally, as well (boys, $r = .41, p < .001$; girls, ($r = .35, p < .001$). Income at Time 1 was also significantly associated with sexting at Time 3 for boys ($r = -.21, p = .04$) but not for girls ($r = -.05, p = .64$). Listening to sexually objectifying lyrics at Time 1 was associated with income (Time 1) for both boys ($r = -.44, p = .0001$) and girls ($r = .32, p = .01$), such that boys were more likely to listen to sexually objectifying lyrics as income decreased where girls were more likely to listen to sexual lyrics as income increased. Interestingly, sexual lyrics were only significantly correlated with income (Time 1) for boys ($r = -.28, p = .02$; girls: $r = -.24, p = .06$).

Follow up t-tests revealed biological sex differences for sexual ($t(df) = 2.14, p = .03$) and sexually objectifying lyrics ($t(df) = 2.88, p = .005$) at Time 1 such that males were more likely to listen to more sexual and sexually objectifying lyrics than females. Interestingly t-test analyses revealed no biological sex differences in sexting at Time 3 ($t(df) = .27, p = .79$), sexting at Time 1 ($t(df) = -.57, p = .57$), impulsivity ($t(df) = -.83, p = .41$), nor any other study variable.

Music Lyrics as Longitudinal Predictors of Adolescent Sexting

Two separate logistic regression analyses predicting sexting behavior at Time 3 were run to explore the effect of both sexual and sexually objectifying lyrics at Time 1. Both models

included participant sexting at Time 1, income, race, and biological sex as control variables. Log likelihood chi-square and pseudo R-square test statistics for both models indicated good model fit (sexual lyrics, $X^2(5) = 17.25, p = .004$, Pseudo $R^2 = .10$; sexually objectifying lyrics, $X^2(5) = 14.81, p = .011$, Pseudo $R^2 = .09$) and Wald's tests revealed that the addition of control variables significantly increased model fit (sexual lyrics, $X^2(4) = 13.06, p = .011$; sexually objectifying lyrics, $X^2(4) = 12.41, p = .014$). However, results revealed that neither sexual lyrics ($B = .54, OR = 1.71, p = .114$) nor sexually objectifying lyrics ($B = .11, OR = 1.12, p = .714$) at Time 1 were significantly associated with adolescent sexting at Time 3. The only significant predictor of adolescent sexting at Time 3 was sexting at Time 1 (model for sexual lyrics, $B = 1.28, OR = 3.58, p = .001$; model for sexually objectifying lyrics, $B = 1.18, OR = 3.29, p = .002$) such that the odds of a participant sexting at Time 3 if they sexted at Time 1 are 3.58 and 3.29 to 1, respectively. Full results are shown in Table 3.

Moderation

Impulsivity. Impulsivity was considered as a potential moderator and two separate logistic regression analyses were used to explore the influence of impulsivity on the relationship between both sexual and sexually objectifying lyrics at Time 1 and sexting at Time 3. Both models included participant sexting at Time 1, income, race, and biological sex as control variables and displayed good model fit (sexual lyrics, $X^2(7) = 19.24, p = .008$, Pseudo $R^2 = .11$; sexually objectifying lyrics, $X^2(7) = 15.97, p = .025$, Pseudo $R^2 = .09$). However, results revealed that impulsivity did not significantly moderate the relationship for either sexual ($B = .23, OR = 1.25, p = .36$) nor sexually objectifying lyrics ($B = -.004, OR = 1.0, p = .99$) at Time 1. Results can be found in Table 4.

Biological Sex. Finally, two separate logistic regression analyses were used to explore the potential moderating influence of biological sex on the relationship between both sexual and sexually objectifying lyrics at Time 1 and adolescent sexting at Time 3. Sexting at Time 1, income and race were included as control variables and both models fit the data well (sexual lyrics, $X^2(6) = 21.80, p = .001$, Pseudo $R^2 = .13$; sexually objectifying lyrics, $X^2(6) = 17.63, p = .007$, Pseudo $R^2 = .10$). Although results revealed that biological sex did not significantly moderate the relationship between sexually objectifying lyrics at Time 1 and sexting at Time 3 ($B = -1.02, OR = .36, p = .10$), analyses revealed that biological sex significantly moderated the relationship between sexual lyrics at Time 1 and sexting at Time 3 ($B = 1.25, OR = .23, p = .04$; Table 2). Simple slopes analyses revealed a significant positive slope for males ($B = .25, OR = 3.49, p = .005$), but not for females ($B = -.05, OR = 0.81, p = .67$), suggesting that males who preferred sexual lyrics at Time 1 were more likely to sext at Time 3 where no relationship existed between sexual lyrics and sexting for females. The moderation analyses further revealed that adolescent boys who preferred high levels of sexual lyrics at Time 1 (as compared to low or medium levels of sexual lyrics) were 91% more likely to sext at Time 3 ($p < .001$). These results are displayed graphically in Figure 1 and textually in Table 5.

