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A Longitudinal Examination of Alcohol Problems and Cyber, Psychological, and Physical Dating Abuse: The Moderating Role of Emotion Dysregulation

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Abstract

Given the prevalence of technology, cyber dating abuse (DA) emerged as an important area of empirical inquiry. Cross-sectional data linked cyber DA perpetration to alcohol problems and psychological and physical DA perpetration. However, the longitudinal relations among these constructs are unknown. DA theory and research suggested that higher levels of aggressogenic traits (e.g., emotion dysregulation) increased the likelihood that alcohol problems and DA co-occur; this conceptual model may extend to cyber DA. We collected self-report data from 578 college students at baseline (T1) and 3 months later (T2) to test the hypothesis that T1 alcohol problems would predict T2 psychological, physical, and cyber DA for students with high, but not low, emotion dysregulation. We also hypothesized that T1 cyber DA would predict T2 psychological and physical DA. We conducted path analyses in Mplus and used the Johnson-Neyman technique to probe significant interactions. Results indicated that alcohol problems predicted psychological and physical DA for college students with high and average emotion dysregulation only. Alcohol problems did not predict cyber DA independently or in conjunction with emotion dysregulation. Cyber DA predicted psychological and physical DA. Results extend DA conceptualizations and highlight the importance of targeting emotion dysregulation in college DA intervention programs.

Keywords

alcohol; cyber dating abuse; dating abuse; partner abuse; emotion dysregulation

Dating abuse (DA) is a prevalent and serious public health concern that peaks between the ages of 18 and 25 years, a time in which many young adults are in college (W. L.

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Johnson, Giordano, Manning, & Longmore, 2015). As many as 33% of college students endorsed perpetrating physical DA (e.g., hitting, slapping, or kicking a partner) in the past year, with even more (82.9%) college students perpetrating psychological DA (e.g., yelling at or threatening a partner) annually (Ortiz, Shorey, & Cornelius, 2015). In addition to these forms of DA, burgeoning research suggested that technology-facilitated social communication trends (e.g., texting, calling, using social media on smartphones) created new contexts for individuals to monitor, harass, humiliate, and abuse dating partners, otherwise known as cyber DA (Borrajo, Gámez-Guadix, Pereda, & Calvete, 2015; Brem, Spiller, & Vandehey, 2015; Elphinston & Noller, 2011; Leisring & Giumetti, 2014). Between 77% and 93% of college students experienced past-year cyber DA which associated with several negative experiences (e.g., depressive symptoms, risky sexual behaviors, and episodic heavy drinking; Leisring & Giumetti, 2014; Van Ouytsel, Ponnet, Malrave, & Temple, 2016; Wolford-Clevenger et al., 2016; Zapor et al., 2017). Despite growing awareness of cyber DA prevalence and cross-sectional correlates, less is known regarding longitudinal predictors of cyber DA, or whether cyber DA is longitudinally associated with college students' psychological and physical DA. To address this gap, the present study investigated whether alcohol and emotion dysregulation, well-established correlates of in-person DA perpetration, longitudinally associated with cyber, psychological, and physical DA. In addition, the present study examined whether cyber DA longitudinally related to college students' psychological and physical DA perpetration.

Cyber DA Perpetration

As of 2015, 85% of college students had daily access to a smartphone, and 90% logged on to social media daily (Pearson, 2015; Perrin, 2015; Smith, 2015). Although the proliferation of technology-based communications (e.g., texting, calling, and social media) has the potential to enhance communication and contact, research suggested that these communication trends created contexts for cyber DA (Borrajo et al., 2015; Brem et al., 2015; Elphinston & Noller, 2011; Leisring & Giumetti, 2014). Emerging literature recognized cyber DA as a distinct form of DA separate from psychological and physical DA (Doucette et al., 2018; Margainski & Melander, 2018; Melander, 2010; Stephenson, Wickham, & Capezza, 2018). Indeed, cyber DA occurred in the absence of in-person psychological DA (Margainski & Melander, 2018), cyber and psychological DA had only modest correlations in some studies (e.g., Temple et al., 2016), and some cyber DA facets distinguished it from psychological DA (e.g., covert cyber monitoring; Stephenson et al., 2018). Although distinct from psychological and physical DA, cross-sectional data indicated that cyber DA was a risk factor for psychological and physical DA among college students (Brem, Romano, Garner, Grigorian, & Stuart, in press; Brem et al., 2015; Watkins, Maldonado, & DiLillo, 2018). It is plausible that cyber DA represents an earlier stage of the progression toward psychological and physical DA. Longitudinal cyber DA research could aid in determining the extent to which college cyber DA is predictive of more physically injurious forms of DA (e.g., physical assault). Such associations remain unexamined among college students; however, longitudinal data gathered from adolescents linked cyber DA with psychological and physical DA (Temple et al., 2016). A critical advancement for DA research and

theory would include a better understanding of whether cyber DA predicts subsequent psychological and physical DA.

