

Moderation in Excess: Binge Drinking and Social Interaction among College Students*

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ABSTRACT. The research on the relationships between sociability and alcohol consumption has produced inconsistent findings, leading some to conclude that there are no such relationships. However, this research has tended to focus on sociability as a personality construct, not on sociability defined as social activity. In the present study, college students ($N = 90$) used a social interaction diary to provide measures of their social activity, and they provided descriptions of their total alcohol consumption and of their frequency of binge drinking. Although total consumption per se was not reliably related to the quality or quantity of participants' social lives, frequency of binge drinking was related to some aspects of social interaction. Specifi-

cally, participants who had no binge-drinking episodes reported less intimacy and less disclosure in their interactions than those who had some episodes. However, men who reported having three or more binge episodes per week experienced less intimacy in their interactions than any other group of men or women. It is possible that because some binge drinking is normative and may be seen as desirable among college students, students who have a more normative number of binge-drinking episodes are integrated more fully into the college community than students who have no episodes or too many episodes. (*J. Stud. Alcohol* 55: 342-351, 1994)

THERE CAN BE little doubt that, for most people, alcohol is consumed in social settings. For this and other reasons, considerable research has focused on the relationships between sociability and alcohol consumption. Unfortunately, there is considerable inconsistency in the results of this research; some studies have found relationships between drinking and sociability, while others have not. Moreover, the relationships that have been found have not all been consistent across studies or samples (e.g., men and women). Recently, Wiggins and Wiggins (1992) suggested that some of the inconsistency in the results of this research could be accounted for by the differences among studies in how sociability was measured. Their hypothesis was that if sociability is a multidimensional construct, then some dimensions of sociability might be related to alcohol consumption, while others would not be. Wiggins and Wiggins measured individuals using six different measures of sociability, examined the dimensions underlying these measures and found that none of these dimensions was reliably related to alcohol consumption.

There are two striking characteristics of the body of research on sociability and drinking, and these characteristics may account for the inconsistency of the research on this topic. First, in most studies sociability has been operationalized through personality measures such as the MMPI (e.g., Hoffman et al., 1974), personality constructs such as alienation (Seeman and Anderson, 1983), or a host of other individual difference measures. That is, researchers have not focused on the relationships between consumption and sociability operationalized more behaviorally (e.g., as social interaction) or more multidimensionally. Second, most studies have obtained estimates of total, habitual consumption, often through the use of variants of the traditional quantity-frequency (Q-F) approach (Straus and Bacon, 1953). That is, researchers have not always distinguished patterns of consumption from total consumption. The present study sought to provide another perspective on the consumption-sociability relationship by examining the relationships between a multidimensional measure of social interaction and measures of alcohol consumption that included a measure of heavy episodic ("binge") drinking.

It is not clear if researchers' preference for using personality measures in examining consumption-sociability relationships is due to the fact that they have been interested more in the relationships between personality and consumption than in relationships between social activity and consumption or if it is due to the fact that valid measures of social activity have not been readily available. Regardless, it is possible that while alcohol consumption and measures of sociability as measured by personality

Received: February 23, 1993. Revision: May 11, 1993.

*Preparation of this study was made possible by grants from the Alcoholic Beverage Medical Research Foundation and the College of William & Mary faculty research program. The data gathered in this study were part of Kathryn Bilbro's master thesis which was conducted under the supervision of the first two authors.

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constructs are not related (granting the general conclusion reached by Wiggins and Wiggins, 1992), alcohol consumption may be related to more behaviorally oriented and more finely differentiated operationalizations of sociability. To further our understanding of the consumption-sociability relationship, the present study examined the relationships between alcohol consumption and sociability using measures of social activity provided by social interaction diaries. These diaries provided more direct measures of social experience than that provided by personality measures which assess individuals' feelings about or reactions to social experiences. In addition, the diaries provided a multidimensional assessment of social experience that permitted more finely grained analyses of consumption-sociability relationships than that allowed by most measures of sociability.

The specific diary method used in the present study was a variant of the Rochester Interaction Record (RIR), initially described by Wheeler and Nezlek (1977). The RIR is a self-report technique with which people provide detailed and quantified descriptions of their social interactions. A few times each day diary keepers use a standardized form to describe each interaction they have. In comparison to many measures which request respondents to summarize their reactions or feelings across a lengthy (or unspecified) period of time and across a wide (or unspecified) variety of events, this repeated measures format, combined with the specific focus of each of these measures, provides descriptions of individuals' interactions that are less prone to selective attention or recall, or the influence of single or unusual events (Reis and Wheeler, 1991). Moreover, the diary provides a multidimensional description of social activity. Summary measures derived from the diary describe people's social interactions at different levels of generality (e.g., all interactions versus interactions with same-sex friends versus interactions with romantic partners). Variants of the RIR have been used to investigate the relationships between social interaction and a variety of measures including loneliness (Wheeler et al., 1983), health (Reis et al., 1985), social support (Cutrona, 1986) and academic success (Nezlek et al., 1990). For summaries of research using the RIR see Nezlek et al. (1983) and Reis and Wheeler (1991).

Although certain features characterize studies using the RIR (e.g., all social contacts are described), different versions of the diary can (and have) measured different aspects of social interaction. For this reason it is probably best to think of the RIR more as a general method of studying social interaction than as a specific technique with a fixed format or emphasis (Nezlek, 1993). In terms of measures of the quantity of social interaction, the specific diary used in the present study was very similar to that used in previous research. Participants described all the social contacts they had that lasted 10 minutes or

longer by indicating when the event occurred, how long it lasted and with whom they were interacting. In terms of measures of different aspects of social interaction, the diary used in the present study focused more on self-disclosure in interaction than have previous versions. The diary focused on self-disclosure because of the considerable research and numerous theories that suggest that self-disclosure is a mechanism that plays a critical role in the establishment and maintenance of personal relationships and in moderating the course of social interaction.

