

Daily Self-Control Demands and Loss of Control Over Drinking: The Moderating Role of Trait Impulsivity and Peer Exposure

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Objective: A defining characteristic of alcohol use disorders is the loss of control over drinking. Although this loss is associated with reduced self-control, the relationship is supported by limited research conducted in real-world contexts, and existing studies have certain limitations and produce inconsistent findings. Given these gaps, our study investigated whether perceived demands on self-control could predict a subsequent loss of control over drinking (i.e., drinking more than planned) in the daily lives of young adults. Additionally, we examined whether peer exposure and negative urgency act as moderators in this relationship, and explored other aspects of trait impulsivity as moderators. **Method:** We observed 496 participants (45% female, 54% White, non-Hispanic, ages 18–22; $M_{\text{age}} = 20.3$) from Thursday to Sunday across 8 weeks. Participants completed five daily surveys assessing perceived self-control demands over moods and thoughts, peer exposure, and mood. Planned and actual drinking amounts were recorded at the second survey and the next morning, respectively. Loss of control over drinking was defined as the deviation between actual and planned consumption. Baseline measurements included trait impulsivity (urgency, premeditation, and perseverance). We used a mixed-effects linear model to analyze how self-control demands impacted loss of control over drinking across individuals. **Results:** Within individuals, predrinking perceived self-control demands did not predict the degree of deviation from planned alcohol consumption. Additionally, neither peer exposure nor negative urgency moderated this relationship. **Conclusions:** Utilizing a substantial sample size and rigorous methodology, this study demonstrates that predrinking self-control demands over moods and thoughts do not predict drinking more than intended. Moreover, neither peer exposure nor negative urgency moderate this relationship.

Public Health Significance Statement

This study indicates that perceived self-control demands over moods and thoughts prior to drinking do not predict deviations from intended drinking amount. Additionally, the findings indicate that peer exposure and trait impulsivity do not moderate this relationship.

Keywords: self-control demands, loss of control over drinking, ecological momentary assessment, peer exposure, negative urgency

Loss of control over one's behavior is a defining characteristic of addiction. For instance, two *Diagnostic and Statistical Manual of Mental Disorders, fifth edition* criteria for alcohol use disorder (AUD) depict this loss of control: "Alcohol is often consumed in larger amounts or over a longer period than intended," and "there is a persistent desire or unsuccessful efforts to cut down or control alcohol use" (American Psychiatric Association, 2013). Other AUD criteria indirectly reflect loss of control, describing continued

alcohol use despite being aware of the impairment (e.g., hazardous use, interpersonal problems, physical or psychological problems) caused by use. Indeed, a network analyses suggested that consuming more alcohol than planned stands out as the most central symptom of problematic alcohol use (Rhemtulla et al., 2016). Given the significant impact of AUDs on individuals and society (World Health Organization, 2019) and the critical role that impaired control over drinking plays in the progression toward

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alcohol dependence, we aimed to investigate the precursors of loss of control over drinking in daily life through the lens of self-control failure.

Loss of control over drinking is theorized to stem from broader self-control deficits, particularly in managing alcohol consumption (Leeman et al., 2012). Questionnaire-based studies consistently show a negative relationship between self-control and alcohol use, suggesting that individuals with difficulties in planning, goal persistence, impulse inhibition, or emotional regulation are more prone to alcohol-related problems (Coskunpinar et al., 2013; de Ridder et al., 2012; Stautz & Cooper, 2013). However, these studies often treat self-control as a static trait, focusing on between-subject differences (e.g., whether lower self-control correlates with higher alcohol use). In reality, self-control fluctuates within individuals due to internal (e.g., motivation) and external factors (e.g., environmental cues; Jones et al., 2013). While between-subject analyses identify at-risk groups, examining within-subject associations—such as whether individuals are more likely to drink when self-control is temporarily diminished—can provide deeper insights into the dynamics of self-control failure in alcohol use.

In recent years, researchers have turned to ecological momentary assessment (EMA) to explore the dynamic interplay between self-control and drinking behavior in real-world environments. EMA entails repeated sampling of participants' environmental contexts, subjective states, and behaviors using mobile devices as they navigate their daily lives. This line of research explores whether daily fluctuations in self-control within-person are associated with alcohol use. For example, by measuring heavy drinkers' inhibition with the stop-signal task, researchers discovered that a decline in inhibitory control throughout the day predicted increased alcohol consumption later the same day (Jones et al., 2018). In another study, self-reported momentary perceptions of self-control were lower in assessments preceding drinking compared to those not followed by drinking (Remmerswaal et al., 2019). Prior studies have provided relatively mixed findings for other self-control-related constructs. For example, a few studies reported that when people reported less planning ahead, they were more likely to initiate unplanned drinking, while rash and impulsive action (e.g., urgency) was negatively associated with unplanned drinking (Griffin et al., 2021; Griffin & Trull, 2021). However, those studies were characterized by small sample sizes and tremendous uncertainty in even the significant effects. Another recent study reported that daily variation in rash and impulsive action was unrelated to subsequent drinking behavior (Dora et al., 2022).

