

BRIEF REPORT

Heavy Episodic Drinking Among Dating Partners: A Longitudinal Actor–Partner Interdependence Model

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Heavy episodic drinking (HED) is a major health problem for young adults. Rates of HED have remained consistently high among young adults for the past two decades. Though research has identified various intrapersonal, interpersonal, and environmental contributors to HED, the majority of research focuses on intrapersonal factors. As such, more research is needed to test the role that specific interpersonal relationships play in perpetuating HED. This study tests the partner influence hypothesis that suggests partners in romantic relationships influence one another's HED over time. A sample of 208 young, nonmarried, heterosexual dating couples completed HED measures at baseline and again 28 days later. Actor–partner interdependence modeling revealed significant actor effects, demonstrating stability in HED within each partner over time. Results also showed significant partner effects where HED in both young men and women in dating relationships positively influenced their partners' future HED over a relatively short time frame. Patterns in the results suggest both women and men are more affected by their own than by their partner's prior level of HED. Nonetheless, small partner effects were present for both women and men. Results support the partner influence hypothesis and suggest HED is a self-propagating behavior sustained, in part, by a pattern of interpersonal influence. These results highlight the importance of considering both intrapersonal and interpersonal factors when implementing prevention and intervention programs for young adults' HED.

Keywords: heavy episodic drinking, binge drinking, alcohol, dyad, dating, longitudinal

Drinking among young adults is a major health problem, with rates of heavy consumption reaching a peak between 21 and 23 years of age (Substance Abuse and Mental Health Services Administration [SAMHSA], 2006). Wechsler and colleagues (2002) found up to 41% of young women and 49% of young men attending university engaged in heavy episodic (binge) drinking within a 2-week period. Heavy episodic drinking (HED) is often operationalized as consuming at least four (women) or five (men)

drinks within a 2-hr period and is linked to various physical, psychological, and social problems (Courtney & Polich, 2009). Given the destructive nature of HED, there is increasing interest in understanding its etiology and maintenance. Research summarizing contributors to HED often includes a role for intrapersonal, interpersonal, and environmental factors (Baer, 2002). Despite this recognition that HED is a complex behavior caused and maintained by multiple factors, most research in this area focuses on

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intrapersonal factors (e.g., personality; Krank et al., 2011), separating drinkers from the interpersonal context in which their HED occurs. Consequently, HED in the context of romantic relationships remains an understudied area.

Partner Influence Hypothesis

On a broad scale, research on interpersonal influence suggests social conformity pressures are robust predictors of alcohol use and abuse (Fairlie, Wood, & Laird, 2012). In fact, interpersonal influence from peers is a strong predictor of HED in university students (Wood, Read, Palfai, & Stevenson, 2001). The partner influence hypothesis builds upon research on peer influences by suggesting that partners in romantic relationships influence one another's HED.

Social impact theory proposes the more important a group is to us, and the more we are in its presence, the more likely we will conform to its normative pressures (Latané, 1981). A romantic couple is an important relationship made up of two individuals where pressures to conform may be enhanced. Along similar lines, people have a strong need for social approval and acceptance (Baumeister & Leary, 1995). Driven to attain and maintain this approval and acceptance, partners may change their drinking behaviors to nurture and uphold the relationship. In addition, the more exposure partners have to each other's HED habits, the more likely they are to become familiar with and positive toward this behavior (Moreland & Zajonc, 1982). As dating partners' drinking patterns become more aligned, relationship satisfaction improves, and the couple is less likely to break up (Homish & Leonard, 2007), further propagating an environment conducive to HED. The partner influence hypothesis asserts that women and men in romantic relationships influence each other's HED over time such that the man's HED influences his partner's future HED and the woman's HED influences her partner's future HED.

Advancing the Literature on the Partner Influence Hypothesis

The present study tests the partner influence hypothesis among a sample of young, nonmarried dating couples. This sample is well suited to testing the partner influence hypothesis in emerging adults, as peer pressure becomes less influential and romantic relationships become more important during this developmental stage (Arnett, 2000; Steinberg & Monahan, 2007). Most research on HED in romantic relationships focuses on samples of adult married couples over relatively long intervals (e.g., 1 year; Leonard & Mudar, 2004), meaning there is much to learn about HED among emerging adult, nonmarried dating couples over shorter intervals (e.g., 28 days). Moreover, cross-sectional designs are often used in studying HED in romantic dyads, but this research design is ill suited to studying the temporal process of interpersonal influence (Wood et al., 2001). The present study advances existing literature by testing the influence that each partner's HED has on his or her own and on his or her partner's future HED over time in an understudied sample of young, nonmarried dating couples.

