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# BRIEF REPORT

# Are College Students' Perceptions of Social Network Drinking Accurate?: Examining the Validity of the Important People Instrument

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A growing body of research has examined self-reported measures of social network alcohol use, such as the Important People Instrument (IPI), among college students. However, it remains unknown whether IPI judgments of friends' alcohol use are accurate. We hypothesized that judgments of friends' drinking status (e.g., heavy drinker) and maximum drinks per day would primarily reflect friends' self-report (accuracy), rather than projection of participants' self-report (assumed similarity) or a systematic tendency to under- or overestimate behavior (directional bias). We also expected that accuracy would be stronger when participants were women, had more contact with friends, or drank less each week or when friends drank less each week. In all, 654 randomly selected, 1st-year students indicated their 5 closest friends in their class, yielding 111 friendship dyads. Participants judged each friend's drinking status and maximum drinks per day and rated these items for themselves. Gender, frequency of contact, and typical drinks per week were assessed. Results indicated that judgments of drinking status and maximum drinks per day were highly accurate. Accuracy effects were consistently stronger than was assumed similarity; directional bias was nonsignificant. Accuracy did not depend on gender or participants' weekly consumption but was stronger for both outcomes when contact was more frequent and, for maximum drinks per day, when friends' weekly consumption was relatively low. Results support validity of the IPI for assessing social network alcohol use among students. Given that perceptions are accurate, research is needed on intervention strategies that facilitate management of risky peers.

Keywords: college student alcohol use, social networks, peer influence, Important People Instrument

College students continue to engage in high levels of alcohol consumption, contributing to a range of negative outcomes, as well as increased likelihood of diagnosis with an alcohol use disorder (Chassin, Pitts, & Prost, 2002; Hingson, Zha, & Weitzman, 2009; Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2016). Research has supported that peer social networks play a role in college students' alcohol use (Rinker, Krieger, & Neighbors, 2016). These studies reflect both self-reported (egocentric) and peer-reported (sociocentric) measures of the alcohol use of specific, important members of an individual's peer group. The Important People Instrument (IPI; Clifford & Longabaugh, 1991;

Zywiak, Longabaugh, & Wirtz, 2002), a widely used egocentric measure of perceived network drinking, is increasingly being used with college students (e.g., Meisel & Barnett, 2017; Reid & Carey, 2018). Although a common concern (Bauman & Ennett, 1996), research to date has not examined whether perceptions captured using the IPI are accurate. The present research therefore examined whether IPI estimates of a friend's alcohol consumption matched the friend's own report, and whether accuracy depended on gender, frequency of contact, and the participant's and friend's weekly alcohol consumption.

Understanding whether perceptions of network alcohol use are accurate is important. If social network measures largely reflect misperceptions, interventions that foster more accurate perceptions of friends' consumption should be sufficient for reducing drinking. Widespread misperceptions would also call into question the validity of using egocentric measures to examine whether peer alcohol use shapes personal behavior, given issues with directionality (Bauman & Ennett, 1996). If, however, perceptions are accurate, interventions may need to address the whole network (e.g., Valente, 2012), and researchers can confidently utilize less costly egocentric approaches to examine network drinking.

The IPI was developed to assess perceptions of network members' alcohol consumption, support for treatment, and general social support (Clifford & Longabaugh, 1991). Research on college students has focused primarily on the consumption items (e.g.,

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Hallgren & Barnett, 2016; Johnson et al., 2010), including drinking status, ranging from recovering alcoholic to heavy drinker, maximum drinks consumed in one day, and frequency of consumption.

Psychological processes may pull individuals toward both inaccurate and accurate perceptions of peer behavior. First, consistent with the false consensus effect (Ross, Greene, & House, 1977), individuals may assume similarity and project their own behavior onto peers (Bauman & Ennett, 1996). Individuals may also have a tendency to systematically overestimate peers' consumption, displaying directional bias. Indeed, college students estimate that close friends, in the aggregate, drink more alcohol than they themselves do (Carey, Borsari, Carey, & Maisto, 2006; Perkins & Berkowitz, 1986). However, this optimistic bias disappears when comparing to a specific individual (Perloff & Fetzer, 1986). In support of this phenomenon, students overestimate their group's typical daily consumption and heavy drinking frequency but are more accurate for specific friends (Cox et al., 2019; Kenney, Ott, Meisel, & Barnett, 2017). Accordingly, judgments of a specific individual's alcohol use may be quite accurate.