In addition to elucidating the longitudinal associations between cyber, psychological, and physical DA, research would benefit from clarifying theory-informed cyber DA risk factors. Alcohol use gained support as an antecedent for in-person DA (Shorey, Stuart, McNulty, & Moore, 2014; Shorey, Stuart, Moore, & McNulty, 2014), and some evidence suggested alcohol use posed a risk for cyber DA (Brem et al., in press; Crane, Umehira, Barbary, & Easton, 2018; Singh et al., 2015; Van Ouytsel et al., 2016). Cross-sectional data revealed that alcohol use positively related to cyber DA perpetration among adult men and women (Crane et al., 2018; Singh et al., 2015). However, Epstein-Ngo et al. (2014) found that the association between alcohol use and cyber DA was nonsignificant when psychological and physical DA was included in the model. It is plausible that, like psychological and physical DA, the relation between alcohol use and cyber DA perpetration may be conditional and influenced by the presence of one or more distal aggressogenic traits.

Alcohol, Emotion Dysregulation, and DA Perpetration

Conceptual models of partner abuse such as Finkel and Eckhardt's (2013) I³ theory implicated a combination of distal, impelling factors (e.g., dispositional traits) and motivational, disinhibitory factors (e.g., alcohol use and problems) in DA perpetration. Proximally, alcohol acted as a disinhibiting factor by reducing individuals' cognitive capacities to override violent impulses (Finkel & Eckhardt, 2013; Giancola, Josephs, Parrott, & Duke, 2010; Steele & Josephs, 1990), and by increasing the likelihood of hostile cognitive attributions toward a partner (Murphy, 2013). Over time, alcohol increased DA risk by influencing one's reliance on alcohol as a coping strategy, use of alcohol during stressful times, and belief that alcohol is a source of relationship problems (Taft et al., 2010). I³ theory also suggested that the association between alcohol and DA may be conditional and influenced by the presence of impelling, distal traits. That is, alcohol problems may increase subsequent DA perpetration for individuals with high, but not low, levels of aggressogenic dispositional traits. Brem et al. (in press) recently proposed that such a model could be applied to cyber DA such that distal traits interact with alcohol problems to increase the risk of cyber DA.

Emotion dysregulation is one such distal trait that gained attention as a risk factor for psychological, physical, and cyber DA (Bliton et al., 2016; Brem et al., 2017; Shorey, McNulty, Moore, & Stuart, 2015). Prior data and theory suggested that some forms of cyber DA perpetration may function as an emotion regulation strategy, albeit a maladaptive one, to reduce jealousy, suspicion of infidelity, or fears of abandonment (Bowe, 2010; Brem et al., 2015; Tokunaga, 2011). If an individual lacks skill in both processing painful affect (e.g., anger, jealousy, sadness) and choosing an adaptive response from their behavioral repertoire, then habitual, impulsive responses such as DA may be more likely to occur (Foran & O'Leary, 2008; Ortiz et al., 2015). Finkel and Eckhardt's (2013) I³ theory suggested that alcohol and DA would be more likely to cooccur among such individuals. In support of this model, excessive alcohol use longitudinally predicted married men's partner abuse only among those with high hostility and avoidance coping, both of which are indicative of

emotion dysregulation (Schumacher, Homish, Leonard, Quigley, & Kearns-Bodkin, 2008). It is unclear whether these results generalize to college DA. Notably, no longitudinal study investigated the interaction of alcohol use and emotion dysregulation among college students in relation to cyber DA. Determining whether the risk that alcohol poses for subsequent cyber, psychological, and physical DA can be attenuated by greater emotion regulation skills will inform future efforts to identify intervention targets and expand existing DA conceptual models.