In previous research, the RIR has been found to provide valid and useful measures of individuals' affective reactions to their interactions and of the quantity and distribution of their interactions. It was expected that this more direct and more finely differentiated measure of people's social behaviors would reveal relationships between social behavior and consumption that previous research (which has relied on less direct, more global measures) has not.

It is possible that the difficulties previous studies have had in demonstrating sociability-consumption relationships have been due also to the ways in which alcohol consumption has been measured. Many studies have used variants of the traditional quantity-frequency (Q-F) approach (Straus and Bacon, 1953) to estimate total, habitual consumption, and these estimates have been used to place participants into a single category on a unidimensional scale. For example, although Wiggins and Wiggins (1992) did not specify the precise method they used, given their description it is reasonable to assume that they used a Q-F variant to produce a six category system. Although studies using such approaches to measuring consumption have been informative, more about alcohol consumption and its correlates might be understood if greater attention were paid to distinguishing total consumption from consumption patterns.

For example, it would seem particularly important to consider the frequency with which people engage in "binge" drinking (i.e., heavy drinking episodes). For college students this has been set traditionally at five or more drinks on an occasion (Berkowitz and Perkins, 1987). Use of a binge measure would distinguish two individuals, one of whom has five drinks per occasion twice a week and the other of whom spreads 10 drinks out over three or four occasions, while these two would be similar in terms of the absolute amount they consumed. The present study addressed this issue by obtaining separate measures of overall consumption and of binge drinking. Binge drinking was chosen because binge episodes may be particularly important or salient social events, both intrapersonally and interpersonally. That is, binge drinking may reflect (or be assumed by others to reflect) certain proclivities, dispositions or interests, and may be associated with certain patterns of social behaviors.

The exploratory study described in this article was conducted, in part, to investigate the value of using social

interaction diaries to study alcohol consumption and its correlates. Previous research on naturally occurring social interaction provided clear directions for summarizing the interaction diaries themselves and for examining the relationships between these summaries and other constructs, but the plethora of studies and theories about alcohol consumption and social behavior made the formulation of specific hypotheses difficult. Nonetheless, existing research and theory provided one general direction for the study. Alcohol consumption is a normative behavior for the participants in the study described here, contemporary students (Johnston et al., 1988; Presley and Meilman, 1992), and so particular attention was paid to the possibility that more active and rewarding social lives might be associated with moderate levels of consumption rather than with abstinence, low levels of consumption, or very high levels.

Method

Sample

The sample consisted of 90 upperclassmen at the College of William and Mary who had been recruited from upper level courses. The study focused on intimacy and self-disclosure in close relationships, and the only requirements for participation were that the subjects were involved in a steady romantic relationship and that they had a platonic opposite-sex friendship.¹ No specific incentives to participate were offered. The representativeness of this sample is discussed later in this article.

Measures of social interaction

Social interaction was measured using a variant of the Rochester Interaction Record (RIR) (Wheeler and Nezlek, 1977), a self-report diary. Similar to most studies using the RIR, participants described the social interactions they had by indicating who their co-interactants were (using unique initials for each co-interactant) and the sex of each co-interactant. For interactions with more than three others, instead of recording individual initials, they indicated how many men and women were present. The date, time and length of each interaction also were reported. In addition, participants rated each interaction on six dimensions: (1) intimacy, (2) depth of self-disclosure, (3) breadth of self-disclosure, (4) enjoyment, (5) influence and (6) other's responsiveness. These ratings were made using 9-point scales, with the following labels: 1 = not, 3 = slightly, 5 = somewhat, 7 = quite, and 9 = very. These labels were chosen to represent roughly equal intervals according to research on the relative strength of modifiers (Cliff, 1959).

Procedure

During an introductory meeting (8-15 people), the importance of understanding social interaction was explained, and participants' role as collaborators in this naturalistic research was emphasized. Participants were told that the study concerned people's patterns of social interaction and that they would use a structured diary form to describe their social interactions. The instructions given to participants were modeled closely after those employed by Wheeler and Nezlek (1977). Participants were told to use the RIR to record every social interaction they had that lasted 10 minutes or longer. An interaction was defined as any encounter with another person (or people) in which the participants attended to one another and adjusted their behavior in response to one another, a definition similar to Goffman's (1971) concept of a "social with." Examples were provided to clarify what an interaction was (e.g., a conversation, dancing) and was not (e.g., simply sitting next to someone in a lecture).

The various response categories on the RIR were discussed until participants understood their definitions and felt comfortable with the forms and the procedure. *Intimacy* was defined as "how interpersonally close" an individual felt to his or her co-interactants, with specific mention that "intimacy did not have to include a sexual component." *Depth* of disclosure was defined as "how deep or intimate your disclosure was," and *breadth* of disclosure was defined as "how diverse the topics that you disclosed were." *Responsiveness* was defined as "how responsive to your needs and feelings you felt the people in the interaction were . . . the extent to which other people changed their behavior to accommodate your particular needs and feelings." *Enjoyment* was defined as "how pleasurable or satisfying" the participant found each interaction to be, and *influence* was defined in terms of the extent to which the participant felt that he or she "controlled the interaction (e.g., initiation, determining what was to be done, where to go, etc.)."

To facilitate accurate recording, participants were encouraged to complete the records at least once a day at a uniform time, such as before going to sleep. Participants were given a pad of interaction forms that were sufficient for the duration of the study, and they were given an instruction booklet that repeated the instructions provided during the meeting. During the study, participants were contacted to see if they were having any problems maintaining the diary; none were reported. Throughout the study, a collaborative, nondeceptive atmosphere was maintained, and the confidentiality of records was emphasized and closely guarded.