Discussion

Overall, my findings indicated that sexual music lyrics can have a long-term association with sexting behavior among some adolescents. Although there were no overall associations between either sexual or sexually objectifying lyrics and sexting behaviors, further analysis revealed biological sex as a significant moderator.

Biological Sex as a Moderator

Specifically, my results demonstrate that males who listened to higher levels of sexual lyrics were much more likely to participate in sexting behaviors two years later than males who do not—even after controlling for initial levels of sexting behavior. In fact, boys who listened to high levels of sexual lyrics were 91% more likely to sext than boys who did not. Interestingly, the same was not true for females, as they remained unaffected by sexual lyric content, at least in terms of their sexting frequency. My findings suggest that, alone, lyrical encouragement to participate in sexual behaviors such as sexting is not enough to produce the behavior in all adolescents—some element of sexual socialization that differs by biological sex influences the way that these adolescents are receiving and acting upon the media messages.

This is consistent with past research, which has consistently shown that males and females receive very different messages regarding sexuality. While boys receive societal pressure and encouragement to participate in sexual behaviors (Kehily, 2001; Maas, et al., 2015; Masters et al., 2013; Popp, et al., 2003), females are frequently discouraged from participating in sexual behaviors (Shibley-Hyde & Durik, 2000), receive more parental communication about sex (Widman, et al., 2014) and, during these parental discussions, are more likely to receive advice regarding the importance of relationships and morality (Masters et al., 2013; Nolin & Peterson, 1992). Further, females often encounter the sexual double standard—or the idea that sexual promiscuity and permissiveness is acceptable for men but not for women (England & Bearak, 2014; Sprecher, 1989)—and may be less likely to engage in some sexual behaviors as a result. Similar gendered messages are sent regarding sexting. For example, while males and females are generally equally likely to participate in sexting behaviors (Underwood, et al., 2015), girls are more likely to have their sext messages forwarded to or shared with others, and are more often

held accountable for the consequences of sexting than boys (Rolins, 2015; Stanley, et al., 2016). As a result, females have more negative expectancies of (Dir, Coskunpinar, Steiner & Cyders, 2013) and attitudes towards (Rolins, 2015) sexting than males.

These gendered messages are not only prevalent in societal expectations, but are also widespread throughout media—including music. Several content analytic studies have suggested that male artists are more likely to use sexually dominant language (Sommers-Flanagan, Sommers-Flanagan & Davis, 1993; Wallis, 2010) and sexual references (Dukes et al., 2003) than female artists. Contrastingly, females are not only underrepresented in music (Wallis, 2010), but they are also more likely to be sexualized, subordinated (Flynn, et al., 2016; Shelton, 1997) and portrayed in rigid gender roles (Rasmussen & Densley, 2016). As social learning theory suggests (Bandura, 1977), adolescents may imitate the gendered expectations encouraged and exemplified both by music lyrics and society. This may help explain why males may be more likely to participate in sexual behaviors, where females may heed the musical and societal encouragement to focus on relationships and maintain more rigid gender roles.

My findings suggest that gendered societal messages regarding sexual expectations, including those common in music lyrics, may prime males to be particularly susceptible to their influence and may lead to an increased likelihood to participate in sexting as a result. Contrastingly, the same results suggest that even when exposed to sexual lyrical messages, female sexting behavior appears to be unaffected, potentially due to the more conservative societal messages sent their way from both society and music lyrics.

Interestingly, despite gendered sexual expectations, a recent meta-analysis has shown that there are no biological sex differences in the influence of general sexual media on sexual behavior (Coyne, et al., *in progress*). However, there have been no studies that use biological sex

as a moderator for the influence of music lyrics on sexual behavior to suggest that my findings regarding sexting are anomalous. It may be that lyrics are unique from other media influences for several reasons. One reason may be that males have a greater opportunity to identify with the artists who are singing the sexual lyrics than females, as an overwhelming majority of musical artists listed as favorites were male. Past research concerning identification has demonstrated that identification increases the association between exposure and impact (Basil, 1996), suggesting that males who listen to sexual musical lyrics sung by those with whom they identify may be especially likely to engage in sexual behaviors. While identification encompasses not only similarity, but also affinity (Leibes & Katz, 1990), the combination of liking and being like the musical artists producing the sexual lyrics these adolescent boys are listening to may help explain why males are so much more likely to sext when choosing to listen to high levels of sexual lyrics.