Summary and Hypotheses

Longitudinal research investigating cyber, psychological, and physical DA would inform whether alcohol relates to subsequent cyber DA perpetration after controlling for psychological and physical DA, while also clarifying whether cyber DA poses a risk for later psychological and physical DA. Furthermore, contextualizing potential cyber DA risk factors (e.g., alcohol use and emotion dysregulation) within empirically supported theoretical models of DA would aid in determining the extent to which DA theories can inform cyber DA research. Theory and research suggested that individual differences in distal traits such as emotion dysregulation might account for the varied associations between alcohol and DA; this may extend to cyber DA. Based on prior research and I³ theory, we proposed the following hypotheses (see Figure 1):

Hypothesis 1: Baseline (T1) alcohol problems would predict cyber, psychological, and physical DA perpetration 3 months later (T2) for college students with high, but not low, emotion dysregulation.

Hypothesis 2: T1 cyber DA would predict T2 psychological and physical DA.

Method

Participants

Undergraduate students ($N = 578$; 85.1% female) were recruited from psychology courses at a large, public, Midwestern university to participate in the present study. To be eligible, participants were required to be at least 18 years old and in a dating relationship for at least 1 month. The majority (95.9%) of participants reported that they were dating someone of a different gender at baseline. At the second assessment approximately 3-months later, 88.7% of participants reported that they were in a romantic relationship, and 79.2% of participants reported that they were still dating the same person that they reported dating at baseline. Because DA can continue, or may increase, after relationships end (Anderson & Saunders, 2003), we did not exclude participants from the study if they were no longer in a relationship at the second assessment. Participants' mean age was 19.05 years ($SD = 1.60$). The racial composition of the sample was as follows: White (84.5%), Asian (4.1%), multiracial (3.9%), Black/African American (3.6%), Other (1.0%), Middle Eastern (0.7%), Native Hawaiian or other Pacific Islander (0.3%), and American Indian or Alaska Native (0.2%); 1.7% of participants did not report their race. Participants reported dating for an average of 18.31 months ($SD = 18.41$).

Procedure

Students were informed of the opportunity to participate in the present study through a psychology online study participation portal that provided a brief description of the study. Interested participants were directed to an online survey website (i.e., [Qualtrics.com](https://www.qualtrics.com)) that used encryption to maintain participant confidentiality and assessed eligibility. Participants earned partial course credit for their participation in the baseline assessment and follow-up assessment approximately 3 months later. No financial compensation was provided. Participants received an email with a link to the follow-up assessment 3 months after baseline assessment completion. Compliance rates were acceptable with 60.7% of baseline participants completing the follow-up assessment.

Measures

Psychological and physical DA perpetration.—Perpetration items of the Revised Conflict Tactics Scales (CTS2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996; Straus, Hamby, & Warren, 2003), Psychological Aggression (8 items) and Physical Assault (12 items) subscales assessed DA perpetration in the past year (at T1) and in the past 3 months (at T2). Responses to items ranged from 0 (*this never happened*) to 6 (*more than 20 times*). Physical DA and psychological DA total scores were calculated separately by adding the midpoint for each item response (e.g., a “4” for the response “3–5 times”), with higher scores representing more frequent DA perpetration for each respective subscale. Possible scores ranged from 0 to 128 for the Psychological Aggression subscale and 0 to 192 for the Physical Assault subscale. Previous studies indicated that the CTS2 had adequate psychometric properties (Straus et al., 1996). The Physical Assault subscale demonstrated strong reliability in the present study at T1 ($\alpha = .90$) and T2 ($\alpha = .98$). The Psychological Aggression subscale demonstrated adequate reliability in the present study at T1 ($\alpha = .77$) and T2 ($\alpha = .89$).

Cyber DA perpetration.—The Psychological Aggression Using Technology Scale (PATS; Leisring & Giumetti, 2014) assessed self-reported cyber DA as it occurred through cell phones, email, social networking sites, text messages, and instant messages in the past year (T1) and in the past 3 months (T2). Participants responded to nine perpetration items (e.g., “Have you posted inappropriate pictures or embarrassing information online to humiliate your partner?” “Have you kept tabs on your partner by checking their email messages or messages on their cell phone?” and “Have you called your partner names in an email, instant message, text message, or on a social networking site?”) by reporting how frequently they engaged in each behavior using a scale that ranged from 0 (*never*) to 6 (*more than 20 times*). Scores were summed across items such that higher scores indicated more frequent cyber DA perpetration. Possible scores ranged from 0 to 54. The PATS demonstrated sound psychometric properties through exploratory, principle, and confirmatory factor analyses and by establishing convergent validity through positive associations with psychological and physical DA measures and an online argument scale (Leisring & Giumetti, 2014). The PATS demonstrated adequate reliability in undergraduate students (Leisring & Giumetti, 2014) and in the present sample at T1 ($\alpha = .83$) and T2 ($\alpha = .90$). It should be noted that the PATS does not assess cyber sexual DA (e.g., unwanted