Accurately estimating friends' alcohol use may depend on various factors. Women display smaller discrepancies in estimates of close friends' versus own drinking than men do and may be more accurate (Carey et al., 2006). Accuracy may also depend on frequency of contact, such that individuals who spend more time together should provide more accurate judgments (Laforge, Borsari, & Baer, 2005). In addition, accuracy may depend on both individuals' level of alcohol consumption. Heavier drinkers may be more likely to overestimate friends' behavior (Cox et al., 2019; Kenney et al., 2017). Likewise, accurately categorizing friends on the IPI should be easy if they abstain but more subjective and difficult at higher weekly drinking.

Research examining accuracy in judgments of peer alcohol use has yielded mixed results. Adolescents demonstrate substantial inaccuracy in classifying friends as drinkers versus abstainers (Bauman & Ennett, 1996; Belendiuk, Molina, & Donovan, 2010; Henry, Kobus, & Schoeny, 2011). Conversely, "collateral report" studies, in which a friend's estimates are used to corroborate a target individual's weekly consumption, support that the collateral's estimates match the target individual's (Borsari & Muellerleile, 2009, p. 826). In addition, estimates for a specific friend appear to be accurate (Kenney et al., 2017). However, these studies did not control for whether participants projected personal behavior onto that of peers and may overestimate accuracy. Thus, it remains unclear whether judgments of peer alcohol use are accurate when using the IPI and when controlling for projection of assumed similarity.

In the present research, four cohorts of randomly selected firstyear students, including drinkers and abstainers, were invited to complete a survey on alcohol use. Participants selected up to five friends in the freshman class and rated each friend's drinking status and maximum drinks per day. Participants also rated these items for themselves. We focused on drinking status because a number of studies have examined it among college students (e.g., DeMartini, Prince, & Carey, 2013; Johnson et al., 2010; Reid & Carey, 2018). Given that most students drink one day per week or less but vary more widely in quantity consumed (Arria et al., 2016), we anticipated greater variability in maximum drinks, and therefore more room for inaccuracy, than frequency of consumption. As described below, we created unique dyads of friends who rated one another on the focal items and tested hypotheses using the truth and bias model (West & Kenny, 2011), which yields coefficients for accuracy, assumed similarity, and directional bias.

We hypothesized that IPI judgments of friends would primarily reflect accuracy, closely matching friends' self-reported behavior, rather than assumed similarity, in which participants' self-reported behavior is projected onto friends. We also expected that we would not observe directional bias, reflecting the tendency to systematically under- or over-estimate peer behavior. Finally, we hypothesized that accuracy would be moderated by participants' gender and frequency of contact and by participants' and friends' drinks per week. We expected accuracy to be stronger when participants were women or had more contact or when participants or friends consumed fewer drinks per week.

#### Method

#### **Participants and Procedure**

The Colby College Institutional Review Board approved all study procedures, and participants provided informed consent prior to participation. Participants were first-year students at a small private college in New England. Randomly selected students were invited via e-mail and provided with a link to complete a brief survey online in exchange for \$3. In all, 654 students (49%) responded. Those included in analyses were identified by one other participant as a friend (n = 458) and uniquely matched with one friend (described below), resulting in 111 dyads, with 222 students.

#### Measures

Important People Instrument. Within the survey, participants were presented with a drop-down list containing the names of all members of their first-year class and asked to select their five closest friends. Participants provided judgments of each friend's drinking status and maximum drinks consumed in a single day (Clifford & Longabaugh, 1991; Zywiak et al., 2002). Response options were 1 (recovering alcoholic), 2 (abstainer), 3 (light drinker), 4 (moderate drinker), 5 (heavy drinker) for drinking status and 0 (0 drinks), 1 (1-2 drinks), 2 (3-5 drinks), 3 (6-9 drinks), 4 (10 or more drinks) for maximum drinks. Participants also reported frequency of contact with each friend, ranging from 1 (1 time in the past 6 months) to 7 (daily) and self-reported their own drinking status and maximum drinks per day. Although the original IPI was completed on paper and assessed up to 10 close others, computer-based and five-friend versions yield similar results (Hallgren & Barnett, 2016; Hallgren, Ladd, & Greenfield, 2013).

