Social Influences on Drinking During Pregnancy

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The influence of social networks on the drinking practices of pregnant women was examined. Pregnant women (*n* = 153) were classified according to whether they were heavy or light drinkers just before pregnancy and whether they reduced their alcohol risk status after pregnancy recognition. Failure to reduce alcohol risk status following pregnancy recognition among initially heavy drinkers was associated with reporting drinking as a social activity and difficulty in resisting social pressure to drink. There was also evidence that failure to reduce drinking was associated with greater approval for drinking during pregnancy and more frequent serving of alcohol among the social network. Findings suggest that interventions designed to reduce drinking among pregnant women help them to find alternative social activities and to develop strategies for resisting pressure to drink.

Since the initiation of educational campaigns regarding the potential dangers of alcohol consumption during pregnancy, there has been an increase in knowledge regarding the risks of heavy drinking during pregnancy (Dufour, Williams, Campbell, & Aitken, 1994) and an increase in the number of women who abstain during pregnancy (Serdula, Williamson, Kendrick, Anda, & Byers, 1991; Streissguth, Darby, Barr, Smith, & Martin, 1983). Although these changes are encouraging, it is important to recognize that spontaneous reduction in alcohol consumption in pregnancy is most likely to occur among light drinkers. Reduction in the rates of fetal alcohol syndrome and fetal alcohol effects is unlikely to occur without a reduction in the number of pregnant heavy drinkers. Warning labels and informational campaigns have had little impact on reducing the consumption of pregnant heavy drinkers, who are most at risk of delivering a baby with alcohol-related birth defects (Hankin et al., 1993; Weiner, Morse, & Garrido, 1989). More troubling is evidence suggesting that rates of alcohol abuse in pregnancy may be rising (Little, Snell, Gilstrap, Gant, & Rosenfeld, 1989).

To facilitate the development of effective interventions, it is important to identify factors associated with heavy drinking in pregnancy. Previous research has found that minority ethnic group, low socioeconomic status, older age (Day, Cottreau, & Richardson, 1993), depression (Zuckerman, Amaro, Bauchner, & Cabral, 1989), and violent victimization by partner (Amaro, Fried, Cabral, & Zuckerman, 1990) are associated with heavy drinking in pregnancy. Among the current sample, lower perceived risk associated with drinking in pregnancy also appears to predict heavier drinking (Testa & Reifman, in press). In the current study we examined the role of social influence in drinking among pregnant women. Two separate bodies of literature suggest that this may be an important factor.

First, there is evidence that alcohol consumption among adults is influenced by the actual and perceived consumption of their friends (Abbey, Smith, & Scott, 1993; Fromme & Ruela, 1994). Membership in a social network in which alcohol consumption is important or central may also contribute to drinking. For example, Hilton (1991) found that heavier drinkers were more likely than light drinkers to report alcohol being served in gatherings of various social groups. Among a sample of employed alcoholic patients in treatment, support for drinking in the workplace (e.g., drinking by others and tolerance of work

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disruptions because of drinking) was predictive of greater drinking in the 3 months before treatment entry (Beattie et al., 1993). Characteristics of network members may also facilitate drinking. For example, the presence of male friends as social support providers in the absence of family social support providers predicted heavier drinking among young men (Leonard, Testa, & Blane, 1995).

There is also evidence that pregnant women may be more inclined to drink when drinking is supported by their social networks. For example, the prevalence of drug and heavy alcohol use was nearly five times higher among pregnant women whose partners abused alcohol or drugs than it was among a comparable group whose partners were not substance abusers (Bresnahan, Zucker-man, & Cabral, 1992). Among an adolescent sample, a best friend’s use of alcohol predicted alcohol consumption during pregnancy, after controlling for pre-pregnancy consumption (Gilchrist, Gillmore, & Lohr, 1990). In a study of heavy-drinking pregnant women, Smith, Lancaster, Moss-Wells, Coles, and Falek (1987) found that compared with women who stopped drinking during pregnancy, women who continued to drink were more likely to report drinking with family members but no more likely to report drinking alone.