At the conclusion of the record-keeping period, participants were interviewed individually to obtain information about the difficulties, ambiguities and potential sources of

inaccuracy in their data. They were encouraged to be straightforward when describing how they maintained the diary. In compliance with instructions, they maintained their diaries an average of 7.3 days, and they reported updating their diaries an average of 1.7 times per day and spending an average of 16 minutes per day doing this. Participant's answers to other questions about how they maintained the diary (ease, accuracy, interference with social life, etc.) were very similar to those given by participants in other RIR studies (cf., Nezlek et al., 1983). These responses strongly suggested that participants maintained the diary in accordance with instructions and that the diaries were accurate representations of their social lives. In the interest of brevity, these data will not be presented.

Measures of alcohol consumption

Total alcohol consumption and frequency of heavy-drinking episodes were measured separately on a questionnaire administered following the interview. Total consumption was measured via the question, "During the past week, how many drinks did you consume?" Binge drinking was measured via the question, "During the past week, how many times did you have five or more drinks at one sitting?" For both questions, a drink was defined as 12 ounces of beer or wine cooler, a shot of distilled spirits or a 6-8 ounce glass of wine.

Summary of social interaction diaries

Participants' social interaction diaries were quantified by calculating summary measures that described their affective reactions to their interactions and the quantity of their interactions. The level of analysis used to summarize the interaction diaries was the individual participant. Summary measures were calculated using a version of Rochester Interaction Record Analysis Package (RIRAP) (Nezlek and Wheeler, 1984), a set of programs written specifically to summarize data generated by the RIR. See Wheeler and Nezlek (1977) and Nezlek and Wheeler (1984) for more detailed discussions of the analytic framework used as the basis for these procedures.

Participants' social interactions were described by three separate sets of summary measures representing different aggregation strategies. The first set (overall) described all of a participant's interactions. The second set (composition) distinguished interactions on the basis of the sex of the co-interactants. In this second set, separate summary measures described each participant's same-sex interactions (i.e., those in which all co-interactants were the same sex as the participant), their opposite-sex interactions (i.e., those in which all co-interactants were the opposite sex of the participant), and mixed-sex interactions

(i.e., those involving both male and female co-interactants). A third set of variables described interactions with participants' friends.

For each of these three levels of aggregation, reactions to interaction were measured by computing averages for the five ratings of interactions (i.e., intimacy, enjoyment, etc.) provided in the diary. Interaction quantity was measured by calculating: (1) the mean number of interactions per day, (2) the time per day spent in interaction (in minutes) and (3) the percent of all interactions that were of specific types (e.g., percent of interactions involving same-sex best friend). In addition, the size of each participant's social network was measured by calculating the number of different individuals with whom the participant interacted during the study (separately for same- and opposite-sex others and divided by the number of days the participant maintained the diary), and the percent of interactions that were dyads was computed.

Results

Overview of analyses

A variety of different analyses were conducted to examine the relationships between alcohol consumption and social interaction. Sex differences are common in research on social interaction and on alcohol consumption, so participant's sex was included in these analyses whenever possible. First, social interaction measures (aggregated at each of the three levels described above) were correlated with total alcohol consumed and with number of binge episodes, separately for men and women. Virtually none of these correlations were significant at the .05 level. Although it is often difficult to interpret null results, it should be noted that the power to detect a medium effect ($r = .35$) was .90 across the entire sample. Second, a series of 2 (sex of participant) \times 2 (nondrinker vs drinker) analyses of variance was done that compared the social interactions of drinkers and nondrinkers. These analyses found virtually no differences between drinkers and nondrinkers, and the power to detect a medium-sized main effect for abstinence ($\omega^2 = .2$) was above .90. Third, a series of 2 (sex of participant) \times 4 (amount of total consumption: zero, and a low vs medium vs high tertile split for those who drank) ANOVAS were done to compare individuals as a function of their total consumption. These analyses produced significant effects for consumption in a few of the analyses of ratings of interactions, although these effects were inconsistent across analyses at different levels of aggregation. Moreover, other divisions using total consumption were tried, and none of these produced a consistent pattern of results.

The analyses that produced the most reliable results were those that compared people as a function of their

frequency of binge-drinking episodes. These analyses were 2 (participant sex) \times 3 (frequency of binge drinking: no, low and high) ANOVAS, and the results of these analyses will be the focus of this article. As noted by Berkowitz and Perkins (1986), considerable research had found that college-aged men drink more than women and, as expected, on average men reported more binge episodes than women (1.27 vs 0.65). This discrepancy was such that slightly different cut-points of binge episodes were used to classify men and women. For both men and women, participants who reported having no binge episodes during the week of the study were classified as *no-binge*.² Women who reported one episode per week and men who reported one or two episodes per week were classified as *low-binge*. Women who reported two episodes or more per week and men who reported three or more episodes per week were classified as *high-binge*.

Using this system, the participants were classified as follows: 36 women and 13 men were assigned to the no-binge category, 14 women and 9 men were assigned to the low-binge category, and 10 women and 8 men were assigned to the high-binge category. For the men, the low-binge group consisted of 7 who reported 1 episode per week and 2 who reported 2 episodes per week, and the average for the high-binge group was 3.4 episodes per week. For the women, the average for the high-binge group was 2.5 episodes per week. As might be expected, the binge groups also differed in terms of total alcohol consumed ($F = 19.4$, 2/84 df, $p < .01$). For women, the averages of number of drinks consumed per week across the three conditions were 1, 5 and 15, and for the men the averages were 4, 12 and 20. However, particularly for men, there were some no-binge drinkers who consumed more alcohol than some low-binge drinkers, and there were some low-binge drinkers who consumed more than some high-binge drinkers.

