

A Brief Decisional Balance Intervention Increases Motivation and Behavior Regarding Condom Use in High-risk Heterosexual College Men

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Abstract Male college students constitute one of a number of at-risk populations susceptible to receiving and transferring sexually transmitted infections. Interventions designed to increase condom use have produced mixed results, but increasing motivation to use condoms may decrease risky sexual behavior. The current study examined the decisional balance, a component of Motivational Interviewing (MI), as an intervention to promote condom use. A total of 41 college men at-risk for negative outcomes from both unsafe sex and drinking participated. They reported both infrequent condom use and heavy drinking. Immediately following a decisional balance on condom use, three separate measures of motivation to change condom use increased. Further, participants reported increases in actual condom use at a 30-day follow-up. Participants did not alter their drinking behavior or their motivation to decrease problematic alcohol use. The findings provide preliminary support for the efficacy of a brief decisional balance intervention to increase safer-sex motivation and behaviors, but similar designs with true control groups receiving assessment only and larger numbers of participants are required before they can be generalized to the greater population of college students. College health professionals might adopt similar brief motivational enhancement interventions with the decisional balance to promote safer sex among at-risk college students.

Keywords Motivational interviewing · Risky sex · Condom use · Decisional balance · Men · College students

Introduction

College students constitute one of a number of at-risk populations in the United States for sexually transmitted infections (STIs), as they are frequently sexually active with multiple partners. About 19 million new STI infections appear annually, and approximately half appear in those between the ages of 15–24 (CDC, 2004). The vast majority of HIV (more than 90%) infections arise from sexual transmission (CDC, 2000) and 60% of new HIV cases each year appear among persons under the age of 25 (UNAIDS, 1997). STIs, however, can be prevented through condom use, abstinence, and other safer-sex behaviors.

Despite the heightened risk for STIs among college students, condom use among this population remains inconsistent. Among currently sexually active students, approximately 40% reported not using a condom during their last sexual intercourse (CDC, 2006). Among college students with multiple sex partners, only 18% of men and 13% of women consistently used condoms (Corbin & Fromme, 2002). Some studies report that more than one-third of college students never use a condom during sex (Cline & Engel, 1991; Douglas et al., 1997). Further studies reveal that men with several casual partners are no more likely to use a condom than when they have only one partner (Catania et al., 1992; Catania, Gibson, Chitwood, & Coates, 1990; Dolcini et al., 1993). Additionally, heterosexual men report inconsistent condom use with different partners and minimal use with casual partners (Choi, Catania, & Dolcini, 1994; Exner, Gardos, Seal, & Ehrhardt, 1999; Laumann, Gagnon, Michael, & Michaels, 1994).

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Flood (2003) found that many young heterosexual men do not use condoms because they believe that condoms decrease pleasure. These men also believe that they are at less risk for STIs because they know and trust their partners.

Increasing condom use among college students is not easy. Many campuses provide extensive information on the benefits of using condoms in the prevention of STIs. These campaigns, however, rarely increase safer-sex behaviors (Schlaama, Abraham, Gillmore, & Kok, 2004). Videotapes promoting safer sex that are strictly informational have not increased condom use (Knight, 1995). Relational skills interventions have also failed (Turner et al., 1994; Turner, Korpita, Hohn, & Hill, 1993). In a social-cognitive intervention, O’Leary (2001) found that the intervention was significantly associated with consistent safer-sex practices, such as condom use or abstinence; however, at three-month follow-up, less than half of those who had gone through the intervention were consistently practicing safer-sex behaviors. In a review of safer-sex interventions, cognitive-behavioral interventions have been found to be the most effective, but these interventions assume that the participants are ready for change and want to change their behavior (Kelly, 1995).

Motivational enhancement interventions, however, may be successful with populations who do not believe they have a problem or need to change their behavior. Several studies have used motivational enhancement interventions to increase condom use. Eitel and Friend (1999) found that a motivational intervention with male and female college students had more success in increasing condom use than a cognitive intervention or no intervention at all. Research in HIV/AIDS prevention has found that an intervention based on the Information-Motivation Behavioral Skills model resulted in increased condom use as well as in greater motivation to change behaviors (Fisher, Fischer, Misovich, Kimble, & Malloy, 1996). Other interventions with a motivation component have also helped increase condom use in diverse samples other than college students (Carey et al., 1997, 2000, 2004; Morrison-Beedy, Carey, Kowalski, & Tu, 2005). In a review of safer-sex interventions, Schlaama et al. (2004) concluded that some form of motivational enhancement that helps participants examine their own personal reasons for initiating change appears essential for safer sex.

Motivating individuals to change problematic behavior stems from the transtheoretical model of behavior change (Prochaska & DiClemente, 1986), which outlines five stages of change: *pre-contemplation*, *contemplation*, *preparation*, *action*, and *maintenance*. Each successive stage represents increased motivation for continued behavior change. Those in the *action* stage are ready and willing to change their behavior. Since many college participants may not see their risky sexual behavior as problematic and,

therefore, will not be ready to initiate change, it is essential to help them reach the *action* stage during interventions.