Another body of literature provides evidence that social network norms are important in encouraging and maintaining a variety of preventive health behaviors ranging from condom use (e.g., Fisher & Misovich, 1990) to smoking cessation (e.g., Mermelstein, Cohen, Lichtenstein, Baer, & Kamarck, 1986). Although these studies have not been specific to pregnancy, this literature suggests that a social network that recognizes the potential risks of drinking during pregnancy and is supportive of a pregnant woman’s desire to avoid alcohol may help her to reduce or stop drinking. On the other hand, a social network that dismisses warnings about the dangers of alcohol consumption may fail to discourage pregnant women from drinking.

In the current study we also examined the impact of several aspects of social networks on reduction of alcohol risk status among a sample of pregnant women who were classified as being either heavy or light drinkers before pregnancy recognition. The aspects of social networks that were examined were (a) characteristics of the network (e.g., family, friends, partner), (b) drinking practices of the network, (c) approval of drinking among the social network, and (d) the woman’s perceived ability to resist social pressure to drink.

Several predictions were offered. First, given that men drink more on average than women (e.g., Midanik & Clark, 1994), we tentatively predicted that women whose networks included partners and male friends would be more likely to drink heavily before pregnancy and less likely to reduce drinking during pregnancy. Second, we predicted that heavier drinking among the network would be associated with heavier pre-pregnancy drinking and failure to reduce drinking following pregnancy recognition. Third, we expected that women who failed to reduce alcohol risk status in pregnancy would be less likely to report that someone had tried to convince them to stop drinking and more likely to report network approval of drinking during pregnancy. We were uncertain whether there would be differences in approval of the woman’s general level of drinking and actual drinking in pregnancy. Light drinkers and women who abstain during pregnancy are likely to receive approval from their networks, however, if heavy drinkers socialize with other heavy drinkers they may also receive social approval for their drinking. Finally, we predicted that pre-pregnancy heavy drinkers and pregnant women who failed to reduce drinking would report more difficulty resisting pressure to drink.

Method

Participants

The sample consisted of 159 pregnant women who drank alcohol at least monthly before learning they were pregnant. Potential participants were recruited through newspaper advertisements seeking pregnant social drinkers and through flyers distributed to new patients at two public prenatal care clinics in Buffalo, New York. All women had learned they were pregnant at least 2 weeks before the interview.

Potential participants were screened for eligibility over the telephone. They were asked whether they had consumed any alcohol during the past 30 days and approximately how often they had consumed alcohol during the past year. Women were eligible for the study if they had consumed...
alcohol during the past 30 days (i.e., during pregnancy) or at least once a month before pregnancy. Women who were abstaining because of pregnancy were eligible if they drank regularly before pregnancy. However, because of disproportionate numbers of women abstaining during pregnancy and our desire to have an adequate sample of pregnant drinkers, we stopped accepting abstinent women approximately halfway through the study.1

Most of the women who were ruled ineligible did not meet minimum drinking criteria. This included 15 women who were believed to be eligible following telephone screening but who, following the more detailed questioning of the interview, revealed that they did not drink at least monthly before pregnancy. The data from an additional nine interviews were not used for the following reasons: incomplete (2), interviewed twice (3), immediate plans to terminate the pregnancy (1), unverified pregnancy (1), and questionable veracity (2).

Procedure

Women participated individually in a 60–90-min data collection session, which consisted of several self-administered questionnaires and a confidential interview administered by a trained female interviewer. All sessions took place at the Research Institute between November 1992 and February 1994. Participants were paid $30.

Measures

Alcohol consumption. Lifetime patterns of alcohol consumption were assessed using Wilsnack, Klassen, and Wilsnack’s (1986) modification of Skinner’s (1979) Lifetime Drinking History. This instrument assesses quantity (e.g., 1–3 drinks, 4–5 drinks, 6–9 drinks, and 10 or more drinks) and frequency (e.g., less than once a week, 1–3 days per week, and 4 or more days) of alcohol consumption since initiation of drinking, including all changes in patterns that lasted at least 3 months. To assess current alcohol consumption (e.g., during pregnancy), the interviewer asked the women about their activities, including their alcohol consumption, during the past 14 days. This procedure was modeled after that used by Sokol, Martier, and Ernhardt (1985). To facilitate recall, the interviewer showed the women a calendar with weekends and holidays highlighted. This portion of the interview was preceded by a statement designed to minimize social desirability concerns. Quantities of beer, wine, wine coolers, and liquor for each of the 14 days were recorded. Women who had not consumed any alcohol in the past 14 days were asked when they had last had a drink and how many drinks they had consumed on that occasion. To determine whether the respondent’s last drink was consumed during pregnancy, we compared the date of the last drink with her reported date of pregnancy recognition. These data allowed us to calculate average daily volume and maximum volume consumed during pregnancy.

