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Personalized Normative Feedback for College Student Condom Use

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PERSONALIZED NORMATIVE FEEDBACK FOR COLLEGE STUDENT CONDOM USE

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For my father

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ABSTRACT

Personalized normative feedback (PNF) interventions provide corrective normative feedback and have been found to successfully elicit behavior change (e.g., related to alcohol consumption, gambling). There are no known PNF interventions that explicitly target risky sexual behavior (RSB). PNF interventions have demonstrated significant reductions on drinking outcomes and normative perceptions, highlighting the potential utility of a PNF intervention specifically for RSB. The current study tested the utility of a web-based PNF intervention to correct normative perceptions regarding condom use as well as to increase condom use among college students. A sample of 189 undergraduate students (80.6% female, 62.2% non-Hispanic Caucasian) who reported engaging in intercourse over the past month completed the study online and were randomized to one of two conditions: (1) PNF (n = 95) or (2) attention-control (n = 94). At a one-month follow-up, students reported on their condom use and perception of other students' condom use. At follow-up, conditions did not significantly differ on norms or condom use. In the PNF condition, students who endorsed lower baseline perceived normative beliefs exhibited significantly greater normative beliefs at follow-up, however students who endorsed lower baseline condom use did not exhibit greater condom use at follow-up. Potential for an iatrogenic effect of the PNF intervention (i.e., a decrease in condom use among individuals whose baseline use was higher than the norm) was evaluated; the overall effect was nonsignificant. Continued research efforts in this area are necessary to identify intervention strategies to best target college student condom use.

INTRODUCTION

The transmission of sexually transmitted diseases (STDs), including human immunodeficiency virus (HIV[1]), on college campuses is a significant health concern and a major cost to society. Despite overall rates of STDs decreasing over the past decade, incidence rates in the young adult population are growing (Centers for Disease Control and Prevention [CDC], 2014). Individuals aged 20-24 are at a higher risk for contracting STDs than other age groups and estimates indicate that this age group accounts for the largest proportion of new STD cases each year and incidence rates continue to grow (CDC, 2014). Risky sexual behavior (RSB) is defined as any behavior that increases one's risk of contracting or transmitting STDs and experiencing unintentional pregnancies (CDC, 2017). RSB includes having multiple sexual partners, early sexual activity, and having oral, vaginal, or anal sexual contact without a condom (CDC, 2017). College students are one population that has been found to engage in RSB, putting

[1] Literature about sexual behaviors has typically separated the terms STD and HIV, used one term instead of the other, or used the terms interchangeably. No known literature related to sexual behavior change has provided a rationale for treating the terms differently or using one term instead of the other. One possible explanation for separating the terms may be different modes of transmission for STDs and HIV. Although STDs are spread via sexual contact, HIV can be spread by via sexual contact as well as by sharing needles or syringes with someone who has HIV, during pregnancy or delivery, during breastfeeding, and via blood and/or bodily fluid exposure to the virus (CDC, 2015). Because rising incidence rates of HIV have been primarily attributed to sexual behaviors (e.g., individuals engaging in anal or vaginal sex with someone who has HIV without using a condom or taking medication to prevent or treat HIV; CDC, 2015), for the purposes of this study, we will refer to STDs broadly (i.e., encompassing HIV) because this study addresses the issue of increasing condom use focuses on condom use for sexual behavior. There is also a growing body of work aimed at integrating HIV and STD terminology. Dowell and colleagues (2009) make a case for not using the terms separately, and state that integrating the terms within health programs can lead to more effective and efficient public health interventions that address issues of treatment and prevention in one setting.

them at risk for negative outcomes (e.g., transmitting or receiving an STD, poor academic performance, physical health consequences; Cooper, 2002).

Thus, although the STD epidemic continues to be a crisis for many populations, college students are one subgroup that deserves special attention for several reasons. First, college students misperceive RSB among their peers in that they believe their peers are engaging in more RSB than they actually are (Lynch, Mowrey, Nesbitt, & O'Neill, 2004). Misperceptions of peer RSB on behalf of college students are problematic because perceived norms are positively associated with one's own sexual behavior (Lewis, Lee, Patrick, & Fossos, 2007). Second, risk reduction efforts for college students have been minimal and have not specifically targeted RSB (e.g., they have primarily focused on reduction of alcohol or other substance use; Kingree & Betz, 2003; Lewis, Patrick, et al., 2014; Patrick, Lee, & Neighbors, 2014; Scott-Sheldon, Carey, & Carey, 2010).

Although most individuals receive some form of sex education (e.g., abstinence-only education, comprehensive sex education) in middle- or high-school, simply increasing knowledge about STDs is not predictive of less RSB (Avants, Warburton, Hawkins, & Margolin, 2000). Surprisingly, teaching about contraception has also not been associated with the decreased risk of contracting an STD, and neither abstinence-only nor comprehensive sex education has been shown to significantly reduce the likelihood of reported STD diagnoses among adolescents (Kohler, Manhart, & Lafferty, 2008). It is troubling that these prevention efforts appear to be ineffective for reducing RSB and associated consequences, and little has been done to address the issue of reducing RSB through school-based interventions. College students are a compelling target population and are largely accessible. Given the major public health challenge posed by STDs, it is important to test the utility of interventions specifically designed to decrease RSB.

Further, identification of other factors that may negatively impact the utility of such interventions will inform efforts to tailor personalized interventions for especially vulnerable students.

STD Statistics for the Target Population

The incidence of STDs among college-age students is alarming, with nearly half of all new infections occurring in individuals aged 15 to 24 (American College Health Association [ACHA], 2014; CDC, 2014) and the greatest rates of STDs contracted in individuals between ages 19 and 24 (Crosby, DiClemente, Wingood, Lang, & Harrington, 2003). Regarding Louisiana State University (LSU) students, the American College Health Association- National College Health Association (ACHA-NCHA) found that 4% of LSU students reported being diagnosed with or treated for chlamydia, genital herpes, genital warts/HPV, gonorrhea, or HIV (ACHA-NCHA, 2013). Data obtained from Brenda Prudhomme, BS, MT (ASCP), Medical Laboratory Manager at the LSU Student Health Center contains rates of positive chlamydia and gonorrhea infections among LSU students who were tested for STDs at the student health center. In 2015, 2,623 LSU students received STD tests and 299 (11.3%) of those students tested positive for chlamydia, gonorrhea, or both (B. Prudhomme, personal communication, May 26, 2016). From January 2015 to December 2015, the percent of positive chlamydia and gonorrhea infections increased from 8.3% to 15.6% and there has been a 112% increase in positive chlamydia and gonorrhea infections from 2004 to December 2015. Regarding HIV specifically, in 2012, 839 LSU students received HIV testing and 4 students (0.48%) tested positive for HIV (B. Prudhomme, personal communication, May 26, 2016). In 2015, 1,519 LSU students received HIV testing and 15 students (0.99%) tested positive for HIV.

It is important to consider positive rates of STDs at LSU in reference to STD rates among college students nationally, as doing so highlights the need for a condom use intervention at LSU. An ACHA Pap and STI survey includes data from 149 health centers of colleges and universities across the United States based on laboratory reports (i.e., not self-reported data from students). When comparing data from other universities with data specifically from LSU students, it is notable that the percentage of LSU students who test positive for an STD (i.e., chlamydia, gonorrhea, HIV; 12.1%) is nearly double the percentage of students who test positive nationally (6.56%; ACHA, 2014). Further, the percentage of LSU students who tested positive for HIV in 2015 (0.99%) is nine times the percentage of college students who tested positive for HIV nationally (0.11%).

Despite these differences in rates of STDs, condom use statistics are similar between LSU students and the national average for college students. Based on self-report data, 43% of LSU students who reported engaging in sexual intercourse (i.e., anal and vaginal) over the past 30 days reported using a condom most of the time or always (ACHA, 2013) and 44% college students nationally who reported engaging in sexual intercourse (i.e., anal and vaginal) over the past 30 days reported using a condom most of the time or always (ACHA, 2014). It is not clear why condom use statistics would be similar for LSU students and the national average while rates of STDs differ so drastically. Finally, rates of sexual activity are similar between LSU students and students nationally. 70.2% of LSU students reported engaging in sexual intercourse over the past 12 months (ACHA, 2013), and 70.4% of college students nationally reported engaging in sexual intercourse over the past 12 months (ACHA, 2014). Yet given their greater rates of STDs, LSU students could benefit from an intervention to increase condom use rates and

given the low rates of condom use among college students nationally, such an intervention could benefit students more broadly.

Normative Misperceptions and RSB among College Students

College students have been found to underestimate their same-sex peers' engagement in protective sexual behaviors (e.g., use of contraceptives) and overestimate their same-sex peers' RSB (e.g., frequency of "casual sex," number of alcoholic drinks prior to intercourse; Bon, Hittner, & Lawandales, 2001; Hines, Saris, & Throckmorton-Belzer, 2002; Scholly, Katz, Gascoigne, & Holck, 2005; Seal & Agostinelli, 1996). Students also overestimate their peers' risk for being infected with STDs (Seal & Agostinelli, 1996). These overestimations are especially problematic given that perceptions of their peers' behaviors are the greatest predictor of their own behavior such that when individuals believe (whether or not accurately) that others are also doing a behavior, they are more likely to engage in that behavior (e.g., frequency of casual sex; Lewis, Litt, Cronce, Blayney, & Gilmore, 2014). Perceptions of normative behavior (e.g., condom use) have been theorized to be associated with safer sex behaviors such as commitment to use condoms (Catania, Kegeles, & Coates, 1990).

