



Reducing heavy drinking in college males with the decisional balance: Analyzing an element of Motivational Interviewing

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Abstract

The decisional balance, a brief detailing of the advantages and disadvantages of behavior change, serves as a key component to interventions in Motivational Interviewing. The impact of this component alone is not well understood. Forty-seven men completed a Timeline Followback interview assessing alcohol consumption and unsafe sexual practices. They then completed a decisional balance, listing the Pros and Cons of decreasing their drinking, but not one for safer sex. One-month follow-up data showed that they had statistically significant and clinically meaningful increases in their motivation to alter drinking and decreases in the number of drinks that they intended to drink, the actual drinks consumed per month, the days per month that they drank, their maximum number of drinks consumed on one occasion, and their average number of drinks per occasion. They did not alter their sexual behavior or their motivation to increase safe sex behavior. These results suggest that the decisional balance plays an important role in Motivational Interviewing and could serve as a quick and efficient intervention by itself.

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At least forty percent of college students drink heavily (O'Malley & Johnston, 2002) and experience negative alcohol-related consequences (Wechsler & Nelson, 2001). Students who drink heavily report alcohol impairs their academic and personal lives, leading to disruption of their sleep and studies as well

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as property damage and verbal, physical, or sexual violence (Engs, Diebold, & Hanson, 1996; Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994; Wechsler, Lee, & Kuo, 2000; Wechsler, Moeykens, Davenport, Castillo, & Hansen, 1995).

Universities attempt to reduce the prevalence of drinking and alcohol-related problems by implementing alcohol-free campuses, dorms, or events; requiring student attendance of alcohol education classes; and providing counseling to students with potential substance abuse problems (Wechsler, Seibring, Liu, & Ahl, 2004). Recently, interventions aimed at targeting misperceptions of campus drinking norms, such as social norms marketing campaigns (Far & Miller, 2003; Perkins & Craig, 2002), as well as interventions that challenge alcohol expectancies (Darkes & Goldman, 1993, 1998, Dunn, Lau, & Cruz, 2000), have shown promise in decreasing problematic drinking. Similarly, interventions combining both the style and techniques of Motivational Interviewing (Miller & Rollnick, 2002) reduced drinking in identified problem drinkers (Baer, Kivlahan, Blume, McKnight, & Marlatt, 2001; Baer, Marlatt, Kivlahan, Fromme, & Larimer, 1992; Borsari & Carey, 2000; Marlatt, Baer, Kivlahan, Dimeff, Larimer, Quigley, et al., 1998).

Motivational Interviewing (MI) is a non-judgmental, client-centered style of counseling founded on the basic principles of expressing empathy, developing discrepancy, rolling with resistance, and supporting efficacy. Interventions designed to help motivate students to change problematic drinking behavior often follow these principles. Helping students develop discrepancies between their behavior and their goals, motivating them to reduce problematic drinking, and helping them prevent relapse into problematic drinking behavior are the essential strategies underlying MI-based interventions with college students.

Motivating individuals to change problematic behavior stems from the transtheoretical model of behavior change (Prochaska & DiClemente, 1986), which posits stages of change. These include *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. Since many participants in college interventions will not be ready to initiate change, it is essential to help them reach the *action* stage during interventions.

Motivational Interviewing is especially useful for motivating individuals who may not recognize a problem or may be ambivalent about changing their drinking behavior to make a decision to change (Miller & Rollnick, 2002). One MI strategy designed to build motivation for changing behavior is the decisional balance. 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. Empirical tests of the decisional balance procedure reveal two factors: "Pros" or benefits of changing the behavior and the "Cons" or costs of changing the behavior (Velicer, DiClemente, Prochaska, & Brandenburg, 1985).

The decisional balance is a tool used in MI to help clients explore and resolve their ambivalence about changing. 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 the possibility of change. MI posits that constructing a decisional balance sheet is not merely a passive assessment of current motivation, but that is also likely to influence motivation (Miller & Rollnick, 2002).

Often, however, the decisional balance is used as one tool among many in brief MI interventions. Neighbors, Larimer, and Lewis (2004) suggest that one of the methodological problems with existing

brief intervention research is that the interventions themselves involve multiple components, which prohibits the evaluation of unique contributors. Individual components of brief interventions have received little scrutiny despite the obvious practical and theoretical reasons for examining them (Zweben & Fleming, 1999).

