Published in final edited form as:

J Affect Disord. 2013 September 25; 150(3): 967–973. doi:10.1016/j.jad.2013.05.022.

Predictors of Alcohol-Related Problems Among Depressed and Non-Depressed Women

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Abstract

Background—Depression and alcohol-related problems are often comorbid in women, but not all depressed women have comorbid alcohol-related problems. The current study investigated intrapersonal (drinking expectancies), interpersonal (interpersonal pressure to drink), and familial (mother's and father's drinking history) predictors of alcohol-related problems among women with and without a major depressive episode in the past year.

Method—Participants were 853 women ages 21–90 from a U.S. national probability sample. Depression diagnosis was determined via interviewer administration of the Diagnostic Interview Schedule (DIS) depression module. Participants completed self-report measures of alcohol-related problems and intrapersonal, interpersonal, and familial predictors of drinking.

Results—Regression analyses indicated that an episode of depression in the past year, more positive drinking expectancies, greater interpersonal pressure to drink, and higher levels of maternal (but not paternal) drinking predicted alcohol-related problems; moreover, the relationships between alcohol-related problems and maternal drinking, paternal drinking, and interpersonal pressure to drink were significantly stronger among women with an episode of major depression in the past year than among women without an episode.

Limitations—Study data was cross-sectional and obtained through self-report, thus limiting causal explanations of results.

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Conflict of Interest

The authors confirm that we have no conflicts of interest that could be interpreted as influencing the current research.

Contributors

All authors collaborated to conceptualize the study and formulate hypotheses. The data set for the study was provided by Sharon C. Wilsnack. Susan Nolen-Hoeksema and Alethea Desrosiers conducted data analyses and all authors participated in interpreting findings. Susan Nolen-Hoeksema was responsible for drafting the majority of the manuscript, and Alethea Desrosiers and Sharon C. Wilsnack provided reviews and revisions.

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Conclusions—Findings suggest that depression may enhance the impact of interpersonal and familial risk factors on women's alcohol misuse. Implications of findings for transdiagnostic models of psychopathology and for prevention and treatment of alcohol-related problems in women presenting with depressive symptoms are discussed.

Keywords

alcohol; depression; women

Transdiagnostic models of psychopathology are increasingly prominent (e.g., Harvey, Watkins, Mansell, & Shafran, 2004; Kring & Sloan, 2010; Sanislow et al., 2010). Most transdiagnostic research seeks to identify fundamental processes underlying multiple, often comorbid disorders. More rarely does transdiagnostic research seek to explain patterns of comorbidity, that is, why two (or more) disorders are comorbid in some people but not in others (Nolen-Hoeksema & Watkins, 2011). The purpose of the present study was to identify predictors of patterns of comorbidity between depression and alcohol-related problems in women.

Depression is a highly prevalent disorder among women, with an estimated 17% of women in the United States meeting criteria for a major depressive episode at some time in their lives (Hasin et al., 2005). Alcohol misuse is frequently comorbid with depression in women. For example, data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) showed that women with major depressive disorder were more likely than non-depressed women to report multiple criteria for alcohol abuse and dependence (Lynskey & Agrawal, 2008). Research has also repeatedly found associations of women's depression with binge drinking. In a major Canadian survey, women's binge drinking (5 or more, and 8 or more, drinks per day) was associated with measures of recent and longer-term depression (Graham et al., 2007), and data from the US Behavioral Risk Factor Surveillance System surveys showed that heavy and binge (4 or more drinks in a day) drinking were significantly more likely in women who had a lifetime diagnosis of depression (Strine et al., 2008).

Most depressed women do not misuse alcohol, however (Dawson, Goldstein, Moss, Li, & Grant, 2010). Why is alcohol misuse comorbid with depressive disorders in some women but not in others? In a recently proposed model of transdiagnostic processes, Nolen-Hoeksema and Watkins (2011) suggested various conditions that will increase the likelihood of comorbidity between two syndromes. One of these conditions is when the presence of one syndrome potentiates or enhances the effects of risk factors for another syndrome. For example, depression may precede symptoms of alcohol misuse and potentiate existing risk factors for alcohol misuse, thus increasing the likelihood of developing an alcohol use disorder.