sexting; Ross, Drouin, & Coupe, 2019) or distinguish between cyber DA subtypes (e.g., cyber relational aggression, cyber invasion; Crane et al., 2018).

Alcohol problems.—The Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) assessed self-reported alcohol use and problems in the prior year (T1) and in the past 3 months (T2). The 10 items examined the intensity and frequency of alcohol use, symptoms of alcohol tolerance and dependence, and negative consequences of alcohol use. Higher scores represented more alcohol problems. The AUDIT demonstrated good reliability across multiple populations, including college students (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001; Brem et al., 2018). The AUDIT demonstrated adequate reliability in the present study at T1 ($\alpha = .83$) and T2 ($\alpha = .82$).

Emotion dysregulation.—The 36-item Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) total score measured emotion dysregulation at T1, defined as a lack of awareness and understanding of emotional responses, the inability to choose adaptive responses in response to painful affect, and the inability to refrain from maladaptive responses in the presence of painful affect. The DERS assessed six aspects of emotion dysregulation: nonacceptance of emotional responses (e.g., “When I’m upset, I feel like I am weak”), difficulties engaging in goal-directed behavior (e.g., “When I’m upset, I have difficulty concentrating”), impulse control difficulties (e.g., “When I’m upset, I lose control over my behaviors”), lack of emotional awareness (e.g., “I am attentive to my feelings”; reverse scored), limited access to emotion regulation strategies (e.g., “When I’m upset, it takes me a long time to feel better”), and lack of emotional clarity (e.g., “I have difficulty making sense out of my feelings”). Respondents selected how often each statement applied to them using a 5-point scale ranging from 1 (*almost never*) to 5 (*almost always*). Several items were reverse scored prior to summing responses such that higher scores indicated greater emotion dysregulation. Possible scores ranged from 36 to 180. The DERS is a reliable and valid measure that was used in prior research with college populations (Shorey et al., 2015). The DERS demonstrated adequate reliability in the present sample ($\alpha = .92$).

Data Analytic Strategy

Descriptive statistics were obtained using SPSS Version 23.0. Path analysis in Mplus Version 8.0 tested the longitudinal relationships among alcohol problems, emotion dysregulation, cyber DA, and face-to-face psychological and physical DA. Variables included in the interaction term were mean centered prior to conducting path analyses. Full information maximum likelihood (FIML) estimation estimated model parameters, which provided more efficient and less biased estimates than alternative strategies to handle missing data such as pairwise or listwise deletion (Enders, 2010; Kline, 2010). FIML was robust to issues of nonnormality (Kline, 2010). Path analysis is preferable to regression models because path analysis allows a series of structural regression equations to be simultaneously analyzed.

The path model illustrated in Figure 1 was created by simultaneously including (a) autoregressive effects (i.e., the stability of individual differences from one occasion to the

next; Selig & Little, 2012) of alcohol problems, cyber DA, psychological DA, and physical DA; (b) paths from T1 DA perpetration (cyber, psychological, and physical) to T2 alcohol problems; (c) paths from T1 alcohol problems to T2 DA perpetration (cyber, psychological, and physical); (d) paths from each type of DA perpetration (i.e., cyber, psychological, and physical) at T1 to each type of perpetration at T2; and (e) paths from the interaction term (i.e., T1 alcohol problems and T1 emotion dysregulation) to each type of DA perpetration (i.e., cyber, psychological, and physical) at T2. Alcohol problems at T2 were included in the model to (a) account for associations between alcohol problems across time points that could otherwise explain associations between alcohol and DA over time and (b) account for the possibility that DA perpetration predicted subsequent alcohol problems given that DA perpetration predicted subsequent alcohol use in prior studies (e.g., Derrick & Testa, 2017). Cross-lagged effects were interpreted as the prospective association of a predictor variable on an outcome variable, controlling for prior levels of the outcome variable and other model covariates at T1. The comparative fit index (CFI) served as the primary fit index given the influence of large sample size on χ^2 (Tanaka, 1987); χ^2 , root mean square error approximation (RMSEA), Tucker–Lewis index (TLI), and standardized root mean square residual (SRMR) aided in fit interpretation. Model fit was acceptable if CFI was equal to or greater than .95, TLI was equal to or greater than .90, RMSEA was less than or equal to .05, SRMR was less than or equal to .05, and χ^2 was nonsignificant (Kline, 2010).