Frequency of binge-drinking episodes and general social interaction

Measures describing general social interaction were analyzed with 2 (sex) \times 3 (binge frequency) analyses of variance, and the means from these analyses are presented in Table 1. The analyses of ratings of interactions suggested that frequency of binge drinking was related to participants' sense of intimacy (or closeness) with others. Significant main effects for frequency of binge drinking were found in the analyses of the following measures aggregated at *overall* level: depth of disclosure ($F = 4.0$, 2/84 df, $p < .05$), breadth of disclosure ($F = 3.3$, 2/84 df, $p < .05$) and intimacy ($F = 3.2$, 2/84 df, $p < .05$). Participants who reported no binge drinking reported less breadth and depth of disclosure and less intimacy across all their interactions compared to participants who re-

TABLE 1. Ratings of all interactions (means \pm SDs)

	No-binge	Low-binge	High-binge
Disclosure-depth	4.6 \pm 1.1	5.2 \pm 0.7	5.2 \pm 0.9
Disclosure-breadth	4.5 \pm 1.0	5.0 \pm 0.6	4.9 \pm 0.8
Intimacy			
Women	4.8 \pm 1.2	5.2 \pm 0.5	5.5 \pm 1.0
Men	4.9 \pm 1.6	5.8 \pm 0.9	3.9 \pm 1.0
Responsiveness			
Women	6.4 \pm 0.9	6.3 \pm 0.9	6.7 \pm 1.4
Men	5.8 \pm 1.1	6.4 \pm 0.7	5.0 \pm 1.2

ported some binge drinking. However, the main effect for frequency of binge drinking in the analysis of intimacy was qualified by a significant interaction of participant sex and binge frequency ($F = 4.5$, 2/84 df, $p = .01$). This interaction was due to the fact that high-binge men found much less intimacy in their interactions than did participants in any other group. The analysis of responsiveness did not produce a significant main effect for frequency of binge drinking, although it did produce a significant interaction of participant sex and binge frequency ($F = 3.9$, 2/84 df, $p < .05$), and the group means for this analysis were similar to those found in the analysis of intimacy. Men in the high-binge group felt that others were less responsive to their needs and feelings than did participants in any other group. In contrast to these differences in reactions to interactions, there were no significant or marginally significant effects involving frequency of binge drinking in the analyses of quantity of interaction (i.e., number of interactions per day, time per day spent in interaction, or size of same- and opposite-sex social networks).

By design, the *overall* measures analyzed in the previous section aggregated across all types of interactions, and they provided a broad view of the differences that existed in social interaction as a function of participants' frequency of binge drinking. To determine if these differences varied across different types of social interaction, additional analyses were conducted that included the sex composition of interactions as a factor, i.e., 2 (sex of participant) \times 3 (frequency of binge drinking) \times 3 (composition: same-sex, opposite-sex and mixed-sex) ANOVAS, with composition as a within-subjects variable. These additional analyses suggested that the differences reported above did not vary across different types of social interactions. That is, there were no significant or marginally significant effects involving the gender composition of social interaction and the frequency of binge drinking in the analyses of intimacy, depth and breadth of disclosure, or responsiveness.

The previous analyses examined the relationships between binge drinking and reactions to all of a participant's social interactions; however, because intimacy is closely

related to friendship development and maintenance, it was important to investigate specifically the relationship between binge drinking and reactions to interactions with close friends. It cannot be assumed that the characteristics of interactions with close friends are the same as the characteristics of general social interaction. Therefore, measures aggregated across only social interactions that involved close friends were analyzed with the same type of analyses as those used to analyze measures describing all social interactions.

Binge drinking and interactions with close same-sex friends

Close same-sex friends were determined by examining each participant's same-sex social network (i.e., all the different same-sex people with whom the participant interacted during the study). Same-sex close friend was designated as the most frequently mentioned same-sex co-interactant, and a set of measures describing interactions with this person was calculated. Use of frequency provided a clear operationalization of friendship status that was consistent across participants. Moreover, previous research has shown that frequency of contact is a reliable indicator of the closeness of friendships (Hays, 1989; Nezlek, 1993; Reis and Wheeler, 1991; Wheeler and Nezlek, 1977), particularly for same-sex friendships. Further confirmation of the validity of this convention came from participants' descriptions of who their close same-sex friends were. As part of their poststudy interviews, participants indicated who their same-sex best friends were. In the present study, 42 of the 74 participants who indicated that their same-sex best friend attended William & Mary described their most frequently occurring same-sex co-interactant as their same-sex best friend.

The 2 (participant sex) \times 3 (frequency of binge drinking) ANOVAs of reactions to interactions with same-sex close friends produced significant main effects for binge-drinking frequency in the analyses of intimacy ($F = 3.9$, 2/84 df, $p < .05$) and depth of disclosure ($F = 3.5$, 2/84 df, $p < .05$). The mean (\pm SD) ratings of interactions with same-sex close friends were: depth of disclosure—no-binge, 4.6 ± 1.2 ; low-binge, 5.3 ± 1.1 ; high-binge, 5.2 ± 1.0 ; and intimacy—no-binge, 4.6 ± 2.0 ; low-binge, 5.8 ± 1.0 ; high-binge, 5.7 ± 1.2 . As can be seen, compared to participants who reported having at least one binge-drinking episode (the low- and high-binge groups), participants in the no-binge group reported less intimacy and less depth of disclosure in interactions with their same-sex close friends. Similar to the results of analyses describing all interactions, there were no significant or near-significant effects involving frequency of binge drinking in the analyses of measures of the quantity of interaction with same-sex close friends.³

TABLE 2. Ratings of interactions with romantic partners (means \pm SDs)

