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Use of Treatment Strategies in a Moderated Drinking Program for Women

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Abstract

Little is known about the extent to which individuals participating in drinking reduction interventions use the drinking reduction strategies presented during treatment. In consideration of this issue, we advanced hypotheses about the impact of baseline drinking patterns on strategy use and the relationship of strategy use to drinking patterns over time. One hundred forty-four women who participated in a 10-week drinking reduction program were monitored over an 18-month posttreatment follow-up period. Results indicated that the frequency of baseline heavy drinking days and the frequency of baseline abstinent/light drinking days negatively predicted drinking reduction strategy use during treatment. Over follow-up, strategy use decreased; however, participants who received booster sessions had higher strategy use during the initial phase of follow-up. Although cross-lagged panel analysis revealed that strategy use during treatment predicted abstinent/light days at the 6-month follow-up assessment, this effect was moderated by baseline drinking patterns. These data indicated that the use of drinking reduction strategies is predictive of subsequent reduced drinking only in the early posttreatment period and only for baseline heavier drinkers. Future research is needed to further specify the interplay of strategy use and drinking outcomes and to develop interventions designed to encourage the continued use of strategies over extended periods of time.

Keywords

secondary prevention; drinking reduction strategies; moderated drinking; women; alcohol abuse

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Contributors:

Dr. Mendoza conducted the statistical analysis, conducted the literature review, and wrote the first draft of the paper. Dr. Walitzer and Dr. Connors designed and implemented the Women and Health Project and had input into the analyses and writing of the paper. All three authors contributed to the development of the manuscript and approve it in its final form.

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All authors declare that they have no conflicts of interest related to this manuscript.

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1. Introduction

Negative consequences associated with alcohol use exist on a continuum ranging from no consequences to severe consequences. Although most interventions focus on individuals with the most severe negative consequences, this population represents the minority of individuals experiencing alcohol use disorders. A significantly larger population is comprised of alcohol abusers who do not meet the criteria for severe physical dependence. This population represents a large number of individuals who might benefit from primary and secondary preventative interventions, including treatments focusing on moderating alcohol consumption. The research on secondary prevention interventions with alcohol abusers has indicated that individuals -- especially women -- without histories of severe physical dependence on alcohol consistently demonstrate successful outcomes (e.g., Hester, 1995; Rosenberg, 1993; Sanchez-Craig, Leigh, Spivak, & Lei, 1989). However, little is known about the extent to which the content of these treatment interventions relates to the outcomes observed. In one study, Connors et al. (1992) found that reductions in drinking among problem drinkers in a drinking reduction program were associated with the posttreatment utilization of drinking reduction techniques.

Connors and Walitzer (2001) reported a drinking moderation intervention for alcohol abusing women that examined the effects of two enhancements to treatment – life skills training and booster sessions. Women, without histories of severe physical dependence on alcohol, exhibited significant increases in abstinent/light drinking days, decreases in negative consequences, and increases in self-efficacy and other life functioning during follow-up. Baseline drinking moderated the effect of treatment enhancements on drinking outcome; women who were heavier drinkers at baseline reported greater improvement in abstinent/light drinking days when they received one or both treatment enhancements, relative to the women who were lighter drinkers at baseline. Walitzer and Connors (2007) observed these findings to be evident over 30 months posttreatment.

Using these data, we evaluated hypotheses regarding the relationships between strategy use, baseline and posttreatment drinking, and treatment enhancements. We first hypothesized that the frequency of baseline heavy drinking days would positively predict strategy use during treatment and that the frequency of baseline abstinent/light drinking days would negatively predict strategy use during treatment. Second, we predicted that participants receiving treatment enhancements - life skills training and booster sessions - would report increased strategy use, relative to participants who did not receive such enhancements. Finally, we predicted that baseline drinking would moderate the relationship between strategy use and drinking outcome, such that women who were relatively heavier drinkers at baseline would evidence a stronger relationship between strategy use and outcome compared to women who were relatively lighter drinkers at baseline.