One strategy for changing behavior is the use of a decisional balance, a component of many motivational interventions. The decisional balance, a procedure derived from Janis and Mann’s (1977) decision-making model, assumes that sound decision-making involves careful scanning of all relevant considerations that enter into a “decisional balance” sheet of comparative potential gains and losses. Individuals list their own personal reasons for and against changing their behavior. The decisional balance penetrates a participant’s state of ambivalence, clarifies competing motivational factors, and encourages the person to consider change. Motivational Interviewing (MI), a popular and successful brief cognitive-behavioral intervention, relies on a decisional balance to increase motivation (Miller & Rollnick, 2002; Prochaska & Redding, 1994). MI posits that constructing a decisional balance sheet is not a passive assessment of current motivation, but that it is also likely to influence motivation to change risky behavior (Miller & Rollnick, 2002).

While safer-sex interventions that utilize motivational strategies have shown promise (e.g., Carey et al., 2000, 2004; Fisher et al., 1996), many motivational interventions are lengthy, spanning several sessions and utilizing a variety of motivational strategies (e.g., the setting of behavioral goals, discussions of high-risk situations where condoms may not be available). It is important to examine the individual strategies in these interventions to determine which aspects may be the most efficacious. In this regard, the decisional balance (in conjunction with the style of MI) is used alone to determine the efficacy of this component of motivational enhancement interventions. Further, most general interventions to promote condom use have been tailored directly toward women or to heterosexuals in general (Exner et al., 1999). However, men are generally considered to have more influence than women when it comes to safer-sex practices, since males are the ones who predominantly wear the condoms (Seal & Ehrhardt, 2004). Finally, condom use is an act for men whereas it is an act of communication for women, making it much easier for men to take control and responsibility of the behavior. Motivational enhancement interventions, therefore, tailored toward men may be successful in promoting condom use among college students.

Considering the paucity of research supporting motivational enhancement interventions to promote condom use among sexually active heterosexual male college students, the present intervention used a specific strategy of MI, the decisional balance, to promote safer sex among this population. The decisional balance administered with the non-confrontational and non-judgmental style of MI was used alone to promote condom use. This technique is brief

and easy to administer and could prove helpful to health practitioners and educators. This study attempted to determine if the decisional balance can be used alone in conjunction with the MI therapeutic style to promote safer-sex practices during one brief meeting. The study employed a within-subjects design, focusing on alcohol use as well as safer-sex motivation and behavior, to determine if the decisional balance altered only the targeted safe-sex variables or other problematic behaviors as well. By assessing both alcohol and condom use behaviors but performing a decisional balance on only condom use, we could test if any alterations in the behaviors stemmed simply from assessment rather than the decisional balance. This brief intervention should increase motivation to use condoms, as well as actual condom use, thereby demonstrating support for the decisional balance as a means of motivating sexually active heterosexual male college students to use condoms.

Method

Participants

Flyers seeking research participants for a study on attitudes and behaviors towards drinking and sexual activity were distributed in academic buildings and residence halls at a large West Coast university in the United States of approximately 15,000 students. Initial respondents ($N = 315$) were screened using a phone interview. To obtain students at-risk for negative outcomes from both alcohol use and sex, only those who drank more than twice a week and who had intercourse (vaginal or anal) with two or more heterosexual partners in the previous 2 months were invited to participate. Drinking behaviors served as a control to determine if assessment and factors other than the decisional balance targeted at condom use contributed to behavior change. The local IRB at the University approved the study.

From the initial pool of participants, 90 met inclusion criteria and were invited to participate. A total of 43 men were randomly assigned to the safer-sex intervention, and 47 men were randomly assigned to receive an alcohol-targeted intervention. The results from the alcohol intervention have been reported elsewhere (see LaBrie, Pedersen, Earleywine, & Olsen, 2006). The 43 men received \$25 for participation in the initial session, as well as \$25 for returning follow-up materials. Two men had sex with men in the previous 2 months and were excluded from the analyses, leaving 41 heterosexual male participants. These 41 participants averaged 20.56 ($SD = 2.87$) years of age, and were primarily Caucasian (76%, $n = 31$). Seventeen percent of participants ($n = 7$) were Hispanic and 7% ($n = 3$) were Asian-American. Participants averaged 2.95

($SD = 0.89$) sexual partners in the past 3 months and reported using condoms approximately 52% of the time. In terms of partner types (defined by Weinhardt et al., 1998), participants used condoms 61% (38 out of 41 men) of the time with new or casual partners (defined as either first time sexual partners or partners known less than one month and with whom the participant had sex less than five times), and 31% (19 out of 41 men) of the time with regular partners (known longer than one month or with whom the participant had sex five or more times). Additionally, participants drank an average of 77.15 ($SD = 43.54$) drinks per month, averaging 12.39 ($SD = 3.81$) drinking days and 5.94 ($SD = 1.67$) drinks per occasion.

Design and procedure

Pre-intervention assessment

Participants completed a questionnaire of demographic information and items to assess intent and motivation to increase condom use or decrease drinking behavior. The questionnaire included items of drinking and sexual behavior intentions and three measures of motivation to change both risky behaviors. Participants completed a five item, 7-point Likert scale measure (“1 = Never” to “7 = Always”) assessing their intent to use condoms in the following month (Helweg-Larsen & Collins, 1994; $\alpha = .63$) and their intentions to consume alcohol in the following month (days intended, drinks per occasion intended, and maximum drinks at one time intended; $\alpha = .71$).