	No-binge	Low-binge	High-binge
Intimacy			
Women	6.2 \pm 1.6	6.1 \pm 0.8	6.9 \pm 1.2
Men	6.3 \pm 1.7	6.8 \pm 0.8	4.2 \pm 1.5
Responsiveness			
Women	6.8 \pm 1.3	6.5 \pm 1.1	7.2 \pm 1.7
Men	6.6 \pm 1.4	6.8 \pm 1.1	5.3 \pm 1.4

Binge drinking and interactions with romantic partners

For purposes of the present study, close opposite-sex friends were defined as romantic partners, and a set of measures describing interactions with this person was calculated. Of the 90 participants, 86 interacted with their romantic partner during the course of the study and, for the four participants who did not, their most frequently occurring opposite-sex co-interactant was substituted.⁴ The results of the analyses of interactions with romantic partners were slightly different from the results of some of the previous analyses. There were significant interactions of sex and binge frequency in the analyses of intimacy ($F = 8.0$, 2/84 df, $p < .01$) and responsiveness ($F = 4.0$, 2/84 df, $p < .05$). As can be seen from the means presented in Table 2, this interaction was primarily due to the fact that, compared to all other groups, high-binge men reported less intimacy in interactions with their romantic partners, and they found their romantic partners to be less responsive. These results are very similar to those that were found in the analyses of reactions to all interactions.

Unlike the results of the analyses of any other type of interaction, there were significant effects for binge frequency in the analyses of quantity of social interaction with romantic partners (Table 3). There were significant main effects for frequency of binge drinking in the analyses of average number of interactions per day ($F = 4.1$, 2/84 df, $p < .05$), in the percent of interactions involving romantic partners ($F = 4.2$, 2/84 df, $p < .05$) and in the percent of these interactions that were dyads ($F = 4.1$, 2/84 df, $p < .05$). As can be seen from the means pre-

TABLE 3. Quantity of interactions with romantic partners

	No-binge	Low-binge	High-binge
Interactions per day			
Combined	1.8 \pm 1.2	2.0 \pm 1.5	1.0 \pm 0.7
Percent of interactions			
Women	0.32 \pm 0.16	0.41 \pm 0.16	0.31 \pm 0.16
Men	0.47 \pm 0.18	0.40 \pm 0.21	0.23 \pm 0.15
Combined	0.40 \pm 0.17	0.40 \pm 0.18	0.27 \pm 0.16
Percent of interaction that were dyads			
Women	0.85 \pm 0.16	0.87 \pm 0.12	0.88 \pm 0.13
Men	0.86 \pm 0.12	0.83 \pm 0.15	0.62 \pm 0.34
Combined	0.86 \pm 0.14	0.85 \pm 0.13	0.75 \pm 0.23

sented in Table 3, high-binge participants had fewer interactions per day with their romantic partners (both absolutely and on a percentage basis) and fewer of these interactions were dyads (i.e., with the romantic partner only). However, the main effects for binge frequency in the analyses of percent of interactions with romantic partner and percent of these interactions that were dyads were qualified by significant (or near significant) interactions of participant sex and binge frequency (percent: $F = 3.6$, $2/84$ df, $p < .05$; percent dyads: $F = 2.4$, $2/84$ df, $p < .10$). The data in Table 3 show that this interaction was due primarily to the fact that there was no difference between men and women in the low-binge category. In comparison, high-binge men had a smaller percent of interactions with their romantic partner than did high-binge women, and fewer of these interactions were dyads. Interestingly, no-binge women had a smaller percent of interactions with their romantic partners than did low-binge women or low-binge men.

Binge drinking and measures of sociability

In addition to maintaining the social interaction diaries, participants completed three individual difference measures: the Center for Epidemiological Studies Depression scale (Radloff, 1977), a widely used measure of depression; the Bem Sex Role inventory (Bem, 1974), a widely used measure of sex-role orientation that produces two scores, expressivity and instrumentality; and the Perceptions of Risk in Intimacy Inventory (Pilkington and Richardson, 1988), a recently developed measure of the extent to which people perceive risk in being intimate with others. To determine if these measures of sociability were related to alcohol consumption, participants' scores on these measures were subjected to the same series of analyses as were the measures of social interaction (i.e., analyses were done comparing participants as a function of total consumption and as a function of binge drinking). In agreement with the results of Wiggins and Wiggins (1992), no relationships were found between these measures of sociability and alcohol consumption, no matter how consumption was defined or how the relationship was evaluated.

Discussion

The present results suggest that the relationships between individuals' alcohol consumption and the nature of their social lives is neither simple nor straightforward. Considering the results as a whole, the aspect of social interaction that was the most consistently related to alcohol consumption was the intimacy or closeness that people experienced in contact with others; however, this was true for alcohol consumption only as measured by frequency of binge drinking, not as measured by total consumption, and the exact nature of this relationship varied

as a function of the sex of the person in question, the specific dimension of interaction being considered and just how much binge drinking the person did.

In general, those who reported some binge drinking had more intimate interactions, including deeper and broader self-disclosure, and they found their co-interactants to be more responsive than did those who reported no binge drinking. However, men who reported high levels of binge drinking experienced less intimacy and interpersonal closeness in their interactions compared to other men and to women. Moreover, it is important to note that differences in social interaction cannot be attributed solely or primarily to behaviors that occurred during binge episodes. Binge episodes accounted for only a small portion of each participant's social interactions. On average, participants described approximately 40 interactions during the course of the study, and they reported at most only a few binge episodes during the same period.

The results of the analyses of interactions with same-sex friends were fairly clear-cut. Participants who reported some binge drinking (either high or low) found interactions with their same-sex close friends to be more intimate than participants who reported no binge drinking. The analyses of individual difference measures related to sociability did not suggest a particular explanation for this finding; however, these analyses were far from exhaustive. Individuals who binged may have differed from nonbingers in terms of some dimension(s) relevant to social interaction. For example, they may have been less inhibited or more spontaneous, or less concerned about losing control in social situations, or they may have been perceived by their peers as being this way and this perception lead to differential treatment and different interactions.