We examined paths from the interaction term (i.e., T1 alcohol problems $\times$ T1 emotion dysregulation) to cyber, psychological, and physical DA. Each significant interaction effect was explicated using the Johnson-Neyman (J-N) technique (P. O. Johnson & Neyman, 1936) in Mplus following the procedures suggested by Hayes and Matthes (2009). This technique allowed us to directly identify the exact level of emotion dysregulation at which T1 alcohol problems demonstrated significant associations with T2 DA perpetration (i.e., the regions of significance of the simple effects of emotion dysregulation). This technique was accomplished by finding the value of emotion dysregulation for which the ratio of the conditional effect to its standard error is equal to the critical t score (Hayes & Matthes, 2009). Separate plots were computed for each significant interaction. Examination of the J-N plot in Mplus provided estimates for probing the interaction at various levels of emotion dysregulation.

Results

Descriptive Statistics

Most participants endorsed perpetrating psychological (74.6%) and cyber (75.3%) DA in the 12 months prior to T1. More than one quarter (26.3%) of participants endorsed physical DA perpetration in the 12 months prior to T1. In the 3 months prior to T2, approximately half of participants reported perpetrating psychological (55.3%) or cyber (48.2%) DA, whereas 14.2% of participants endorsed perpetrating physical DA. Rates of cyber, psychological, and physical DA are comparable with the rates reported elsewhere (e.g., Ortiz et al., 2015; Wolford-Clevenger et al., 2016). See Table 1 for bivariate correlations, means, and standard deviations of study variables. Participants who completed the baseline assessment, but not the follow-up assessment, reported greater alcohol use ($M = 6.34$, $SD = 5.41$ vs. $M = 5.28$,

$SD = 4.81$), $t(558) = 2.29$, $p = .02$, and emotion dysregulation ($M = 85.57$, $SD = 25.38$ vs. $M = 77.58$, $SD = 22.57$), $t(502) = 3.44$, $p = .00$, than participants who completed both assessments.

Model Testing

Results of a single group path model are displayed in Table 2. The model fit the data well: $\chi^2 = .59$, $p = .44$; RMSEA = .00; CFI = 1.00; TLI = 1.01; SRMR = .00. Autoregressive effects revealed that T1 alcohol problems predicted T2 alcohol problems, T1 psychological DA predicted T2 psychological DA, and T1 cyber DA predicted T2 cyber DA. T1 physical DA perpetration did not predict T2 physical DA perpetration.

Hypotheses 1 was partially supported. The interaction term (i.e., T1 alcohol problems $\times$ T1 emotion dysregulation) significantly predicted psychological and physical DA at T2. Results of the J-N technique indicated that T1 alcohol problems predicted T2 psychological DA perpetration among college students who reported emotion dysregulation scores greater than $-.42$ SDs , $B = .55$, $SE = .13$, $p = .00$, but did not predict T2 psychological DA for students with lower emotion dysregulation scores (i.e., students who had better skills for regulating emotions). Similarly, T1 alcohol problems predicted T2 physical DA perpetration among college students who reported emotion dysregulation scores greater than $-.04$ SDs , $B = .38$, $SE = .17$, $p = .03$. T1 alcohol problems did not predict T2 physical DA perpetration for students with lower emotion dysregulation scores (i.e., students who had better skills for regulating emotions). In other words, T1 alcohol problems positively related to T2 psychological and physical DA perpetration among college students who endorsed approximately average, or above average, levels of emotion dysregulation (i.e., average or poor skills for regulating emotions) but did not relate to DA perpetration among college students who endorsed lower levels of emotion dysregulation (i.e., well-developed skills for regulating emotions). As the level of emotion dysregulation increased beyond $-.42$ SDs and $-.04$ SDs , the relationship between alcohol problems and psychological and physical DA, respectively, became stronger.