Findings related to perceived norms by gender have been mixed. One study found that women gave higher prevalence estimates of RSB than men while all participants estimated that men engaged in more risky behavior compared to women (Seal & Agostinelli, 1996). No gender differences in estimates of perceived same- and opposite-sex RSB were found in one college sample, such that students perceived that all other peers engaged in more RSB than they actually do (Lewis et al., 2007). Despite overestimates by both genders, same-gender normative beliefs were directly associated with one's behavior in that same-gender normative beliefs were

associated with greater frequency of RSB (i.e., casual sexual intercourse, alcohol-related RSB), and opposite-gender perceptions were not associated with any form of RSB. These findings are concerning as college students significantly overestimate peer RSB and it is clear that perceived norms are directly related to RSB. Interventions such as personalized normative feedback (PNF; as described below) would provide corrective normative information on peer RSB and may be useful to reduce RSB among college students.

Perceived Normative Beliefs and Interventions for College Students

Normative beliefs about RSB may be an important therapeutic target. Importantly, normative beliefs about substance use are malleable, resulting in associated behavioral change (Carey, Henson, Carey, & Maisto, 2010; Terlecki, Buckner, Larimer, & Copeland, 2012), so it is possible that changing normative beliefs about other behaviors may also result in desired behavioral change. PNF entails providing individuals with information comparing their self-reported behavior with normative behavior in an effort to correct misperceptions of norms. PNF is an effective way to change various health-related behaviors including reduction of alcohol among college students (Agostinelli, Brown, & Miller, 1995; Larimer & Cronce, 2002; Terlecki, Buckner, Larimer, & Copeland, 2011), smoking among teenagers (Pallonen et al., 1998; Roncone, 2005), gambling (Neighbors et al., 2015), and increasing the use of sunscreen (Reid & Aiken, 2013). Further, there is evidence that web-based PNF is an effective way to reduce alcohol consumption (Doumas, McKinley, & Book, 2009; Neighbors et al., 2010). PNF interventions, particularly when web-based, have the potential to reach a large number of college students, which is important because in-person feedback is costly and less time-efficient. There is support for PNF going above and beyond both normative feedback and personal strivings assessments (i.e., an assessment designed to develop discrepancy between current and ideal self)

to highlight inconsistencies between current behavior and behavioral norms, based on self discrepancy ratings (Neal & Carey, 2004; Neighbors, Larimer, & Lewis, 2004), and higher perceived discrepancy has been significantly positively associated with making a behavioral change (Collins, Carey, & Sliwinski, 2002). Thus, providing PNF for RSB as opposed to mere normative feedback or other interventions may provide more compelling data to students to develop a sense of discrepancy between their normative beliefs and actual peer behavior. Developing discrepancy can prompt individuals to make behavioral changes that increase consistency between the individual's behavior and values (Markland, Ryan, Tobin, & Rollnick, 2005). This technique has been utilized to reduce alcohol and other substance use among college students (Borsari & Carey, 2000; Stein, Hagerty, Herman, Phipps, & Anderson, 2011) and at-risk college drinkers with greater perceived discrepancy have been shown to reduce heavy alcohol consumption after receiving PNF compared to a control group that received psychoeducational material about alcohol (Collins et al., 2002).

No known studies have tested the utility of using PNF to specifically target RSB. Three known studies have used normative feedback interventions for RSB, which entail providing individuals with information about RSB among their peers while not explicitly revealing discrepancies between the individual's behavior, perceived typical behavior, and actual behavior (i.e., the feedback is not personalized). These interventions were conducted via in-person interventions or through media campaigns. The first known study utilizing normative feedback to change RSB was Fisher and colleagues' (1996) investigation of the effects of an intervention emphasizing Acquired Immune Deficiency Syndrome (AIDS) risk reduction information to reduce risky behaviors (e.g., not discussing safe sex with partners, not using condoms) among college students. Information about social norms regarding HIV risk related behavior (e.g.,

substance use, RSB), psychoeducation, and behavioral strategies (e.g., carrying condoms) were provided individually to students in an experimental condition. A control condition received no treatment. At a one-month follow-up, the intervention resulted in increases in motivation to follow through with behavioral change (e.g., using condoms), behavioral skills (e.g., purchasing condoms, storing them safely), and condom use during sexual intercourse. Two-month follow-up revealed significant increases in HIV risk related preventative behaviors (e.g., increase in condom use, decrease in number of partners) in the intervention condition. There were no significant changes in behavior among individuals in the control condition. Though these findings are promising, an effect size was not provided to assess the magnitude of the treatment effect.

The second study utilized in-person normative feedback in addition to goal setting as an individualized intervention to reduce HIV/AIDS risk among sexually active college students (Chernoff & Davison, 2005). This intervention sought to convey the idea that risk reduction was the prevailing social norm among peers of the same age, and the authors accomplished this by presenting normative data on the relatively low prevalence of RSB among college students and having students set goals for behavior change (e.g., using a condom) that they would implement over the following 30 days. Participants received the intervention or were instructed to read an AIDS informational pamphlet. Overall, individuals in the intervention condition were significantly more likely to use condoms while engaging in vaginal sex (d = .36) and less likely to consume alcohol prior to sexual intercourse. The authors found that the relationship between RSB and intervention was moderated by gender, with men in the normative feedback condition reporting significantly more condom use at 30-day follow-up than the control condition, and

women in the normative feedback condition reporting significantly fewer sexual partners than the control condition at 30-day follow-up.

The third study targeted RSB among college students at four universities (Scholly et al., 2005). The intervention portion of this study consisted of a social-norms based media campaign during which a series of posters with normative messages were made visible throughout the campuses. Results of a nine-month follow-up found no change in self-reported beliefs or behaviors related to sexual activity.

Finally, one known web-based study specifically targeted condom use among college women via a motivational enhancement intervention (Starosta, Cranston, & Earleywine, 2015). Participants received a condom use intervention or a binge drinking intervention. The condom use intervention portion consisted of engaging in a decisional balance exercise in which they compared their actual sexual behavior to ideal sexual behavior. Participants then reported reasons for using and not using condoms and rated those reasons on a one to 10 scale of importance. They then compared their numeric ratings of the importance of their reasons for use and nonuse. Finally, participants were provided with a CDC fact sheet about HIV/AIDS and asked to write an essay encouraging high school girls to insist that their partners use condoms during all types of sexual intercourse. The binge drinking intervention consisted of the same process, but with questions and the essay being related to binge drinking. Immediately post-intervention, women in the condom intervention reported greater intentions to use condoms in the future as compared to women in the binge drinking intervention. These differences were not maintained at a three-month follow-up. At the three-month follow-up, the condom use intervention was not directly related to increased condom use. Condom use was similar for both interventions at follow-up (d = .09) and there was no significant change over time in the

percentage of time women in the condom use intervention used condoms. Rather, women's attitudes (specifically, those who had increased thoughts of pleasure derived from using condoms) following the condom use intervention significantly predicted condom use at the follow-up compared to the binge drinking intervention (d = .40), and this relationship was mediated by the intention to use condoms immediately following the condom use intervention.

Taken together, these studies suggest that mass media campaigns may not be an effective way by which to change RSB but that brief interventions can produce significant behavior change and that individualized or web-based normative feedback can have an impact on changing RSB and promoting risk reduction strategies more successfully than no intervention or the presentation of general information about STDs. However, though Chernoff and Davidson's (2005) findings do suggest interventions that include a normative feedback component for RSB can effectively change condom use in college men, there was no investigation as to whether changes in normative beliefs regarding condom use led to increases in condom use. This intervention also did not solely consist of normative feedback and it is unclear whether the goal-setting or normative feedback components were predictive of behavior change (e.g., carrying condoms, using condoms). Starosta et al. (2015) emphasized the importance of evaluating mediating factors related to condom use. It is also unclear in their study whether the effect of the intervention was related to the decisional balance portion of the intervention or to the written essay. The only studies utilizing PNF to reduce RSB have also targeted heavy alcohol consumption and alcohol-related RSB (e.g., heavy alcohol consumption leading to RSB; Lewis, Patrick, et al., 2014; Patrick et al., 2014). Intervention conditions in Lewis et al.'s (2014) study included alcohol-only PNF, alcohol-related RSB PNF, and combined alcohol- and alcohol-related RSB conditions and did not include an RSB-only PNF condition. The control condition

participants were shown information related to the use of technology among undergraduate students. There was a significant reduction in alcohol-related RSB outcomes in only the alcohol-related RSB condition (d = .18), and the intervention effects on RSB were mediated by reductions in normative perceptions. Patrick et al.'s (2014) study utilized a PNF intervention aimed at reducing event-specific alcohol use and RSB by targeting norms for alcohol use, sexual behavior, and drinking before sex. The PNF intervention succeeded at reducing perceived social norms about alcohol consumption but did not succeed at changing risk behavior (d = .17; alcohol consumption did not decrease, RSB did not decrease) in comparison to an assessment-only control condition, meaning that changing norms was not sufficient for changing behavior. Ultimately, these studies do not support alcohol-related PNF for reducing sexual behavior, nor did they find strong effects of alcohol-related PNF on changing normative beliefs regarding risky sex. However, these studies did consistently reduce perceived RSB norms, indicating that a PNF specifically designed to target normative beliefs regarding condom use may be warranted.

Although promising, this body of work is limited in several key ways. First, although heavy episodic drinking has been associated with greater levels of RSB (Patrick, O'Malley, Johnston, Terry-McElrath, & Schulenberg, 2012), not all students who engage in RSB drink alcohol (Cooper, 2002). One study indicated that normative perceptions of RSB were among the strongest predictors of personal RSB when not under the influence of a substance among college students (Bon et al., 2001). These findings suggest it is important to differentiate the relationship between substance use and RSB rather than measure alcohol-related RSB as one construct, as well as strive to correct college students' normative beliefs regarding RSB.