Participants also completed the 12-item Readiness to Change Questionnaire for alcohol use (RTCQ; Rollnick, Heather, Gold, & Hall, 1992). This questionnaire used a 7-point Likert scale from “1 = Not like me/Very false for me” to “7 = Totally like me/Very true for me.” While initial investigations divided this scale into three factors (*preparation, contemplation, or action*) Budd and Rollnick (1996) found that the questionnaire measured a global second-order continuous factor called “readiness to change.” This continuum of “readiness to change” served as a marker of motivation to decrease drinking. An adapted 11-item RTCQ for condom use assessed motivation to use a condom. Individual condom use items matched alcohol use items from the original RTCQ by replacing the word “drinking” with “unsafe sex” or “not using a condom.” This truncated scale displayed adequate reliability in this sample ($\alpha = .84$), as did the alcohol use RTCQ ($\alpha = .72$). Finally, participants also completed two Change Rulers (one assessing motivation for condom use and one assessing motivation for reduced drinking) that served as measures of motivation or readiness to change. The rulers, consisting of 10 ruler units along a continuum of change

from “0 = Not needing to change” to “10 = Maintaining a change,” are comparable in reliability to longer questionnaires (LaBrie, Quinlan, Earleywine, & Schiffman, 2005).

Following the questionnaire, two male, MI-trained, doctoral-level, clinical psychology graduate students individually administered the *Timeline Followback Interview: Sexual Behavior and Substance Use (TLFB-SS)*; Carey, Carey, & Maisto, 2001). The TLFB-SS is an assessment tool for both drinking and sexual behavior and assesses retrospective drinking (Sobell & Sobell, 2003; Sobell, Sobell, Klajner, Pavan, & Basian, 1986) and sexual behavior (Carey et al., 2001). The order of the assessments of sexual behavior and drinking were counterbalanced during the administration of the TLFB-SS. The TLFB-SS is a structured, calendar-aided interview that yields a detailed assessment of sex and drinking while providing information about the behaviors and their co-occurrence on each day. Each behavior (sex and alcohol) in the TLFB-SS was assessed separately over 3 months, with participants reporting on every sexual and drinking event over that period. Participants first indicate personal “marker days” for themselves (e.g., birthdays, trips to visit friends, parties) which aid in their recollection of drinking and sexual behavior. These marker days can be sex or alcohol related (e.g., girlfriend visits, parties) or not (e.g., trip home to visit parents) to help participants remember to the best of their ability each sexual and drinking event over the 3 months. For each drinking event, participants reported the time of day that they drank and the number of standard drinks they consumed. One standard drink was defined as a 12 oz beer, a 5 oz glass of wine, a 1.5 oz shot of liquor, or a mixed drink containing 1.5 oz of liquor. For each sexual event, participants reported on the type of sexual intercourse (anal or vaginal penetration), whether condoms were used, and their partner type (new/casual or regular).

Decisional balance motivational enhancement intervention

After completing the TLFB-SS, the facilitator administered a decisional balance worksheet to each participant. First, participants generated a list of their own personal reasons against using a condom every time they had sexual intercourse. Each reason was highlighted and supported by the interviewer. Participants were then asked to rate each reason against using condoms on a scale from “0—Not important at all to me) to “10—Extremely important to me”). Each reason was rated independently from the others. Participants were then asked to consider all of their reasons against using a condom during all sexual intercourse and rated the totality of these reasons on a similar 0–10 scale. This rating was not an average rating, but rather a personally weighted average of the importance of reasons taken together as a whole. For instance, a participant may

have rated “not having condoms easily accessible during the events” a 10 and “does not feel as good” a 9, but all other reasons between 0 and 4. Nonetheless, the first two were extremely important to him so he rated the whole set of reasons against using a condom a 10. Once participants completed the rating of their reasons against using condoms as a whole, they began generating a list of their own personal reasons for using condoms every time they had sexual intercourse. Again, each reason was highlighted and affirmed by the interviewer. After exhausting their self-generated reasons for condom use, participants received additional reasons from a previously developed decisional balance scale for condom use (Grimley, Riley, Bellis, & Prochaska, 1993) and were asked if these reasons were important to them. If so, they were included on the decisional balance worksheet. Participants were then asked to rate each reason for using condoms on a scale from “0—Not Important at All” to “10—Extremely Important”, rating each reason independently from the others. Finally, participants considered all of their reasons for using a condom in every sex event and rated the totality of these reasons on a similar 0–10 scale.

Prochaska and Redding (1994) found that increasing the value of the reasons for change might account for more of the variance in increased motivation to change than reducing the values of the reasons not to change. Thus, the facilitator engaged participants in a 5–10 min MI-styled conversation around the reasons for using a condom in every sexual event. The facilitator led the conversation using the non-judgmental and non-confrontational style of MI, and asked a series of open-ended questions to encourage participation in the discussion. The facilitator started by asking the participant to speak more about their highest rated reason for condom use and why it was important. The facilitator’s comments consisted of open-ended questions, simple reflections of the participant’s preceding statement, as well as double-sided reflections to point out discrepancies in their responses. An example includes: “Can you tell me why *protecting yourself from STDs* is important to you?” This was followed by a simple reflection of the participant’s response and a further probe if necessary (e.g., “Tell me more”). Consistent with the MI approach, the facilitator never confronted the participant about a behavior or a response but simply encouraged participants to explore reasons for change. If participants raised an inaccurate reason for using condoms due to a lack of knowledge (e.g., “To not cut myself”) or due to some resistance (e.g., “To devoid myself of pleasure”), MI strategies were used to inform participants of the appropriate usage of condoms, and were used to roll with the resistance presented. Specific MI strategies used to roll with resistance, as well as an in-depth description of this

therapeutic technique can be found in Miller and Rollnick (2002).