Three items that were part of a larger questionnaire on health beliefs assessed ability to resist alcohol when faced with pressure: “If my partner were trying to get me to drink, it would be hard to resist even if I didn’t really feel like drinking,” “If my friends were trying to get me to drink, it would be hard to resist even if I didn’t really feel like drinking,” and “Even when other people are drinking alcoholic drinks I can just say no and stick to pop or nonalcoholic drinks.” Responses were rated on a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Scores among the three items were significantly intercorrelated (range = .23–.54).

Social networks. Women were asked to identify individuals or groups of individuals with whom they socialize regularly. Up to four social units, consisting either of an individual or a group, were recorded (e.g., parents, friends from church, best friend). We attempted to record largely nonoverlapping units. Thus, women were told that if, for

1 The 159 women who made up the final sample were drawn from a pool of 413 women who responded to advertisements seeking pregnant social drinkers, were contacted or given flyers at prenatal clinics, or were told about the study by a friend. The sample is not a representative one, in which, alcohol consumption would be much lower. Rather we sought to maximize the number of pregnant drinkers to permit testing of hypotheses of interest by using a modest sample size. None of the women in this study was considered an abstainer outside of pregnancy; whereas approximately 30% of 18- to 39-year-old American women are currently considered abstainers (Midanik & Clark, 1994). Further, about 80% of women abstain during pregnancy (Serdula et al., 1991) compared with only one third of the current sample.
example, they regularly socialized with two or more friends together and rarely saw them separately, they should count them as one unit. Women were asked a series of questions regarding each social unit. First, they were asked about activities in which they engage with each unit (e.g., shopping, having dinners together). A positive response for drinking as an activity was coded if drinking or going to bars was mentioned spontaneously. Using questions that were based on those of Cahalan, Cisin, and Crossley (1969), we asked women how often each social unit drinks and how often alcohol is usually served in social gatherings. Respondents were given a choice of several responses ranging from never to nearly every time for the first question and from never served to nearly every time for the second. Further, the social unit’s approval for (a) the woman’s drinking practices in general, (b) her drinking (or abstention) during pregnancy, and (c) drinking during pregnancy in general was assessed. These variables were coded dichotomously according to whether there was approval or not. Women were then asked whether the unit had encouraged her to drink during pregnancy and also whether they had told her or helped her to stop drinking during pregnancy (both coded: 1 = yes and 0 = no).

Social influences on women are complex because a pregnant woman may, for example, socialize both with a group of abstemious family members who frown on drinking during pregnancy and a group of heavy drinking friends. Two sets of composite variables were created on the basis of social network data. First, for each of the various social influence variables discussed above, a corresponding composite variable was created that indicates whether there was a positive response from any of the social units (1 = yes and 0 = no). For example, if one of three units encouraged the woman to drink during pregnancy she would receive a 1 on that variable, indicating exposure to some encouragement for drinking. Second, we created a composite variable that indicates the proportion of social units that had a positive response on each of the various measures. For example, if two of a woman’s three social units approve of her drinking in pregnancy, she would receive a score of .67 on that variable.

Other measures. Using the Hollingshead index (1975), we assessed socioeconomic status. Higher scores (range = 6–66 points) indicated a higher composite level of educational attainment and occupational status. Partner alcohol problems were assessed using the alcoholism section of the Research Diagnostic Criteria (RDC; Andreasen, Endicott, Spitzer, & Winokur, 1977). The RDC uses reports of family members to diagnose alcoholism in an individual who is unavailable for assessment. A male partner was considered to be a problem drinker if the woman responded positively to at least one of the six problems indicated.