Actor–Partner Interdependence Model

The Actor–Partner Interdependence Model (APIM; Cook & Kenny, 2005) is a dyadic data analytic approach used to measure

interdependence within interpersonal relationships. APIMs are appropriate for studying short-term longitudinal data (Cook & Snyder, 2005). Rather than controlling for the interdependence in dyadic data, APIMs provide an avenue to study the patterns of stability and reciprocity unique to these data (Kashy & Kenny, 2000). APIMs are comprised of both actor effects and partner effects (see Figure 1). As Cook and Kenny (2005) describe, actor effects (labeled a in Figure 1) measure how well a person's own past behavior predicts his or her own future behavior, whereas partner effects (labeled p in Figure 1) measure how well one partner's past behavior predicts his or her partner's future behavior. APIMs also account for shared variance in predictor variables (see path c_1 in Figure 1) and for potential error covariance in outcome variables (path c_2 in Figure 1).

The Present Study

Our study tested two main hypotheses concerning HED among dating partners. Consistent with past research demonstrating stability in HED over time (Leonard & Mudar, 2004), we hypothesized there would be positive and significant actor effects for both women and men in romantic relationships (i.e., paths a_W and a_M in Figure 1 will be positive and significant). On the basis of evidence suggesting married women and men influence each other's drinking patterns over long intervals (Leonard & Mudar, 2004), we hypothesized there would be positive and significant partner effects for HED in both women and men in our sample of dating couples over a shorter interval of 28 days (i.e., paths p_W and p_M in Figure 1 will be positive and significant).

Method

Participants

A sample of 208 nonmarried, heterosexual dating couples was recruited. To be eligible, couples had to be dating for at least 3 months, had to have face-to-face contact at least 5 days a week, and at least one member of each dating couple had to be enrolled in postsecondary education. On average, women were 20.89 years old, $SD = 3.31$, and men were 21.08 years old, $SD = 3.96$. Most participants were Caucasian (89.4% of women; 88.9% of men),

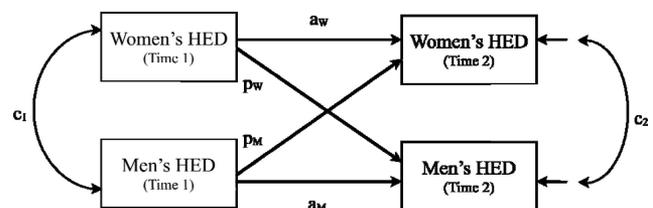


Figure 1. Hypothesized actor-partner interdependence model testing the influence of partners' HED on their own, and their partners', future HED. Rectangles represent measured variables. Double-headed arrows represent correlations. Single-headed arrows represent direct effects. a_W = the actor effect for women; a_M = the actor effect for men; p_W = the partner effect for women; p_M = the partner effect for men. c_1 = the correlation between women's HED and men's HED at Time 1. c_2 = the error covariance in women's HED and men's HED at Time 2. HED = heavy episodic drinking.

born in Canada (89.9% of women; 87.0% of men), and enrolled in postsecondary education (93.3% of women; 75.5% of men). On average, couples were dating for 1.76 years, $SD = 1.56$, and reported an average of 6.40 days of face-to-face contact per week, $SD = 0.91$; 33.0% of couples lived together. Values for the above relationship variables were calculated by averaging values reported by women and by men in each dyad. Our sample resembles other samples of young dating couples with respect to age, ethnicity, education, and relationship variables (Papp, 2010).