Post-intervention assessment

Immediately following the decisional balance intervention, participants completed a brief questionnaire that included the same measures of intended drinking and sexual behavior in the next 30 days, as well as the change rulers for condom use and drinking. In addition, participants completed a 30-day behavioral log following the intervention that measured sexual behavior and alcohol use on a day-to-day basis. The log included each day that they had sex, the partner type, and whether or not the participant used a condom. Participants also indicated which days they drank and how many standard drinks they consumed on each drinking day. At the end of the 30-day follow-up, they reported on the same measures of safer sex and drinking intention and motivation completed at pre- and post-intervention.

Results

A total of 41 exclusively heterosexual participants completed the pre-intervention assessment, decisional balance

intervention, and post-intervention assessment, while 37 (90%) completed the 30-day follow-up behavioral log with measures of intention and motivation. No significant differences were found between those who completed the diaries and those who did not on multiple variables at pre-intervention, including age, ethnicity, drinking behavior, number of partners, and condom use. Intent to treat analysis was not used in the present study due to the small sample size examined. Among those who completed, 17% ($n = 6$) had no sex at all during the follow-up period and were included in analyses of motivation and intention, but not in condom use change variables.

Motivation and intention measures

Three separate measures served as indicators of the participants' motivation and intention to increase condom use: the condom use ruler, the condom use RTCQ, and the measure assessing intention to use a condom. Table 1 summarizes the means and SDs for condom use and alcohol use motivation and intention variables. A one-way analysis of variance (ANOVA) for Time (pre-intervention, post-intervention, and 30-day follow-up) yielded a significant main effect for the condom use ruler, $F(2, 70) = 110.09, p < .001$, and the condom use RTCQ, $F(2, 72) = 51.90, p < .001$. Subsequent post hoc analyses revealed an increase of 2.73 ruler units on

Table 1 Means and SDs comparisons for motivation and behavioral variables

Variable	Pre-intervention (T1)		Post-intervention (T2)		30-Day Follow-Up (T3)		Effect sizes (Cohen's <i>d</i>)			
	<i>N</i> = 41		<i>N</i> = 41		<i>N</i> = 37					
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	T1 → T2	T1 → T3	T2 → T3	
<i>Motivation/intent</i>										
Safe sex change ruler	3.39	2.11	6.12 ^a	2.89	6.75 ^a	2.25	1.08	1.54	.24	
Risky sex RTCQ	3.26	1.05	4.54 ^a	1.39	4.62 ^a	1.32	1.04	1.14	.06	
Condom intent	5.19	1.58	5.29	1.54	5.49 ^b	1.41	.06	.20	.13	
Alcohol change ruler	2.85	2.24	3.22	2.01	3.08	2.07	.18	.11	.07	
Alcohol RTCQ	3.65	1.16	3.85	1.00	3.79	0.98	.18	.13	.06	
Drinking intent (drinks/week)	16.23	10.65	18.36	16.29	16.51	10.68	.32	.02	.13	
<i>Behavior</i>										
Condom percentage (all sex)	40.99	29.42			69.78 ^a	37.97		.85		
Condom percentage (new/casual sex partners)	61.42	39.87			80.62 ^c	32.57		.53		
Condom percentage (regular sex partners)	31.39	36.62			44.40	48.86		.53		
Alcohol use (drinks/month)	77.15	43.54			77.65	48.94		.01		
Drinking days	12.39	3.81			12.50	5.95		.02		
Drinks/occasion	5.94	1.67			5.87	2.03		.04		

Note: ^a Indicates a significant difference from pre-intervention, $p < .001$

^b Indicates a significant difference from pre-intervention, $p < .05$

^c Indicates a nearly significant difference from pre-intervention, $p < .10$

the safer-sex ruler from pre-intervention to post-intervention, $t(40) = 11.53$, $p < .001$, $d = 1.08$, and 3.36 ruler units from pre-intervention to 30-day follow-up, $t(35) = 15.12$, $p < .001$, $d = 1.54$. Participants also significantly increased their condom use RTCQ scores from baseline at post-intervention, $t(40) = 8.16$, $p < .001$, $d = 1.04$, and at 30-day follow-up, $t(36) = 8.52$, $p < .001$, $d = 1.14$. A one-way ANOVA revealed a nearly significant main effect for time for intentions to use a condom, $F(2, 72) = 3.29$, $p = .053$. With an F -value close to significance, we examined paired samples t -tests between means post-hoc and found a significant increase from pre-intervention to 30 day follow-up, $t(36) = 2.12$, $p < .05$, $d = .20$.