Results

Before we could examine the relationship of social network factors to alcohol risk reduction in pregnancy, it was necessary to classify women according to pre-pregnancy drinking level (heavy or light) and whether they reduced their alcohol risk status following pregnancy recognition. On the basis of the quantity of typical consumption just before pregnancy recognition, those who indicated that they typically drank at least four to five drinks per drinking occasion were classified as heavy pre-pregnancy drinkers. Light pre-pregnancy drinkers drank one to three drinks per occasion. One to three drinks per drinking occasion is generally consistent with guidelines for nonrisky drinking (e.g., Addiction Research Foundation, Moderate Drinking and Health, 1993).

Reduction in alcohol risk status was determined by comparing pre-pregnancy drinking level (heavy vs. light) with in-pregnancy drinking level (heavy, light, or abstaining). In-pregnancy drinking level was determined as follows: Women were classified as abstainers if they had not consumed any alcohol since learning that they were pregnant (n = 52).

2 We did not base our classification on average volume, as is more typical, because of our interest in alcohol risk status in pregnancy. A woman who typically consumes six drinks once or twice monthly would have a low average volume but is potentially putting her fetus at risk if she continues to drink that amount during pregnancy. Further, average volume may underestimate the effects of alcohol for women because women tend to drink less frequently than men but, controlling for body water, achieve a comparable blood alcohol level on drinking occasions (York & Welte, 1994). Thus, we considered quantity, rather than frequency, to be the critical variable. Although a high average volume may also result from frequent light drinking, all but one light drinker drank either one to three days per week or less than once a week.
Women were considered heavy drinkers if they had consumed at least one drink per day on average over the last 14 days (n = 19). This amount corresponds to the lowest dosage associated with adverse fetal effects (e.g., Jacobson & Jacobson, 1994). Some women did not average at least one drink per day but reported an occasion of high consumption during pregnancy. Because animal studies suggest that the high blood alcohol levels associated with binge drinking have the potential to be especially harmful during pregnancy (e.g., West, Goodlett, Bonthius, & Pierce, 1989), women were considered heavy drinkers if they had consumed four or more drinks on a single occasion either within the last 14 days (n = 7) or on the most recent occasion of drinking since pregnancy recognition (n = 4, for a total of 30 heavy drinkers). Light drinkers had consumed alcohol within the last 2 weeks or at some time since pregnancy recognition at levels insufficient to meet the classification for heavy drinking (n = 77).

Heavy drinkers were considered to have reduced their alcohol risk status if they moved from heavy pre-pregnancy drinking to light drinking or abstinence during pregnancy. Women who were light drinkers before pregnancy were classified as reducing their alcohol risk status if they abstained from alcohol during pregnancy. It is very rare for a woman to increase her alcohol consumption during pregnancy, thus this category was not considered.

Of the 53 women who drank heavily just before pregnancy, 29, or 55%, reduced their alcohol risk status after learning they were pregnant, including 11 who abstained totally. Of the 100 light drinkers, 41 reduced their alcohol risk status (i.e., abstained) during pregnancy. Change in risk status was conceptualized as reflecting movement between clinically meaningful categories. We did not consider reductions in alcohol consumption that did not constitute a change in risk category. Thus, a woman who drank 2 drinks weekly before pregnancy and 1 drink weekly since pregnancy or a woman who drank 10 drinks every day before pregnancy and 5 drinks every day since pregnancy would not be considered to have reduced her risk status.

Our primary goal was to determine whether social network variables account for failure to reduce alcohol risk status among heavy drinkers who become pregnant. Theoretically, however, it is important to determine whether the same variables contribute to reduced consumption among both heavy and light drinkers. Consequently, we compared responses of women who were either heavy or light pre-pregnancy drinkers and women who reduced or did not reduce consumption following pregnancy recognition in a 2 x 2 factorial framework.