Effectiveness of PNF Interventions

There is evidence that web-based PNF interventions have been successful at reducing alcohol use with small to moderate effect sizes. Effect sizes for web-based and in-person interventions have been reported in the results of a meta analysis of behavioral change outcomes for web-based versus non web-based interventions for health related behaviors (Wantland, Portillo, Holzemer, Slaughter, & McGhee, 2004). Authors conducted effect size analyses for 17 health-related behavior change studies to evaluate a standardized difference between web-based and non-web-based interventions and found that 16 or the 17 studies resulted in improved behavioral outcomes for participants using web-based interventions. Effect sizes ranged from small (d = .01 to .19); to moderate (d = .20 to .47); to moderately large (d = .54 to .75). These results provide evidence that web-based interventions can be effective in promoting behavior change. Importantly, authors did not find a significant difference between the length of an intervention and the effect size for the target outcome behavior. A growing body of work has provided evidence that computerized and web-based interventions that incorporate PNF have been found to reduce alcohol use, with effect sizes ranging from .16 to .57 to (Doumas, Haustveit, & Coll, 2010; LaBrie et al., 2013; Neighbors et al., 2010). There are few studies that directly compare face-to-face alcohol interventions with computer-based interventions, but these studies indicate that face-to-face interventions are more efficacious at producing decreases in drinking consumption as well as drinking problems (d = .12-.20; Butler & Correia, 2009; Carey et al., 2010; Donohue, Allen, Maurer, Ozols, & DeStefano, 2004) . Despite these findings, evidence does suggest that web-based interventions for alcohol use are efficacious. Further, the use of web-based interventions has practical advantages such as being standardized and both cost- and time-effective (Butler & Correia, 2009; Carey et al., 2010; Hester, Delaney & Campbell, 2010) as well as being able to reach a wide range of people. Additionally, college students have

reported that they prefer computer-based assessments (Epler, Sher, Loomis, & O'Malley, 2009). Face-to-face interventions are also costly and time-intensive, which may make a web-based intervention a better option (Carey, Scott-Sheldon, Elliott, Garey, & Carey, 2012).

Limitations of using a web-based intervention include lower effect sizes for web-based interventions compared to face-to-face interventions. Further, there is little research that evaluates the durability of interventions that are conducted without in-person contact. A study comparing web-based PNF for heavy drinking with a web-based social comparisons intervention for heavy drinking found that though intervention effects were present at a three-month follow-up, effects were no longer observed at a 6-month follow-up (Neighbors et al., 2016). Authors hypothesized that this effect may be due to the absence of repeated administration or booster sessions that could occur with face-to-face interventions. It is also possible that the effects of feedback decline over time.

Study Aims and Hypotheses

Given that STD infection rates are not declining among the age group most associated with college students (CDC, 2016) and that disease infection negatively impacts an individual's physical and psychological health (Douglas et al., 1997; Downing-Matibag & Geisinger, 2009), the current study's aim is to test the utility of a web-based PNF to increase condom use among college students. Because condom use is a protective rather than risky behavior, increases in perceptions of condom use may be associated with increases in actual condom use, rather than decreasing perceived norms of risky behaviors in order to reduce a risky behavior (i.e., as is done in alcohol literature). The current study is the first to test the hypothesis that web-based PNF designed specifically to target perceived norms about condom use will be related to increases in normative beliefs and increased condom use compared to the control condition (i.e., attention

control feedback). First, it was expected that students who received the PNF intervention would report greater increases in normative beliefs about condom use than those in the control condition at four-week follow-up. Second, we hypothesized that the web-based PNF intervention would be related to greater increase in condom use compared to the control condition among participants who engaged in intercourse during the one-month follow-up period.

METHOD

Participants

Participants were recruited through the LSU psychology participant pool and received research credit for completing baseline and follow-up measures. Students who completed follow-up measures were also entered into a raffle to win one of three $25 Amazon gift cards. Inclusion criteria required participants to be 18 years or older, be sexually active within the last 30 days, not be pregnant, and not currently have an STD. Sexually active was defined as engaging in anal or vaginal intercourse. Vaginal intercourse was defined as "when a man puts his penis inside a woman's vagina" per the Timeline Followback for Sexual Behavior and Substance use (TLFB-SS; Weinhardt et al., 1998). Anal intercourse was defined as "when a man puts his penis inside another person's rectum or buttocks" per the TLFB-SS (Weinhardt et al., 1998). Students with a STD or who were pregnant at baseline were excluded from this study because current STD status or pregnancy may cause an individual to change their condom use and beliefs. Similarly, students who reported becoming pregnant or having a STD at follow-up (e.g., they were diagnosed with a STD in the time between baseline and follow-up) were excluded from follow-up analyses given that they may also change their condom use and beliefs due to pregnancy/STD status.

For the current study, a total of 254 participants were recruited with the goal of having 187 students complete both the baseline and follow-up measures (accounting for potential attrition), to obtain a medium effect size with a power level of .80 and an alpha level of .05 (calculated with G*power; Faul, Erdfelder, Lang, & Buchner, 2007). Of the 425 students who consented, 48 students did not meet inclusion criteria for the following reasons: younger than 18 (n = 2), denied engaging in intercourse in the past month (n = 30), and reported that they

currently had an STD (n = 16). An additional 155 students did not complete the measures after they signed up for the survey. These students either did not continue with survey questions after giving consent or stopped responding at various points during the survey. Thus, 222 students were invited to complete the follow-up measures.

Of the 193 students that completed the follow-up measures, four were excluded for becoming pregnant (n = 1) and for being diagnosed with an STD (n = 3) in the time between baseline and follow-up. An additional 27 students denied that they engaged in sexual intercourse in the time between baseline and follow-up. Those students were not included in follow-up condom use analyses, but were included in the analyses of follow-up perceived norms. There were no students who responded to three or more infrequency items at baseline or at follow-up; as a result, no students were excluded due to potential random responding or problems with comprehension. Students who completed the study did not differ from non-completers on age, F (1,220) = 1.00, p = .755, η^2 = 0.00, race/ethnicity, $\chi 2$ (6, N = 222) = 7.44, p = .114, φ = 0.18, or gender, $\chi 2$ (1, N = 222) = 0.04, p = .852, φ = -0.01. Completers also did not differ from non-completers on baseline perceived normative beliefs, F (1,220) = 0.17, p = .678, η^2 = 0.00, or baseline condom use, F (1,220) = 0.02, p = .878, η^2 = 0.00. The overall rate of attrition from eligible baseline participants (N = 222) to students who completed the follow-up measures and were not excluded (N = 189) was 14.9%, with 16 students in the attention-control condition and 17 students in the PNF condition not completing the follow-up after completing baseline measures. The final sample of 189 was 80.4% female, and 65.1% non-Hispanic Caucasian, with a mean age of 20.24 (SD = 2.67; Table 1).

Baseline and Follow-Up Measures

Pregnancy and STDs. Questions about pregnancy (i.e., Are you pregnant? Yes/No) were assessed both at baseline and follow-up (i.e., in the event that an individual becomes pregnant between baseline and follow-up). STDs were assessed at baseline and follow-up. Questions related to STDs were adapted from the Known STI Exposure questionnaire that students at LSU are given at the Student Health Center (B. Prudhomme, personal communication, May 26, 2016). Questions included a list of STDs (e.g., genital herpes, chlamydia, gonorrhea) and students checked a box if they had ever been diagnosed with the STD in the past and if they currently have an STD (e.g., genital herpes, chlamydia, gonorrhea).

Condom use. Participants completed a modified version of the TLFB (Sobell, Brown, Leo, & Sobell, 1996) to assess condom use. The TLFB-SS assesses for number of partners, condom use, and substance use behaviors. We modified the TLFB-SS to assess for only condom use behaviors. Participants were shown a calendar for the past 30 days and were prompted to look at the current date to report on their behavior over the last 30 days. For each day for the past 30 days, participants entered two pieces of information: the number of times they had vaginal/anal intercourse, and how many times they used a condom. Qualtrics software calculated a frequency of condom use variable (i.e., a percentage) from the data that was used for feedback for participants in the PNF condition. Modified versions of the TLFB have been shown to be feasible, reliable, and valid when used to assess for sexual behaviors among psychiatric outpatients (2001). The TLFB has been administered online to assess condom use (Starosta et al., 2015).

Normative perceptions. Participants were asked two questions related to their perceptions of typical peer RSB (adapted from Lewis et al., 2007). Participants were asked to

estimate how often the typical LSU student had intercourse in the past 30 days and how many times the typical LSU student used condoms within the past 30 days. Qualtrics software calculated a frequency of condom use variable (i.e., a percentage) from the data to be used for feedback. It was presented to the student as a percentage (e.g., You reported that you believe other LSU students use condoms X% of the time).

Infrequency scale. To assess for the validity of responses (e.g., to identify participants who provide random or invalid responses), we included four questions from the *Infrequency Scale* (Chapman & Chapman, 1983). This scale includes items such as "Driving from New York to San Francisco is generally faster than flying between these cities." And "I believe that most light bulbs are powered by electricity." Endorsement of these types of items may suggest random responses, poor comprehension of question items, or unusual pathology (Groth-Marnat, 2009). Individuals who endorsed three or more of these infrequency questions on the baseline or follow-up survey would have been excluded from this study; however, no one was excluded for this reason.

Follow-up. Students in both conditions completed follow-up questions at a four-week post-intervention time point: TLFB-SS modified for condom use over the past 30 days, and normative perceptions, as stated above.