The current study attempts to determine the effectiveness of a unique component, the decisional balance procedure, in motivating and initiating change in drinking behavior among high-risk male college students. While other motivational interventions have been successful in producing reductions in drinking (Baer et al., 2001; Baer et al., 1992; Borsari & Carey, 2000; Marlatt et al., 1998), the current study uses the decisional balance only (in concert with the non-confrontational style of open-ended questions of MI), to increase readiness to change problematic drinking behavior. The study is a within-persons design and it is hypothesized that the decisional balance intervention will significantly increase participants' motivation to change drinking behavior, while not affecting motivation to change another assessed health behavior—risky sex. By assessing two problem behaviors but performing a decisional balance on only one, we can test if any alterations in the behaviors stemmed simply from assessment rather than the decisional balance. If this brief and simple procedure decreases drinking, the decisional balance can be used widely on college campuses.

1. Methods

1.1. Participants

Male college students ($N=315$) responded to flyers seeking research participants for a study on attitudes and behaviors towards drinking and sexual activity. Initial respondents were screened using a phone interview. To obtain at-risk individuals, 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 two months were invited to participate. Sexual risk behaviors were not the focus of the intervention, but they served as a control to determine if assessment and factors other than the alcohol-targeted decisional balance contributed to behavior change.

Forty-seven heterosexual men, averaging 20.44 ($SD=2.12$) years of age participated. All agreed to and signed local IRB approved consent forms and received a nominal stipend for their participation. Thirty-one (66%) of these participants were Caucasian, 10 (21%) were Hispanic, four (9%) were Asian-American, and two (4%) were African-American. They drank on average 3.40 ($SD=1.06$) days per week and 14.49 ($SD=4.55$) days per month. They averaged 6.64 ($SD=3.25$) drinks per occasion and drank an average of 14.28 ($SD=5.25$) maximum drinks during one occasion. Additionally, participants averaged 3.08 ($SD=1.54$) sexual partners in the last three months and reported using condoms approximately 75% ($SD=23.75$) of the time; 65% ($SD=35.52$) of the time when alcohol was involved.

1.2. Design and procedure

1.2.1. Pre-intervention assessment

Participants completed a questionnaire of demographic information and items assessing sexual and alcohol-related behavior, intentions, sex-related alcohol expectancies, and motivation to change. A quantity/frequency index asked participants to indicate their weekly and monthly alcohol use, as well as

their maximum number of drinks consumed at one time. One drink was defined as a 12 oz. beer, a 5 oz. glass of wine, a 1.5 oz. shot of liquor, or an 8 oz. mixed drink containing one 1.5 oz. shot of liquor. Participants also reported their sexual behavior, including the number of sexual partners they had in the past three months and in their lifetime. They also were asked about their rate of condom use and how long they knew their partners.

In addition, participants reported their intentions to consume alcohol in the following month and filled out a measure assessing their intent to use condoms in the following month (Helweg-Larsen & Collins, 1994). Finally, participants completed two Change Rulers (one for reducing drinking and the other for using a condom) that served as measures of motivation or readiness to change. Each participant rated himself by circling the position (1 through 10) on the ruler that best described him. The ruler was modeled on similar rulers found on the Motivational Interviewing website, operated by Dr. William Miller, and has been shown to be comparable to a longer questionnaire (LaBrie, Quinlan, Earleywine, & Schiffman, 2005).

Following the questionnaire, two separate doctoral-level clinical psychology graduate students, trained in the styles and techniques of MI, administered to participants the *Time-Line Followback Interview: Sexual Behavior and Substance Use* (TLFB-SS; Carey, Carey, & Maisto, 2001, used with permission by Michael Carey). The TLFB-SS is an assessment tool for both drinking and sexual behavior and has been shown to be very accurate in assessing retrospective drinking (Sobell, Sobell, Klajner, Pavan, & Basian, 1986) and sexual behavior (Carey et al., 2001). During the administration of the TLFB-SS, the order of the assessments of sexual behavior and drinking were counterbalanced. Further, the two facilitators utilized the TLFB-SS manual to ensure homogeneity between administrations.

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 the event-level. Each behavior in the TLFB-SS (sex and alcohol) is assessed separately over three months, with participants reporting on every sexual and drinking event over that period. For each drinking event, participants reported the time of day that they drank and the number of standard drinks they consumed. For each sexual event, participants reported on the type of sex experienced (anal, vaginal, or both), whether condoms were used, and their partner type (New Partners — partners with whom the participant had sex with for the first time, Casual Partners — partners known for less than a month and with whom the participant had sex with less than five times, and Regular Partners — partners a participant knew longer than one month or with whom the participant had sex with five or more times).