2. Method

2.1. Participants

One hundred forty-four women enrolled in a drinking moderation intervention for women seeking to reduce their alcohol consumption (Connors & Walitzer, 2001). Women had to be at least 21 years of age and drink at least 15 drinks per week or report six or more drinks two days per week. A series of criteria were used to exclude women with more than a moderate history of alcohol problems (described in Connors & Walitzer, 2001). The study was approved by the Research Institute on Addictions Institutional Review Board.

The participants had an average age of 38.7 ($SD = 10$). The majority were White (90%) and 10% were African American. Most of the participants were employed full-time (59%) or

part-time (14%). Forty-three percent were married, 26% separated-divorced, 24% single, and 7% widowed. Their average monthly pretreatment drinking patterns for the 6 months before treatment were as follows: 10.1 ($SD = 7.6$) abstinent days; 6.1 ($SD = 6.2$) light days (1–3 Standard Drink Equivalents [SDEs]); 8.0 ($SD = 7.0$) moderate days (4–6 SDEs); and 5.7 ($SD = 6.1$) heavy days (>6 SDEs).

2.2. Procedures

Details regarding treatment can be found in Connors and Walitzer (2001). Thirteen hours of group time for all participants were geared toward moderating alcohol intake. Thirty-two cohorts were randomly assigned to receive (or not receive) seven hours of life skills training and to receive (or not receive) eight booster sessions (administered during the 6-month period following the end of the 10-week treatment period). Attendance averaged 7.44 group treatment sessions ($SD = 2.6$). Participants assigned to the booster condition averaged 4.99 booster contacts ($SD = 2.6$). Following treatment, women were assessed every three months for 18 months.

2.3. Measures

The Timeline Follow-Back Interview (TLFB; Sobell & Sobell, 1992) was used to derive percent days abstinent/light drinking per month (i.e., 0 to 3 SDEs/day; PDA/L) and percent days heavy drinking per month (i.e., days in which >6 SDEs were consumed; PDH). Data were collapsed into five waves: baseline (i.e., the 6 months prior to intake), during treatment; and 1–6 months, 7–12 months, and 13–18 months following treatment.

The Alcohol Dependence Scale (ADS; Skinner & Allen, 1982) was administered at baseline to assess severity of alcohol dependence.

The Strategy Use Questionnaire assessed the extent to which participants used the drinking moderation strategies presented during treatment. Examples assessed were setting drinking limits, counting drinks, and sipping instead of gulping. For each strategy, the respondent provided an extent of use rating on a 9-point Likert-type scale ranging from “1=not at all” to “9=a great extent.” Guided by principal component analysis, a single factor solution (i.e., strategy use variable) was chosen. Two items failed to load on this factor (calculating blood alcohol level and record keeping) and were not included in the final 11-item measure.

2.4. Analyses

To test the first hypothesis, the strategy use variable was regressed on baseline PDA/L and baseline PDH, controlling for life skills condition and ADS score (booster sessions were not included, as this treatment manipulation occurred in months 1–6 posttreatment). To address the second hypothesis, we used a restricted maximum likelihood approach with ProcMixed in SAS/STAT 9.2 (SAS Institute Inc., 2008). We examined strategy use in a 2 (skills: absent, present) X 2 (booster: absent, present) X 4 (time: during treatment, Months 1–6, 7–12, and 13–18 posttreatment) repeated-measures analysis of variance (ANOVA). Linear, quadratic, and cubic effects of time were examined as main effects. We then performed simple effects tests at each time point. For the third hypothesis we modeled a cross-lagged panel in LISREL 8.80 (Joreskog & Sorbom, 1993) to reveal relationships between drinking and strategy use over time. Using a median split on baseline drinking (i.e., at 18.4 PDA/L), we created two groups (i.e., relatively lighter drinkers and relatively heavier drinkers) and conducted a multiple group test to assess the presence of moderation.