In the current study, we examined whether the experience of an episode of depression in the past year was associated with stronger effects of risk factors for alcohol misuse in predicting alcohol-related problems. We focused on three types of risk factors: *intrapersonal risk factors* (positive expectancies for the effects of alcohol), *interpersonal risk factors* (pressure from peers and close others to drink), and *familial risk factors* (maternal and paternal history of drinking). Each of these may predict alcohol-related problems equally well in women with and without a history of a recent depressive episode. However, if the relationship between these variables and alcohol-related problems is stronger in depressed than non-depressed women, this would suggest that depression may enhance the effects of these risk factors on alcohol misuse in women. This has important implications for identification of

women at risk for comorbid problems, and for conceptual models of comorbidity and transdiagnostic processes.

We frame our analyses in terms of the variables that interact with depression to predict comorbid alcohol-related problems in women, rather than the factors that interact with alcohol misuse to predict depression, for practical reasons. Because depression is a much more common syndrome than alcohol misuse in women (Hasin et al., 2005), and because alcohol misuse is less socially accepted in women than men (Wilsnack, Wilsnack, & Obot, 2005), women are more likely to seek help for depression than for alcohol-related symptoms, even if they suffer both types of symptoms (Stewart, Gavric, & Collins, 2009). Thus, women are more likely to come to the attention of clinicians or researchers with symptoms of depression than alcohol misuse.

Intrapersonal Moderators: Expectancies

People differ in how rewarding they find alcohol, and those who find alcohol more rewarding drink more and have more alcohol-related problems (Sher et al., 2005). Emotional distress appears to potentiate reward systems in the brain (Brady & Sinha, 2005), and this potentiation may be even greater in individuals high in reward sensitivity, increasing the chances they will turn to substances like alcohol. Thus, depression may interact with women's sensitivity to the rewarding aspects of alcohol, increasing the effects of reward sensitivity on likelihood of alcohol misuse.

People who have positive expectancies for the effects of alcohol, which may reflect self-knowledge that alcohol has rewarding consequences (Brunelle et al., 2007), are more prone to drink when distressed and to show higher average levels of alcohol consumption and problem drinking (see Goldman, Reich, & Darkes, 2006). In addition, positive expectancies interact with distress to predict alcohol misuse (e.g., Armeli, Carney, Tennen, Affleck, & O'Neil, 2000; Cooper, Frone, Russell, & Mudar, 1995). Thus, we predicted that women with positive expectancies for the effects of alcohol would be more likely to develop alcohol use problems and that the association between positive expectancies and alcohol-related problems would be stronger among women who experienced an episode of depression in the past year than those who did not.

Interpersonal Moderators: Pressure from Others

The social environment influences how much reward, or punishment, individuals receive for using alcohol (Borsari & Carey, 2001; Rosenquist et al., 2010). For example, adolescents' alcohol use over time is predicted by peers' perceived drinking, offers of alcohol, and perceived norms for drinking (e.g., Wills & Cleary, 1999; Wood et al., 2004). In general, women perceive there to be less reward and more punishment for women drinking than for men drinking (Nolen-Hoeksema, 2004). Still, women vary in their exposure to reinforcement, even pressure, from others to drink, and women whose peers are heavy drinkers may be more likely to misuse alcohol. For example, Testa, Kearns-Bodkin, and Livingston (2009) found that college women who perceived more pressure from peers to drink engaged in more heavy episodic drinking.

Partners or spouses appear to have strong influences on women's drinking patterns (Leonard & Mudar, 2003). Women are more likely than men to drink in response to conflict with their partner and to increase intimacy with their partner (Covington & Surrey, 1997; Levitt & Cooper, 2010). Thus, women may be particularly open to encouragement or pressure from partners to drink more when they are depressed, in efforts to reduce conflict and increase support from a partner.