1.2.2. Decisional balance motivational enhancement intervention

The decisional balance was administered to participants by the same doctoral level clinical psychologists who administered the TLFB-SS. Participants first generated a list of their own personal Pros and Cons for changing their drinking behavior to “drink less than now.” After they exhausted their self-generated Pros and Cons, they received additional Pros and Cons from a previous decisional balance for adolescent alcohol use (Migneault, Pallonen, & Velicer, 1997). They were asked to rate each Pro and Con on a scale from 0 (Not Important at All) to 10 (Extremely Important).

Since increasing the value of the Pros may account for more of the variance in increased motivation to change than reducing the values of the Cons (Prochaska & Redding, 1994), participants engaged in five to 10 minute MI-styled conversation around the reasons for change (Pros) that were most important to them. The conversation involved a series of open-ended questions starting with “Can you tell me why X

(the reason they marked as most important) is important to you?” Follow-up questions, performed in a non-judgmental and non-confrontational manner consistent with the principles of MI, encouraged participants to talk about their specific reason(s) and personal benefits for changing their behavior. The facilitator’s comments involved simple reflections of the participant’s preceding statement, as well as double-sided reflections to point out discrepancies in their responses. Consistent with MI approach, the facilitator never confronted the participant about a behavior or a response to one of the Pros or Cons and encouraged participants to continue exploring their reasons for change.

1.2.3. *Post-intervention assessment*

Immediately following the decisional balance intervention, participants completed an assessment questionnaire that measured their intention, as well as their motivation to change both alcohol and safe sex behaviors. Participants also completed a behavioral log measuring alcohol use and sexual behavior on a day-to-day basis over the 30-day period following the intervention. This behavioral log asked individuals to write down each day that they drank, how much they drank, each day that they had sex, and whether that sex was performed with or without a condom. At the end of the 30-day follow-up, they once again completed measures of intention and motivation. Risky sex behaviors and intentions (condom usage and condom intent) were included to determine if the decisional balance worked best with the targeted problem behavior (heavy drinking), rather than on both initially assessed problem behaviors.

2. Results

Forty-seven participants completed the pre-intervention assessment, decisional balance, and post-intervention assessment, while 30 completed the 30-day follow-up diary and measures of intention and motivation. No differences were found among those who completed the diaries and those who did not on multiple variables at pre-intervention, including demographics, drinking behavior, and condom usage.

2.1. *Motivation and intention measures*

Two separate measures served as indicators of the participants’ motivation and intention to change drinking behavior: the alcohol change ruler and a quantity \times frequency index of intended weekly drinking. A repeated measures ANOVA revealed a significant within-subjects effect across time (pre-intervention, post-intervention, and 30-day follow-up) for the alcohol change ruler ($F(2,62)=67.14$, $p<.001$) and the intended quantity \times frequency index ($F(2,62)=36.94$, $p<.001$). Subsequent post hoc analyses revealed an increase of 3.20 ruler units on the alcohol change ruler from pre-intervention to post-intervention and 3.75 ruler units from pre-intervention to 30-day follow-up ($p<.001$). Intended total drinks per week (quantity \times frequency) decreased by 10.07 drinks at post-intervention and by 14 drinks at 30-day follow-up ($p<.001$).

Motivation to increase safe sex and intentions to use a condom were assessed to determine if the decisional balance intervention influenced non-targeted behavior (risky sexual behavior). Neither the motivational ruler for condom usage (safe sex ruler) nor the intention to use a condom significantly differed across time for the participants (all $p>.10$). Table 1 summarizes the means and standard deviations across time for these alcohol and risky sex assessed variables.

Table 1
Means and standard deviations comparisons for motivation and behavioral variables