In contrast to Hypothesis 1, the interaction term did not predict T2 cyber DA perpetration. However, emotion dysregulation positively predicted T2 cyber DA perpetration. T1 alcohol problems did not predict T2 cyber DA although alcohol problems positively related to cyber DA at the bivariate level at each time point.

Consistent with Hypotheses 2, T1 cyber DA predicted T2 psychological and physical DA. T1 psychological DA also predicted T2 cyber DA but, unexpectedly, not T2 physical DA.

Discussion

We examined emotion dysregulation as a moderator of the longitudinal association between baseline alcohol problems and cyber, psychological, and physical DA perpetration 3 months later. In support of our hypotheses, alcohol problems predicted subsequent psychological and physical DA perpetration among college students with average and high levels of emotion dysregulation only. In contrast to our hypothesis, alcohol problems did not predict subsequent cyber DA perpetration independently or in conjunction with emotion

dysregulation. Although both alcohol problems and emotion dysregulation positively related to cyber DA at the bivariate level, only emotion dysregulation positively and longitudinally related to cyber DA. This was the first study to find that college students' cyber DA predicted their subsequent psychological and physical DA perpetration.

Results from the present study supported conceptual models of alcohol-related partner abuse (e.g., Finkel & Eckhardt, 2013) by suggesting that the longitudinal relationship between alcohol problems and DA perpetration may depend upon an individual's dispositional capacity to regulate emotions. Notably, the relationship between alcohol problems and psychological and physical DA perpetration was positive and significant for college students with approximately average levels of emotion dysregulation; the relationship between alcohol problems and DA perpetration strengthened as emotion dysregulation increased. It is possible that even minor difficulties regulating affect may place college students at risk for perpetrating psychological and physical DA, particularly when they also endorse problems with alcohol use. In contrast, alcohol problems may be a less consequential longitudinal DA risk factor among students with well-developed emotion regulation capacities. These results were consistent with the finding that individuals with higher emotion regulation skills (i.e., trait reappraisal) were less likely to perpetrate lab-based DA than were individuals with lower emotion regulation skills, even when intoxicated and instructed to engage in maladaptive emotion regulation strategies (i.e., rumination; Watkins, DiLillo, & Maldonado, 2015). Together, results from the present and prior research indicated that college DA interventions may benefit from incorporating emotion regulation and alcohol reduction strategies into existing programs.

The present findings also suggested that college students with difficulties regulating emotions may be at increased risk of perpetrating cyber DA regardless of the extent of their alcohol use. Although unexpected, these results are not surprising given that cyber DA tactics (e.g., monitoring a partner) were suspected to be motivated by efforts to regulate painful affect (e.g., jealousy, suspicion of infidelity, abandonment; Bowe, 2010; Brem et al., 2015). Although we hypothesized that alcohol problems would positively relate to cyber DA among college students with high, but not low, emotion dysregulation, our data suggested that alcohol was not a longitudinal risk factor for cyber DA, nor did it confer risk for cyber DA in conjunction with emotion dysregulation. These findings contrast those observed with psychological and physical DA perpetration wherein alcohol problems and emotion regulation interacted to predict subsequent DA perpetration. It is plausible that alcohol problems contributed to partner conflict, but not necessarily the monitoring and abusive behaviors that were examined with the PATS measure in the present study. Future research should examine whether similar results are obtained when more multifaceted cyber DA measures are used with longer follow-up.

Results from the present study extended cyber DA research by providing evidence of a longitudinal association between college students' cyber, psychological, and physical DA perpetration. Specifically, baseline cyber DA positively predicted subsequent psychological and physical DA. Notably, cyber DA positively predicted physical DA above and beyond initial psychological and physical DA, and after accounting for T2 psychological and physical DA. These findings may point to the unique characteristics of cyber, relative to

psychological, DA that are more predictive of physical DA. As such, cyber DA may be an indicator that more injurious forms of DA might occur within a relationship. The present data could not determine the trajectory for cyber, psychological, and physical DA in relation to one another. Future research should evaluate whether cyber DA precedes psychological and physical DA as a discrete monitoring behavior that progresses into more injurious forms of DA until physical abuse occurs. Indeed, this area of research would benefit from further examinations of the longitudinal trajectory of cyber DA in relation to psychological and physical DA.