Experimental Conditions

Personalized normative feedback (PNF) condition. In this condition, participants received PNF immediately following the completion of baseline assessments. Participants were able to view the feedback on their computer screen for an unlimited amount of time. There was no interpersonal interaction involved in this feedback intervention. Feedback was modeled after online PNF interventions used in prior work (Lewis et al., 2007; Neighbors et al., 2016) and

consisted of feedback regarding the student's own condom use, the student's perceptions of other LSU students' condom use, and LSU students' actual condom use. Participants received the feedback in text format. The numbers were presented as percentages (e.g., Over the past 30 days, you used condoms X% of the time; You reported that you believe other LSU students use condoms X% of the time). The Qualtrics program has the ability to pull in dynamic numbers for each respondent. Actual LSU student norms were based on data collected by the American College Health Association (ACHA, 2014) for LSU students. Specifically, students received the following information about condom use at LSU: "LSU students actually use condoms 43% of the time." Research indicates that the use of proximal referents elicits greater changes in attitudes and behaviors than the use of distal referents in normative feedback interventions for alcohol consumption (Borsari & Carey, 2003; Lewis et al., 2007). Thus, LSU students may be better able to relate to other LSU students than to national norms.

Attention control feedback. Control participants were provided feedback on behaviors unrelated to condom use or STD/HIV prevention (e.g., an average college student spends 10.4 hours a week studying, an average college student spends 6.4 hours watching television, the average college student spends 4.2 hours engaging in physical activity; Larimer & Cronce, 2007). Attention control feedback is similar to the PNF but without the components of PNF theorized to have an effect on dependent variables (Bickman, Rog, & Hedrick, 1998). It was used in this study to minimize differences between the two experimental conditions by providing participants in both conditions with similar levels of communication throughout the study, as well as ensuring that all participants are exposed to a web-based feedback session. Attention-control feedback was also modeled after online PNF interventions used in prior work (Lewis et al., 2007; Neighbors et al., 2016), with information given about behaviors unrelated to condom use.

Participants were provided with three pieces of information (i.e., time spent studying, time spent watching television, and time spent engaged in physical activity).

Procedures

Participants completed the study on www.qualtrics.com, a secure, online data-collection site. Participants first provided informed consent. In order to ensure confidentiality, a Certificate of Confidentiality was obtained from the National Institutes of Health.

Participants' eligibility was confirmed with items assessing age (i.e., 18 and older), pregnancy status (i.e., "are you pregnant?" response options were yes or no), and sexual activity in the past 30 days (i.e., "have you been sexually active in the past 30 days?" defined as vaginal or anal intercourse).

Eligible participants completed baseline measures. The study utilized a mixed-model design and participants were randomized to one of two conditions (PNF condition and attention-control condition) by Qualtrics. Participants provided their email address to receive an invitation (via email) to complete their four-week follow-up survey. Four weeks after completion of baseline, participants were emailed a website link to complete follow-up questionnaires.

Data Analytic Strategy

Differences between conditions on relevant variables (i.e., age, gender, race/ethnicity, prior STD status, baseline perceived normative beliefs and condom use) were examined with analysis of variance (ANOVA) for continuous dependent variables (e.g., age) and chi-square analyses for categorical dependent variables (i.e., gender and race/ethnicity, prior STD status).

Hypotheses 1 (that students in the PNF condition would exhibit higher follow-up normative beliefs than students in the attention-control condition) and 2 (students in the PNF

condition would exhibit greater post-intervention condom use than students in the attention-control condition) were tested with two independent samples t-tests. The independent variable was intervention and the dependent variables were follow-up perceived normative beliefs and follow-up condom use. To reduce the impact of potential bias in the data, we used bootstrapping to generate confidence intervals (95%) for the difference between means. Prior to reporting the t statistics, we examined Levene's test to see whether variances were different between conditions. We then reported the significance of the *t* statistics. Effect size was evaluated using Cohen's *d*. The bootstrapped confidence intervals were also reported.

Hypotheses 1 and 2 were reevaluated using two analyses of covariance (ANCOVA), with condition as the independent variable, follow-up perceived normative beliefs or follow-up condom use as the dependent variable, and either baseline perceived normative beliefs or baseline condom use as a covariate. Baseline number of times a student had intercourse was also entered as a covariate because this variable was significantly different between conditions (Table 1). For the analyses with condom use as the dependent variable, only students who reported engaging in intercourse between baseline and follow-up were included. Next, gender was evaluated as a covariate in the above analyses because there were significant gender differences for baseline condom use and age (Table 2).

Students with low baseline perceived normative beliefs ($n = 58$) and students with low baseline condom use ($n = 82$) use were also evaluated, given that online PNFs tend to target those that engage in risky behaviors (e.g., heavy drinking; Neighbors et al., 2010). Given the feedback participants received, normative beliefs and low condom use were defined as below 43%. In these ANCOVA models, condition was the independent variable, follow-up perceived normative beliefs or follow-up condom use was the dependent variable, and either baseline

perceived normative beliefs or baseline condom use was a covariate. Baseline number of times a student had intercourse was also entered as a covariate because this variable was significantly different between conditions for these participants (Table 1). For the analyses with condom use as the dependent variable, only students who reported engaging in intercourse between baseline and follow-up were included.

RESULTS

Sample Descriptives

Data were first inspected for outliers that were greater than three standard deviations from the sample mean. There were no outliers in baseline or outcome variables. Figure 1 presents the distribution of condom use among participants, which was predominantly bimodal. Approximately 65% of students reported using condoms 0% of the time or 100% of the time, with 31.7% of students reporting that they never use condoms and 33.3% of students reporting that they always use condoms.

Figure 1. Distribution of baseline condom use among participants

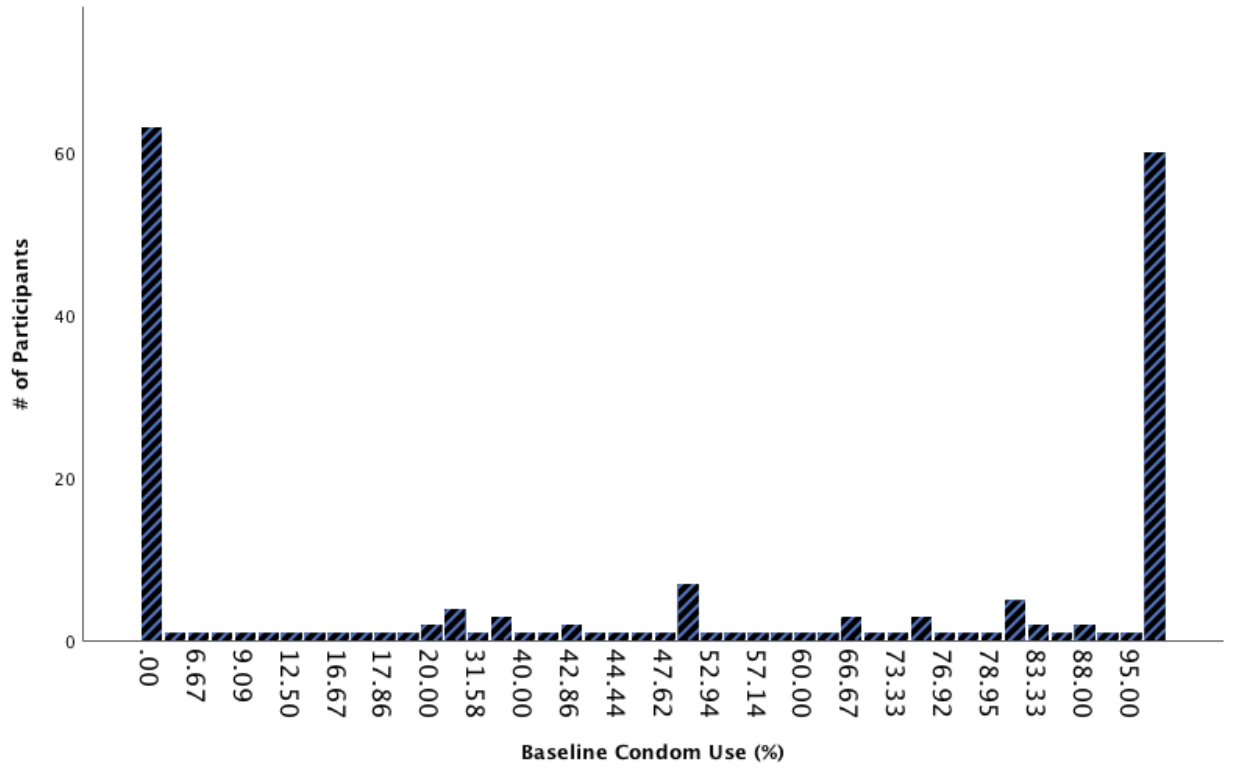

Table 1 presents descriptive information and study variables by condition.

Table 1. Differences Between Conditions on Study Variables

Demographic and other study variables	Attention-Control (n = 94)	PNF (n = 95)	F or χ 2	p	d or Cramer's φ
	M (SD) or % (n)				
Age	20.56 (3.34)	19.93 (1.73)	2.73	.10	.24
Gender			0.05	.83	.02
Men	20.2 (19)	18.9 (18)			
Women	79.8 (75)	81.1 (77)			
Race/Ethnicity			1.56	.82	.10
Caucasian/Hispanic	5.3 (5)	7.4 (7)			
Caucasian/Non- Hispanic	64.9 (61)	65.3 (62)			
African American	20.2 (19)	16.8 (16)			
American Indian	0.0 (0)	1.1 (1)			
Other	3.2 (3)	4.2 (4)			
Past STD			1.20	.56	.04
Chlamydia	1.1 (2)	1.6 (3)			
Other	0.0 (0)	0.5 (1)	S		
Baseline no. times intercourse	7.86 (6.37)*	10.24 (9.61)*	4.02	.05	.29
Baseline no. times condom used	3.18 (4.33)	3.83 (4.89)	0.93	.14	.14
Baseline condom use	47.11 (44.39)	51.31 (42.07)	0.45	.51	.10
Baseline perceived norms	60.11 (25.88)	58.88 (26.96)	0.10	.75	.05
Follow-up condom use[a]	43.45 (44.86)	48.67 (43.82)	0.56	.46	.12
Follow-up perceived norms	64.72 (26.66)	65.65 (22.59)	0.07	.80	.04

Note. PNF = Personalized Normative Feedback.
*$p < .05$.
[a] All values for follow-up condom use include only students who reported engaging in intercourse between baseline and follow-up (N = 162).