Motivation to change drinking behavior (decrease alcohol consumption) and drinking intentions assessed specificity of the decisional balance intervention with respect to changes in motivation. Neither the alcohol RTCQ, $F(2, 72) < 1$, the motivational ruler for alcohol use, $F(2, 72) < 1$, or the intended drinks per week, $F(2, 72) < 1$ significantly differed across time for the participants (all effect sizes d between .02 and .33).

Behavioral change measures

For behavioral change measures, there were only two time points (pre-intervention, 30-day follow-up) and therefore within subjects paired samples t -tests were used. These analyses revealed significant increases in condom use at follow-up. For the 37 participants who completed the study, condom usage increased from 41% ($SD = 29.42$) at pre-intervention to 70% ($SD = 37.97$) at follow-up, $t(35) = 4.23$, $p < .001$, $d = .85$. Although not statistically significant, condom use with new/casual partners increased from approximately 61% to 81% at follow-up, $t(18) = 1.86$, $p = .079$, $d = .53$, while condom use with regular partners increased from approximately 31% to 44% at follow-up, $t(15) = 1.58$, ns , $d = .53$.

Other condom use percentages were examined to determine if the intervention promoted increased condom use among participants who neglected to use condoms during all sex events. Sixty-eight percent of those who used condoms less than 50% of the time at pre-intervention ($n = 22$) increased condom use at follow-up, $t(14) = 2.94$, $p < .05$; 15 of 22 increased use, 71% of those who used condoms less than 75% of the time ($n = 34$) increased condom use at follow-up, $t(25) = 4.17$, $p < .001$; 24 of 34 increased use, and 68% of those who used condoms less than 90% of the time ($n = 37$) increased condom use at follow-up, $t(26) = 3.20$, $p < .01$; 25 of 37 increased use. Fifteen of the 37 participants (40%) who used condoms less than 90% of the time reported 100% usage at follow-up.

Data from the TLFBS-SS were used to compare drinking behavior one month before the intervention to drinking behavior at the comparable 30-day follow-up. Total drinks per month (quantity \times frequency), drinking days, and average drinks all did not significantly decrease at the 30-day follow-up (all effect sizes $.01 < d < .04$). Table 1 displays the means and SDs of drinking and overall condom use at pre-intervention and 30-day follow-up.

Decisional balance: reasons for and reasons against changing

Prochaska and Redding (1994) suggested that when the reasons for changing outweigh the reasons for not changing, the individual may be more willing to change. Thirty-six of the original 41 participants endorsed reasons for change more strongly than reasons against change on their decisional balance. Of the five participants whose reasons for change did not outweigh the reasons against change, two of them had reasons for change equal to the reasons against change. All five of these participants completed the follow-up portion of the study.

The 37 participants who completed the follow-up gave an average rating of 8.34 ($SD = 2.20$) out of 10 for the strength of their reasons for change and 4.76 ($SD = 1.90$) for reasons against change on the decisional balance. An independent t -test revealed a significance between reasons for and against change (mean difference 3.58, $t(37) = 6.70$, $p < .001$). The total reasons for change scores and the reasons for change minus the reasons against change scores for those who completed the study were significantly correlated with the three measures of motivation at post-intervention (the condom use ruler, the condom use RTCQ, and the intention to use a condom scale, all $ps < .05$). Additionally, correlations continued to fall in the moderate range between the decisional balance reasons for change and reasons for change minus the reasons against change and the measures of motivations at 30-day follow-up, although not all of these correlations were significant. Effect sizes for all correlations were medium to large (all $d > .50$). Table 2 displays the correlations between the total reasons for change and the effect sizes, as well as the reasons for change minus the reasons against change, and the three measures of motivation.

The decisional balance reasons for change total and the reasons for change minus the reasons against change scores for the 37 participants who completed the study also significantly correlated with 30-day follow-up condom use percent for all partners, as well as for new/casual partners (see Table 2).

Table 2 Correlations for reasons for change and reasons for change minus reasons against change with motivation and behavioral variables

Variable	Reasons for change	Effect size (Cohen's <i>d</i>)	Reasons for change minus reasons against change	Effect size (Cohen's <i>d</i>)
Condom intent (post-intervention)	.60**	1.5	.52**	1.22
Condom intent (30-day follow-up)	.49**	1.12	.45**	1.01
Condom ruler (post-intervention)	.50**	1.15	.41**	.90
Condom ruler (30-day follow-up)	.32	.67	.31	.65
Sex RTCQ (post-intervention)	.60**	1.50	.37*	.80
Sex RTCQ (30-day follow-up)	.46**	1.04	.24	.50
Follow-up condom use (all partners)	.32	.67	.41*	.90
<i>N</i>	36		36	
Follow-up condom use (new/casual partners)	.56*	1.35	.58*	1.42
<i>N</i>	20		20	
Follow-up condom use (regular partners)	.31	.065	.40	.87
<i>N</i>	18		18	