**Demographic Differences**

A series of 2 x 2 analyses of variance (ANOVAs) was used to compare the four groups on various demographic variables. As shown in Table 1, several differences emerged. Heavy drinkers who did not reduce consumption were least likely to be Caucasian (25% vs. 58% in the other three groups), $F(1, 149) = 10.71, p < .01$. Socioeconomic status was lower among heavy drinkers, $F(1, 149) = 4.69, p < .05$, and those who failed to reduce alcohol risk status, $F(1, 149) = 6.93, p < .01$. Consistent with previous research (e.g., Day et al., 1993), women with more prior pregnancies were less likely to reduce consumption, $F(1, 149) = 5.11, p < .03$, and age was marginally higher among those who did not reduce, $F(1, 149) = 3.17, p = .08$. Previous research has suggested that alcohol consumption declines as pregnancy progresses (e.g., Day et al., 1993). However, we found a significant interaction of pre-pregnancy drinking and reduction such that initially light drinkers who reduced their drinking (e.g., abstained during pregnancy) were the least advanced in their pregnancies (17 weeks), $F(1, 149) = 6.63, p < .02$. Simple effects tests revealed

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3 There were substantial differences between the heavy- and light-drinking groups. Among the heavy group, the median number of drinks consumed in the past 2 weeks was 16.5, with a median of 5.1 drinks per drinking occasion. Among the light-to-moderate group, the median number of drinks consumed in the past 2 weeks was 2, with a median of 1.3 drinks per drinking occasion.

4 We found six women classified as pre-pregnancy light drinkers who reported in-pregnancy amounts that were discrepant with their reported typical consumption. None of these women mentioned that her drinking changed because of pregnancy. It is unclear whether the amounts reported in pregnancy were unusual or whether they had underreported their consumption before pregnancy; hence, these women were dropped from subsequent analyses, resulting in a sample size of 153.
Table 1

Characteristics of Sample as a Function of Pre-Pregnancy Drinking Level and Alcohol Risk Reduction During Pregnancy

<table>
<thead>
<tr>
<th>Demographic characteristic</th>
<th>Heavy drinkers</th>
<th></th>
<th></th>
<th>Light drinkers</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No risk reduction ((n = 24))</td>
<td>Risk reduction ((n = 29))</td>
<td>No risk reduction ((n = 59))</td>
<td>Risk reduction ((n = 41))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race (% Caucasian)</td>
<td>25 (44)</td>
<td>69 (47)</td>
<td>59 (50)</td>
<td>49 (51)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socioeconomic status (^a)</td>
<td>22.25 (9.15)</td>
<td>32.36 (12.77)</td>
<td>30.53 (13.66)</td>
<td>33.48 (12.90)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (in years)</td>
<td>28.17 (12.77)</td>
<td>26.30 (4.89)</td>
<td>27.99 (5.40)</td>
<td>26.45 (5.75)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous pregnancies</td>
<td>3.67 (1.93)</td>
<td>2.76 (2.39)</td>
<td>3.31 (1.77)</td>
<td>2.68 (1.88)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week of gestation</td>
<td>20.29 (8.20)</td>
<td>21.66 (9.36)</td>
<td>23.71 (9.26)</td>
<td>17.32 (7.98)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\)Socioeconomic status was determined by using the Hollingshead index (1975); scores on the index ranged from 6 to 66 points.

...that the group consisting of light drinkers who reduced their drinking differed from the other three, which were not significantly different from each other. This group appears to be a conscientious one characterized by early recognition of pregnancy, early initiation of prenatal care, and abstinence from alcohol.

Next, the correlations between those demographic variables that differed among the groups and the dependent variables were examined. Those that were significantly related to a given dependent variable were used as covariates in the corresponding ANOVA. For example, race and socioeconomic status both differed among the groups and were significantly correlated with whether any social unit had told or helped the woman to stop drinking. They were used in the analysis of covariance examining the percentage of social units that had told or helped her stop as a function of pre-pregnancy drinking level and reduction in alcohol risk status. Race, socioeconomic status, and prior pregnancies were correlated with some dependent variables and were used as covariates for analyses of those dependent variables. Age and week of gestation were not correlated with any dependent variables and hence were not considered further.