Measures

The frequency of HED was assessed using two continuous items (one item for women; one item for men) recommended by the National Institute on Alcohol Abuse and Alcoholism (NIAAA, 2003). We modified the anchors for the NIAAA's original items to include 32 response options ranging from "0 times" (scored as 0) to "31 or more times" (scored as 31). Participants were asked: "During the past 14 days, how often did you have four or more drinks (women) (or five or more drinks [men]) containing any kind of alcohol, within a 2 hour period? (One alcoholic drink = 12-ounce can or glass or bottle of beer or cooler, a 5-ounce glass of wine, or a drink containing one shot of liquor or spirits)." Thus, a score of 1, for example, would indicate a participant engaged in HED once during the past 14 days. To minimize the influence of a few extreme cases on analyses, we replaced any values larger than 3 SDs above the group mean (1.56% of the data) with the value equal to the group mean plus 3 SDs . Our modified HED measure is strongly correlated with the original unmodified NIAAA items (r_s from .68 [women] to .83 [men]) and is highly convergent with the consumption factor (r_s from .66 [women] to .76 [men]) of the Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993; Sherry, Mushquash, & Stewart, 2011). In addition, our modified measure correlates moderately to strongly with the AUDIT consequences factor (r_s from .58 [men] to .64 [women]) and with Rutgers's Alcohol Problems Index (White & Labouvie, 1989) scores (r_s from .52 [men] to .58 [women]; Sherry, Mushquash, & Stewart, 2011).

Procedure

The Research Ethics Board at Dalhousie University approved the present study. Participants responded to an advertisement inviting their participation in a larger study on personality, health-related thoughts, feelings, and behaviors. The present data involve two time points spaced 28 days apart, hereafter referred to as Time 1 and Time 2. Participants attended scheduled appointments in the lab at both time points. Before beginning the study, participants were invited to ask questions and to provide informed consent. Members of each dyad completed measures separately at both time points. Demographic information was collected at Time 1. After completing Time 2 measures, participants were debriefed and compensated with \$25 or bonus credits toward a psychology class. Of the 208 couples who provided data at Time 1, 202 couples (97.1%) also provided data at Time 2. Couples returned to the lab for Time 2 an average of 31.04 ($SD = 2.49$) days after Time 1.

Data Analytic Plan

We tested the link between HED at Time 1 and HED at Time 2 among dating partners with an APIM. Specifically, we tested actor effects and partner effects using AMOS 7.0 and calculated k -statistics to test for patterns in the APIM using Mplus 6.0.

Results

Missing Data Analysis

Minimal data were missing across all variables (1.3% total), and covariance coverage was high (.97 to 1.00). Our data were missing completely at random as indicated by a nonsignificant Little's MCAR test, $\chi^2 = 7.39$, $p = .29$ (Little, 1988). We used an expectation maximization algorithm in PASW 17.0 to impute the missing data (see Scheffer, 2002).

Descriptive Statistics

Descriptive statistics appear in Table 1. Values are consistent with prior research involving similar samples (e.g., Borden et al., 2011). Many participants in our study reported HED at Time 1 (61.5% of women, 62.5% of men) and at Time 2 (63.7% of women, 65.3% of men).

Multivariate Normality

Small's Omnibus Test (DeCarlo, 1997) indicated that variables in the present study were multivariate nonnormal. To address this nonnormality, we conducted all analyses using bias-corrected bootstraps with 20,000-bootstrap samples (Nevitt & Hancock, 2001).

Actor Effects

Actor effects in the APIM were analyzed to test if prior levels of HED predict future levels of HED among women and men. Consistent with Cook and Kenny (2005), actor effects were tested while statistically controlling for partner effects. As hypothesized, actor effects for HED were large, positive, and statistically significant, indicating strong stability in HED for both partners over a 28-day time frame (see Figure 2).¹

Partner Effects

Partner effects in the APIM were analyzed to test if prior levels of each partner's HED predict future levels of the other partner's HED. Partner effects were tested while statistically controlling for actor effects (Cook & Kenny, 2005). As hypothesized, both partner effects were positive and statistically significant (see Figure 2), albeit small in magnitude. Results indicate a process of influence wherein a man's HED is influenced by his partner's prior level of

¹ Consistent with recommendations in Kenny and Ledermann (2010), unstandardized coefficients are presented. Standardizing the regression coefficients within men and women would result in the loss of an equivalent metric, thus making comparisons of actor and partner effects between men and women impossible.