My results support the notion, put forth by Erickson (1968), that repetitive internalization of powerful and seductive messages may have long-term effects, especially for adolescents as they navigate several important stages of identity development—including sexual identity. Indeed, our results suggested that this relationship is not only cross-sectional, but is consistent across time.

Sexual versus Sexually Objectifying Lyrics. While biological sex did significantly moderate the relationship between lyrics and sexting behavior for sexual lyrics, it is important to note that the same results were not found for sexually objectifying lyrics. Specifically, we found that, even after exploring biological sex effects, preference for sexually objectifying lyrics had no influence on adolescent sexting behavior. While these results were unexpected, one potential reason for the findings could be that sexting may be more of an expression of sexuality than it is

an expression of misogynistic ideologies—making it less likely that lyrical messages specifically regarding sexual objectification would manifest themselves through sexting behavior. Many adolescents report using sexting as a form of sexual exploration that has less immediate consequences (i.e. pregnancy, STI, etc.; Albury, Crawford, Byron & Mathews, 2013) and while sexual objectification can certainly manifest through sexting (e.g. coercion to send sexually explicit messages or threatening to share such messages), some research suggests that such behavior is relatively uncommon (Reed, Tolman & Ward, 2016). Although it is beyond the scope of the current study to fully explain this finding, future research regarding the influence of sexually objectifying media on sexting behavior should consider not only the frequency of sexting but also the frequency with which sexting is used to usurp power over or degrade another individual.

Impulsivity

Finally, I found that impulsivity did not have a significant moderating effect on the relationship between either sexual or sexually objectifying lyrics and sexting. While I had hypothesized that those who were more impulsive would be more susceptible to the influence of both sexual and sexually objectifying lyrics, results suggested that impulsivity had no influence on sexting behavior. Previous research demonstrates that low impulsivity may be a protective factor against sexual behavior for adolescents (Donohew et al., 2000). Similarly, information processing theory suggests that an impulsive personality may lead to adolescents bypassing the evaluation process when deciding whether to enact a behavioral script learned from media. However, our findings reveal that, longitudinally, this is not the case for the relationship between music lyrics and sexting behavior. Although, at the bivariate level, lower levels of impulsivity were significantly associated with more sexting for males and females two years later, the

finding did not persist in moderation analyses. One reason for the lack of significant moderation may be that adolescents are altogether more impulsive when it comes to technological communication due to the anonymity and lack of adult supervision. Past research has suggested that the ability to communicate privately with peers incentivizes adolescents to use text messaging as a main form of communication (Ling & Yttri, 2002) and, when that safety is combined with anonymity, adolescents may be more inclined to engage in activities or conversations for which they otherwise might not feel ready (Strasburger, Wilson & Jordan, 2014). Although this has not often been explored in the context of sexting, cyberbullying research has found that the limitless boundaries (Patchin & Hinduja, 2006), anonymity (Tokunaga, 2010), and disinhibition (Hinduja & Patchin, 2010) made possible by online and texting communications provides adolescents with more opportunities to act impulsively (Fanti, Demetriou, & Hawa, 2012; O'Brennan, Bradshaw, & Sawyer, 2009), without regard for consequences and with lower regard for accountability or guilt for the behavior (Li, 2007). Thus, it could be that the nature of sexting (i.e. private, potentially anonymous, disinhibited) may allow most adolescents to bypass the evaluation process before enacting the behavioral cue, where, for other sexual behaviors they may have to spend more time considering consequences and evaluating other behavioral options.