In the current study, we examined the influence of close others on women's alcohol-related problems. Specifically, we predicted that pressure from close others to drink would be directly related to alcohol-related problems, and more strongly among women who experienced an episode of depression in the past year than those who did not.

Familial Moderators: Parental Drinking

Parental history of drinking is a significant predictor of adults' drinking patterns (see review by Agrawal & Lynskey, 2008). This may, of course, be due to genetic factors (Bierut et al., 1998). The relationship between parental drinking history and offspring's drinking may also be due to modeling. Children raised in homes where parents drink excessively and regard drinking as an appropriate response to stress are more likely to begin to drink earlier, to use alcohol excessively in adolescence and young adulthood, and to engage in alcohol misuse (Chassin, Pitts, DeLucia, & Todd, 1999; Fitzgerald & Zucker, 2006).

Social learning theories suggest that children model the behavior of same-sex parents more than opposite-sex parents (Chassin et al., 1999). Thus, females may be more likely to model the drinking behavior of their mothers than their fathers, and some studies have found that maternal history of alcohol use is a more potent predictor of women's alcohol use than paternal history (Bucholz, Heath, & Madden, 2000; Llorens et al., 2011; Pollock et al., 1987). Similarly, in a longitudinal study of adolescents and their parents, Windle and Windle (2012) found a stronger association between daughters' and mothers' motives to drink alcohol than daughters' and fathers' motives to drink. Women whose mothers drank relatively heavily may see alcohol use as more acceptable, including as a way to cope with depression, and thus be more likely to turn to alcohol when they are depressed. Therefore, we predicted that mothers' alcohol use would be related to alcohol-related problems in women, and more strongly among women who experienced an episode of depression in the past year than those who did not. We also examined the relationship of fathers' alcohol use to alcohol-related problems among depressed and non-depressed women.

Method

Participants and Procedures

Participants were subsampled from a U.S. national probability sample of 1126 women ages 21 and older interviewed in 2001 in the final wave of a longitudinal study of women's alcohol consumption that began in 1981. The sample was stratified by screening to include larger numbers of women who reported drinking four or more drinks per week (approximately 20% of U.S. women; see Wilsnack et al., 1984, 1991). Statistical weighting compensated for the stratified sampling and for variations in response rates across survey waves and major demographic categories. Additional information regarding recruitment and data collection can be found in Wilsnack et al. (2006).

The present study included only women who reported consuming at least one to three drinks in the previous 12 months. We excluded women who abstained completely because they could not experience alcohol-related problems. Participants meeting inclusion criteria were not significantly different from those excluded on 12-month depression diagnoses, drinking expectancies, and father's drinking history, but had higher scores on interpersonal pressure to drink and mother's drinking history ($p < .01$). Due to missing data on depression, one woman was dropped from the analyses.

The final sample consisted of 853 women ages 21–90 ($M = 43.33$ years, $SD = 1.71$ years). Participants were predominantly white (71.3 %), with 15.2% African-American and 13.5% other (11.0% of all participants also identified as Hispanic or Latina). The modal level of

education was a high school diploma or GED (38.3%), with 36.5% reporting some college, 14.7% reporting a bachelor's degree, and 10.5% reporting a graduate or professional degree.

Age, education level, and ethnicity/race were all significantly related to alcohol-related problems, with fewer problems reported by older women, women with more education, and women from ethnic/racial minority groups compared to non-Hispanic White women (p 's < .05). These variables were added as covariates in the first step of the regression analysis reported below. (The pattern of results was the same with and without the demographic covariates.)

All participants were interviewed by extensively trained female interviewers in locations selected by the participant (most often in the women's homes); interviews averaged 75–90 minutes. Informed consent was obtained from participants prior to the interview. Sampling and fieldwork for the 2001 survey were conducted by the National Opinion Research Center, University of Chicago. All study procedures were approved by the University of North Dakota Institutional Review Board.