3. Results

With respect to the prediction of strategy use during treatment by baseline drinking patterns, regression results indicated that PDH and PDA/L significantly predicted less strategy use ($b = -1.97$, $SE=.66$, $p<.01$; $b = -1.51$, $SE=.53$, $p<.01$, respectively), when controlling for the life skills treatment enhancement and ADS score.

Examining the effects of life skills, booster sessions, and time on strategy use during treatment, we found that the 2 X 2 X 4 (i.e., life skills X booster X time) repeated measures ANOVA demonstrated a significant main effect of time [$F(3, 357)=96.45$, $p<.001$] and a significant interaction between booster and time [$F(3,357)=3.25$, $p<.05$]. In order to further understand the main effect of time, we examined the linear, quadratic, and cubic components of time. The linear [$F(1,357)=251.07$, $p<.001$], quadratic [$F(1,357)=34.76$, $p<.001$], and cubic [$F(1,357)=4.03$, $p<.05$] components were all significant. We also conducted simple effects tests comparing women who received booster sessions with women who did not, at each time point. These tests demonstrated that at 6 months, participants who received booster sessions had higher strategy use [$t(125)=-2.25$, $p < .05$], suggesting that boosters played a role in strategy use (see Fig. 1). Booster sessions appeared to increase strategy use, but only early in follow-up.

For the sample as a whole, cross-lagged analysis via simultaneous path model indicated that previous strategy use and drinking patterns predicted future strategy use and drinking, respectively, $\chi^2(18, N=144) = 67.18$, $p<.00$; RMSEA = .13; CFI = .91. Two models for the relatively heavier and lighter drinkers were tested systematically for invariance. We found that the models varied between the groups with respect to one path: strategy use at posttreatment to PDA/L at six months, $\chi^2\Delta(1)=7.53$, $p<.01$. As shown in Figure 2, women who were relatively heavier drinkers at baseline evidenced a significant relationship between strategy use during treatment and PDA/L at 6 months ($p<.001$). For women who were relatively lighter drinkers at baseline, there were no significant relationships between strategy use and PDA/L at any time point.

4. Discussion

The most notable finding is that increased strategy use is associated with drinking outcomes only for relatively heavier baseline drinkers. Further, strategy use was important earlier following treatment as this association was seen only in the first 6 months posttreatment. It may be that over time, strategy use is normalized and less salient to the drinker, with explicit types of behaviors (e.g., drink substitution) becoming a less conscious effort.

Connors et al. (1992) found that strategy use predicted outcomes over 12 months of follow up; however, our study demonstrated significant relationships between strategy use and alcohol consumption only early in follow-up and only with relatively heavier drinkers. A notable difference between the two studies is that the Connors et al. sample appeared to have more severe drinking histories.

Strategy use contributing to moderate drinking is a complicated construct and we reasoned that there would be multiple variables impacting how strategy use manifests over time. We found that, although there was no interaction between life skills enhancement and time, there was a significant main effect of time indicating that strategy use decreases over time. The interaction between booster and time was significant, indicating that at 6 months, women who received booster sessions had significantly higher strategy usage. Strategy use, it seems, was enhanced over the period during which booster sessions were occurring. Nonetheless, the relationship between strategy use and other treatment-related variables and between drinking patterns and strategy use generally remains tentative.

We hypothesized that strategy use during treatment would be positively predicted by higher baseline PDH and negatively predicted by higher baseline PDA/L. We reasoned drinkers with more heavy days may need to use strategies to manage problematic drinking to a greater extent. Conversely, we reasoned that drinkers with more abstinent/light days may not need to use specific strategies because they may already incorporate a means of moderation into their behavior. Interestingly, we found that both baseline PDA/L and PDH drinking predicted *less* strategy use at the end of treatment. The finding that greater PDH was associated with less strategy use during treatment was inconsistent with our original hypothesis. It may be that drinkers with more heavy drinking days continue to struggle with applying skills at the end of treatment, although our later cross-lagged panel showed that relatively heavier drinkers are using strategies that influence their drinking. We confirmed that strategy use during treatment is negatively predicted by baseline PDA/L, which suggests that women who drink less at baseline are applying strategies they have already learned to lessen their problematic drinking and they may not be as apt to report specific strategies like those taught with this intervention.