One of the most important findings of the study was the association between binge drinking and the intimacy and responsiveness of interactions with romantic partners. Men who reported having three or more binge episodes per week found their romantic partners to be less responsive, and they found these relationships to be considerably less intimate than did any other group in the study. In contrast, for women, higher binge drinking was associated with more responsive and more intimate romantic relationships. This may have been due to the fact that modest amounts of binge drinking (one or two episodes per week) on the part of one or both members of a couple is associated with more intimate and responsive romantic relationships, while heavy bingeing is associated with poorer relationships. Recall that different criteria were used for men and women to distinguish the high- and low-binge groups. In fact, most of the high-binge women would have been classified as low-binge if they were men. The relatively greater intimacy and responsiveness reported by the high-binge women may not have been due to the fact that heavier binge drinking is associated with the intimacy and

responsiveness of women's romantic relationships. If more women had more binge episodes (three or more per week), the intimacy and responsiveness of their relationships might have suffered in the same way that men's suffered.

One question at the core of this issue is whether the criteria for defining "heavy" binge drinking should be sex-based or not. The results from this study pertaining to the intimacy of interactions suggest that sex-based classifications are not needed; modest binge drinking (on an absolute scale) was associated with more positive interactions with romantic partners for both men and women. However, using sex-based classifications, high-binging men and women were similar in one important regard: They both had less contact with their romantic partners than did men or women who binged moderately or not at all, suggesting that sex-based classification may be useful. Furthermore, it is not clear if the same criterion for a binge episode, five or more drinks at one sitting, should be used to describe men and women. Women tend to be smaller than men, and it may be appropriate to use a lower cut-point (perhaps four or more drinks at one sitting) to define a binge episode for women. For example, Ratliff and Burkhart (1984) found that gender differences in alcohol consumption were minimal when consumption was adjusted for body weight. Clearly, more research is needed to determine the importance of considering biological factors such as sex and body mass when defining binge drinking.

Regardless of whether sex-based measures of binge drinking are appropriate, one of the important implications of these results for studying the relationships between alcohol consumption and social behavior is that researchers should assess patterns of alcohol consumption as well as total consumption. Using total measures of total consumption, previous researchers have had difficulty in demonstrating reliable relationships between alcohol consumption and sociability/social behavior. The present results suggest that some of these difficulties may have been due to a reliance on total consumption measures that do not accurately reflect heavy episodic drinking.

Some researchers have relied on measures of drinking patterns, and it is important to note that to some extent these results contradict the research demonstrating that binge drinking is associated with poorer functioning and social integration (e.g., Wechsler and McFadden, 1979; Wechsler and Rohman, 1981). Students in the present study who did not binge at all had less intimate relationships with both same-sex friends and romantic partners. However, it is difficult to place the present results in the context of specific previous research because few studies have investigated the relationships between alcohol consumption and social activity using techniques similar to those used in the present study. Nonetheless, prior research can provide a broad context for understanding the

present results. There can be little doubt that alcohol consumption, like many other behaviors, is influenced by social norms. In general, people will drink more when the prevailing norms of their reference groups favor drinking, and they will drink less when these norms do not favor drinking. The available data suggest that some binge drinking is normative on many contemporary campuses (e.g., Presley et al., 1993; Wechsler and Issac, 1992), and so any explanation of the results of the present study should include consideration of the influences such norms may have had on the behaviors of the participants in the present study.

The assumption that participants viewed some binge drinking as normative and perhaps desirable (as an indication of maturity among other things) provides a reasonable explanation for the findings that those who did not have any binge episodes reported less disclosure and lower intimacy than those who had some heavy-drinking episodes. People who did not "binge" may not have been as well integrated into the larger community as those who did, perhaps because they were not behaving in as normative or socially desirable a fashion as were the "bingers." Occasional binge drinking may serve as evidence that an individual is relaxed, is easy to get along with, and is someone with whom one can have a good time. In contrast, students who do not binge drink may be seen by their peers as more reserved, anxious or controlled (i.e., someone with whom it would not be that easy to have a good time). Clearly, more research is needed to understand stereotypes regarding different drinking patterns.

However, the above explanation does not account for the dramatically lower intimacy and responsiveness reported by high-binging men and the diminished contact that high-binging men and women had with their romantic partners. Although binge drinking may be viewed (normatively) as desirable, excessive binge drinking may interfere with the maintenance of satisfactory romantic relationships. The time spent under the influence and recovering from binge episodes may have reduced the time that people (particularly men) had available for their romantic partners. In addition, high-binge drinking may have served as a self-handicapping mechanism (Berglas, 1987), providing an excuse for the failure (or inability) to establish intimate relationships. Individuals who were intoxicated frequently could have attributed the difficulties they had in relationships to their drinking, not to other personal characteristics such as social skills. Alternatively (or concurrently), binge drinking may reflect difficulties people are experiencing in close relationships. It may represent attempts to "forget" the problems one is experiencing. The relationships between drinking patterns and relational stability and quality among nonclinical populations should be an important focus of future research.

Before concluding, an important limitation to the generalizability of this study needs to be discussed. Although

a considerable body of data clearly indicates that volunteers for, and participants in, RIR diary studies are not distinguishable from the general student population on a wide variety of measures (Nezlek, 1993), the sample in this study was limited to students who had an active same-sex friendship, an active opposite-sex friendship and an active romantic relationship. In the general population from which this sample was drawn virtually all students report having an active same-sex friendship and about half report being involved in a romantic relationship. Reliable estimates of the relative occurrence of opposite-sex friendships are not available (O'Meara, 1989), although the present sampling procedure suggested that they are less common than either same-sex friendships or romantic relationships.