Measures

Eleven items were used to index drinking problems. The questions were originally designed for the longitudinal study's first survey in 1981 to allow comparisons with results of earlier national drinking surveys (e.g., Cahalan, 1970; Clark & Midanik, 1982). Seven items assessed adverse social and behavioral consequences of alcohol use (e.g., 'close friends or relatives worried or complained about your drinking', 'you drove a car when you felt drunk or high from drinking'), and four were symptoms of potential alcohol abuse or dependence (e.g., 'you could not remember some of the things you had said or done while drinking,' 'you tried to cut down or quit drinking but were unable to do so'). Participants indicated 'yes' or 'no' in response to whether each experience had happened to them in the previous 12 months. Items were summed to create a total score. Cronbach's alpha for this scale was .79.

Interviewers administered the depression module of the Diagnostic Interview Schedule (DIS), which has been shown to produce reliable and valid diagnoses of major depression (Robins et al., 1981). Women were asked about their symptoms of depression over the last 10 years, whether they had experienced multiple symptoms of depression in the same 2 weeks, and when their last period of depression ended. Information from the DIS was used to determine whether each woman met diagnostic criteria for an episode of major depression in the last 12 months, according to *DSM-IV* criteria (American Psychiatric Association, 1994).

Drinking expectancies were measured by computing the mean score on twelve items assessing expectations of positive consequences of drinking (e.g., 'feel less shy or more confident', 'cheers you up or helps you forget your worries') (Bogren, Kristjanson, & Wilsnack, 2007). Participants indicated whether each statement was 'usually true', 'sometimes true', or 'never true' for them. Cronbach's alpha for the expectancies measure was .88.

Interpersonal pressure to drink was assessed by computing the mean score on three items asking whether participants experienced pressure to drink or drink more in the last 12 months by a family member, co-worker/friend, and/or husband/partner who drinks more than them. Responses were scored as 'no', 'yes, once or twice', or 'yes, three or more times'. Because we would not necessarily expect pressure from one group of people in the woman's life to be related to pressure from other groups of people, we did not calculate internal reliability for this score.

Participants were asked to describe their mother's and father's general drinking pattern before they were 14 years of age, with categories of 'abstainer/never drank', 'occasional or light drinker', 'moderate or average drinker', and 'frequent or heavy drinker', which were coded 0 to 3 respectively.

Results

Means, standard deviations and correlations for continuous variables are exhibited in Table 1. Alcohol-related problems were significantly related to higher levels of expectancies, more pressure by others to drink, and higher levels of both maternal and paternal drinking. The difference in the correlation between maternal drinking and alcohol-related problems ($r=.23$) and between paternal drinking and alcohol-related problems ($r=.13$) was statistically significant ($z=1.99$, $p<.05$).

Of the 853 women, 183 (21.5%) met criteria for a major depressive episode in the previous year. As shown in Table 2, women who met criteria for a major depressive episode reported higher levels of alcohol-related problems, higher positive expectancies, more interpersonal pressure to drink, and higher levels of mother's drinking, compared to women who did not meet criteria for a depressive episode. There were no differences between women with and without an episode of major depression on reports of father's drinking.

Multiple regression analysis examined the contribution of depression diagnosis, mother's drinking, father's drinking, interpersonal pressure to drink, and drinking expectancies to alcohol-related problems among women who drank. All continuous predictors were standardized before entering them into the equation. In step one of the regression model, the demographic covariates of age, education level, and ethnicity/race (0=non-Hispanic White, 1=other) were entered; in step two, depression diagnosis was entered; in step three, expectancies, interpersonal pressure, mother's drinking, and father's drinking were entered; and in step four, the interaction terms for depression diagnosis and each of the four predictor variables, respectively, were entered.