Implications

In order to discourage or prevent sexting behavior, many parents use texting restrictions (Lenhart, 2009), which are commonly encouraged by researchers (Hinduja & Patchin, 2010; Martinez-Prather & Vandiver, 2014; Ryan, 2010; Sadhu, 2012). However, while text message restrictions have been associated with lower sexting rates (Lenhart, 2009; Martinez-Prather & Vandiver, 2014; Ryan, 2010), I suggest that parents take an even more active role in preventing

sexting behavior. Because both societal messages and identification with musical artists may influence boys who prefer more sexual lyrics to be more likely to sext, parents should consider not only monitoring their children's texting, but also talking with their children about the child's media preferences and about social expectations for sexuality. Meta-analytic research has suggested that active media monitoring, which involves open dialogue about media choices and messages, can be a protective factor against negative media messages (Collier, et al., 2016). Additionally, frequent (Hutchinson, 2002; Somers & Paulson, 2000; Somers & Vollmar, 2006; DiClemente et al., 2001) and open communication (DeLooze, Constantine, Jerman, Vermeulen-Smit & ter Bogt, 2015; Hubner & Howell, 2003; Whitaker, Miller, May & Levin, 1999) with children regarding sexuality, regardless of biological sex, has also been shown to be a protective factor against early and risky sexual behaviors. Indeed, meta-analytic data has shown that parent-adolescent sexual communication significantly predicts safer sexual behavior among youth (Widman, et al., 2016). Parents should be communicating with their children frequently, actively, and openly not only about sexting, but also about sexuality and media.

Limitations and Future Directions

The current study adds to the existing literature by showing, for the first time, the longitudinal influence of music lyrics on sexting behaviors. This was done by using observational sexting data and by quantifying lyrical messages—methodology that is innovative when considering these types of relationships. This methodology produced important results that both support and challenge those that have been put forth by other research. For example, although we were unable to gather information about pictorial sexting, our results suggest sexting rates well above those that have been reported in other literature. Finally, the sample, although small, was fairly representative.

However, the study is not without limitations. As has been mentioned, one obvious limitation was that my measure of sexting did not include pictures, thus underrepresenting the sexting that may have actually taken place. Despite this limitation, however, sexting rates were almost 20% higher than what has been found using other self-report measures (Dake, et al., 2012; Houck, et al., 2014; Kopecký, 2012; Lippman & Campbell, 2014; Mitchell, Finkelhor, Jones & Wolak, 2012; Rice, et al., 2012; Strassberg et al., 2013). Additionally, it may be that the time between when I measured for musical artist preference and sexting behaviors (two years) does not fully capture the effect of the sexual lyrics. It may be that exploring this relationship in a cross-lagged model would yield more solid findings. However, our finding that there was no correlation between sexual lyrics and sexting behaviors cross-sectionally suggests that time may be an important factor for understanding this relationship. As suggested by information processing theory, the preference of sexual lyrics *over time* may create scripts which set the stage for future sexual encounters and behaviors. As such, a time gap of two years may be appropriate. Another potential limitation is that participants mostly came from two-parent homes with relatively high incomes. Future research should examine the relationship between music lyrics and sexting for a more economically diverse sample and consider the influence of family life by exploring differences in outcomes based on family stability and structure. Additionally, in order to assess lyrical content, participants were asked to list their top three favorite musical artists. Although this provides an overall picture of the adolescent's musical preference, it does not provide information as to the music they are listening to on a daily basis. Future studies should consider using other methods of assessing musical preferences and exposure in order to gain a better perspective on overall music exposure. These methods could include daily diary studies,

using music-streaming software to gather information, or asking adolescents which artists/bands they listen to most frequently—rather than which they prefer.

Conclusion

Although the study is not without limitations, it provides the first evidence that listening to sexual lyrics in music is associated with future sexting behavior in adolescence, especially among boys. These results suggest that lyrical encouragement to participate in sexual behaviors is not enough, on its own, to produce the behavior in adolescents and that gendered sexual socialization may play an important role in this relationship. Accordingly, parents should consider not only creating an open dialogue with their children about sexting, but also about gendered societal expectations for sexuality and media preferences and messages. Such dialogue will, hopefully, prevent sexting behaviors while also generating less rigid gender expectations surrounding sexuality—fostering a healthier environment for adolescent identity development.

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Appendix A

Table 1. *Descriptive Statistics and Correlations for All Study Variables*

| | 1 | 2 | 3 | 4 | 5 | 6 |
|------------------------------------|---------|---------|---------|---------|---------|---------|
| 1. Sexting T3 | - | -0.07 | -0.03 | -0.05 | 0.35*** | 0.61*** |
| 2. Sexual Lyrics T1 | 0.30** | - | 0.43** | -0.24 | -0.04 | -0.18 |
| 3. Sexually Objectifying Lyrics T1 | 0.23* | 0.71*** | - | 0.32** | -0.17 | 0.10 |
| 4. Income T2 | -0.21* | -0.28* | -0.44** | - | 0.22** | -0.11 |
| 5. Impulsivity T1 | 0.41*** | 0.04 | -0.04 | 0.03 | - | 0.26** |
| 6. Sexting T1 | 0.50*** | 0.02 | 0.16 | -0.27** | 0.42*** | - |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Males displayed below the diagonal and females above.