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

Discussion

The current study examined the decisional balance, a component of Motivational Interviewing (Miller & Rollnick, 2002), as a stand-alone, safer-sex intervention in a sample of high-risk college men. This intervention was accentuated by a detailed Timeline Followback assessment of alcohol and sexual behavior and the non-confrontational, non-judgmental style of MI. Three separate measures of motivation to use condoms increased either at post-intervention or at 30-day follow-up. Several measures of condom use across partner types showed increased condom use at 30-day follow-up. Effect sizes for changes in motivation to increase condom use were large and for actual behavior were medium to large, providing support for the intervention within one month of follow-up. Alcohol consumption served as an alternative health behavior to examine if the decisional balance for one behavior might generalize to others or if assessment alone caused changes in motivation and behavior. Neither motivation to drink less nor actual drinking behavior changed from pre-intervention through follow-up. Thus, these findings provide support for the efficacy of a safer sex-targeted decisional balance intervention in reducing risky sexual behavior. This type of decisional balance intervention also appears effective to reduce alcohol use among male college students (LaBrie et al., 2005)

Miller and Rollnick (2002) posited that increasing motivation is a key component to changing behavior. They further proposed that increasing motivation is a successful intervention in itself. Motivation to use condoms, as measured by both the risky sex RTCQ and the safer-sex ruler, increased both at post-intervention and at the 30-day fol-

low-up. Further, intent to use condoms also increased significantly at 30-day follow-up. In addition to increases in motivation, condom use increased by approximately 29% at follow-up. When divided among partner type, participants significantly increased condom use by approximately 19% up to 81% with new/casual partners and 13% up to 44% with regular partners. Additionally, 40% of the participants who used condoms less than 90% of the time prior to the intervention reported using a condom every time they had sex at follow-up. As previous research suggests (Carey et al., 2000, 2004; Schlaama et al., 2004), the revealed increases in condom use support the effectiveness of an intervention that weighs reasons for and against change in order to increase behavior change. Consistent with previous suggestions (Prochaska & Redding, 1994), increased reasons for change on the decisional balance led to increases in motivation after the brief intervention. This was evident by the mostly large effect size found for measures of motivation and behavior correlated with reasons for change and reasons for change subtracted by reasons against change. As Schlaama et al. (2004) suggest, interventions promoting motivation are necessary to help prevent the spread of STIs by helping participants examine their personal reasons for changing risky sexual behavior. Perhaps focusing on individuals' own reasons for change can apply to other interventions or safer-sex health campaigns. Interventions may focus on why change would be important to each individual, rather than focus on general statistics of STI rates among college students or on immediate behavioral change.

The use of the TLFB-SS to assess heavy drinking in addition to condom use served as a control to determine the effectiveness of the decisional balance intervention. The

absence of decreases in alcohol consumption supports the idea that these results did not stem from simple self-report biases for reporting any sort of improvement on any health behavior. Although the TLFB-SS itself may serve as an intervention to increase motivation (Weinhardt, Carey, & Carey, 2000) and mere assessment of drinking or sexual risk-taking can enhance risk perception and motivate intentions to reduce risky behavior (Kalichman, Rompa, & Coley, 1996), the absence of any changes in drinking behavior suggests that the decisional balance was the primary source of changes in safer sex. Detailed assessment of risky behavior may increase effectiveness, but the decisional balance appears to improve motivation to increase condom use. The combination of the TLFB and the decisional balance may together foster greater increases in motivation and behavior change for risky sex behavior. Nevertheless, without a true control group given only the TLFB alcohol and sex assessment and not the decisional balance, it is not possible to conclude that the increases in condom use at follow-up were attributed solely to the decisional balance alone. Further randomized control designs, specifically with sexual behavior assessment only (i.e., no assessment of drinking behavior), or studies that examine this intervention in comparison to several types of safer-sex interventions (e.g., psycho-educational interventions, confrontational designs) would provide additional support for this brief intervention.

The study was further limited by the exclusion of women, bisexual, and homosexual men. This initial focus on heterosexual men arose from the small number of men that responded who had sexual contact with men. Men who have sex with men are at increased risk for multiple STIs (CDC, 2002); thus, a comparable intervention with gay men seems worthy of study. We focused on men rather than women because men may need more motivation than women to initiate condom use during sex, as they are primarily the ones who wear the condom (Seal & Ehrhardt, 2004). Nevertheless, a comparable intervention with women and with men who have sex with men would make a welcome addition to this literature. Additionally, the sample was predominantly Caucasian and similar interventions that examine this method with different ethnicities are warranted. While we anticipate that students of different ethnicities would benefit similarly from this type of intervention, it would be interesting to examine the differences among reasons for and reasons against condom use among different cultures. Finally, the reliance on self-reported retrospective behavior suggests that participants may not have been able to fully recount all their sexual encounters or every drink consumed in the past 3 months. However, several studies cite the reliability and validity of the TLFB (Carey et al., 2001; review by Sobell & Sobell, 2003; Sobell et al., 1986) and it is anticipated that the

TLFB yields a richer and more accurate portrayal of sexual and drinking behavior than single item self-reports. Even still, reliance on self-reported data on both the initial and follow-up assessments is a limitation to the study.

While the 30-day follow-up supports the short-term effects of the brief intervention, a longer follow-up could provide more information about the duration of the decisional balance's efficacy. Given the absence of a control group, we cannot rule out the idea that the mere passage of time contributed to better sex practices. A three-month to six-month follow-up could provide a better picture of the long-term effects of the intervention. However, the increases in motivation from baseline to follow-up suggest that participants were willing and actively ready to change their risky sexual behavior. Perhaps this brief intervention provides a necessary first step towards behavioral change, and it may take individuals more than one month to process and implement their desired change.