Results of multiple regression analysis are shown in Table 3. In step one, demographic covariates were significantly associated with alcohol-related problems ($F(3, 825)=14.56$, $p<.001$). In step two, depression diagnosis was significantly associated with alcohol-related problems ($F(1, 824)=36.54$, $p<.001$). In step three, depression diagnosis remained significantly associated with alcohol-related problems ($\beta=.12$, $p<.001$), and higher levels of drinking expectancies ($\beta=.21$, $p<.001$), interpersonal pressure ($\beta=.29$, $p<.001$), and mother's drinking ($\beta=.15$, $p<.001$) were also significantly associated with alcohol-related problems. Father's drinking was not associated with alcohol-related problems. The addition of the predictor variables in step three accounted for a significant increase in variance in alcohol-related problems ($\Delta R^2=.17$, $F(4, 820)=48.15$, $p<.001$).

In step four, the interaction terms for depression diagnosis and expectancies, interpersonal pressure, mother's drinking, and father's drinking were added to the equation, resulting in a significant increase in variance in alcohol-related problems ($\Delta R^2=.05$, $F(4, 816)=13.13$, $p<.001$). The interaction terms for depression diagnosis and interpersonal pressure ($\beta=.17$, $p<.001$), mother's drinking ($\beta=.11$, $p<.01$), and father's drinking ($\beta=.10$, $p<.01$) were each individually significantly associated with alcohol-related problems. The interaction term for drinking expectancies and depression diagnosis was nonsignificant ($\beta=.07$, $p=.06$). All variables entered in the final model accounted for 31% of the total variance in alcohol-related problems.

To interpret the interactions between depression diagnosis and the four predictor variables, we examined the relationships between predictor variables and alcohol-related problems separately for women with and without a past year diagnosis of depression. Table 4 presents bivariate correlations between predictor variables and alcohol-related problems separately for each group. We also conducted separate regression analyses to examine whether each predictor variable was associated with alcohol-related problems while controlling for the influence of the other predictors in depressed versus non-depressed women (see Table 4). Associations between expectancies and alcohol-related problems did not differ in depressed and non-depressed women, which is consistent with results of the full regression analysis (Table 3). In contrast, interpersonal pressure to drink, maternal drinking, and paternal drinking were all more strongly related to alcohol-related problems in depressed than in nondepressed women, consistent with results in the full model predicting alcohol-related problems (Table 3).

Among non-depressed women, the difference in the correlation between alcohol-related problems and maternal drinking ($r=.16$) and the correlation between alcohol-related problems and paternal drinking ($r=.06$) was marginally significant in a two-tailed test ($z=1.95$, $p=.051$). Among depressed women, the difference in the correlations between alcohol-related problems and maternal versus paternal drinking (.31 and .26, respectively, see Table 4) was not significant.

We followed up our main analyses with a final set of analyses for one of the hypothesized moderators: interpersonal pressure to drink. Because research on interpersonal influences on women's drinking has mainly studied the influence of male partners, we examined whether pressure from partners to drink was more strongly related to women's alcohol-related problems than pressure from others. The correlation between pressure from partners and women's alcohol-related problems ($r=.31$, $p<.01$) and the correlation between pressure from friends and co-workers ($r=.29$, $p<.01$) were not significantly different. However these two correlations were both significantly greater ($p's<.001$) than the correlation between pressure from family members and alcohol-related problems ($r=.11$, $p<.01$). We further examined whether each of these sources of pressure interacted with depression diagnoses to predict women's alcohol-related problems and found significant interactions for pressure from friends/co-workers ($p<.05$) and pressure from partners ($p<.001$) but not pressure from family.

Discussion

About one in five women will develop an episode of major depression in their lives (Hasin et al., 2005) and these women are at increased risk to also be engaging in alcohol misuse (Lynskey & Agrawal, 2008). In this study, women who had experienced an episode of major depression in the last year were significantly more likely to have problems related to alcohol use, such as drunk driving, conflicts with others, or job difficulties. Still, most of the women with major depression in this study were not using alcohol to a maladaptive extent. We examined factors in three domains, intrapersonal, interpersonal, and familial, that may increase the likelihood that a depressed woman will have comorbid alcohol-related problems.