Students in the PNF condition reported having intercourse more times per month than students in the attention-control condition however the effect was small, and the percentage of

condom use did not differ between conditions (Table 1). This variable was therefore included as a covariate when later analyses included covariates. No other baseline differences between conditions were significant.

To test whether baseline perceived normative beliefs were related to a student's own condom use, a paired samples *t*-test was conducted. Students estimated that other LSU students use condoms significantly more ($M = 59.50$, $SD = 26.37$) than they themselves did ($M = 49.22$, $SD = 43.17$), $t(188) = 3.02$, $p = .003$, but the effect was small, $d = .29$.

Descriptive data per gender on study variables are presented in Table 2. There was a significant difference in baseline condom use between men and women, with men using condoms at a higher percentage than women, and a significant difference in age, with men being slightly older. There were no other significant baseline differences between men and women.

Table 2. Differences Between Genders on Study Variables

Demographic and other study variables	Women ($n = 152$)	Men ($n = 37$)	F or $\chi 2$	p	d or Cramer's φ
	M (SD) or % (n)				
Age	20.02 (1.81)*	21.16 (4.71)*	5.60	.02	0.32
Race/Ethnicity			3.70	.79	0.02
Caucasian/Hispanic	5.3 (10)	1.1 (2)			
Caucasian/Non-Hispanic	52.4 (99)	12.7 (24)			
African American	15.9 (30)	2.6 (5)			
Asian	4.2 (8)	1.6 (3)			
American Indian	0.5 (1)	0.0 (0)			
Other	2.1 (4)	1.6 (3)			
Past STD			0.25	.89	0.04
Chlamydia	2.1% (4)	0.5% (1)			

(Table 2 continued)

Demographic and other study variables	Women (n = 152) M (SD) or % (n)	Men (n = 37) F or $\chi 2$	p	d or Cramer's φ	
Baseline # of times intercourse	9.31 (7.93)	8.03 (9.43)	0.72	.40	0.15
Baseline # of times condom used	3.34 (4.44)	4.20 (5.27)	1.01	.32	0.18
Baseline Condom Use	45.62 (43.24)*	64.00 (40.17)*	5.52	.02	0.44
Baseline Perceived Norms	57.70 (26.15)	66.89 (26.32)	3.67	.06	0.35
Follow-up Condom Use [a]	43.23 (44.65)	58.02 (41.30)	2.83	.10	0.34
Follow-up Perceived Norms	65.95 (24.07)	62.06 (26.98)	0.74	.39	0.15

Note. An asterisk represents significant differences between conditions at $p < .05$.
[a] All values for follow-up condom use include only students who reported engaging in intercourse between baseline and follow-up (N = 162).

Correlations among study variables are presented in Table 3. Baseline condom use frequency was significantly, positively associated with baseline perceived norms. Baseline perceived normative beliefs were significantly, positively associated with follow-up perceived normative beliefs.

Differences in Follow-Up Normative Beliefs Between Conditions

An independent-samples t-test was run to determine if there were differences in follow-up perceived normative beliefs between students who received the attention-control and PNF intervention. There was homogeneity of variance, as assessed by Levene's test for equality of variances (p = .147). Follow-up norms did not significantly differ between students in the PNF condition (M = 65.65, SD = 22.60) and those in the attention-control condition (M = 64.72, SD = 26.66), $t(187) = -0.261$, p = .794, 95% CI [-8.03, 6.15]. The effect size was small, d = 0.04.

The ANCOVA testing whether the PNF condition would be related to greater perceived norms after controlling for the baseline number of times students engaged in intercourse was also not significant, $F(1, 186) = .201$, $p = .654$ partial $\eta^2 = .001$. After adjusting for baseline perceived normative beliefs and baseline number of times a student had intercourse, there was not a statistically significant difference in follow-up perceived normative beliefs between the conditions, $F(1, 185) = .287$, $p = .593$, partial $\eta^2 = .002$. Because the effect size of baseline number of times a student had intercourse was low, the analysis was conducted again without baseline number of times a student had intercourse as a covariate. The results remained non-significant, $F(1, 186) = .122$, $p = .727$, partial $\eta^2 = .001$.

Differences in Follow-Up Condom Use Between Conditions

An independent-samples t-test was run to determine if there were differences in follow-up condom use between conditions. There was homogeneity of variance, as assessed by Levene's test for equality of variances ($p = .639$). Condom use was not significantly greater for students in the PNF condition ($M = 48.67$, $SD = 43.82$) than for those in the attention-control condition ($M = 43.45$, $SD = 44.87$), $t(160) = -0.748$, $p = .455$, 95% CI [-18.98, 8.55]. The effect size was small, $d = 0.12$.

After controlling for baseline condom use and number of times a student had intercourse at baseline, there was not a statistically significant difference in follow-up condom use between the conditions, $F(1, 158) = .350$, $p = .555$, partial $\eta^2 = .002$. The results were also not significant after removing baseline number of times a student had intercourse as a covariate, $F(1, 159) = .237$, $p = .627$, partial $\eta^2 = .001$.

Table 3. Correlations Between Demographic Variables, Dependent Variables, and Covariates

Variable	1	2	3	4	5	6	7
1. Age	-						
2. Baseline perceived norms	.06	-					
3. Baseline condom use	-.14	.16*	-				
4. Baseline # times intercourse	-.13	-.02	-.27**	-			
5. Baseline # of times condom used	-.14	.09	.56**	.36**	-		
6. Follow-up condom use [a]	-.12	.08	.74**	-.22**	.45**	-	
7. Follow-up perceived norms	-.03	.25**	.13	-.09	.08	.13	-
M	20.24	59.59	49.22	9.06	3.51	46.06	65.19
SD	2.67	26.37	43.17	8.23	4.61	44.29	24.64

Note. [a] All values for follow-up condom use include only students who reported engaging in intercourse between baseline and follow-up (N = 162).
**$p < .01$
*$p < .05$

Gender as a Covariate

Given that women and men differed significantly on age and baseline condom use (Table 2), ANCOVAs were rerun with gender, age, and baseline condom use as covariates. The ANCOVA testing whether the PNF condition would be related to greater perceived norms after controlling for gender, age, baseline number of times students engaged in intercourse, baseline, condom use, and baseline perceived normative beliefs was not significant, $F(6, 182) = .158$, $p = .692$, partial $\eta^2 = .001$ (see also Table 4).

Table 4. Results of an ANCOVA with Follow-Up Perceived Normative Beliefs as Dependent Variable

	Estimated Marginal Means					
Covariate	PNF	Control	*F*	*df*	*p*	Partial η2
Gender			2.34	1, 182	.13	0.01
Age			0.50	1, 182	.82	0.00
Baseline norms			11.76	1, 182	.001	0.06
Baseline no. times intercourse			1.10	1, 182	.30	0.01
Baseline condom use			1.09	1, 182	.30	0.01
Main Effect						
Condition						
	65.89	64.48	0.16	6, 182	.69	0.00

The ANCOVA testing whether the PNF condition would be related to greater condom use after controlling for gender, age, baseline number of times students engaged in intercourse, and baseline condom use was also not significant $F(5, 156) = .295$, $p = .588$, partial $\eta^2 = .002$ (see also Table 5).

Table 5. Results of an ANCOVA with Follow-Up Condom use as Dependent Variable

	Estimated Marginal Means					
Covariate	PNF	Control	*F*	*df*	*p*	Partial η2
Gender			0.15	1, 156	.70	0.00
Age			0.47	1, 156	.49	0.00
Baseline no. times intercourse			0.68	1, 156	.41	0.00
Baseline condom use			153.93	1, 156	<.001	0.50
Main Effect						
Condition						
	47.38	44.75	0.30	5, 156	.59	0.00

Note. Only individuals who endorsed engaging in intercourse between baseline and follow-up were included in this analysis.

High-Risk Groups

Next, given that individuals who use condoms 100% of the time may not benefit from corrective normative feedback about condom use, both ANCOVAs testing whether the PNF condition would be related to greater perceived normative beliefs and condom use were rerun excluding participants who reported using condoms 100% of the time (< 100%; $n = 129$). Conditions were not significantly different on follow-up perceived normative beliefs, $F(2, 126) = 1.70$, $p = .195$, partial $\eta^2 = .013$, or follow-up condom use, $F(2, 115) = .000$, $p = .983$, partial $\eta^2 = .000$.

Students who exhibited lower baseline perceived normative beliefs or lower baseline condom use might be most at risk for engaging in risky sexual behavior. Students with low baseline perceived normative beliefs (i.e., lower than 43%; $n = 58$) and students with low baseline condom use who endorsed engaging in intercourse between baseline and follow-up (i.e., lower than 43%; $n = 82$) were analyzed.

There were 31 students (32.6%) in the PNF condition and 27 (28.4%) students in the attention-control condition who believed at baseline that students used condoms less than 43% of the time. Students in the PNF condition ($M = 66.98$, $SD = 26.90$) exhibited significantly greater follow-up perceived normative beliefs than the control condition ($M = 49.95$, $SD = 22.06$), $F(2, 55) = 6.52$, $p = .013$, $d = 0.69$. There were 39 students (41.1%) in the PNF condition and 43 (45.7%) in the attention-control condition who used condoms less than 43% at baseline. Students in the PNF condition ($M = 17.00$, $SD = 30.43$) did not exhibit significantly greater condom use than the control condition ($M = 12.04$, $SD = 25.18$), $F(2, 79) = .366$, $p = .547$, $d = 0.18$.