Limitations

The present study has notable limitations to consider when interpreting the results. First, our data were collected from primarily White, female college students who were in romantic relationships with someone of a different gender. Our findings may not generalize to larger samples of men, sexual and gender minorities, more ethnically diverse populations, or other adult populations (e.g., domestic violence offenders, sheltered women). Similarly, there were too few men in the present sample to examine gender differences in the relations among study variables, which future research should explore. Second, our longitudinal data could not determine causality, or proximal associations among study variables. For example, it is unclear whether DA occurred in the presence of either alcohol use or emotion dysregulation. Event-level and experimental research would clarify causal and proximal relations among alcohol, emotion dysregulation, and various forms of DA. Third, cyber DA perpetration was operationalized with the PATS, which is not a comprehensive measure of cyber DA as it does not include sexual cyber DA (e.g., coercive sexting, revenge porn, sending unwanted sexually explicit images; Ross et al., 2019) or distinguish between subtypes of cyber DA (e.g., cyber relational aggression, cyber invasion; Crane et al., 2018). In contrast to the CTS2, the PATS does not specify that the aggressive behavior occurred within the context of conflict. Different results may be obtained when using an alternative cyber DA measure. Fourth, as is the case with all moderation analyses, *Ms* and *SDs* used to examine emotion dysregulation as a moderator were sample specific. These results may not extend to other samples with varying ranges of emotion dysregulation.

In addition, the present study did not account for associations between study variables and DA victimization. This research area would benefit from a longitudinal investigation of alcohol problems in relation to cyber DA perpetration and victimization over time as such a study has not been conducted. That participants who completed baseline, but not the follow-up assessment, reported greater alcohol use and problems, and emotion dysregulation, than participants who completed both assessments may explain, in part, why alcohol use and problems did not relate to cyber DA independently or in conjunction with emotion dysregulation. Finally, the follow-up rate was relatively low for this 3-month study (60.7%), though this was expected given the lack of financial compensation for participants who completed the follow-up assessment. Employing methods that incentivize participation in follow-up assessments may result in better estimates of the longitudinal associations among study variables. Despite the attrition rate, our findings that alcohol problems positively related to psychological and physical DA among college students with average and high emotion dysregulation are particularly robust given that those who

completed both assessments had less alcohol problems and emotion dysregulation. Fewer alcohol problems and emotion regulation difficulties might also explain why we did not find a significant interaction between alcohol problems and emotion regulation in relation to cyber DA.

Research Implications

In addition to addressing these limitations, future research would benefit from moving beyond self-report assessments of these constructs to include experimental examinations of alcohol use and emotion dysregulation in relation to cyber DA. Recently, researchers began investigating the relationships between alcohol intoxication and lab-based DA perpetration using the Taylor Aggression Paradigm (Taylor, 1967; Watkins, DiLillo, Hoffman, & Templin, 2015; Watkins, DiLillo, & Maldonado, 2015). Similarly, manipulating social media message exclusivity allowed Cohen, Bowman, and Borchert (2014) to examine how individuals responded to a partner's provoking social media activity. Investigators are encouraged to use these and similar manipulation procedures to approximate the effects of alcohol intoxication and emotional dysregulation on cyber DA.

In addition, elucidating broad and relationship-specific emotions that contextually precede cyber DA may help identify which emotion regulation skills to target (e.g., relationship communication, general distress reduction). Additional research should examine proximal associations among alcohol, emotion dysregulation, and cyber DA as different results may be obtained. For instance, alcohol use may be proximally related to cyber DA, particularly when college students with high emotion dysregulation experience painful affect (e.g., jealousy). The likelihood of perpetrating cyber DA in the presence of painful affect may be exacerbated by simultaneous alcohol intoxication given (a) the myopic effect alcohol has on salient stimuli (e.g., painful affect; Giancola et al., 2010; Steele & Josephs, 1990) and (b) the accessibility of a partner via technology, which does not require that a partner be present during intoxication for abuse to occur. Future research is needed to examine these suppositions using event-level research methods (e.g., ecological momentary assessment).