Intrapersonal factors: Expectancies

In the intrapersonal domain, we examined women's expectancies for the effects of alcohol, predicting that women with positive expectancies would be more likely to use alcohol when depressed and have alcohol-related problems. Indeed, women with positive expectancies were significantly more likely to have alcohol-related problems, replicating previous studies (e.g., Armeli et al., 2000). However, the interaction between expectancies and depressive

symptoms was not statistically significant, suggesting that expectancies are related to alcohol misuse whether or not women have depressive symptoms.

Our expectancies measure had only one item that assessed expectancies that alcohol reduces depressive symptoms or tension, whereas most items assessed women's expectancies that alcohol helps them be more assertive and confident, and more comfortable in social situations. It is possible that if we had more items assessing women's use of alcohol specifically to self-medicate (e.g., the "drinking to cope" subscale by Cooper et al., 1995), we would have found that these types of expectancies predict alcohol-related problems more in depressed than non-depressed women.

Still, the results using our expectancies measure suggest that even if women are not specifically using alcohol to "self-medicate" or reduce the negative symptoms of depression, beliefs that alcohol will have positive effects on their functioning in multiple life areas are a risk factor for using alcohol to a maladaptive extent regardless of whether or not they are depressed.

Interpersonal Factors: Pressure to Drink

In the interpersonal domain, we found that women whose friends, co-workers, family members, and/or partners put more pressure on them to drink had more alcohol-related problems. Further, interpersonal pressure was more strongly related to alcohol-related problems among women with a past year episode of depression than in women who had not been depressed. When they are depressed and in need of support by others, women appear to be even more vulnerable to encouragement by others to drink.

Further analyses of interpersonal influences found that pressures from partners and from friends and co-workers were more strongly associated with women's alcohol-related problems than were pressures from family members, and that partner and friend/co-worker pressures – but not family pressures – interacted with depression diagnoses to predict women's alcohol-related problems. The lack of effects for pressure from family members may have occurred in part because this type of pressure was less common: only 4.3% of women reported even one instance of pressure from a family member to drink more, whereas 6.9% reported at least one instance of pressure from a partner and 10.2% reported pressure from friends or co-workers. Thus, although pressure to drink from partners was a significant predictor of women's alcohol-related problems, particularly among depressed women, pressure to drink from friends and co-workers was also related to women's alcohol-related problems, replicating recent work with college students (Testa et al., 2009), and should receive increased attention in future research.

Familial Factors: Maternal and Paternal Drinking

Finally, in the familial domain, we examined mothers' and fathers' drinking as predictors of alcohol-related problems in depressed and non-depressed women. In the full sample, we found that women whose mothers were heavier drinkers were more likely to have alcohol-related problems than women whose mothers were abstinent or light drinkers, but the relationship between paternal drinking patterns and women's drinking problems was nonsignificant (see also Bucholz, Heath, & Madden, 2000; Llorens et al., 2011; Pollock et al., 1987). Moreover, in the full sample, and to a lesser extent in the subsample of women who had not experienced depression in the past year, the strength of the relationship between maternal drinking and alcohol-related problems was greater than the strength of the relationship between paternal drinking and alcohol-related problems.

Women may be more likely to model their drinking behaviors after their mothers' than their fathers' drinking behaviors (Chassin et al., 1999). In addition, because heavy drinking is less

normative for women than for men, mothers who were heavier drinkers may have experienced depression or stress when our respondents were younger, and this stress may have permeated their relationships with their daughters. In other analyses, we found that women who said their mothers were heavier drinkers reported a less close relationship with their mothers than those who said their mothers were abstinent or light drinkers (Nolen-Hoeksema, Desrosiers, & Wilsnack, in preparation). Thus, the women whose mothers were heavier drinkers may have experienced more stress in childhood and adolescence, and it may be this early life stress – together with the presence of a heavier-drinking same-sex role model -- that generally increases women's susceptibility to alcohol-related problems (Brady & Sinha, 2005).