**Typical drinks per week.** Drinks consumed during a typical week were measured with a 7-day grid, adapted from the Daily Drinking Questionnaire (Collins, Parks, & Marlatt, 1985). Participants indicated how many drinks they consumed on a typical Sunday, Monday, and so forth in the last month. Responses were summed to form the total number of drinks in a typical week.

**Demographics.** Participants reported their gender as male or female. Response options for ethnicity included White, African

American or Black, Asian, Native American or Native Alaskan, Native Hawaiian or other Pacific Islander, and other.

# **Data Analytic Plan**

Individuals who had at least one friend in the data set varied in the number of friends they rated and in the number of friends who rated them. Analytic techniques do not currently exist for addressing dependence of this nature. We therefore formed unique dyads by prioritizing closeness. Participants who selected each other as the first friend were paired first, followed by selections as either the first or second friend and so on, resulting in 111 dyads. First friend matches were made for both partners in 20% of dyads and at least one partner in 52% of dyads.

We first examined exact classification of a friend's drinking status and maximum drinks per day with Cohen's kappa. Our primary analyses focused on the truth and bias model (West & Kenny, 2011) estimated in Mplus Version 8.1 (Muthén & Muthén, 1998-2018). The model uses an actor-partner, multilevel modeling approach to quantify accuracy, assumed similarity, and directional bias in dyads. Separate models were estimated for drinking status and maximum drinks per day, in which judgments of friends on these variables served as the dependent variables. Accuracy refers to, for example, the association of a participant's judgment of a friend's drinking status with the friend's self-reported drinking status. Assumed similarity refers to the association of a participant's judgment of a friend's drinking status with the participant's self-reported drinking status. Directional bias, captured in the intercept, indicates systematic overestimation in judgments of friends when positive and underestimation when negative. As recommended by West and Kenny (2011), effects were constrained to equality across dyad members because friends were indistinguishable, and participants' judgments were centered by subtracting the grand mean of friends' self-reported scores on the focal IPI item. Difference tests indicated whether accuracy and assumed similarity coefficients significantly differed from one another (West & Kenny, 2011). Each moderator was examined in a separate analysis and was mean-centered before forming interactions. Although our hypotheses focused on interactions with accuracy, proper model specification required inclusion of moderator by assumed similarity interactions (Garcia, Kenny, & Ledermann, 2015). Significant interactions were probed within each category or at 1 standard deviation above and below the mean (Aiken & West, 1991).

# Results

# **Sample Descriptives**

The sample was predominantly female (72%) and White (80%) and averaged 5.14 drinks per week (SD = 6.04). On average, self-reported (M = 3.14, SD = 0.85) and judgments of friends' (M = 3.16, SD = 0.97) drinking status indicated identification as light drinkers and were almost identical. Likewise, average self-reported (M = 1.64, SD = 1.21) and judgments of friends' (M = 1.62, SD = 1.32) maximum drinks per day fell between one-two drinks and three-five drinks. We compared those retained in analyses (n = 222) to those who were not (n = 432) in the full data set. Retained participants tended to be less risky. They were more likely to be women (p = .001) and White (p = .02) and consumed less on their maximum drinking day (p = .02) and marginally fewer drinks per week (p = .06) but were equivalent in self-reported drinking status (p = .28).

# **Main Effects**

Table 1 provides percent agreement and disagreement for selfreported categorizations versus friends' judgments. As shown in Table 1, self-reported categorizations for drinking status and maximum drinks per day were differentiated by self-reported drinks per week. For drinking status, Cohen's kappa was .52, indicating moderate agreement (Landis & Koch, 1977). Table 2 provides results from the truth and bias model. For drinking status, accuracy was significant, indicating that participants' judgments corresponded with friends' self-reported drinking status. In addition, assumed similarity was not significant. That is, participants' judgments of friends were not biased by their own self-reported drinking status. A difference test further supported that accuracy was a

Percent Agreement and Disagreement for Self-Reported Versus Friends' Judgments of Drinking Status and Maximum Drinks per Day