Table 2. *Descriptive Statistics and T-tests by Biological Sex for All Study Variables*

| | Mean (SD) | | % | | Range | T-value |
|---------------------------------|-------------|-------------|--------|--------|-------|---------|
| | Male | Female | Male | Female | | |
| Sexting T3 | 0.59 (0.5) | 0.57 (0.5) | | | 0-1 | 0.27 |
| Sexting T1 | 0.61 (0.5) | 0.57 (0.5) | | | 0-1 | 0.57 |
| Sexual Lyrics T1 | 1.62 (0.7) | 1.39 (0.57) | | | 3-Jan | 2.14* |
| Sexually Objectifying Lyrics T1 | 1.6 (0.78) | 1.28 (0.56) | | | 3-Jan | 2.88** |
| Income | 3.22 (1.45) | 3.47 (1.39) | | | 5-Jan | -1.12 |
| Impulsivity | 3.47 (1.37) | 3.63 (1.3) | | | 6-Jan | -0.83 |
| Race | 1.84 (1.16) | 1.81 (1.08) | | | 5-Jan | 0.17 |
| White | | | 54.55% | 56.04% | | |
| Black | | | 26.14% | 19.78% | | |
| Hispanic | | | 11.36% | 19.78% | | |
| Asian | | | 1.14% | - | | |
| Mixed/Other | | | 6.82% | 4.40% | | |
| Biological Sex | | | 50.54% | 49.46% | | |
| Sex of Musical Artist | | | 76.52% | 15.89% | | |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3. *Logistic Regressions for Sexual and Sexually Objectifying Lyrics (T1) on Sexting (T3)*

| | Model 1 | | | Model 2 | | |
|---------------------------------|----------|-----------|------------------|----------|-----------|------------------|
| | <i>B</i> | <i>SE</i> | OR (<i>SE</i>) | <i>B</i> | <i>SE</i> | OR (<i>SE</i>) |
| Sexual Lyrics T1 | 0.54 | 0.34 | 1.71 (0.58) | | | |
| Sexually Objectifying Lyrics T1 | | | | 0.11 | 0.31 | 1.12 (0.35) |
| Income | -0.02 | 0.15 | 0.98 (0.15) | -0.05 | 0.16 | 0.95 (0.15) |
| Race | 0.22 | 0.18 | 1.25 (0.22) | 0.24 | 0.18 | 1.27 (0.23) |
| Sexting T1 | 1.28** | 0.4 | 3.6** (1.41) | 1.19** | 0.39 | 3.29** (1.26) |
| Biological Sex | | | | | | |
| Female | -0.23 | 0.39 | 0.79 (0.31) | -0.27 | 0.39 | 0.76 (0.30) |
| Constant | -1.46 | 0.99 | 0.23 (0.23) | -0.7 | 0.97 | 0.50 (0.48) |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4. *Logistic Regressions for Sexual and Sexually Objectifying Lyrics (T1) on Sexting (T3) Moderated by Impulsivity (T1)*

| | Model 3 | | | Model 4 | | |
|---|----------|-----------|------------------|----------|-----------|------------------|
| | <i>B</i> | <i>SE</i> | OR (<i>SE</i>) | <i>B</i> | <i>SE</i> | OR (<i>SE</i>) |
| Sexual Lyrics T1 | -0.24 | 0.89 | 0.79 (0.70) | | | |
| Sexually Objectifying Lyrics T1 | | | | 0.09 | 0.78 | 1.09 (0.85) |
| Income | -0.003 | 0.16 | 0.99 (0.16) | -0.03 | 0.16 | 0.97 (0.15) |
| Race | 0.22 | 0.19 | 1.25 (0.24) | 0.26 | 0.18 | 1.29 (0.24) |
| Sexting T1 | 1.11** | 0.41 | 3.03** (1.25) | 1.12** | 0.39 | 3.06** (1.21) |
| Biological Sex | | | | | | |
| Female | -0.23 | 0.25 | 0.79 (0.31) | -0.27 | 0.39 | 0.76 (0.30) |
| Impulsivity | -0.52 | 0.41 | 0.6 (.25) | -0.16 | 0.35 | 0.85 (0.30) |
| Sexual Lyrics T1 x Impulsivity | 0.23 | 0.25 | 1.25 (0.31) | | | |
| Sexually Objectifying Lyrics T1 x Impulsivity | | | | -0.004 | 0.21 | 1.00 (0.21) |
| Constant | 0.37 | 1.79 | 1.44 (2.60) | -0.15 | 1.59 | 0.86 (1.37) |