However, both mothers' and fathers' drinking patterns interacted with depressive symptoms to predict women's alcohol-related problems, such that the relationship between parental drinking patterns was stronger among depressed than non-depressed women. Findings suggest that heavier drinking by mothers *or* fathers is related to increased risk of misusing alcohol when a woman is depressed. Women whose parents were heavier drinkers may have more difficulty inhibiting learned patterns of maladaptive alcohol use when they are depressed because depression is associated with deficits in executive control (Joormann, 2009). These women may also be more likely to see heavy alcohol use as an acceptable way of responding to their symptoms of depression.

Limitations

The present analyses were all cross-sectional, thus we cannot draw causal conclusions about them. Further, we cannot know whether depression preceded alcohol-related problems or vice versa. It will be important for future studies to determine if the variables studied here predict increases in alcohol misuse over time in depressed and non-depressed women.

Our data was obtained through face-to-face interviews, but are still self-reports. The reports of parents' drinking patterns were retrospective and second-hand from the respondents. Confirming our results with measures of parents' drinking patterns that were obtained directly from parents would be especially valuable in future research.

The data for the analyses here were gathered over a decade ago. The rates of binge drinking by both men and women have declined since 2001, but less so for women than men, and the gender difference in binge drinking has narrowed (Johnston, O'Malley, Bachman, & Schulenberg, 2012). Women may be experiencing even more social pressure to drink, and may have even more positive expectancies for the effects of alcohol, now than in 2001. If so, these risk factors might be even more strongly related to alcohol-related problems in women today.

Conclusions

Depression and alcohol misuse are often comorbid in women, but most depressed women do not develop problems related to alcohol use. Our results suggest that clinicians treating depressed women should be alert to the presence of interpersonal pressures to drink, a parental history of heavy drinking, and positive expectancies for the effects of alcohol, as well as to the actual drinking behavior of their clients. Implementing practices to address these factors could reduce risks of alcohol misuse in depressed women.

Our findings that interpersonal pressure to drink and parental heavy drinking were more strongly related to alcohol-related problems in depressed women than non-depressed women suggest that depression may enhance the impact of these risk factors on women's problematic drinking. Research on the mechanisms driving these enhancement effects will

inform models describing the effects of depression on psychosocial and biological functioning as well as models of risk factors for alcohol-related problems. Moreover, the results presented here illustrate the value of transdiagnostic research that not only identifies common factors underlying comorbid disorders, but also digs deeper to understand when and why these disorders are comorbid in some people but not in others.

Acknowledgments

Collection of data analyzed for this paper was supported by National Institute on Alcohol Abuse and Alcoholism Grant R01 AA004610 to Sharon C. Wilsnack. Survey fieldwork was conducted by the National Opinion Research Center, University of Chicago. The authors are grateful to Perry W. Benson, Ph.D., for assistance with data preparation; to NORC field staff and interviewers; and to the women who participated in the National Study of Health and Life Experiences of Women. This paper is dedicated to the memory of Dr. Susan Nolen-Hoeksema, an outstanding researcher and educator and an esteemed colleague, mentor, and friend. Her clear, incisive thinking and kind, generous spirit have made an indelible contribution to the field of psychology as well as to the individual lives of all those she touched.

Role of Funding Source

Funding for this study was provided by the National Institute on Alcohol Abuse and Alcoholism Grant R01 AA004610 to Sharon C. Wilsnack.