Potential Iatrogenic Effects

In order to test whether the intervention had a potentially iatrogenic effect (i.e., decreased condom use among those with high baseline condom use), we tested whether baseline condom use interacted with condition to predict decreased condom use. A moderation analysis was conducted using PROCESS. Baseline number of times students had intercourse was entered as a covariate because this variable differed significantly between conditions. The interaction was not significant, $F(1, 157) = 0.01$, $p = .942$, $DR^2 = 0.0000$. A moderation analysis was also conducted to test whether baseline perceived norms interacted with condition to predict decreased condom use. Baseline number of times students had intercourse was again entered as a covariate. The interaction was not significant, $F(1, 157) = 0.73$, $p = .395$, $DR^2 = 0.0046$.

DISCUSSION

The present study was the first of its kind to utilize an online personalized normative feedback intervention to increase perceived normative beliefs and increase college student condom use without also addressing risky drinking behaviors. This study attempted to replicate a growing body of literature that has sought to reduce risky behaviors (e.g., risky sexual behavior, alcohol use) via personalized normative feedback interventions (e.g., Neighbors et al., 2004; Neighbors et al., 2010; Patrick et al., 2014). While other PNF studies have included condom use as a variable, they have not explicitly targeted normative beliefs regarding condom use (Lewis et al., 2007; Lewis, Patrick, et al., 2014; Patrick et al., 2014). Notably, this study differed from prior work that attempted to reduce perceived norms of risky behaviors (e.g., binge drinking); the present study aimed to increase perceived norms of a protective behavior (i.e., condom use).

PNF Efficacy

The PNF did not result in greater normative beliefs or follow-up condom use than control. Given that students who participated in this study already held the belief that students used condoms at a greater frequency than they actually do (i.e., 43% of the time), it is not surprising that there was no significant difference in mean perceived normative beliefs at follow-up between conditions. The lack of impact of the PNF may also be due to methodological error. The actual normative data from the ACHA-NCHA database is that LSU students use condoms "mostly or always" 51.5% of the time when engaging in vaginal intercourse and "mostly or always" 34.5% of the time when engaging in anal intercourse. Future research is necessary to test whether giving students these data, rather than an average of these numbers, impacts normative beliefs and/or condom use. Further, the ACHA-NCHA database did not provide count data for intercourse or condom use. This type of methodology should be considered for future

research; if risk behavior is to be evaluated, discrete instances of individuals not using a condom should be recorded rather than the percentage of times an individual does use a condom. The need for count data rather than relative frequencies is advantageous because it prevents error in interpreting condom use. For example, and individuals who reported having intercourse twice and using a condom once may be assigned to a "sometimes," and someone who had intercourse 50 times and used a condom half of those times would also be assigned to a "sometimes" category. Though they receive the same categorical score, one person has been exposed to more risk than the other (Schroder, Carey, & Varnable, 2003). Going forward, studies evaluating sexual risk behaviors should consider using count data to target RSB and increase precision of measurement.

High-Risk Students

Consistent with the notion that online PNFs tend to be designed for those who engage in risky behavior (e.g., Elliott, Carey, & Bolles, 2008; Lewis, Litt, et al., 2014) or are at risk to (Lewis, Logan, & Neighbors, 2009), among students with lower baseline perceived normative beliefs, the PNF condition was related to greater perceived normative beliefs at follow-up compared to the control. However, among those who used condoms less often at baseline, the PNF did not increase condom use relative to the control. It may be that beliefs are more malleable than behaviors, and the discrepancy between beliefs and behavior in this circumstance merits further evaluation. Another hypothesis is that if individuals are told they are using condoms more than what is normative, they may not perceive a reason to change their behavior. Further, despite a shift in normative beliefs, there may be other unidentified barriers to behavior change that would follow a change in beliefs (e.g., lack of access, lack of knowledge).

It was also hypothesized that students who received PNF would exhibit greater condom use at follow-up than students in the attention-control condition. There were no significant differences between condition means at follow-up. Given that a difference in gender was found related to age and baseline condom use, analyses were rerun to adjust for gender and these differences. Still, there was no significant difference between condition means for either perceived normative beliefs or condom use at follow-up.

The Role of Gender

One unexpected finding from the present study is that men reported engaging in significantly greater condom use than women. There is little research about rates of condom use by men and women that do not focus primarily on specific subgroups of the population or at-risk individuals. Findings from Lewis, Litt, et al. (2014) are consistent with the current study, and found that in a college sample, men reported significantly greater condom use than women. Another study assessed condom use for 5,865 U.S. adolescents and adults and found that adult men reported slightly higher condom use than women for both vaginal and anal intercourse (Reece et al., 2010). Though the authors did not investigate reasons for this discrepancy, there are potential explanations for the differences noted. For example, if a man is wearing a male condom, a woman may report that she did not use a condom (i.e., a female condom) because the man was literally wearing the condom. In the future, definitions of condom use can include a note stating to report on condom use if either partner was wearing a condom during intercourse.

A small body of work has examined differences between men and women regarding attitudes and skills related to condom use. One such study found that men endorsed more barriers to condom use and that both men and women who endorsed barriers to condom use were less likely to use condoms (Calsyn et al., 2013). This study was conducted with individuals who were

participating in substance abuse treatment so it is unclear whether it would generalize to a college student population. Another study found the opposite—that women perceived more barriers to condom use, and that women with "conventional gender stereotypes about men's roles" (e.g., were likely to accept a power differential in a relationship, had multiple partners) were less likely to use condoms than women who held more stereotypes about women's roles (Lefkowitz, Shearer, Gillen, & Espinosa-Hernandez, 2014). This finding highlights that biological sex may be less important than an individual's perception or attitudes toward gender roles on condom use because an individual's attitude toward using condoms may not be dependent on biological sex. Further, it may be more important to investigate differences within-sex or within-gender than differences between men and women. Future research in this area could evaluate the extent to which students identify with or believe in messages from society related to gender roles and the interaction of that variable with PNF versus control condition on follow-up condom use.

The use of gender-specific referents has also been used to provide PNF. Given that receiving information that relates to a closer (e.g., providing feedback about LSU students rather than college students generally) rather than a distal referent may have a greater influence on behavior, it follows that providing gender-specific feedback may have a greater influence than feedback that is gender-neutral. Lewis et al. (2007) found that by providing gender-specific norms of alcohol consumption to college students, women's reduction in drinking behavior was associated with change in gender-specific norms. Further, women with higher gender identity who received gender-specific feedback were found to further reduce their drinking behavior. An examination of attitudes toward gender and condom use in the absence of substance use behaviors is necessary to further elucidate between- and within-gender differences when engaging in condom use.

Normative Beliefs

Contrary to prior research that college students overestimate their peers' engagement in risky sexual behaviors (e.g.,Chernoff & Davison, 2005; Hines et al., 2002; Lewis, Litt, et al., 2014), results from the present study indicate that LSU students who participated in this study, on average, believed that other students use condoms more than they themselves did. However, the effect was small. Only two studies (Chernoff & Davison, 2005; Lewis, Litt, et al., 2014) specifically evaluated estimates of condom use, while other studies refer to overestimation of other facets of risky sexual behavior (e.g., multiple partners, inconsistent condom use, alcohol use prior to sexual intercourse). In Chernoff & Davison's (2005) study, questions related to estimates of condom use were phrased in terms of beliefs that other students used condoms "all or most of the time" or "never." Using a dichotomous option may have limited the results and may have misrepresented a student's actual perception of other students' condom use. It is unclear why LSU students overestimated condom use of others relative to their own condom use; given the small effect size of this finding, a replication of the data collection is recommended.

Other factors such as a student's relationship status (e.g., dating, single, monogamous) may have interacted with the relationship between their own condom use and perception of others' condom use. For example, if the majority of students in this study were in a monogamous relationship, they may use condoms less (Reece et al., 2010) but assume other students are not in a monogamous relationship and therefore are using condoms more. Refinement to the collection of demographic data related to relationship is necessary to interpret this type of finding.

Limitations and Future Directions

Limitations to the present study are significant. Foremost, the sample was primarily White/Non-Hispanic women and future work targeting more racially and ethnically diverse

sample with a greater number of men will be an important next step, especially in the examination of gender differences and other cultural differences in condom use. Additionally, given the definitions provided for vaginal and anal intercourse, the study did not target women who have sex with women, and it is unclear how these findings may generalize to women who have sex with women. Next, the experiment was conducted solely via Qualtrics, and online platform. Although no student data was excluded due to responses on infrequency items, we did not assess how much attention was paid to the corrective normative feedback and future studies of this nature could include a follow-up question regarding the content of the feedback (e.g., "What percentage of the time do LSU students use condoms?") to gauge attention to feedback provided. Evaluating attitudes and values related to condom use will also be an important next step. Alternately, it may be that PNF administered in an online forum is not effective for changing condom use, though normative beliefs for high-risk students in the PNF condition were increased.

Conclusion

The present study is limited in many ways, and it is unclear whether a PNF intervention for college student condom use can be effective, even with changes to study design. Further information regarding the relationship between important variables (e.g., gender identity, relationship status) and condom use is necessary to elucidate mechanisms by which the intervention does and does not work. However, this study is unique in that it is one of few studies that collected specific counts of condom use and intercourse rather than utilizing relative frequencies. Continued use of this data collection methodology in conjunction with other improvements (e.g., information about attitudes toward condom use, data collection of type of intercourse and relationship status) will increase the precision of PNF as well as findings related

to RSB. These findings only stress the importance of developing effective and well-informed interventions to increase condom use among college students.