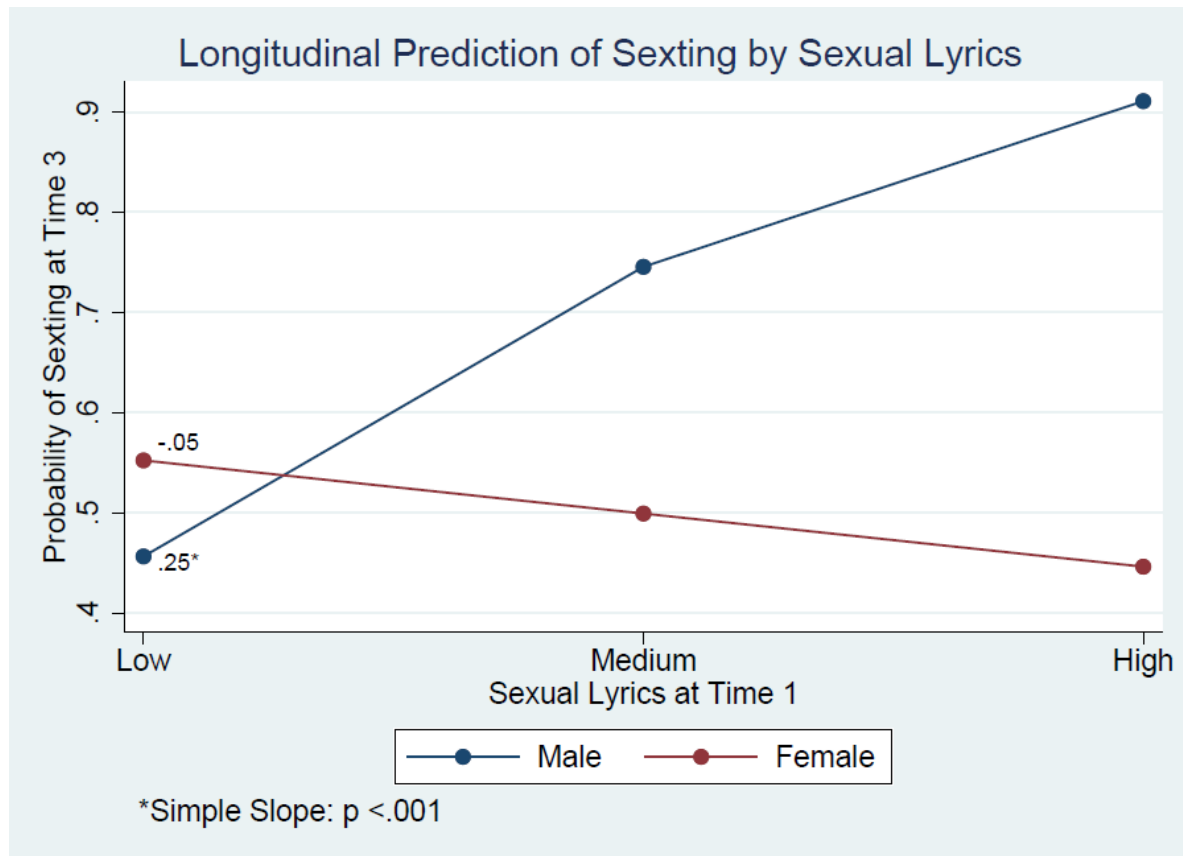
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5. *Logistic Regressions for Sexual and Sexually Objectifying Lyrics(T1) on Sexting(T3) Moderated by Biological Sex*