Characteristics of Social Units

All but 2 women (99%) indicated that they socialized with at least one individual or group on a regular basis. Seventy percent indicated at least one group, 51% at least one individual, and 22% at least one individual and one group. On average, women identified 1.87 social units. Only 6 women listed 4 units, indicating that limiting respondents to four responses was not unduly restraining. Seventy-eight percent of the sample indicated that they socialized regularly with a family member or family group, making this the most common category. This was followed by group of male and female friends (46%), female friend or friends (34%), partner (27%), and male friends (3%). To determine whether type of social unit was related to reduction in alcohol risk status during pregnancy, we performed a series of 2 (pre-pregnancy heavy vs. light drinking) × 2 (reduced alcohol risk status during pregnancy) ANOVAs on whether each type of social group was mentioned (1 = mentioned and 0 = not mentioned). After we had controlled for the appropriate covariates, these analyses revealed no main effects or interactions involving the percentage of women who indicated that they socialized with family groups, female friends, male friends, partners, or mixed-sex groups. Thus, there was no evidence that socializing with male friends or partners was associated with heavier pre-pregnancy drinking or failure to reduce alcohol risk.

Drinking Practices of Social Units

We had predicted that women who drink heavily before pregnancy and those who fail to reduce their alcohol risk status during pregnancy are more likely to socialize with heavy-drinking networks. Three variables that were indicators of exposure to heavy drinking social units were created: (a) whether any of the identified units...
drank every day or nearly every day, (b) whether alcohol was served during the majority of social gatherings with any unit, and (c) whether the respondent indicated drinking as an activity she engaged in with any unit. As shown in Table 2, pre-pregnancy heavy drinkers were more likely than pre-pregnancy light drinkers to report frequent drinking among social units, $F(1, 149) = 6.51, p < .01$. Compared with light drinkers, women who drank heavily before pregnancy were more likely to report socializing with at least one social unit who drinks daily (32% vs. 15%). The main effect for risk reduction was not significant ($F < 1$). After we had controlled for race and socioeconomic status, there were significant main effects of both pre-pregnancy drinking, $F(1, 147) = 7.94, p < .01$, and risk reduction, $F(1, 147) = 4.01, p < .05$, on frequent serving of alcohol in social gatherings. Heavy drinkers (compared with light drinkers) and those who failed to reduce alcohol risk status (compared with those who did reduce) were more likely to report at least one social unit that served alcohol on most social occasions. Further, as shown in Figure 1, there was a significant interaction of pre-pregnancy drinking and reduction on whether drinking was indicated as an activity, $F(1, 149) = 11.02, p < .001$. Pre-pregnancy heavy drinkers who did not reduce their consumption were more likely than all other groups to indicate that drinking was an activity in which they engaged with at least one social unit. In summary, there was evidence that heavier drinkers and those who fail to reduce their alcohol risk status in pregnancy socialize with heavier drinking networks in which alcohol plays a more central role.

### Attitudes of Social Groups Toward Drinking

Women were asked about the attitudes of their identified social units toward (a) drinking during pregnancy, (b) her own drinking during pregnancy, and (c) her own drinking in general. Women were also asked whether each unit had ever told or helped her to stop drinking. We had predicted that women who drank heavily before pregnancy and those who failed to reduce their risk status would be more likely to report that at least one social unit approved of drinking in pregnancy and less likely to report that at least one unit told her to stop drinking. These predictions were only partially supported. Women who drank heavily before pregnancy were no more

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**Table 2**

*Mean Proportion of Positive Responses as a Function of Pre-Pregnancy Drinking Level and Alcohol Risk Reduction During Pregnancy*

<table>
<thead>
<tr>
<th>Behavior and attitude</th>
<th>Heavy drinkers</th>
<th>Light drinkers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No risk reduction ($n = 24$)</td>
<td>Risk reduction ($n = 29$)</td>
</tr>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Drinking practices of social networks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drink daily</td>
<td>.37</td>
<td>.49</td>
</tr>
<tr>
<td>Alcohol usually served</td>
<td>.67</td>
<td>.48</td>
</tr>
<tr>
<td>Drinking as activity</td>
<td>.50</td>
<td>.51</td>
</tr>
<tr>
<td>Approval of drinking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approve of her drinking, generally</td>
<td>.54</td>
<td>.51</td>
</tr>
<tr>
<td>Approve of her antenatal drinking</td>
<td>.21</td>
<td>.41</td>
</tr>
<tr>
<td>Approve of drinking in pregnancy</td>
<td>.29</td>
<td>.46</td>
</tr>
<tr>
<td>Tell or help to stop</td>
<td>.63</td>
<td>.49</td>
</tr>
<tr>
<td>Pressure to drink</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encouraged to drink</td>
<td>.33</td>
<td>.48</td>
</tr>
<tr>
<td>Hard to resist pressure from partner*</td>
<td>3.52</td>
<td>2.25</td>
</tr>
<tr>
<td>Hard to resist pressure from friends*</td>
<td>2.96</td>
<td>2.18</td>
</tr>
<tr>
<td>Can avoid alcohol*</td>
<td>5.04</td>
<td>1.94</td>
</tr>
</tbody>
</table>