Table 1
Means, Standard Deviations, and Bivariate Correlations
for HED

Variable	<i>M</i>	<i>SD</i>	1	2	3	4
1. Women's HED (Time 1)	1.56	1.91				
2. Men's HED (Time 1)	1.72	2.01	.36***			
3. Women's HED (Time 2)	1.72	2.18	.68***	.35***		
4. Men's HED (Time 2)	2.14	2.72	.32***	.63***	.29***	

Note. HED = heavy episodic drinking.

*** $p < .001$.

HED and a woman's HED is influenced by her partner's prior level of HED.

Patterns in the APIM

To test for patterns in the data, we calculated k , a parameter defined as the ratio of the partner effect to the actor effect (Kenny & Ledermann, 2010). If k equals 0, results suggest an actor-only pattern wherein each partner's future HED is predicted by his or her own prior level of HED, but not by the other partner's prior HED. If k equals 1, results suggest a couple pattern wherein each partner's future HED is equally influenced by his or her own prior level of HED and by his or her partner's prior levels of HED. Prior to evaluating k , we compared a model with paths constrained to equality across sex to an unconstrained model with all paths allowed to freely vary. There is a significant difference between two models if the change in the comparative fit index (ΔCFI) $> .01$ (Cheung & Resnsvold, 2002). The ΔCFI analysis with our data favored the constrained model ($\Delta\text{CFI} = .00$), suggesting there are no significant sex differences. The k for the constrained model was .20, 95% CI $[-.01, .52]$. To test if the data are best represented by an actor-only pattern ($k = 0$) or by a mixed pattern with large actor effects and small partner effects ($0 < k < 1$), another model comparison test was conducted comparing a model with $k = 0$ to a model where k was allowed to freely vary. Results support the model where k was allowed to freely vary ($\Delta\text{CFI} = .033$). These results support the mixed pattern with large actor effects and small partner effects. In sum, the APIM actor effects suggest that HED is highly stable in each partner. Partner effects are also positive and significant, but their influence is small when compared with actor effects.

Discussion

Based on previous theory and research (e.g., Latané, 1981; Leonard & Homish, 2008; Moreland & Zajonc, 1982), we proposed the partner influence hypothesis, which suggests partners in romantic relationships influence one another's HED. Consistent with hypotheses, results indicated strong stability in HED for both romantic partners. Over a 28-day time frame, a strong predictor of each partner's future HED was his or her own respective prior levels of HED. Path analyses and analyses of patterns in the data using the k -statistic also supported the partner influence hypothesis and suggest each dating partner exerts a significant, albeit small, influence on the other partner's future HED over a relatively short interval. Although the influence of one's partner is relatively small

in comparison to the influence of one's own past behavior, our study represents a stringent test of the partner influence hypothesis in that we controlled for baseline levels of HED. Controlling for baseline levels of one's own HED removes a large amount of the variance available for prediction by the partner's HED (Cook & Kenny, 2006). Thus, it is noteworthy that partner effects were significant even over a relatively short time frame.

Interpersonal influences on drinking behavior are often discussed (Baer, 2002), but seldom tested, inviting questions regarding the contribution of interpersonal relationships to an individual's HED. Most research on partner influence has studied slightly older married couples over long time frames (e.g., Leonard & Mudar, 2004). Our study advances research in this area by providing a rigorous test of the partner influence hypothesis in the context of younger, nonmarried dating couples studied over a shorter time frame. Our results are discrepant with previous research, with our data suggesting both men and women in dating relationships influence each others' drinking. Previous data showed only husbands influencing their wives' drinking over the first year of marriage (Leonard & Mudar, 2004). There are several possible explanations for this. First, cohort effects may exist because recent data suggest young women's HED is becoming equivalent to men's (Stewart, Gavric, & Collins, 2009), and our sample was recruited more recently than in previous research. Second, the developmental stage of our sample may influence the results such that bidirectionality is present in emerging adult samples, whereas only men influence women in slightly older samples (Leonard & Mudar, 2004). In addition, differences between our results and previous results might be related to the relationship stage of the couples. Leonard and Mudar's (2004) results suggest influences change over the course of marriage, with men's drinking initially influencing women in the first year of marriage, but the reverse occurring later in the marriage. We tested couples at various stages of a dating relationship; future work could examine this issue by studying young dating couples longitudinally from the initial point of relationship formation.