Increased condom use after the intervention provides preliminary evidence for effectiveness of the safer sex-targeted decisional balance intervention at increasing motivation to change risky sexual behavior among college males. Further intervention studies that use the decisional balance with other populations, including women, men who have sex with men, and people who are not in college, are necessary to provide further support for this brief motivational intervention. Nonetheless, college health professionals may implement similar interventions to increase condom use among sexually active students and are urged to examine the utility of these interventions on their own campuses. The decisional balance is brief and easy to administer and could be done in the course of a visit to a student health center. Particularly useful would be focusing on individual student's positive reasons for initiating change. This would help motivate students to begin the change process to use condoms when having sexual intercourse in the future. Increasing motivation to use condoms may be at the heart of interventions to increase actual use, and building this motivation through brief and easy-to-administer means may potentially reduce the spread of STIs among high-risk college students.

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References

- Budd, R. J., & Rollnick, S. (1996). The structure of the readiness to change questionnaire: A test of Prochaska and DiClemente's transtheoretical model. *British Journal of Health Psychology*, *1*, 356–376.

- Carey, M. P., Braaten, L. S., Maisto, S. A., Gleason, J. R., Forsyth, A. D., Durant, L. E., et al. (2000). Using information, motivational enhancement, and skills training to reduce the risk of HIV infection for low-income urban women: A second randomized clinical trial. *Health Psychology, 19*, 3–11.
- Carey, M. P., Carey, K. B., & Maisto, S. A. (2001). Assessing sexual risk behavior with the timeline followback (TLFB) approach: Continued development and psychometric evaluation with psychiatric outpatients. *International Journal of STD and AIDS, 12*, 365–375.
- Carey, M. P., Carey, K. B., Maisto, S. A., Gordon, C. M., Schroder, K. E., & Venable, P. A. (2004). Reducing HIV-risk behavior among adults receiving outpatient psychiatric treatment: Results from a randomized controlled trial. *Journal of Consulting and Clinical Psychology, 72*, 252–268.
- Carey, M. P., Maisto, S. A., Kalichman, S. C., Forsyth, A. D., Wright, E. M., & Johnson, B. T. (1997). Enhancing motivation to reduce the risk of HIV infection for economically disadvantaged urban women. *Journal of Consulting and Clinical Psychology, 65*, 531–541.
- Catania, J. A., Coates, T. J., Stall, R., Turner, H., Peterson, J., Hearst, N., et al. (1992). Prevalence of AIDS-related risk factors, condom use in the United States. *Science, 258*, 1101–1106.
- Catania, J. A., Gibson, D. R., Chitwood, D. D., & Coates, T. J. (1990). Methodological problems in AIDS behavioral research: Influences of measurement error and participation bias in studies of sexual behavior. *Psychological Bulletin, 108*, 339–362.
- Centers for Disease Control and Prevention (CDC). (2000). *HIV/AIDS among America's youth*. Retrieved February 8, 2005, from <http://www.cdc.gov/hiv/pubs/facts/youth.htm>.
- Centers for Disease Control and Prevention (CDC). (2002). *HIV/AIDS surveillance report, 14*, 1–40.
- Centers for Disease Control and Prevention (CDC). (2004). *Trends in reportable sexually transmitted diseases in the United States, 2003: National data on chlamydia, gonorrhea, and syphilis*. Retrieved February 8, 2005, from <http://www.cdc.gov/std/stats/trends2003.htm>.
- Centers for Disease Control and Prevention (CDC). (2006). Youth risk behavior surveillance: United States-2005. *Morbidity and Mortality Weekly Report, 55*, 1–108.
- Choi, K. H., Catania, J. A., & Dolcini, M. M. (1994). Extramarital sex and HIV risk behavior among US adults: Results from the National AIDS Behavior Survey. *American Journal of Public Health, 84*, 2003–2007.
- Cline, R. W., & Engel, J. L. (1991). College students' perceptions of sources of information about AIDS. *Journal of American College Health, 40*, 55–63.
- Corbin, W. R., & Fromme, K. (2002). Alcohol use and serial monogamy as risks for sexually transmitted diseases in young adults. *Health Psychology, 21*, 229–236.
- Dolcini, M. M., Catania, J. A., Coates, T. J., Stall, R., Hudes, E. S., Gagnon, J. H., et al. (1993). Demographic characteristics of heterosexuals with multiple partners: The National AIDS Behavioral Surveys. *Family Planning Perspectives, 25*, 208–214.
- Douglas, K. A., Collins, J. L., Warren, C., Kann, L., Gold, R., Clayton, S., et al. (1997). Results from the 1995 National College Risk Behavior Survey. *Journal of American College Health, 46*, 55–66.
- Eitel, P., & Friend, R. (1999). Reducing denial and sexual risk behaviors in college students: A comparison of a cognitive and a motivational approach. *Annals of Behavioral Medicine, 21*, 12–19.
- Exner, T. M., Gardos, P. S., Seal, D. W., & Ehrhardt, A. A. (1999). HIV sexual risk reduction interventions with heterosexual men: The forgotten group. *AIDS and Behavior, 3*, 347–358.
- 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*, 114–123.
- Flood, M. (2003). Lust, trust, and latex: Why young heterosexual men do not use condoms. *Culture, Health, & Sexuality, 5*, 353–369.
- Grimley, D. M., Riley, G. E., Bellis, J. M., & Prochaska, J. O. (1993). Assessing the stages of change and decision-making for contraceptive use for the prevention of pregnancy, sexually transmitted diseases, and acquired immunodeficiency syndrome. *Health Education Quarterly, 20*, 455–470.
- Helweg-Larsen, M., & Collins, B. E. (1994). The UCLA multidimensional condom attitudes scale: Documenting the complex determinants of condom use in college students. *Health Psychology, 13*, 224–237.
- Janis, I. L., & Mann, L. (1977). *Decision making: A psychological analysis of conflict, choice, and commitment*. London: Cassel & Collier Macmillan.
- Kalichman, S. C., Rompa, D., & Coley, B. (1996). Experimental component of a behavioral HIV-AIDS prevention intervention for inner-city women. *Journal of Consulting and Clinical Psychology, 64*, 687–693.
- Kelly, J. A. (1995). *Changing HIV risk behavior: Practical strategies*. New York: Guilford Press.
- Knight, C. L. (1995). HIV prevention and heterosexual college students: The impact of video instruction on the "safer" sexual behaviors of sexually active men. *Dissertation Abstracts International: Section B: The Sciences & Engineering, 56*(1-B), 512.
- LaBrie, J. W., Pedersen, E. R., Earleywine, M., & Olsen, H. (2006). Reducing heavy drinking in college males with the decisional balance: Analyzing an element of motivational interviewing. *Addictive Behaviors, 31*, 254–263.
- LaBrie, J. W., Quinlan, T., Earleywine, M., & Schiffman, J. (2005). Performance of alcohol and safer-sex change rulers compared to the readiness to change questionnaire. *Psychology of Addictive Behavior, 19*, 112–115.
- Laumann, E. O., Gagnon, J. H., Michael, R. T., & Michaels, S. (1994). *The social organization of sexuality: Sexual practices in the United States*. Chicago: University of Chicago Press.
- Miller, W. R., & Rollnick, S. (2002). *Motivational interviewing: Preparing people for change* (2nd ed.). New York: Guilford Press.
- Morrison-Beedy, D., Carey, M. P., Kowalski, J., & Tu, X. (2005). Group-based HIV risk reduction intervention for adolescent girls: Evidence of feasibility and efficacy. *Research in Nursing & Health, 28*, 3–15.
- O'Leary, A. (2001). Social-cognitive theory mediators of behavior change in the national institute of mental health multisite HIV prevention trial. *Health Psychology, 20*, 369–376.
- Prochaska, J. O., & DiClemente, C. C. (1986). Towards a comprehensive model of change. In W. Miller & N. Heather (Eds.), *Treating addictive behaviors* (pp. 3–28). New York: Plenum Press.
- Prochaska, J. O., & Redding, C. A. (1994). The transtheoretical model of change and HIV prevention: A review. *Health Education Quarterly, 21*, 471–487.
- Rollnick, S., Heather, N., Gold, R., & Hall, W. (1992). Development of a short 'readiness to change' questionnaire for use in brief opportunistic intervention among excessive drinkers. *British Journal of Addiction, 87*, 743–754.
- Schaalma, H. P., Abraham, C., Gillmore, M. R., & Kok, G. (2004). Sex education as health promotion: What does it take? *Archives of Sexual Behavior, 33*, 259–269.
- Seal, D. W., & Ehrhardt, A. A. (2004). HIV-prevention-related sexual health promotion for heterosexual men in the United States:

- Pitfalls and recommendations. *Archives of Sexual Behavior*, 33, 211–222.
- Sobell, L. C., & Sobell, M. B. (2003). Alcohol consumption measures. In J. P. Allen & M. Columbus (Eds.), *Assessing alcohol problems: A guide for clinicians and researchers* (2nd ed., pp. 78–99). Rockville, MD: National Institute on Alcohol Abuse and Alcoholism.
- Sobell, M. B., Sobell, L. C., Klajner, F., Pavan, D., & Basian, E. (1986). The reliability of a timeline method for assessing normal drinker college students' recent drinking history: Utility for alcohol research. *Addictive Behaviors*, 11, 149–162.
- Turner, J. C., Garrison, C. Z., Korpita, E., Waller, J., Addy, C., Hill, W. R., et al. (1994). Promoting responsible sexual behavior through a college freshman seminar. *AIDS Education and Prevention*, 6, 266–277.
- Turner, J. C., Korpita, E., Mohn, L. A., & Hill, W. B. (1993). Reduction in sexual risk behaviors among college students following a comprehensive health education intervention. *Journal of American College Health*, 41, 187–193.
- UNAIDS. (1997). *Position paper: Integrating HIV/STD prevention in the school setting*. Geneva, Switzerland: Author.
- Weinhardt, L. S., Carey, K. B., & Carey, M. P. (2000). HIV risk sensitization following a detailed sexual interview: A preliminary investigation. *Journal of Behavioral Medicine*, 23, 393–398.
- Weinhardt, L. S., Carey, M. P., Maisto, S., Carey, K. B., Cohen, M. M., & Wickramasinghe, S. M. (1998). Reliability of the timeline follow-back sexual behavior interview. *Annals of Behavior Medicine*, 20, 25–30.