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BRIEF REPORT

Pilot Test of an Emotional Education Intervention Component for Sexual Risk Reduction

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Objective: Emotions are key predictors of sexual risk behavior but have been largely ignored in theory-based intervention development. The present study aims to evaluate whether the addition of an emotional education intervention component to a traditional social-cognitive safer sex intervention increases intervention efficacy, compared with both a social-cognitive only intervention and a no intervention control condition. **Methods:** Young adults were randomized in small groups to receive the social-cognitive-emotional (SCE) intervention, the social-cognitive (SC) intervention, or standard of care. **Results:** Analyses of data from 176 participants indicated that intervention arms reported similar increased condom use compared with the no intervention control arm at 3 months' postintervention ($\beta = .06, p = .41, d = 0.08$). However, at 6 months' postintervention, individuals in the SCE intervention arm reported increased condom use compared with both the SC intervention ($\beta = .27, p = .04, d = 0.38$) and control arms ($\beta = .37, p < .01; d = 0.56$), demonstrating preliminary evidence that the addition of an emotional education component may facilitate sustained behavior change. **Conclusions:** An emotional education intervention module has the potential to facilitate sustained behavior change at delayed follow-up. Additional research is necessary to replicate findings in a larger sample and to determine the mediators of emotional education intervention efficacy.

Keywords: emotion, intervention, sexual risk reduction, HIV prevention, emotional education

Condom use is inconsistent among young adults (e.g., Kiene, Barta, Tennen, & Armeli, 2009), leading to unplanned pregnancy, human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), and other sexually transmitted infections (Centers for Disease Control and Prevention, 2010, 2011). Current interventions for sexual risk reduction are largely informed by models that address social—cognitive factors (Noar, 2008), which offer a useful way to conceptualize and change health behaviors (Glanz & Bishop, 2010) and provide a theoretical framework for evaluating how interventions work—or why they do not work (Rothman, 2004).

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These models assume that emotions "work through" and are captured in the measurement of other constructs (e.g., Fishbein & Ajzen, 1975), which may make it difficult to ascertain what emotions to address to facilitate safer behavior. Indeed, emotions are rarely explicitly addressed in SC interventions. Even more comprehensive models that address motivational factors, such as the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) and the Information-Motivation-Behavioral Skills (IMB) Model (Fisher, Fisher, & Harman, 2003), operationalize measurement of these factors as attitudes and social norms rather than emotion. This may have consequences, because emotion is a critical element in decision making (e.g., Loewenstein & Lerner, 2003), risk assessment (Lerner & Keltner, 1999; Patrick, Blair, & Maggs, 2008), information processing, (e.g., Clore, Gasper, & Garvin, 2002), and behavior counter to the actor's best interest (Loewenstein, 1996). Emotion may, at times, be more predictive of behavior than SC influences (Lawton, Conner, & McEachan, 2009; Norton, Bogart, Cecil, & Pinkerton, 2005), and its influence can endure long after the emotional experience itself has ceased (Andrande & Ariely, 2009). Emotion is a critical component of sexual behaviors specifically (e.g., Buck, Anderson, Chaudhuri, & Ray, 2004; Philpott, Knerr, & Maher, 2006; Sanchez, Caballero, Carrera, Blanco, & Pizarro, 2001), particularly among youth (e.g., Ethier et al., 2006; Mutanski, 2007).

One way to intervene on emotions is through *emotional educa*tion (Buck, 1990). Although individuals have generalized access to their subjective emotions, they may be unable to identify the cause of the emotion or even the emotion itself. Complicating matters, individuals are relatively poor at anticipating their emotions (e.g., Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998), which can lead them to underestimate effects of emotion on behavior, particularly in situations in which emotions are complex and intense (Loewenstein, 1996). Emotional education is the process by which individuals learn to identify and label the emotions they experience. When an individual is able to identify experienced emotions confidently and reliably, and can deal with and express them effectively in an adaptive manner, this is considered emotional competence (e.g., Buck, 1990; Buck & Powers, in press). Emotional education may be one way to help individuals to accurately anticipate emotions and develop advance strategies to deal with them in a way that facilitates safer sexual behavior. Note that emotional education differs from largely inefficacious fear appeals, which attempt to induce fear of contracting HIV (Earl & Albarracín, 2007). In contrast, emotional education facilitates the recognition and anticipation of a complex range of emotions that individuals report feeling in sexual situations.