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Table 1

Binary correlations and descriptive statistics for continuous variables

	Alcohol Problems	Expectancies	Interpersonal Pressure	Mother's Drinking	Father's Drinking
Expectancies	0.32 **				
Interpersonal Pressure	0.37 **	0.18 **			
Mother's Drinking	0.23 **	0.12 **	0.11 **		
Father's Drinking	0.13 **	0.05	0.13 **	0.25 **	
Mean (St. Dev.)	0.55 (1.35)	1.66 (0.52)	1.10 (0.25)	0.72 (0.82)	1.40 (1.09)
Range	0 – 9	0.11 – 3.00	1 – 3	0 – 3	0 – 3

* $p < .05$,** $p < .01$

Table 2

Means and standard deviations for study variables in women who had and had not experienced an episode of major depression in the last 12 months

	No depressive episode (n=670)	Depressive episode (n=183)
Alcohol-related problems	0.39 (1.00)	1.14*** (2.10)
Expectancies	1.62 (0.52)	1.80*** (0.54)
Interpersonal pressure	1.07 (0.27)	1.18*** (0.35)
Mother's drinking	0.68 (0.79)	0.87*** (0.91)
Father's drinking	1.37 (1.08)	1.50 (1.13)

*** Comparison of means between depressed and nondepressed women significant at $p < .001$

Table 3

Multiple regression analyses examining moderators of alcohol-related problems

Predictors	Step 1 Statistics		Step 2 Statistics		Step 3 Statistics		Step 4 Statistics	
	<i>b</i> (<i>SE b</i>)	β	<i>b</i> (<i>SE b</i>)	β	<i>b</i> (<i>SE b</i>)	β	<i>b</i> (<i>SE b</i>)	β
Step 1								
Age	−0.02(0.003)	−0.18***	−0.01(0.003)	−0.16***	−0.004(0.003)	−0.05	−0.006(0.003)	−0.07*
Education	−0.12(0.05)	−0.09*	−0.10(0.05)	−0.08*	−0.06(0.04)	−0.05	−0.06(0.04)	−0.04
Ethnicity/Race	−0.23(0.10)	0.08*	−0.27(0.10)	0.09**	−0.28(0.09)	0.09**	−0.25(0.09)	0.08*
Step 2								
Depression			0.67(0.11)	0.20***	0.39(0.10)	0.12***	0.19(0.10)	0.06 ^d
Step 3								
Expectancies					0.30(0.05)	0.21***	0.26(0.05)	0.18***
Interpersonal pressure					0.38(0.04)	0.29***	0.22(0.05)	0.17***
Mother's drinking					0.19(0.04)	0.15***	0.12(0.05)	0.09*
Father's drinking					0.05(0.04)	0.04	−0.006(0.05)	−0.004
Step 4								
Dep X Expectancies							0.19(0.10)	0.07 ^d
Dep X Pressure							0.32(0.08)	0.17***
Dep X Mo drinking							0.26(0.09)	0.11**
Dep X Fa drinking							0.27(0.10)	0.10**

Note.

^a $p < .10$.* $p < 0.05$.** $p < 0.01$.

Dependent variable: alcohol-related problems in the last 12 months. Depression diagnosis coded 0=no, 1=yes; Ethnicity/race coded 0=Non-Hispanic White, 1=Other

Table 4

Relationships of predictor variables to alcohol-related problems for women who had and had not experienced an episode of major depression in the last 12 months

	No depressive episode		Depressive episode	
	r	β	r	β
Expectancies	0.31**	0.26**	0.32**	0.23**
Interpersonal Pressure	0.24**	0.19**	0.46**	0.39**
Mother's Drinking	0.16**	0.12**	0.31**	0.21**
Father's Drinking	0.06	-0.001	0.26**	0.14*
R ² for equation		0.14**		0.36**

*
 $p < .05$,

**
 $p < .01$

Note: r is the binary correlation between alcohol-related problems and each predictor variable, separately for women who had, and who did not have, a major depressive episode in the last 12 months. β weights are from regression analyses with alcohol-related problems as the dependent variable and all four predictor variables in the analyses, run separately for women who had, and who did not have, a major depressive episode in the last 12 months.