Overall, our results offer a novel explanation for why young adults engage in HED: that is, because they have a past habit of HED and because they are involved in a "drinking partnership" that promotes ongoing HED (Roberts & Leonard, 1998). Early on in the partnership, men and women may alter their own drinking out of pressures to conform (Leonard & Mudar, 2004), a desire for

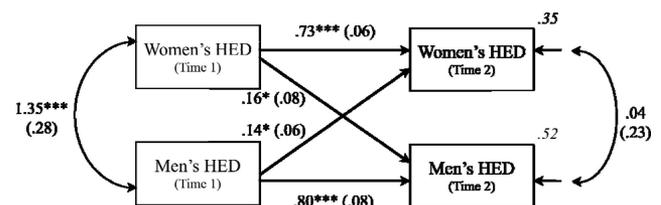


Figure 2. Hypothesized actor-partner interdependence model testing the influence of the partners' HED on their own, and their partners', future HED. Rectangles represent measured variables. Double-headed arrows represent correlations. Single-headed arrows represent direct effects. Unstandardized path coefficients appear with standard errors in parentheses. Italicized numbers (e.g., .52) appearing in the upper right hand of Time 2 variables represent the proportion of variance accounted for by Time 1 variables. HED = heavy episodic drinking. * $p < .05$. *** $p < .001$.

belonging and acceptance (Baumeister & Leary, 1995), or mere exposure to their partner's drinking. Over time, couples who do not break up are more likely to converge in their drinking patterns (Homish & Leonard, 2007). Through this cycle, women and men in romantic relationships may find themselves stuck in a pattern of dysfunctional drinking where the person they seek love, approval, and acceptance from is also the person for whom they drink. Caught in an escalating pattern of HED, couples may find it difficult to dismantle the cycle of HED without dismantling their relationships' functioning (Homish & Leonard, 2007). By studying individuals outside their romantic relationships, researchers may fail to appreciate interpersonal factors that are important in understanding HED. Conceptualizing HED as a phenomenon explained, in part, by one's dating relationship will help to guide future research and practice in this area.

Implications for Clinicians and Policy Makers

Our study informs clinical practice and policies surrounding college drinking by highlighting interpersonal factors as likely prevention and intervention targets when working with young adults struggling with HED. Individual level alcohol abuse prevention interventions targeting college students can be effective in reducing alcohol consumption and associated problems (Carey, Scott-Sheldon, Carey, & DeMartini, 2007). However, these interventions are less successful when targeting heavy drinkers whose social networks are saturated with other heavy drinkers (Carey et al., 2007). These conclusions and our results highlight the importance of considering both the proximal social network (e.g., dating relationships) and the broad social network (e.g., peer relationships) for college students who engage in HED. When choosing appropriate prevention and intervention methods, clinicians and policy makers should consider the results of the present study, which suggest that focusing on just intrapersonal factors (e.g., personality; Krank et al., 2011) will not fully address HED in young dating couples.

Limitations and Future Directions

Our study measured only partner influence. It is likely that both partner influence and partner selection are related to the drinking patterns created between two people in a romantic relationship. In fact, baseline similarities between men and women's HED could reflect earlier partner influences, partner selection effects, or both. Future research addressing both partner influence and partner selection will be important in clarifying the relationship between dating partners' HED over time and will allow researchers to study both relationship formation and partner influence processes. In the present study, reports of HED were spaced 28 days apart, which represents both a strength and potential limitation of the present study. Shorter time frames allow us to determine the proximal influence that partners have on each other's drinking. However, using longer spacing between reports (e.g., 1 year) has the potential to affect our results (Gollob & Reichardt, 1991). Future research using longer spaced intervals would be useful in exploring the potentially unfolding patterns of partner influence. Our sample involved mostly university students. Research suggests that university students often engage in patterns of alcohol use different from their same-age peers (e.g., higher rates of HED; SAMHSA,

2006). Thus, it is possible our results may not generalize to other samples of emerging adults. Finally, future research comparing partner influence in cohabiting versus noncohabiting couples, short- versus long-duration relationships, and couples where one (or both partners) is under the legal drinking age versus those of legal drinking age in the jurisdiction where the research takes place would be beneficial given that our sample was heterogeneous in terms of those specific variables.

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