Emotional education occurs naturally, but has also been proposed as a means of changing behavior (e.g., Buck, 1990; Shaughnessy & Shakesby, 1992), although no studies published to date have used emotional education interventions. In advertising, however, emotional education approaches are common and effective in facilitating sustained behavior change (e.g., Buck & Davis, 2010; Chaudhuri, 2006). For example, "branding" involves educating individuals to associate affectively laden images with a brand in order to increase certain emotions associated with that brand, leading to purchase behavior (e.g., Greifender, Bless, & Kuschmann, 2007).

We examined whether adding an emotional education module to a social-cognitive intervention (informed by the IMB model) increases its efficacy. Our hypotheses are as follows: (a) the emotional education module paired with the social-cognitive intervention will increase condom use compared with the social-cognitive intervention or the control condition; and (b) the social-cognitive intervention will increase condom use compared with the control condition.

Method

Participants

Two hundred traditional college students were recruited from two university participant pools; two declined to participate during the consent process. Because intervention content would differ for abstinent and sexually active individuals, and in order to maximize the potential for sex to be reported within the follow-up period, only those who had ever had sex were invited to participate. To minimize attrition, we used reminder e-mails and telephone calls. Participants were compensated for follow-ups with gift certificates. Fully 176 were retained for first follow-up, and 160 participants were retained for second follow-up (10% attrition). Attrition was not selective based on demographics, sexual activity at baseline, or study condition. Those who did not elect to participate in follow-ups were either unreachable or gave no reason for their decision.

Procedure

The study involved a baseline assessment, a 120-min intervention, and two online follow-up measures, 3 and 6 months' postintervention. The intervention was delivered to mixed-gender groups of 10 to 15 participants. Each group of subjects was randomly assigned (using a randomization program) to one of three conditions: social-cognitive plus emotion (SCE; n = 68) intervention, Social-Cognitive (SC) intervention (n = 67), or standard of care control condition (no intervention beyond standard material presented by the university; n = 64). Analyses were undertaken to evaluate the equivalence of individuals in each condition. The first author, who was a fifth-year social psychology doctoral student with extensive training in health behavior theory and intervention development, served as intervention facilitator for all groups, and adhered strictly to a standard written intervention protocol for each condition. There was no external monitoring of fidelity, but given the nature of the intervention and the use of tools that would not vary by groups, we are confident that drift, if it did occur, would have been minimal. Identical measures were completed at baseline, 3 months' postintervention, and 6 months' postintervention. Participants were asked whether they had had sex in the past month (yes/no) and what percentage of the time condoms were used during sex (vaginal and anal) in the past month.

Intervention Content

The emotion intervention module was designed to help individuals to identify and anticipate specific emotions (emotional education), and to facilitate the enactment of strategies to respond to these emotions in a health promoting manner (emotional competence). The intervention utilized videos to facilitate emotional education and competence, because individuals often seek out videos for emotional education in everyday life (e.g., Buck, 1988; Boyanowsky, Newtson, & Walster, 1972; Buck & Powers, in press). Relevant emotions were identified a priori (Buck et al., 2004), and videos were designed to highlight ways that individuals might be able to experience *love* and *caring* for a partner by using condoms, and to associate condoms with confidence and security in a sexual situation. Furthermore, videos were designed to facilitate anticipation of embarrassment or guilt associated with not using a condom. Finally, the videos demonstrated ways that condom use could lead to eroticism (e.g., putting a condom on with one's mouth). The videos showcased attractive and "cool" college students discussing sexual situations with friends or talking with a partner immediately prior to engaging in sex. These situations were designed to evoke specific these emotions in the viewers. Facilitator-led discussion followed—a common technique for reinforcing intervention messages (Fisher, Fisher, Bryan, & Misovich, 2002; Fisher, Fisher, Misovich, Kimble, & Malloy, 1996). Discussion highlighted the need to translate anticipation of these