Self-control demands are a key factor that can trigger fluctuations in self-control, as proposed by at least two theoretical models. The strength model of self-control suggests that self-control is a limited resource, and excessive or prolonged demands can deplete this resource, impairing behavior regulation (e.g., ego depletion; Baumeister et al., 2007). However, the reliability of the ego depletion paradigm has been questioned, with some meta-analyses indicating it may reflect fatigue rather than resource depletion (Hagger et al., 2016; Vohs et al., 2021). Research shows that ego depletion effects can be mitigated by altering expectations about depletion (Job et al., 2010, 2013) or introducing incentives (Muraven & Slessareva, 2003). Alternatively, self-control demands may reflect situational appraisals of events as challenging or uncontrollable (Lazarus & Folkman, 1984), which could heighten cravings for alcohol or reduce motivation to limit

consumption (Inzlicht & Schmeichel, 2012; Job et al., 2010). While distinguishing between self-control depletion and situational appraisals is beyond this study's scope, we focus on how perceived demands on emotional and cognitive self-control might predict loss of control over drinking (defined here as drinking more than planned) in daily life. Identifying such an association would suggest that individuals are more likely to drink more than planned on days when they perceive more demands to control their moods and thoughts. Conversely, a null result would imply that drinking episodes are less influenced by appraisals and more by other situational factors, such as social context.

Several EMA studies have investigated the link between daily self-control demands and alcohol consumption, with mixed findings. Early research suggested a positive association with alcohol use (DeHart et al., 2014; Muraven et al., 2005), while more recent studies have reported negative or null relationships (Carey et al., 2019; Dora et al., 2024; Gius, 2020; Walters et al., 2018). However, most studies focused on drinking likelihood or quantity, which do not directly capture loss of control over drinking. It may be better to operationalize loss of control in terms of deviations from pre-established drinking plans (Leeman et al., 2012). Three EMA studies have partially explored this connection. Muraven et al. (2005) found that higher self-control demands increased the likelihood of exceeding self-imposed drinking limits, but their analysis of 808 drinking episodes from 106 participants may have been underpowered, raising concerns about the reliability of their findings (Albers & Lakens, 2018; Leon et al., 2011). Walters et al. (2018) reported a positive association between self-control demands and alcohol-related problems, including exceeding intended drinking amounts, while Carey et al. (2019) found no significant link between self-control demands and alcohol self-control failures across two samples. Regarding self-control demands, these studies operationalized it variously as efforts at self-control (e.g., "I stopped myself from doing something"), perceptions of emotional and cognitive self-control demands (e.g., "I had to control/fix my moods/thoughts"), or general feelings of distress (e.g., "I dealt with stress/felt overwhelmed"). Overall, the evidence remains limited and inconclusive, with existing studies hampered by issues such as limited sample diversity, low statistical power, and inadequate measures of loss of control. In this study, we address these limitations by using a more precise operationalization of loss of control—calculating the discrepancy between intended and actual alcohol consumption—and analyzing data from a sizable sample of 496 participants observed over 32 days.

Moderator

Individual and contextual factors that may moderate the relationship between self-control demands and excessive drinking have rarely been examined. Clarifying these moderating factors would provide valuable targets for intervention studies. In the present study, we considered two moderators: the personality trait of negative urgency and the situational factor of peer exposure.