REFERENCES

Agostinelli, G., Brown, J. M., & Miller, W. R. (1995). Effects of normative feedback on consumption among heavy drinking college students. *Journal of drug education, 25*(1), 31-40. doi: 10.2190/XD56-D6WR-7195-EAL3

American College Health Association. (2013). *Louisiana State University Executive Summary*. Retrieved from https://www.lsu.edu/shc/files/assessment/NCHA-II-web-spring-2013-lsu-exectuive-summary-data-report.pdf.

American College Health Association. (2014). *The American College Health Association National College Health Assessment (ACHA-NCHA): Fall 2012 Reference Group Executive Summary*. Retrieved from http://www.acha-ncha.org/docs/NCHA-II_FALL_2014_REFERENCE_GROUP_EXECUTIVE_SUMMARY.pdf.

Avants, S. K., Warburton, L. A., Hawkins, K. A., & Margolin, A. (2000). Continuation of high-risk behavior by HIV-positive drug users: Treatment implications. *Journal of Substance Abuse Treatment, 19*(1), 15-22. doi: 10.1016/S0740-5472(99)00092-6

Bickman, L., Rog, D. J., & Hedrick, T. E. (1998). Applied research design: A practical approach. *Handbook of applied social research methods, 19*. doi: 10.4135/9781483348858.n1

Bon, S. R., Hittner, J. B., & Lawandales, J. P. (2001). Normative perceptions in relation to substance use and HIV-risky sexual behaviors of college students. *The Journal of Psychology, 135*(2), 165-178. doi: 10.1080/00223980109603688

Borsari, B., & Carey, K. B. (2000). Effects of a brief motivational intervention with college student drinkers. *Journal of consulting and clinical psychology, 68*(4), 728. doi: 10.1037/0022-006X.68.4.728

Borsari, B., & Carey, K. B. (2003). Descriptive and injunctive norms in college drinking: A meta-analytic integration. *Journal of Studies on Alcohol, 64*(3), 331. doi: 10.15288/jsa.2003.64.331

Butler, L. H., & Correia, C. J. (2009). Brief alcohol intervention with college student drinkers: Face-to-face versus computerized feedback. *Psychology of addictive behaviors, 23*(1), 163. doi: 10.1037/a0014892

Carey, K. B., Henson, J. M., Carey, M. P., & Maisto, S. A. (2010). Perceived norms mediate effects of a brief motivational intervention for sanctioned college drinkers. *Clinical Psychology: Science and Practice, 17*(1), 58-71. doi: 10.1111/j.1468-2850.2009.01194.x

Carey, K. B., Scott-Sheldon, L. A., Elliott, J. C., Garey, L., & Carey, M. P. (2012). Face-to-face versus computer-delivered alcohol interventions for college drinkers: a meta-analytic

review, 1998 to 2010. *Clinical psychology review, 32*(8), 690-703. doi: 10.1016/j.cpr.2012.08.001

Carey, M. P., Carey, K. B., Maisto, S., Gordon, C., & Weinhardt, L. (2001). Assessing sexual risk behaviour with the Timeline Followback (TLFB) approach: continued development and psychometric evaluation with psychiatric outpatients. *International journal of STD & AIDS, 12*(6), 365-375. doi: 10.1258/0956462011923309

Catania, J. A., Kegeles, S. M., & Coates, T. J. (1990). Towards an understanding of risk behavior: An AIDS risk reduction model (ARRM). *Health Education & Behavior, 17*(1), 53-72. doi: 10.1177/109019819001700107

Centers for Disease Control and Prevention. (2014). *CDC Fact Sheet: Reported STDs in the United States*. Retrieved from http://www.cdc.gov/std/stats14/std-trends-508.pdf.

Centers for Disease Control and Prevention. (2016). *Surveillance Report: Reported STDs at Unprecedented High in the U.S.* Retrieved from https://www.cdc.gov/nchhstp/newsroom/2016/std-surveillance-report-2015-press-release.html.

Centers for Disease Control and Prevention. (2017). *Sexual Risk Behaviors: HIV, STD, & Teen Pregnancy Prevention*. Retrieved from https://www.cdc.gov/healthyyouth/sexualbehaviors/.

Chapman, L. J., & Chapman, J. P. (1983). *Infrequency scale*. Madison, WI: Unpublished test.

Chernoff, R. A., & Davison, G. C. (2005). An evaluation of a brief HIV/AIDS prevention intervention for college students using normative feedback and goal setting. *AIDS Education & Prevention, 17*(2), 91-104. doi: 10.1521/aeap.17.3.91.62902

Collins, S. E., Carey, K. B., & Sliwinski, M. J. (2002). Mailed personalized normative feedback as a brief intervention for at-risk college drinkers. *Journal of Studies on Alcohol, 63*(5), 559-567. doi: 10.15288/jsa.2002.63.559

Cooper, M. L. (2002). Alcohol use and risky sexual behavior among college students and youth: Evaluating the evidence. *Journal of Studies on Alcohol, supplement*(14), 101-117. doi: 10.15288/jsas.2002.s14.101

Crosby, R. A., DiClemente, R. J., Wingood, G. M., Lang, D., & Harrington, K. F. (2003). Value of consistent condom use: a study of sexually transmitted disease prevention among African American adolescent females. *American Journal of Public Health, 93*(6), 901. doi: 10.2105/ajph.93.6.901

Donohue, B., Allen, D. N., Maurer, A., Ozols, J., & DeStefano, G. (2004). A controlled evaluation of two prevention programs in reducing alcohol use among college students at low and high risk for alcohol related problems. *Journal of Alcohol and Drug Education, 48*(1), 13.

Douglas, K. A., Collins, J. L., Warren, C., Kann, L., Gold, R., Clayton, S., . . . Kolbe, L. J. (1997). Results from the 1995 national college health risk behavior survey. *Journal of American College Health, 46*(2), 55-67. doi: 10.1080/07448489709595589

Doumas, D. M., Haustveit, T., & Coll, K. M. (2010). Reducing heavy drinking among first year intercollegiate athletes: A randomized controlled trial of web-based normative feedback. *Journal of Applied Sport Psychology, 22*(3), 247-261. doi: 10.1080/10413201003666454

Doumas, D. M., McKinley, L. L., & Book, P. (2009). Evaluation of two Web-based alcohol interventions for mandated college students. *Journal of Substance Abuse Treatment, 36*(1), 65-74. doi: 10.1016/j.jsat.2008.05.009

Downing-Matibag, T. M., & Geisinger, B. (2009). Hooking up and sexual risk taking among college students: A health belief model perspective. *Qualitative Health Research, 19*(9), 1196-1209. doi: 10.1177/1049732309344206

Elliott, J. C., Carey, K. B., & Bolles, J. R. (2008). Computer-based interventions for college drinking: a qualitative review. *Addictive behaviors, 33*(8), 994-1005. doi: 10.1016/j.addbeh.2008.03.006

Epler, A. J., Sher, K. J., Loomis, T. B., & O'Malley, S. S. (2009). College student receptiveness to various alcohol treatment options. *Journal of American College Health, 58*(1), 26-32. doi: 10.3200/jach.58.1.26-32

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175-191. doi: 10.3758/bf03193146

Fisher, J. D., Fisher, W. A., Misovich, S. J., Kimble, D. L., & Malloy, T. E. (1996). Changing AIDS risk behavior: effects of an intervention emphasizing AIDS risk reduction information, motivation, and behavioral skills in a college student population. *Health Psychology, 15*(2), 114. doi: 10.1037/0278-6133.15.2.114

Groth-Marnat, G. (2009). *Handbook of psychological assessment*: John Wiley & Sons.

Hester, R. K., Delaney, H. D., & Campbell, W. (2012). The College Drinker's Check-Up: Outcomes of two randomized clinical trials of a computer-delivered intervention. *Psychology of addictive behaviors, 26*(1), 1. doi: 10.1037/a0024753

Hines, D., Saris, R. N., & Throckmorton‐Belzer, L. (2002). Pluralistic ignorance and health risk behaviors: Do college students misperceive social approval for risky behaviors on campus and in media? *Journal of Applied Social Psychology, 32*(12), 2621-2640. doi: 10.1111/j.1559-1816.2002.tb02760.x

Kingree, J., & Betz, H. (2003). Risky sexual behavior in relation to marijuana and alcohol use among African–American, male adolescent detainees and their female partners. *Drug and Alcohol Dependence, 72*(2), 197-203. doi: 10.1016/s0376-8716(03)00196-0

Kohler, P. K., Manhart, L. E., & Lafferty, W. E. (2008). Abstinence-only and comprehensive sex education and the initiation of sexual activity and teen pregnancy. *Journal of Adolescent Health, 42*(4), 344-351. doi: 10.1016/j.jadohealth.2007.08.026

LaBrie, J. W., Lewis, M. A., Atkins, D. C., Neighbors, C., Zheng, C., Kenney, S. R., . . . Hummer, J. F. (2013). RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough? *Journal of consulting and clinical psychology, 81*(6), 1074. doi: 10.1037/a0034087

Larimer, M. E., & Cronce, J. M. (2002). Identification, prevention and treatment: a review of individual-focused strategies to reduce problematic alcohol consumption by college students. *Journal of Studies on Alcohol, supplement*(14), 148-163. doi: 10.15288/jsas.2002.s14.148

Larimer, M. E., & Cronce, J. M. (2007). Identification, prevention, and treatment revisited: Individual-focused college drinking prevention strategies 1999–2006. *Addictive behaviors, 32*(11), 2439-2468. doi: 10.1016/j.addbeh.2007.05.006