¹ Although randomization occurred at the group level, analyses occurred at the individual level. Condom use did not differ by group at baseline, and was included in analyses as a covariate. In addition, attrition did not differ by group. The interaction between group session and study condition was included in an original set of analyses, but there were no significant effects, providing further support for individual-level analyses. Note that individuals within each group were generally not known to one another.

emotions into motivation to engage in and strategies to support safer sex. For example, anticipation of caring for a partner associated with condom use can motivate an individual to want to use one. In addition, anticipation of guilt associated with condom nonuse can be translated into advance planning that could result in condom use, such as bringing condoms on a date.

The social-cognitive intervention modules that comprised a critical part of the SCE intervention were adapted and updated from an IMB Model-based intervention for college students that was previously demonstrated to be effective (Fisher et al., 1996). The intervention was substantially shortened for the current purpose (from six 120-min sessions to a single 120-min session). Targeting weaknesses in sexual risk-related information, a PowerPoint slide show was used to deliver facts and correct erroneous heuristic decision-making rules. This slide show was created based on the transparencies from the original intervention. Risk-related motivation (attitudes and social norms toward preventive behavior, as well as perceptions of personal vulnerability to HIV and sexually transmitted infections [STI]), were targeted through a video depicting individuals who had contracted HIV through unsafe heterosexual contact. The script from the original video was updated to reflect current popular terminology, and the video was refilmed. Behavioral skills for condom use its negotiation were also targeted via a video, which depicted correct use, as well as a PowerPoint slide show and discussion concerning negotiation of condom use with different kinds of sexual partners. Facilitator-led discussions reinforcing content followed each module.

Intervention Content by Condition

The SC condition comprised only the social-cognitive intervention modules. The SCE condition comprised both the social-cognitive and emotion modules. To ensure that the conditions were of similar length, some peripheral content was trimmed from the social-cognitive modules in SCE condition; specifically, the informational slide show was shortened without loss of pertinent content, as was discussion of various heuristic decision-making rules; the motivational video was shortened slightly, as were discussions of attitudes and social norms for condom use; and the behavioral skills slide show was shortened as well, as were discussions about skills for facilitating condom use in various situations. The control condition received no intervention and only completed the baseline measures.

Analysis Strategy

The main planned comparison of interest examined whether the SCE intervention outperformed the SC intervention. A planned comparison between the SCE model intervention and the control was undertaken to further confirm the efficacy of the SCE intervention. Finally, the SC intervention was compared with the control, as a manipulation test to confirm SC intervention efficacy. All analyses were performed in SPSS 15. Evaluation of group differences at each follow-up interval was conducted, with an ordinary least squares (OLS) regression approach to determine potential effects specific to a given follow-up (3 and 6 months' postintervention).² Baseline condom use and gender were included as covariates in all analyses.

Results

Participant Characteristics

Of the 176 traditional college student participants included in analyses, most were White (81%) or Black (10%), and 52% were women. At baseline, 66% reported sex in the past month, and mean percentage of condom use was 32.50% (SD=40.65). There were no significant differences in demographics, sex in the past month, or percentage of condom use at baseline by study arm (see Figure 1).