Given college students' cell phone use frequency, the prevalence of cyber DA, and the potential risk of psychological and physical DA following cyber DA perpetration, investigators may consider evaluating the efficacy of smart-phone-based applications for DA assessment and intervention. AbuSniff, a system that alerts Facebook users of abusive friends and encourages users to restrict abusive friends' access to their online activity, gained preliminary support for increasing individuals' awareness of cyber abuse and their perceived protection from friend abuse (Talukder & Carburnar, 2018). Such applications may be adapted to combat cyber DA. However, this may only be beneficial in protecting individuals from partners who threaten, abuse, or harass them online; such an application would have little benefit when it comes to reducing discrete monitoring or cyberstalking behavior. Applications that inform individuals how often their social media sites are accessed by partners may have implications for reducing covert cyber monitoring.

Clinical and Social Policy Implications

Clinicians working with students who describe unhealthy cyber behaviors within their intimate relationships should consider (a) evaluating the function of cyber monitoring and harassment for that individual, (b) assessing for psychological and physical DA, (c) assessing students' use of maladaptive emotion regulation strategies, which may include problematic alcohol use, (d) informing students of the risk cyber DA may pose for more physically injurious forms of DA, and (e) educating students on the criminal implications of some cyber DA behaviors (e.g., hacking into a partner's email; Electronic Communications Privacy Act Amendments Act of 2015). College-based DA intervention programs may benefit from targeting alcohol use, emotion dysregulation, and cyber DA to reduce psychological and physical DA. It should be noted that no DA intervention research evaluated the efficacy of existing interventions at reducing cyber DA. Although preliminary, results of the present study suggested that neglecting these DA tactics may have important implications for future psychological and physical DA perpetration.

Conclusion

Consistent with DA theories, well-developed emotion regulation capacities may deter college students from perpetrating cyber DA and hinder the likelihood that college students with alcohol problems will perpetrate subsequent psychological and physical DA. The present findings supported the importance of targeting college students' cyber DA, alcohol misuse, and emotion dysregulation in DA interventions. Continued efforts to incorporate cyber DA into existing DA theories and interventions may help researchers and clinicians become better able to reduce college DA.

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Figure 1.
Paths tested in longitudinal model.

Table 1.

Means, Standard Deviations, and Bivariate Correlations Among Study Variables

	1	2	3	4	5	6	7	8	9
1. T1 psych	1								
2. T1 phys	.38***	1							
3. T1 cyber	.71***	.25**	1						
4. T1 alcohol	.14*	.16**	.13*	1					
5. T1 ED	.21**	.13*	.19**	.14*	1				
6. T2 psych	.49**	.10	.45**	.24**	.22**	1			
7. T2 phys	.22**	.06	.36**	.19**	.15*	.66**	1		
8. T2 cyber	.51**	.10	.55**	.09	.24**	.79**	.50**	1	
9. T2 alcohol	.13*	.08	.16**	.71**	.11	.29**	.28**	.18**	1
<i>M</i>	10.31	1.90	15.14	6.05	78.02	5.63	2.67	5.61	5.68
<i>SD</i>	15.21	7.88	25.16	4.78	23.06	14.33	17.44	14.91	4.82

Note. Psych = psychological dating abuse perpetration; phys = physical dating abuse perpetration; cyber = cyber dating abuse perpetration; alcohol = alcohol problems; ED = emotion dysregulation; T1 = Time 1; T2 = Time 2.

*
 $p < .01$.

**
 $p < .05$.

 $p < .001$.

Table 2.

Standardized Path Estimates for the Proposed Longitudinal Model.

Predictors (T1)	Outcome Variables (T2)			
	Alcohol Problems	Cyber Dating Abuse	Psychological Dating Abuse	Physical Dating Abuse
Alcohol problems	.72 (.04) ***	.10 (.13)	.42 (.13) **	.36 (.17) *
Cyber dating abuse	.02 (.01)	.23 (.04) ***	.11 (.04) **	.26 (.05) ***
Psychological dating abuse	-.01 (.02)	.22 (.06) ***	.30 (.06) ***	-.09 (.08)
Physical dating abuse	-.01 (.02)	.06 (.07)	-.07 (.07)	.10 (.10)
Emotion dysregulation	-.00 (.01)	.06 (.03) *	.06 (.03) *	.05 (.04)
Alcohol problems × emotion dysregulation	—	.00 (.01)	.01 (.01) **	.02 (.01) **

Note. Standard errors are in parentheses. Variables included in the interaction term were mean centered prior to analyses. Covariances among variables are not presented for clarity.

*
 $p < .05$.

**
 $p < .01$.

 $p < .001$.