Variable	Pre-intervention	Post-intervention	30-Day follow-up
	<i>N</i> =47	<i>N</i> =47	<i>N</i> =30
	Mean (SD)	Mean (SD)	Mean (SD)
<i>Motivation/intent</i>			
Alcohol change ruler	2.30 (1.80)	5.64 (2.44) ^A	6.19 (2.36) ^A
Drinking intent (drinks/week)	21.78 (14.56)	11.71 (10.64) ^A	7.78 (5.70) ^A
Safe sex change ruler	4.70 (3.37)	4.52 (3.32)	4.59 (3.22)
Condom intent	6.00 (1.12)	5.77 (1.42)	5.84 (1.61)
<i>Behavior</i>			
Alcohol use (drinks/month)	103.70 (67.74)		33.09 (18.35) ^A
Drinking days	14.08 (4.02)		7.40 (2.74) ^A
Drinks/occasion	7.06 (2.86)		4.45(2.35) ^A
Maximum drinks	15.23 (5.91)		7.83 (4.39) ^A
Condom percentage (all sex)	74.70 (23.75)		79.37 (38.12)
Condom percentage (casual sex partners)	84.17 (32.31)		88.23 (28.11)
Condom percentage (new sex partners)	88.21 (25.03)		80.18 (29.97)
Condom percentage (sex events with alcohol)	65.46 (35.52)		49.22 (38.57)

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

2.2. Alcohol behavioral measures

While the TLFB-SS asks participants to record every drinking and sexual event over the previous three months, data from the measure was used to compare drinking behavior one month before the intervention to drinking behavior at the 30-day follow-up. Total drinks per month (quantity \times frequency), drinking days, average drinks, and maximum drinks were assessed for the month before the intervention on the TLFB-SS. Condom usage was assessed over the month before the intervention as well. Participants reported a decrease in quantity \times frequency (calculated by TLFB-SS drinking days \times average drinks in the previous month) by 52.57 drinks ($t(29)=8.23$, $p < .001$). Drinking days decreased by 6.10 drinks ($t(29)=8.55$, $p < .001$), average drinks by 1.79 drinks ($t(29)=5.26$, $p < .001$), and maximum drinks by 7.13 drinks ($t(29)=6.73$, $p < .001$). There was no significant change in condom usage for participants, both in all sexual events, sexual events with casual partners, and in all sexual events involving alcohol. Table 1 displays the means and standard deviations of drinking and condom usage at pre-intervention and 30 day follow-up.

2.2.1. Heavy drinking days

Heavy drinking days were assessed using the previous month TLFB to determine how many days a participant engaged in binge drinking activity (5 or more drinks in a row) during the month prior to the intervention. All participants significantly reduced their amount of heavy drinking days from baseline to follow-up (8.67 to 3.00, $t(30)=6.64$, $p < .001$). The TLFB was also used to assess very heavy drinking days (10 or more drinks in a row). All participants significantly reduced very heavy drinking days from 2.43 (SD=3.66) days at baseline to .79 (SD=1.47) days at follow-up ($t(28)=2.79$, $p < .05$).

Participants were put into two categories based on median splits of heavy and very heavy drinking days. For heavy drinking days, 18 participants had seven or fewer heavy drinking days, while 29 participants had more than seven heavy drinking days. Those who had more than seven heavy drinking days experienced a larger change in intended quantity \times frequency from pre-intervention to follow-up ($t(45)=2.08, p<.05$) and in actual drinks per month (quantity \times frequency) at follow-up ($t(28)=4.45, p<.001$). They dropped from drinking 132.23 (SD=71.35) drinks in the month prior to the intervention to 40.90 (SD=18.48) in the follow-up month, while those with fewer than seven heavy drinking days went from 57.74 (SD=20.20) drinks to 24.16 (SD=14.00) drinks at follow-up.

For very heavy drinking days, 23 participants had one or fewer very heavy drinking days, while 21 had more than one heavy drinking day. Those who had more than one very heavy drinking days experienced a larger change in quantity \times frequency at follow-up ($t(26)=4.85, p<.001$). They drank 144.12 (SD=80.78) drinks per month prior to the intervention and 42.62 (SD=19.28) drinks in the follow-up month, while those who had one or less very heavy drinking days went from 68.55 (SD=26.91) drinks to 27.54 (SD=15.83) drinks at follow-up. Although these results may stem from regression to the mean, they also suggest that the decisional balance can be particularly effective for students who drink very heavily.

2.3. Decisional balance: pros and cons

When the Pros outweigh the Cons, the individual may be more willing to change (Prochaska & Redding, 1994). The sample was divided into two groups: one group where the Pros outweighed the Cons ($n=36$) and the other where the Cons equaled or outweighed the Pros ($n=11$). There was a significant time (pre-intervention, post-intervention, and 30-day follow-up) \times group interaction effect for alcohol stage change ($F(2,60)=3.29, p<.05$), suggesting that participants whose Pros outweigh their Cons are more motivated to change behavior. However, this effect was not seen in intended drinking behavior or in actual drinking behavior at the 30-day follow-up. This result suggests that while motivation to change may be present when Pros outweigh Cons, increased Pros may not automatically lead to actual behavioral changes.