Although the unavailability of precise estimates of the percent of students who have opposite-sex friendships makes it difficult to determine just how unusual the present sample was, it is reasonable to conclude that, in terms of the existence of an opposite-sex friendship, this sample did not represent the "typical" or "average" student. It is not clear, however, how meaningful this difference was. Approximately half of the participants did not interact at all with their opposite-sex friends, a lack of contact that calls into question the centrality of such relationships in participants' social lives. Nonetheless, the fact that these participants indicated that they had these three relationships distinguished them from their peers. Although the available data do not indicate this, the existence of these relationships may reflect the fact that these students had more mature styles of relating to others, a broader range of interpersonal skills, or stronger motivation to establish close relationships, differences that might be found on other measures not taken in the present study.

More concretely, the similarity of this sample to the more general population can be evaluated in terms of participants' patterns of social interaction, measures of their psychological characteristics, and their alcohol consumption. Participants' patterns of social interactions were very similar to patterns found in studies of other similar populations. The average number of events per day, the length of these events and the average enjoyment, intimacy and influence found in interaction are similar to the averages describing other samples that were not selected on the bases of the existence of certain relationships. See Nezlek (1993), Nezlek et al. (1983) and Reis and Wheeler (1991) for a more detailed presentation of data describing other samples. Moreover, participants' perceptions of risk in intimacy, their reports of depressive symptoms and their sex-role orientations were similar to those found in reference populations. See Pilkington and Richardson (1988), Nezlek et al. (1992) and Bem (1974, 1977) for data describing these measures for other similar samples that were not selected on the bases of the existence of certain types of social relationships.

In terms of their alcohol consumption, the present sample was similar to the general population from which the sample was drawn. As part of a mass testing administered in introductory psychology classes the same semester as the present study was conducted, 258 upperclassmen (153 women and 105 men) described their drinking behaviors using the same scales as those used in this study. The average number of binge episodes reported by the women in this reference sample was .84 (compared to .67 in the present sample), and the average reported by the men was 1.64 (compared to 1.27 in the present sample). Using the classification system that served as the basis for the analyses in the present study, for women, the higher average in the reference sample was due primarily to a somewhat greater proportion of high-binging drinkers (20%) than in the present sample (16%). For the men, the difference was due primarily to the fact that, although the proportion of high-binge drinkers was virtually identical in the two samples (27% vs 28%), the high-binging men in the reference sample reported having more binge episodes per week (4.9) than the high-binging men in the present sample (3.4). However, it is also noteworthy that the present sample had a smaller proportion of no-binge participants than found in the reference sample (60% vs 64% of women and 43% vs 51% of men, respectively).

Taken together, these data suggest that the drinking patterns of the present sample corresponded roughly to the general student population, although there were relatively fewer very heavy drinkers and relatively more moderate drinkers in the present study. Nonetheless, many of the important results of the present study concerned differences between those with no-binge episodes and those with a moderate amount of binge drinking, and it is difficult to attribute these results to differences in consumption between the study sample and the reference sample.

It appears that Disraeli's observation that "There is moderation even in excess" provides an appropriate context for the present results. The moderation of an excess (binge drinking) seems to have been associated with a positive outcome, i.e., more intimate (and perhaps more meaningful) relationships. Although the usual caveats about the representativeness of the sample, the scope of the domains covered by the instruments and the limits of the available statistics need to be kept in mind when considering the generalizability of the results of the present study, these results suggest, as many have suspected, that alcohol consumption and social behavior are related. However, the results also suggest that these relationships may be more complicated than many have imagined them to be. The difficulties previous researchers have had in documenting relationships between consumption and social behavior may have been due to their relative reliance on measures of total consumption instead of measures of patterns of consumption (binge drinking), as well as to their reliance on personality-style measures of social be-

havior that do not provide sufficiently detailed descriptions of different aspects of social life. In future research, measures of social behavior/sociability and alcohol consumption should be both precise and multidimensional to determine the specific nature of the relationships between these two constructs.

Acknowledgment

We are grateful to Phillip Meilman for his comments on the manuscript.

Notes

1. Less than half of the participants interacted with this platonic friend over the course of the study, and data describing interactions with this friend will not be presented because of the small part of the sample that contributed analyzable data.
2. Additional analyses were done that included a distinction between nondrinkers and drinkers who had no binge episodes; however, this distinction was not informative.
3. Additional analyses were conducted that compared operationally defined same-sex close friends who were described as best friends in the interview with those who were not. These analyses did not reveal any differences in the patterns of results between these two groups. In addition, previous research (e.g., Nezlek, 1993) has suggested that frequency of contact over a week period is a more reliable indicator of closeness for same-sex friends than are single-item assessments. Therefore, the analyses in this article focused on interactions with the most frequently mentioned same-sex co-interactants instead of on interactions with the nominated same-sex best friend.
4. Analyses that excluded the four participants who did not interact with their romantic partner during the course of the study produced results that were virtually identical to those presented in this article.