	Friends' judgments (%)						
per category)	Recovering alcoholic	Abstainer	Light drinker	Moderate drinker	Heavy drinker		
Drinking status							
Recovering alcoholic $(n = 0)$	0.0	0.0	0.0	0.0	0.0		
Abstainer $(n = 62; M_{drinks} = .10)$	1.6	85.5	11.3	0.0	1.6		
Light drinker ( $n = 62; M_{drinks} = 2.58$ )	0.0	19.4	58.1	22.6	0.0		
Moderate drinker ( $n = 88; M_{drinks} = 10.37$ )	0.0	1.1	20.5	61.4	17.0		
Heavy drinker $(n = 2; M_{\text{drinks}} = 15.00)$	0.0	0.0	0.0	100.0	0.0		
	0 drinks	1-2 drinks	3-5 drinks	6–9 drinks	10+ drinks		
Maximum drinks per day							
0 drinks $(n = 56; M_{drinks} = .07)$	89.3	10.7	0.0	0.0	0.0		
$1-2 \text{ drinks} (n = 31; M_{\text{drinks}} = 1.32)$	19.4	61.3	19.4	0.0	0.0		
3–5 drinks ( $n = 66; M_{drinks} = 5.51$ )	6.1	12.1	53.0	22.7	6.1		
6–9 drinks ( $n = 50; M_{drinks} = 10.81$ )	4.0	4.0	28.0	40.0	24.0		
10+ drinks ( $n = 9$ ; $M_{drinks} = 16.22$ )	0.0	0.0	11.1	55.6	33.3		

Table 2									
Roles of Accuracy,	Assumed	Similarity,	and	Directional	Bias	in .	Drinking	Judgm	ents

	Full sample				Reduced sample with abstainers removed				
Judgments of friends'	b	z	р	Effect size r	b	z	р	Effect size r	
Drinking status									
Accuracy	0.86	13.47	<.001	0.79	0.90	7.05	<.001	0.56	
Assumed similarity	0.04	0.60	.55	0.06	-0.05	-0.43	.67	0.04	
Directional bias	0.04	1.01	.31	0.10	0.10	0.97	.33	0.09	
Maximum drinks per day									
Accuracy	0.78	16.99	<.001	0.85	0.67	7.82	<.001	0.60	
Assumed similarity	0.22	4.88	<.001	0.42	0.21	2.48	.01	0.23	
Directional bias	-0.03	-0.51	.61	0.05	0.08	0.92	.36	0.09	

*Note.* Approximate effect sizes were calculated using the formula  $r = \sqrt{(z^2/(z^2 + N))}$ , where N = 111; see Friedman (1982) and Muise, Stanton, Kim, and Impett (2016) and Overall and Hammond (2013) for similar effect size estimation in the truth and bias model.

significantly stronger factor in judgments than was assumed similarity (b = 0.82), z = 6.99, p < .001. Directional bias was also nonsignificant, demonstrating that participants did not systematically under- or overestimate friends' drinking status.

For maximum drinks per day, Cohen's kappa was .48, indicating moderate agreement (see also Table 1). As shown in Table 2, both accuracy and assumed similarity were significant. However, the coefficients (0.78 vs. 0.22) and difference test (b = 0.56), z = 7.19, p < .001, supported that judgments were more strongly a function of accuracy than assumed similarity. That is, participants projected their own maximum drinks when judging friends, but judgments were more so reflective of the friend's self-reported maximum drinks. Participants also did not systematically misestimate maximum drinks, as indicated by the nonsignificant directional bias. A sensitivity analysis indicated that the observed main effects for drinking status and maximum drinks were robust to exclusion of abstainers from analyses (see Table 2).

# Moderation by Gender, Contact, and Participants' and Friends' Drinks per Week

Contrary to hypotheses, accuracy did not depend on gender (ps > .38) or participants' drinks per week (ps > .63) for either drinking status or maximum drinks per day, suggesting that women's and men's and lighter and heavier drinkers' judgments similarly matched friends' self-reported categorizations. However, accuracy depended on frequency of contact for drinking status (b = 0.34), z = 3.46, p = .001, and maximum drinks per day (b = 0.34), z = 3.46, p = .0010.22), z = 2.59, p = .003. Simple slopes revealed that judgments more closely tracked friends' self-reports when contact with friends was daily—drinking status (b = 0.98), z = 13.92, p <.001; maximum drinks (b = 0.86, z = 16.98, p < .001)—than when contact was lower, at three to six times per week-drinking status (b = 0.64), z = 7.21, p < .001; maximum drinks (b = 0.64), z = 0.64z = 9.81, p < .001 (see Figure 1). Despite the slightly weaker effect of accuracy when participants had less contact, accuracy remained a significantly stronger effect than assumed similarity among those with low contact for both outcomes (zs > 2.75, ps <.01). Finally, the interaction between accuracy and friends' weekly alcohol consumption was not significant for drinking status