3. Discussion

The current study reveals the success of a brief decisional balance intervention focused on decreasing drinking in college males. In the absence of a decisional balance, identical assessments of unsafe sexual behaviors did not lead to safer sexual practices. These results suggest that the decreased drinking arose from the decisional balance rather than any reaction to the assessments. These students engaged in high risk drinking (drank at least two nights per week) and sexual activity (at least two heterosexual partners in the last two months) prior to the study. The alcohol-targeted intervention aided participants in increasing motivation to change problematic drinking behavior as well as in decreasing intended levels of alcohol consumption. This motivation and change in intentions led to reductions in overall drinks per month, drinking days per month, average drinks per occasion, and maximum drinks consumed at one time. Participants did not increase motivation or intent to use condoms, nor did they increase condom usage after the intervention. Additionally, participants reduced the amount of heavy and very heavy drinking days at follow-up.

These results indicate the efficacy of an alcohol-targeted decisional balance intervention in reducing problematic drinking behavior, while not affecting a non-targeted problematic behavior (risky sex).

Fromme and Corbin (2004) suggest that more research is needed to determine if motivationally based interventions actually increase participants' motivation and readiness to change, which is presumably a necessary precursor of new behavior (Miller & Rollnick, 2002). The current study is the first to our knowledge to examine readiness to change for a motivationally based intervention that focuses on the decisional balance. All the participants either increased their readiness to change ($n=40$) or stayed exactly the same ($n=7$). No participants decreased motivation to change after the intervention. Only two participants increased their readiness to change risky sex behavior, while 10 decreased their motivation to change. Thirty-five stayed the same on the safe sex readiness to change ruler. This result indicates that the intervention helped motivate participants to change the targeted drinking behavior, but not the non-targeted risky sexual behavior.

The current study uses the decisional balance as the primary focus of the intervention. Unlike other motivationally based interventions with multiple components (feedback, expectancy challenges, skills development), this study helps to isolate the factor responsible for motivation. While other aspects of MI (open-ended questions, non-confrontation, reflective listening) were present in addition to the decisional balance, this study displays the effectiveness of the decisional balance in motivating male college students to reduce problematic drinking behavior.

Several limitations deserve note. The sample is limited because women were excluded from the initial recruitment. Nevertheless, as the NIAAA (2002) has suggested, targeted interventions for men may not apply to women. Follow-up studies with women are necessary to determine efficacy of the decisional balance with female college students. In addition, the TLFB-SS assessment, as well as the 30-day diary may have served as an extension to the intervention. Mere assessment of drinking or sexual risk-taking can enhance risk perception and motivate intentions to reduce risky behavior (Kalichman, Rompa, & Coley, 1996). However, no changes in sexual motivation, intentions, or condom use were found, providing evidence that the TLFB-SS assessment alone was not sufficient to influence change, at least for sexual behavior. Further, the monitoring of behavior could have influenced changes in both drinking behavior and condom use, but condom usage did not increase, even though it was monitored after the intervention. While evidence exists here that the decisional balance itself led to increased motivation and reductions in drinking, future studies are needed to determine if the decisional balance alone can be effective without prior priming or subsequent monitoring. A between subjects design with a control group that completed the drinking and sexual behavior assessments but did not receive the decisional balance intervention would support the claim that the intervention itself contributed to motivation and behavior change.

Finally, focusing on drinking during the decisional balance may have revealed to the participants that, despite assessment and monitoring of two behaviors, the experimenters were seeking to change drinking behaviors. However, since self-reports of student drinking appear accurate (Babor, Stephens, & Marlatt, 1987), it does not seem likely that participants changed their intentions or motivation to appease the facilitator.

While research supports the effectiveness of motivational interventions with multiple components for college students (Baer et al., 2001; Baer et al., 1992; Borsari & Carey, 2000; Marlatt et al., 1998), this study suggests the use of the MI-based decisional balance in lieu of longer motivationally based interventions in situations where it is difficult to provide many students with a lengthy one-on-one

intervention. Although this study contains a small sample, the results are fairly large, especially because no reductions in sexual activity, intentions, or motivation were found over time. This inexpensive and brief intervention can apply to larger populations of students (including females, bisexuals, and homosexuals) in the effort to reduce drinking.

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