| | Model 5 | | | Model 6 | | |
|--|----------|-----------|------------------|----------|-----------|------------------|
| | <i>B</i> | <i>SE</i> | OR (<i>SE</i>) | <i>B</i> | <i>SE</i> | OR (<i>SE</i>) |
| Sexual Lyrics T1 | | 1.25 | 3.49 (1.81) | | | |
| Sexually Objectifying Lyrics T1 | | | | 0.55 | 0.42 | 1.73 (0.74) |
| Income | 0.03 | 0.15 | 0.97 (0.15) | -0.05 | 0.16 | 0.95 (0.15) |
| Race | 0.24 | 0.19 | 1.26 (0.24) | 0.25 | 0.18 | 1.28 (0.24) |
| Sexting T1 | 1.26** | 0.4 | 3.52** (1.42) | 1.20** | 0.39 | 3.31** (1.29) |
| Biological Sex | | | | | | |
| Female | 1.85 | 1.07 | 6.34 (6.77) | 1.13 | 0.93 | 3.10 (2.87) |
| Biological Sex x Sexual Lyrics T1 | | | | | | |
| Female | 1.46* | 0.71 | 0.23* (0.16) | | | |
| Biological Sex x Sexually Objectifying Lyrics T1 | | | | | | |
| Female | | | | -1.02 | 0.62 | 0.36 (0.22) |
| Constant | 2.48* | 1.16 | 0.08* (0.10) | -1.35 | 1.07 | 0.25 (0.28) |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 1. *Biological Sex Differences for Sexual Lyrics at T1 on Sexting at T3*



Appendix B

Sexual Words Dictionary used in LIWC

| | | |
|----------------|----------------|-----------------|
| Beg for it | Get popped | Porn* |
| Action | Get wet | Pregnan* |
| Aids | Give head | Prick* |
| All night | Give it up | Prostat* |
| All night long | Giving head | Prostitu* |
| All up in | Go down | Pump it |
| Ass | Going in | Pump* |
| Bang* | Good top | Pussy |
| Basted | Grab* | Pussy* |
| Be on that | Grind* | Queer* |
| Bed-rock | Groan* | Rang the bell |
| Bi | Hands down my | Rang the bells |
| Blood rush* | Hands on my | Rape* |
| Blow | Harlot | Rendezvous |
| Blow* | Heat between | Ride |
| Boobies | Hit* it | Ride her |
| Boobs | Homosexual* | Ride me |
| Booty | Hood | Ring* the bell |
| Bra | Hooker | Ring* the bells |
| Bras | Horny | Rock it |
| Breast* | Hug | Rubber |
| Bucket | In the butt | Sandpaper ** |
| Butt | In the mouth | Screw* |
| Candy | Incest* | Sex drive |
| Caress* | Intertwined | Sex* |
| Cherry | Jack pot | Sexuality |
| Chest | Juice bombs | Shag* |
| Clothes off | Kiss* | Shake her |
| Cock | Legs | Shaking her |
| Cock block* | lesbian* | Shawty snap |
| Cock-block* | libid* | Skeet |
| Cocked tight | Libido | Skin |
| Condom | Lover* | Skin it |
| Condom* | Loves | Slot |
| Coochie | Lust | Squeeze |
| Cream* | Make love | Stimulator |
| Crotch | Make you sweat | Strip* |
| Crunk | Moan* | Suck |
| Desire | Mosquito | Superhova |
| Dick | My bed | Swallow |
| Dicks | My body | Tak* off |
| Dingalang | My flow | Take off |
| Dingaling | My wood | Take you home |

| | | |
|---------------|--------------------|----------------|
| Dirty dancer* | Nail* it | Thang |
| Dirty dancing | Naked | The bed |
| Dirty girls | Nipple* | Thighs |
| Do it | Nude | Throwing money |
| Double d's | On my lap | Tied up |
| Erection* | On the floor | Tit |
| Fairy | On your back | Tits |
| Fantasize | One night stand | Titties |
| Fantasizing | Open your mouth | Touch* |
| Feel you | Orgasm* | Tounge |
| Fetish | Out of their jeans | Trojans |
| Fill me | Out they jeans | Two balloons |
| Fire it up | Ovar* | Underwear |
| Fuck* | Panties | Undress |
| Gang bang | Panty | Up her dress |
| Gangbang | Passion* | Vibrat* |
| Gave head | Pay for it | Waist |
| Gay | Payed for it | Waist |
| Gays | Penis* | Wedding night |
| Genital* | Pervert* | Wet |
| Get a room | Pimp* | Wings |
| Get it | Pole | Wobble |
| Get it on | Poon-tang | Your bed |
| Get laid | Pop it | Your touch |
| Get paid | Porn | |

* symbol used in LIWC to signal the software to include any other ending of the word beyond the asterisk.