(b = -0.02), z = -0.85, p = .40, but was significant for maximum drinks per day (b = -0.03), z = -3.53, p < .001. Consistent with hypotheses, participants were more accurate when friends' weekly drinking was low (b = 0.66), z = 10.59, p < .001, than when it was high (b = 0.28), z = 2.54, p = .01. Although assumed similarity was only marginally significant when friends had higher weekly drinking (b = 0.17), z = 1.88, p = .06, accuracy and assumed similarity were not significantly different in this context (b = 0.11), z = 0.71, p = .48. Thus, the extent to which judgments were accurate was weaker when friends drank more each week but not because participants strongly projected their own maximum drinks on to friends.

#### Discussion

Consistent with our hypotheses, judgments of friends' drinking status and maximum drinks per day were generally accurate. Judgments largely reflected friends' self-reports rather than participants' assumption of similarity or systematic under- or overestimation of peer behavior. Indeed, except for those whose friends



*Figure 1.* Accuracy in judgments of friends' drinking status as a function of contact.

had high weekly consumption, accuracy was consistently significantly larger than assumed similarity was, including when contact with friends was low. In contrast to previous research that used different analytic approaches (Carey et al., 2006; Kenney et al., 2017), accuracy did not depend on gender or participants' drinks per week. Collectively, the results support that students' judgments of peer alcohol use obtained using the IPI, in general, accurately reflect how friends would describe themselves.

That we generally observed smaller effects of assumed similarity than accuracy is notable given the timing of data collection, just following the end of the first semester of college. The campus on which data collection occurred includes students from 45 U.S. states and 70 countries. Thus, friendships were relatively new, lasting only 4 months. Given previous research on the role of relationship closeness in collaterals' accuracy (Laforge et al., 2005), older students with longer lasting friendships may provide more accurate judgments. However, research is needed on upperclassmen, because closer relationships could also be marked by heightened assumptions of similarity. Complementing research on collaterals, the present results support that students accurately report friends' alcohol consumption in the absence of strong motivations to do so, given that all parties were unaware of whether someone might be reporting on their behavior.

Given that judgments of friends' alcohol use were accurate, researchers can confidently use the IPI to characterize social network alcohol use among college students. Studies examining peer socialization with egocentric data appear to be unlikely to produce inflated associations between peer and personal behavior. Moreover, because perceptions of close friends are already accurate, rather than correcting misperceptions, research is needed on whether interventions that target the network directly (e.g., Barnett et al., 2019) or provide strategies for managing risky peers are best for reducing the effects of exposure to risky peers.

The results should be considered in light of the study limitations. The data were collected on a campus in which first-year students were required to live on campus. Although 80% of first-year students in the United States live on campus (Powell, 2018), results may not generalize to campuses with more commuters, who may have less direct observation of friends. Individuals may also rely more on assumed similarity for measures that are less observable than consumption, such as general social support and approval of seeking alcohol treatment. In addition, our retained sample was less risky than the larger population is. Although the sensitivity analysis supported that effects were not driven by abstainers, accuracy may be weaker in heavier drinking samples. We prioritized closeness in constructing dyads. Maximizing social distance may weaken accuracy and, particularly for the 10-friend version of the IPI, would provide useful data on the boundaries of participants' accuracy. Finally, the IPI was developed for treatmentseeking samples (Longabaugh, Wirtz, Zywiak, & O'Malley, 2010; Zywiak et al., 2002), and judgments may not be similarly accurate among these individuals. These limitations are countered by the strengths of our analysis. We conducted the first known examination of the accuracy of IPI judgments among students who were unaware that peers might be reporting on their behavior.

Peer social networks have received increasing attention as a factor in college students' alcohol use. A common concern is that judgments of friends' behavior are primarily a projection of personal behavior. The present results indicate that perceptions of peer behavior collected using the IPI are fairly accurate and highlight the need for social network interventions.

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