References

- BEM, S.L. The measurement of psychological androgyny. *J. Cons. Clin. Psychol.* **42**: 155-162, 1974.
- BEM, S.L. On the utility of alternative procedures for assessing psychological androgyny. *J. Cons. Clin. Psychol.* **45**: 196-205, 1977.
- BERGLAS, S. The self-handicapping model. In: BLANE, H.T. AND LEONARD, K.E. (Eds.) *Psychological Theories of Drinking and Alcoholism*, New York: Guilford Press, 1987, pp. 305-345.
- BERKOWITZ, A.D. AND PERKINS, H.W. Recent research on gender differences in collegiate alcohol use. *J. Amer. Coll. Hlth* **36**: 123-129, 1987.
- CLIFF, N. Adverbs as multipliers. *Psychol. Rev.* **66**: 27-44, 1959.
- CUTRONA, C.E. Behavioral manifestations of social support: A microanalytic investigation. *J. Pers. Social Psychol.* **51**: 201-208, 1986.
- GOFFMAN, E. *Relations in Public*, New York: Basic Books, Inc., 1971.
- HAYS, R.B. The day-to-day functioning of close vs. casual friendships. *J. Social Pers. Relat.* **6**: 21-38, 1989.
- HOFFMAN, H., LOPER, R.G. AND KAMMEIER, M.L. Identifying future alcoholics with MMPI alcoholism scales. *Q. J. Stud. Alcohol* **35**: 490-498, 1974.
- JOHNSTON, L.D., O'MALLEY, P.M. AND BACHMAN, J.G. *Illicit Drug Use, Smoking, and Drinking by America's High School Students, College Students, and Young Adults, 1975-1987*, DHHS Publication No. (ADM) 89-1602, Washington: Government Printing Office, 1988.
- NEZLEK, J.B. Methodological and analytic issues in conducting diary research. In: NEZLEK, J.B. (Chair) *Current Research Using Social Interaction Diaries*. Symposium conducted at the International Conference on Personal Relationships, Milwaukee, Wisconsin, 1993.
- NEZLEK, J.B., SHEAN, G. AND IMBRIE, M. *Depression and Everyday Social Interaction*, Boston: Eastern Psychological Association, 1992.
- NEZLEK, J.B. AND WHEELER, L. RIRAP: Rochester interaction record analysis package. *Psychol. Documents* **14**: 6 (Ms. No. 2610), 1984.
- NEZLEK, J.B., WHEELER, L. AND REIS, H.T. Studies of social participation. In: REIS, H.T. (Ed.) *Naturalistic Approaches to Studying Social Interaction*, San Francisco: Jossey-Bass, Inc., Pubs., 1983, pp. 57-75.
- NEZLEK, J.B., WHEELER, L. AND REIS, H.T. Academic performance and social behavior. *J. Social Pers. Relat.* **7**: 291-309, 1990.
- O'MEARA, J.D. Cross-sex friendship: Four basic challenges of an ignored relationship. *Sex Roles* **21**: 525-543, 1989.
- PILKINGTON, C.J. AND RICHARDSON, D.R. Perceptions of risk in intimacy. *J. Social Pers. Relat.* **5**: 503-508, 1988.
- PRESLEY, C.A. AND MEILMAN, P.W. *Alcohol and Drugs on American College Campuses: A Report to College Presidents*. Carbondale, Ill.: Southern Illinois University, 1992.
- PRESLEY, C.A., MEILMAN, P.W. AND LYERLA, R. *Alcohol and Drugs on American College Campuses: Use, Consequences, and Perceptions of the Campus Environment*, Vol. 1, Carbondale, Ill.: Southern Illinois University, The Core Institute, 1993, pp. 189-191.
- RADLOFF, L.S. The CES-D scale: A self-report depression scale for research in the general population. *Appl. Psychol. Measur.* **1**: 385-401, 1977.
- RATLIFF, K.G. AND BURKHART, B.R. Sex differences in motivations for and effects of drinking among college students. *J. Stud. Alcohol* **45**: 26-32, 1984.
- REIS, H.T. AND WHEELER, L. Studying social interaction using the Rochester Interaction Record. In: ZANNA, M.P. (Ed.) *Advances in Experimental Social Psychology*, Vol. 24, San Diego, Calif.: Academic Press, Inc., 1991, pp. 270-318.
- REIS, H.T., WHEELER, L., KERNIS, M.H., SPIEGEL, N. AND NEZLEK, J. On specificity in the impact of social participation on physical and psychological health. *J. Pers. Social Psychol.* **48**: 456-471, 1985.
- SEEMAN, M. AND ANDERSON, C.S. Alienation and alcohol: The role of work, mastery, and community in drinking behavior. *Amer. Sociol. Rev.* **48**: 60-77, 1983.
- STRAUS, R. AND BACON, S.D. *Drinking in College*, New Haven, Conn.: Yale Univ. Press, 1953.
- WECHSLER, H. AND ISSAC, N. 'Binge' drinkers at Massachusetts colleges: Prevalence, drinking style, time trends, and associated problems. *JAMA* **267**: 2929-2931, 1992.
- WECHSLER, H. AND MCFADDEN, M. Drinking among college students in New England: Extent, social correlates, and consequences of alcohol use. *J. Stud. Alcohol* **40**: 969-996, 1979.
- WECHSLER, H. AND ROHMAN, M. Extensive users of alcohol among college students. *J. Stud. Alcohol* **42**: 149-155, 1981.
- WHEELER, L. AND NEZLEK, J. Sex differences in social participation. *J. Pers. Social Psychol.* **35**: 742-754, 1977.
- WHEELER, L., REIS, H.T. AND NEZLEK, J. Loneliness, social interaction, and sex roles. *J. Pers. Social Psychol.* **45**: 943-953, 1983.
- WIGGINS, B. AND WIGGINS, J.A. Specification of the association between sociability and drinking levels among college students. *J. Stud. Alcohol* **53**: 137-141, 1992.

Journal of Studies on Alcohol

THE JOURNAL OF STUDIES ON ALCOHOL (ISSN 0096-882X) is published bimonthly at the Center of Alcohol Studies by Alcohol Research Documentation, Inc., Rutgers University, New Brunswick, N.J. 08903. The six issues—dated January, March, May, July, September and November—contain original research reports that contribute significantly to fundamental knowledge about alcohol, its use and misuse, and its biomedical, behavioral and sociocultural effects.

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