Main Outcomes

At 3 months, mean condom use was 65% in the SCE arm (SD=44), 60% in the SC arm (SD=47), and 35% in the control condition (SD=43). At 6 months, mean condom use was 67% in the SCE arm (SD=42), 52% in the SC arm (SD=47), and 35% in the control condition (SD=41). The SCE arm did not differ from the SC arm at 3 months ($\beta=.06$, p=.41, d=0.08) but there was a significant difference at 6-month follow-up ($\beta=.27$, p=.04, d=0.38). The SCE arm reported higher percentage of condom use at both 3 ($\beta=.33$, p=.02; d=0.49) and 6 months ($\beta=.37$, p<.01; d=0.56). The SC intervention in this study did not appear to increase condom use at 3 ($\beta=.21$, p=.11, d=0.27) or 6 months ($\beta=.19$, p=.12, d=0.27).

Discussion

This study provides preliminary evidence to suggest that incorporating an emotional education component into a social-cognitive intervention may help to facilitate sexual risk reduction. The SCE arm reported greater condom use at both follow-ups compared with the control arm. In addition, the SCE intervention sustained condom use at 6 months' postintervention compared with the SC intervention, which is important given that sexual risk reduction interventions have difficulty sustaining behavior change over time (e.g., Copenhaver, Johnson, Lee, Harman, & Carey, 2006; Mullen, Ramirez, Strouse, Hedges, & Sogolow, 2002). Effect sizes were medium, which is unusual for brief interventions, with few exceptions (e.g., Dilley, Woods, & Sabatino, 2002; Jemmott, Jemmott, & Fong, 1992; Jemmott, Jemmott, Fong, & McCaffree, 1999; Sanderson, 1999). These findings are not surprising in light of research demonstrating the importance of emotion in decision-making (e.g., Loewenstein & Lerner, 2003) and sexual behavior (e.g., Buck et al., 2004; Mutanski, 2007; Sanchez et al., 2001).

This is the first study to test the possibility that emotional education interventions may be efficacious in changing health behaviors. However, one major limitation of this study concerns the limited significance of the findings, which could be due to small sample size and lack of power. This study was a pilot test of

 $^{^2}$ The distribution condom use yielded skewness (.16, SE=.14) and kurtosis (-1.81, SE=.28) statistics that did not grossly violate the assumptions of regression on a normally distributed outcome. However, condom use had a tri-modal distribution, characterized by a large number of "0" and "100" values as well as many other values spread out fairly evenly between those two points. As such, we undertook ancillary ordinal logistic regression analyses; these results were consistent, and as such, only the OLS regression results are presented.

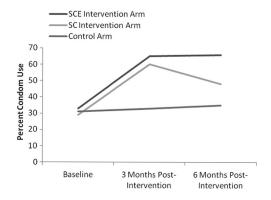


Figure 1. Condom use over time by intervention condition.

the intervention component, and future research is necessary to replicate this finding in larger samples to confirm efficacy. In addition, this study was not powered to test complex mediational relationships, and therefore although it is hypothesized that the intervention was efficacious because it increased emotional competence in sexual situations, more research is necessary to evaluate mechanisms of efficacy.

Of note is the tendency for the SC intervention to be less efficacious than expected. This limitation can be explained by the fact that the intervention from which it was adapted benefited from a longer and more intervention sessions, greater development resources, and a larger sample size (Fisher et al., 1996). Another limitation concerned the use of paper-and-pencil measures for baseline and online measures for follow-ups, which could result in variance because of measurement modality. A third limitation concerns the use of an undergraduate sample of unknown sexual orientation; nonheterosexual individuals may have found the content irrelevant, and future interventions should target content specifically to sexual orientation. Future research should also examine emotional education interventions in different populations, such as substance users.

If larger trials support emotional education interventions, future research may expand intervention content and address additional anticipatory emotions such as worry, regret, resentment, and trust. In addition, emotional education interventions may potentially be useful in application to other health behaviors, such as obesity-related behaviors and smoking, for which emotion likely plays a critical role yet is too rarely addressed in behavior change attempts.

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