Sexually Objectifying Words Dictionary used in LIWC

| | | |
|-------------------------|-------------------------|----------------------|
| All up in | Get some ass | Poon |
| Asking for it | Get some booty | Poonj |
| Baby mama | Give her the bone | Pootie tang |
| Babymama* | Golddigger | Pop it |
| Bad bitches | Gossipy | Pork |
| Ball* | Grabbin all these girls | Pork* |
| Ball-buster | Greedy girl | Posess your body |
| Balls deep | Grind | Pound |
| Bang | Hag | Pound* |
| Banshee | Harlot | Pre-menstrual |
| Barbie doll | Harpy | Prima donna |
| Barbie* | Harridan | Priss |
| Barren | Have a go at | Prize |
| Basted | Hellcat | Prud* |
| Battle-axe | Her knee* | Pull a train |
| Beast | Hide the sausage | Pull ass |
| Beating the pussy up | Highest bid | Pump it |
| Biddy | Hit her | Pussy |
| Bimbo | Hit that | Pussy pop |
| Bitch | Hit the jack pot | Pussy whistle |
| Bitch fase | Hit the wall | Put her on the train |
| Bitches | Ho | Railing |
| Bitchfest | Hoe | Ram* |
| Bitchy | Hoe* | Rape |
| Blonde* | Hoes | Ratched |
| Bloodsucking succubuses | Home Run | Ride |
| Blow dis | Hoochie | Riding |
| Blow this | Hoochies | Riding |
| Boff | Hood bitch | Road kill |
| Bolshy | Hormonal | Root |

| | | |
|---------------|----------------|----------------|
| Bone | Hos | Satisfy |
| Boning | Hot chicks | Score |
| Boning | Houseproud | Scores |
| Bonk | Housewife | Screw |
| Booty | Humourless | Screw* |
| Bossy | Hump | Sex up |
| Bottom bitch | Hysterical | Shack Up |
| Bow-legged | Ice bucket | Shag |
| Breezy rep | Ice game | Shagging |
| Broad | Ice queen | Shake her |
| Broads | Irrational | Shawty snap |
| Bucket | Jeep | Shot caller |
| Butch | Jump | Shrew |
| Catfight | Kept woman | Shrill |
| Cats | Kick it | Sippin' cleeko |
| Catty | Knock | Skank |
| Chase skirts | Laid | Slave |
| Cheap | Laying | Slaying |
| Chick* | Let herself go | Slob |
| Chubby | Lil' mama* | Slot |
| Clotheshorse | Lippy | Slut |
| Clotheshourse | Look like sex | Slut* |
| Clucky | Looks like sex | Slut* |
| Cold | Loose | Slutty |
| Coochie | Lucky | Soccer mom |
| Cougar | Make it | Spinster |
| Crone | Make that work | Spinster* |
| Crusty | Man-eater | Stripper |
| Cunt | Man-hater | Strippers |
| Cunt | Maniac | Stroppy |
| Curvy | Mannish | Stuff |

| | | |
|----------------|--------------------|------------------|
| Deflowering | Mark it | Take a slice |
| Did | Menstrual | Tames |
| Diddle | Mistress | Tan dope |
| Dig out | Moody | Tap* |
| Dime piece | Motherfucker | Tapit |
| Dip a wick | Mount | Tapthat |
| Dirty dancer | Mount* | Tart |
| Dirty girls | Mula | Tease |
| Disgusting | Mumsy | Thang |
| Ditzy | Muse | Thang |
| Diva | Nag | Thick country |
| Do that | Nail* | Thorough bred |
| Drama Queen | Nasty | Tip wet |
| Drama queen | Neurotic | Tit* |
| Dramatic | Next her | Titties |
| Drill* | Nookie | Touching it |
| Dyke | Nooky | Tramp |
| Dynamo | Old bat | Tripple B |
| Easy | On a flier | Tripple threat |
| Eat out | Out of their jeans | Trollop |
| Eff | Out they jeans | Trunk |
| Emotional | Over-sensitive | Tup |
| Faded beauty | Pants to zip | Twerk |
| Femme | Paula patton | Two girls |
| Fishwife | Piece | Two women |
| Flaky | Piece of ass | Unattractive |
| Floozy | Pig | Under the wheels |
| Fondle | Piggy | Victim |
| Fresh squeezed | Pimp | Vinyl |
| Frig | Pimpin' | Want it |
| Frigid | Pimping | Wax |

| | | |
|---------------|----------|-----------------|
| Frisbee | Plow* | Wears the pants |
| Frombe | Plug* | Wench |
| Frumpy | Podger | White girl |
| Fuck | Poke | Whore* |
| Gamine | Poo tang | You women |
| Geit | | You're the prey |
| Get | | Your knee* |
| Get a dicking | | |
| Get it | | |

* symbol used in LIWC to signal the software to include any other ending of the word beyond the asterisk.