Lewis, M. A., Lee, C. M., Patrick, M. E., & Fossos, N. (2007). Gender-specific normative misperceptions of risky sexual behavior and alcohol-related risky sexual behavior. *Sex Roles, 57*(1-2), 81-90. doi: 10.1007/s11199-007-9218-0

Lewis, M. A., Litt, D. M., Cronce, J. M., Blayney, J. A., & Gilmore, A. K. (2014). Underestimating protection and overestimating risk: Examining descriptive normative perceptions and their association with drinking and sexual behaviors. *Journal of sex research, 51*(1), 86-96. doi: 10.1080/00224499.2012.710664

Lewis, M. A., Logan, D. E., & Neighbors, C. (2009). Examining the role of gender in the relationship between use of condom-related protective behavioral strategies when drinking and alcohol-related sexual behavior. *Sex Roles, 61*(9-10), 727-735. doi: 10.1007/s11199-009-9661-1

Lewis, M. A., Patrick, M. E., Litt, D. M., Atkins, D. C., Kim, T., Blayney, J. A., . . . Larimer, M. E. (2014). Randomized controlled trial of a web-delivered personalized normative feedback intervention to reduce alcohol-related risky sexual behavior among college students. *Journal of consulting and clinical psychology, 82*(3), 429. doi: 10.1037/a0035550

Lynch, J., Mowrey, R., Nesbitt, G., & O'Neill, D. F. (2004). Risky business: Misperceived norms of sexual behavior among college students. *NASPA Journal, 42*(1), 21-35. doi: 10.2202/0027-6014.1412

Markland, D., Ryan, R. M., Tobin, V. J., & Rollnick, S. (2005). Motivational interviewing and self-determination theory. *Journal of social and clinical psychology, 24*(6), 811. doi: 10.1521/jscp.2005.24.6.811

Neal, D. J., & Carey, K. B. (2004). Developing discrepancy within self-regulation theory: Use of personalized normative feedback and personal strivings with heavy-drinking college students. *Addictive behaviors, 29*(2), 281-297. doi: 10.1016/j.addbeh.2003.08.004

Neighbors, C., Larimer, M. E., & Lewis, M. A. (2004). Targeting misperceptions of descriptive drinking norms: efficacy of a computer-delivered personalized normative feedback intervention. *Journal of consulting and clinical psychology, 72*(3), 434. doi: 10.1037/0022-006x.72.3.434

Neighbors, C., Lewis, M. A., Atkins, D. C., Jensen, M. M., Walter, T., Fossos, N., . . . Larimer, M. E. (2010). Efficacy of web-based personalized normative feedback: a two-year randomized controlled trial. *Journal of consulting and clinical psychology, 78*(6), 898. doi: 10.1037/a0020766

Neighbors, C., Lewis, M. A., LaBrie, J., DiBello, A., Young, C., Rinker, D., . . . Hamor, E. (2016). A Multisite Randomized Trial of Normative Feedback for Heavy Drinking: Social Comparison Versus Social Comparison Plus Correction of Normative Misperceptions. *Journal of consulting and clinical psychology*. doi: 10.1037/ccp0000067

Neighbors, C., Rodriguez, L. M., Rinker, D. V., Gonzales, R. G., Agana, M., Tackett, J. L., & Foster, D. W. (2015). Efficacy of personalized normative feedback as a brief intervention for college student gambling: A randomized controlled trial. *Journal of consulting and clinical psychology, 83*(3), 500. doi: 10.1037/a0039125

Pallonen, U. E., Velicer, W. F., Prochaska, J. O., Rossi, J. S., Bellis, J. M., Tsoh, J. Y., . . . Prokhorov, A. V. (1998). Computer-based smoking cessation interventions in adolescents: description, feasibility, and six-month follow-up findings. *Substance use & misuse, 33*(4), 935-965. doi: 10.3109/10826089809056250

Patrick, M. E., Lee, C. M., & Neighbors, C. (2014). Web-based intervention to change perceived norms of college student alcohol use and sexual behavior on Spring Break. *Addictive behaviors, 39*(3), 600-606. doi: 10.1016/j.addbeh.2013.11.014

Patrick, M. E., O'Malley, P. M., Johnston, L. D., Terry-McElrath, Y. M., & Schulenberg, J. E. (2012). HIV/AIDS risk behaviors and substance use by young adults in the United States. *Prevention Science, 13*(5), 532-538. doi: 10.1007/s11121-012-0279-0

Reece, M., Herbenick, D., Schick, V., Sanders, S. A., Dodge, B., & Fortenberry, J. D. (2010). Condom use rates in a national probability sample of males and females ages 14 to 94 in the United States. *The journal of sexual medicine, 7*(s5), 266-276. doi: 10.1111/j.1743-6109.2010.02017.x

Reid, A. E., & Aiken, L. S. (2013). Correcting injunctive norm misperceptions motivates behavior change: A randomized controlled sun protection intervention. *Health Psychology, 32*(5), 551. doi: 10.1037/a0028140

Roncone, J. E. (2005). *Normative Beliefs Among Adolescent Non-Smokers Intending and Not Intending to Initiate Tobacco Use.* Retreived from: https://du1ux2871uqvu.cloudfront.net/sites/default/files/file/RonconeJohn.pdf.

Scholly, K., Katz, A. R., Gascoigne, J., & Holck, P. S. (2005). Using social norms theory to explain perceptions and sexual health behaviors of undergraduate college students: An exploratory study. *Journal of American College Health, 53*(4), 159-166. doi: 10.3200/jach.53.4.159-166

Scott-Sheldon, L. A., Carey, M. P., & Carey, K. B. (2010). Alcohol and risky sexual behavior among heavy drinking college students. *AIDS and Behavior, 14*(4), 845-853. doi: 10.1007/s10461-008-9426-9

Seal, D., & Agostinelli, G. (1996). College students' perceptions of the prevalence of risky sexual behaviour. *AIDS care, 8*(4), 453-466. doi: 10.1080/09540129650125641

Sobell, L. C., Brown, J., Leo, G. I., & Sobell, M. B. (1996). The reliability of the Alcohol Timeline Followback when administered by telephone and by computer. *Drug and Alcohol Dependence, 42*(1), 49-54. doi: 10.1016/0376-8716(96)01263-x

Starosta, A. J., Cranston, E., & Earleywine, M. (2015). Safer sex in a digital world: A web-based motivational enhancement intervention to increase condom use among college women. *Journal of American College Health*(just-accepted), 00-00.

Stein, M. D., Hagerty, C. E., Herman, D. S., Phipps, M. G., & Anderson, B. J. (2011). A brief marijuana intervention for non-treatment-seeking young adult women. *Journal of Substance Abuse Treatment, 40*(2), 189-198. doi: 10.1016/j.jsat.2010.11.001

Terlecki, M. A., Buckner, J. D., Larimer, M. E., & Copeland, A. L. (2011). The role of social anxiety in a brief alcohol intervention for heavy-drinking college students. *Journal of Cognitive Psychotherapy, 25*(1), 7-21. doi: 10.1891/0889-8391.25.1.7

Terlecki, M. A., Buckner, J. D., Larimer, M. E., & Copeland, A. L. (2012). Brief motivational intervention for college drinking: the synergistic impact of social anxiety and perceived drinking norms. *Psychology of addictive behaviors, 26*(4), 917. doi: 10.1037/a0027982

Wantland, D. J., Portillo, C. J., Holzemer, W. L., Slaughter, R., & McGhee, E. M. (2004). The effectiveness of Web-based vs. non-Web-based interventions: a meta-analysis of behavioral change outcomes. *Journal of medical Internet research, 6*(4), e40. doi: 10.2196/jmir.6.4.e40

Weinhardt, L. S., Carey, M. P., Maisto, S. A., Carey, K. B., Cohen, M. M., & Wickramasinghe, S. M. (1998). Reliability of the timeline follow-back sexual behavior interview. *Annals of Behavioral Medicine, 20*(1), 25-30. doi: 10.1007/bf02893805

APPENDIX

IRB APPROVAL FORM

ACTION ON PROTOCOL APPROVAL REQUEST

Institutional Review Board
Dr. Dennis Landin, Chair
130 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8692
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irb@lsu.edu | lsu.edu/irb

TO: Julia Buckner
Psychology

FROM: Dennis Landin
Chair, Institutional Review Board

DATE: October 31, 2016

RE: **IRB#** 3767

TITLE: Personalized Normative Feedback For College Student Condom Use

New Protocol/Modification/Continuation: New Protocol

Review type: Full __X__ Expedited ____ **Review date:** 9/22/2016

Risk Factor: Minimal _____ Uncertain __X____ Greater Than Minimal_____

Approved ____X____ **Disapproved** _____

Approval Date: 10/14/2016 **Approval Expiration Date:** 10/13/2017

Re-review frequency: (annual unless otherwise stated)

Number of subjects approved: 254

LSU Proposal Number (if applicable):

Protocol Matches Scope of Work in Grant proposal: (if applicable)_____

By: Dennis Landin, Chairman _____

PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING –
Continuing approval is CONDITIONAL on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.
8. SPECIAL NOTE:

**All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at http://www.lsu.edu/irb*

VITA

Sonia Shah received a Bachelor of Arts Degree in Psychology from Texas Tech University in 2010 and a Master of Arts in Clinical Psychology from Eastern Illinois University in 2012. Her doctoral work in clinical psychology at Louisiana State University has been under the mentorship of Dr. Julia Buckner. Ms. Shah completed a predoctoral clinical internship at the Charlie Norwood VA and Medical College of Georgia in Augusta, Georgia. She is currently employed at a private practice in Baton Rouge, Louisiana, under the supervision of Dr. Brandon Romano, Psy.D. Her clinical interests include the treatment of trauma, anxiety disorders, and substance use disorders.