*Note.* Values indicate proportion of participants who indicated positive responses from at least one social network.

*Responses on a self-reported 7-point Likert scale ranged from 1 (strongly disagree) to 7 (strongly agree).*
likely than light drinkers to report social approval of drinking in pregnancy ($p > .25$); however, there was a main effect of risk-reduction status on reported social approval of prenatal drinking, $F(1, 149) = 8.50, p < .01$. Women who failed to reduce risk, compared with those who did reduce, were more likely to report that at least one social unit approved of drinking in pregnancy (28% vs. 10%). After we had controlled for race and socioeconomic status, heavy drinkers were only somewhat more likely to report being told or helped to stop drinking compared with light drinkers (58% vs. 42%), $F(1, 147) = 3.11, p = .08$. There was no main effect for risk reduction on being told or helped to stop drinking ($F < 1$).

After we had controlled for number of previous pregnancies, race, and socioeconomic status, there were no effects for either pre-pregnancy drinking or risk reduction on reported approval of the woman’s drinking in general (both $p > .13$). However, both main effects were significant for reports of approval of her drinking in pregnancy. Women who were light drinkers before pregnancy, compared with pre-pregnancy heavy drinkers, reported more approval for their prenatal drinking (or lack of drinking), $F(1, 146) = 10.15, p < .01$. Further, women who reduced their alcohol risk status reported more approval than those who failed to reduce, $F(1, 146) = 15.10, p < .01$. Only 21% of initially heavy drinkers who did not reduce their risk status reported approval for their drinking from any social unit compared with 85% of light drinkers who reduced (i.e., abstained during pregnancy). Thus, despite evidence that heavy drinkers and women who fail to reduce drinking in pregnancy socialize with heavier drinking networks, they are still less likely than abstainers and lighter drinkers to experience approval for their drinking practices in pregnancy.

**Pressure to Drink During Pregnancy**

We had predicted that reported pressure to drink would be higher among women who did not reduce their alcohol risk status during pregnancy. For each of the identified social units, women were asked whether they had been encouraged to drink. Compared with pre-pregnancy light drinkers, women who drank heavily before pregnancy were more likely to report that at least one social unit had encouraged them to drink during pregnancy (25% vs. 13%), $F(1, 151) = 3.77, p = .05$. The main effect for risk reduction was not significant, however ($p > .25$). Three related items assessed ability to resist pressure to drink from friends, ability to resist pressure from partner, and confidence in ability to resist social pressure generally. After we had controlled for race and socioeconomic status, there was a significant interaction of Pre-Pregnancy Drinking x Risk-Reduction Status on the item assessing difficulty resisting pressure from friends, $F(1, 147) = 6.71, p = .01$. This interaction is presented graphically in Figure 2. Simple effects tests indicated that women who drank heavily before pregnancy and did not reduce their alcohol risk status during pregnancy reported more difficulty in resisting pressure to drink compared with all other groups, who did not differ from each other. The pattern of responses was similar for the other two pressure items, although the interactions did...
not attain conventional significance \((p = .09, p = .10)\).

**Ratio Analyses**

The above analyses were conducted using dichotomous dependent measures, indicating whether any social unit engaged in each practice or approved of drinking. Although this is appropriate for examining the effects of any exposure to a heavy-drinking network or approval of drinking in pregnancy, it cannot distinguish between the effects of minimal versus universal exposure or approval. For example, a woman who associates with one heavy-drinking social unit and three light-drinking units may experience less pressure to drink than one who associates with four heavy-drinking units and no light-drinking units. Using the proportion of social units who engage in a practice or approve of a type of drinking, we repeated the analyses. There were no substantive differences in the findings when results were analyzed in this way.