Over time, relatively heavier and lighter drinkers increased their abstinent/light drinking days. Women who were relatively lighter drinkers appeared to have increased abstinent/light drinking days regardless of strategy use, which is consistent with findings by Connors and Walitzer (2001), who reported that these women increased abstinent/light drinking days regardless of treatment enhancements.

This study has limitations on generalizability. First, these women were relatively well-educated, socially stable, not severely dependent on alcohol, and self-referred to treatment. Conclusions about how the intervention would impact other samples are not available. Nonetheless, this research is a step toward greater understanding of how secondary prevention interventions may work.

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References

- Browne, MW.; Cudeck, R. Alternative ways of assessing model fit. In: Bollen, KA.; Long, JS., editors. *Testing Structural Equation Models*. Beverly Hills, CA: Sage; 1993. p. 136-162.
- Connors GJ, Tarbox AR, Faillace LA. Achieving and maintaining gains among problem drinkers: Process and outcome results. *Behav Ther*. 1992; 23:449-474.
- Connors GJ, Walitzer KS. Reducing alcohol consumption among heavily drinking women: Evaluating the contributions of life skills training and booster sessions. *J Couns Clin Psychol*. 2001; 68:447-456.
- Hester, RK. Behavioral self-control training. In: Hester, RK.; Miller, WR., editors. *Handbook of Alcoholism Treatment Approaches*. 2. Boston: Allyn & Bacon; 1995. p. 148-159.
- Joreskog, KG.; Sorbom, D. *LISREL 8: Structural Equation Modeling with the SIMPLIS Command Language*. Chicago: Scientific Software; 1993.
- Rosenberg H. Prediction of controlled drinking by alcoholics and problem drinkers. *Psychol Bull*. 1993; 113:129-139. [PubMed: 8426872]
- Sanchez-Craig M, Leigh G, Sipvak K, Lei H. Superior outcomes of females over males for the reduction of heavy drinking. *Brit J Addict*. 1989; 84:395-404. [PubMed: 2720192]

- Skinner HA, Allen BA. Alcohol dependence syndrome: Measurement and validation. *J Abnorm Psychol.* 1982; 91:199–209. [PubMed: 7096790]
- Sobell, LC.; Sobell, MB. Time-line follow back: A technique for assessing self- reported ethanol consumption. In: Allen, J.; Litten, R., editors. *Techniques to Assess Alcohol Consumption*. Totowa, NM: Humana Press; 1992. p. 41-72.
- Walitzer KS, Connors GJ. Thirty-month follow-up of a drinking moderation training for women: A randomized clinical trial. *J Consult Clin Psych.* 2007; 75:501–507.

Highlights

Baseline heavy drinking days and frequency of baseline abstinent/light drinking days negatively predicted drinking reduction strategy use during treatment.

Participants who received booster sessions had higher strategy use during the initial phase of follow-up.

Drinking reduction strategies are predictive of reduced drinking only early posttreatment period and only for baseline heavier drinkers.

Figure 1.

Strategy use as a function of presence/absence of booster sessions over the course of posttreatment.

Heavier Drinkers at Baseline

Lighter Drinkers at Baseline

Figure 2.

Cross-lagged panel analysis of strategy use and average percentage abstinent and light drinking days (% AL Days). Data collection waves are at baseline, posttreatment, 6, 12, and 18 months posttreatment. Values are standardized regression weights.

*** $p < .001$.