**Influence of Partner's Drinking**

Male partners are likely to have an important impact on the drinking habits of pregnant women. However, only 27% identified partner as a person with whom they socialized. This may have been due to the phrasing of the question, with women assuming that by socialize we meant someone that they met outside of the house, not the partner with whom they lived. For all women who indicated that they had a partner (89% across all groups), we examined whether pre-pregnancy alcohol consumption or in-pregnancy alcohol reduction was related to whether the partner consumes alcohol. Surprisingly, women who reduced their alcohol risk status were more likely to have a partner who drinks alcohol \((95\% \text{ vs. } 85\%)\), \(F(1, 131) = 4.44, p < .05\). There were no main effects or interaction for percentage of partners who met RDC for alcohol dependence \((ps > .20)\).

**Discussion**

The results of the present study provide some interesting and potentially important information concerning the influence of social networks on drinking among women before and after pregnancy recognition. We found evidence suggesting that reducing alcohol consumption during pregnancy is more difficult when there is social pressure to continue drinking. Women who failed to reduce their alcohol risk status during pregnancy were more likely to report socializing with people who serve alcohol frequently and network approval for prenatal drinking.

We were particularly interested in variables associated with failure to reduce alcohol risk status among heavy drinkers because these women are most at risk of delivering a baby affected by alcohol. Two major factors emerged. First, we found that heavy drinkers who failed to reduce their alcohol risk status were more likely than all others to report drinking as an activity in which they engaged with at least one group or individual. This suggests that the social networks of heavy drinkers who do not reduce drinking are more alcohol centered. The potential loss of social activities that is likely to result from abstaining may act as a barrier to reducing drinking during pregnancy. Interventions designed to reduce alcohol consumption in pregnancy may be more successful if they recognize this potential loss and encourage alternative activities and sources of social support. Further, because heavy drinkers who failed to reduce their alcohol risk status report more difficulty resisting social pressure to drink, it may be useful to teach heavy-drinking pregnant women how to recognize and resist these pressures.

Although we were primarily interested in social network factors associated with alcohol risk reduction during pregnancy, we also found evidence that the social networks of initially heavy drinkers were more likely to include daily drinkers and frequent serving of alcohol in social gatherings. Hence, our findings are consistent with previous work demonstrating a relationship between reports of friends' drinking and one's own drinking level \((e.g., \text{Hilton}, 1991)\). We did not find that any particular type of social unit \((e.g., \text{partner vs. family})\) was associated with drinking during pregnancy. In retrospect, this is not particularly surprising because within each type of unit there is likely to be considerable variability in alcohol consumption and attitudes toward prenatal drinking.

Despite the potential importance of these findings, several limitations should be considered. First and foremost, the study was cross-sectional rather than longitudinal. Consequently, whether the social network variables were the cause of
heavy or continued drinking or the result of such drinking cannot be ascertained. In addition, there was no independent assessment of network attitudes or drinking habits. Because information on the social units was assessed through the woman’s report, it is possible that this information reflects her own perceptions (see Fromme & Ruela, 1994). For example, although the woman might report drinking as an activity in which she engages with her friends, the friends may view the drinking as secondary to talking or listening to music and not mention it as an activity. A third limitation concerns the nature of the social network assessment. Participants were asked to indicate up to four individuals or groups of individuals with whom they socialize regularly. However, closeness, network size, and extent of that socialization were not assessed. Social influence may be greater among larger networks, when socialization is more frequent and when exerted by closer friends and relatives. Nonetheless, although these weaknesses in the social network assessment may have obscured some differences in the social networks, they would be unlikely to have spuriously created the observed findings. Longitudinal research, in which fine-grained social network, individual difference, and drinking characteristics are collected and tracked over the transition to parenthood, would be useful in determining the extent to which the social environment aids or impairs the ability of pregnant women to drink in a nonharmful manner.

References