Negative Urgency

Individuals with more limited resources (e.g., lower trait self-control) may be more susceptible to the effects of self-control demands (Muraven et al., 2005). Moreover, daily life research

indicated that moments with higher negative affect are also characterized by greater rash and impulsive action (Feil et al., 2020; King et al., 2024). It may be that people who are lower on self-control traits exhibit stronger associations between self-control demands and excessive alcohol use because perceptions of challenges to self-control make it especially challenging to resist temptation or work toward one's goals (e.g., limiting drinking or the harmful consequences of excess drinking). Thus, we tested whether trait negative urgency moderated the association between self-control demands and deviations from drinking plans. Negative urgency, characterized by rash and impulsive reactions to negative emotions such as sadness or anger, is a facet of the Urgency–Premeditation–Perseverance–Sensation Seeking–Positive Urgency impulsivity model (Cyders & Smith, 2007; Whiteside & Lynam, 2001) and is strongly associated with alcohol use and alcohol-related problems (Coskunpinar et al., 2013). People high in this trait report that they tend to act impulsively in moments high in negative emotions, despite potential long-term repercussions (Cyders et al., 2016), and EMA research has shown that people high on trait urgency also report higher rash and impulsive action in daily life (King et al., 2024). Moreover, Billieux et al. (2021) proposed that negative and positive urgency constitute a single urgency construct. Accordingly, we conducted a sensitivity analysis using the mean of negative urgency and positive urgency scores as the moderator.

Peer Exposure

Exposure to peers may amplify the effects of self-control demands on impaired control over drinking. Peer influence on drinking manifests through direct offers of alcohol, modeling peers' drinking behaviors, and perceived social norms that make excessive drinking appear common and acceptable (Borsari & Carey, 2001). Furthermore, research suggests that merely being in the presence of peers increases sensitivity to rewards and risky decision making (O'Brien et al., 2011; Steinberg, 2008). In other words, the presence of peers may reflect a high-risk context in which the presence of extra self-control demands makes it especially challenging to achieve alcohol moderation goals because alcohol may be easier to access and appear more rewarding in those situations.

The Present Study

In this study, we specifically examined perceived demands on emotional and cognitive self-control (i.e., the need to regulate moods and thoughts) and how these relate to loss of control over drinking in the specific form of drinking more than planned among youth. Using the largest sample size to date, we also explored the moderating effects of (negative) urgency and peer exposure. We hypothesized that:

Hypothesis 1: The more participants perceived self-control demands, the more they exceeded their planned drinking.

Hypothesis 2: (Negative) urgency moderates the association between self-control demands and drinking more than planned, so that the association is more positive for participants reporting higher (negative) urgency.

Hypothesis 3: Peer exposure moderates the association between self-control demands and drinking more than planned, so that the association is stronger on days participants report the presence of peers at the start of the drinking episode.

Method

This study's analyses were preregistered in detail after data collection but before accessing the data (<https://osf.io/hm62f>). Analysis scripts, codebooks, and additional online material are available at <https://osf.io/ypumn/>.

Participants

Participants ($n = 496$) were recruited from diverse sources such as social media, newspapers, flyers, and university registrar lists, representing young adults from both college and noncollege backgrounds. The sample consisted of 45% cisgender females, 42% cisgender males, and the remaining individuals identified as nonbinary/genderqueer/gender nonconforming (8.5%), transgender male or female (4.0%), or nongendered (0.2%). Racial/ethnic distribution was as follows: 54% White, 28.5% Asian, 6.6% African American, and 8.37% Hispanic/Latino, with 22.7% endorsing multiple ethnicities. To be included, participants had to be aged 18–22 ($M = 20.3$ years, $SD = 1.3$ years) during initial screening, have lived in or relocated to the United States before the age of 12, and report weekly alcohol or marijuana use in the past 3 months, in addition to owning a smartphone and being fluent in English (King et al., 2024). Approximately 67% of the sample attended a 4-year college at recruitment. Not surprisingly given the recruitment criteria, the sample endorsed high levels of problematic alcohol use. The mean Alcohol Disorders Identification Test (Babor & Grant, 1989) score for participants was 7.91, and on a self-reported AUD symptom inventory (Boness et al., 2019), participants reported a mean of 2.89 symptoms, with 47% of the sample meeting criteria for at least mild AUD (e.g., 2+ symptoms) and 25% meeting criteria for moderate or severe AUD (e.g., 4+ symptoms).

The sample size of this EMA study was based on a power analysis for a different set of analyses than the ones reported here. For that reason, we conducted a set of simulations to determine the power we have to detect a cross-level interaction between self-control demands and negative urgency using the Shiny app from Lafit et al. (2021). For this simulation, we assumed that each participant provides data on eight drinking days across the study and that the association between perceived self-control demands and loss of control over drinking gets stronger as the moderator increases, so that the effect of self-control demands on loss of control over drinking increases by 0.1 units for every one standard deviation increase in the moderator. The simulation indicated that we have roughly 87% power to detect the specified cross-level interaction under our assumptions. The code for the power simulations can be found at <https://osf.io/ypumn/>.

Procedure

All study procedures were conducted online and approved by the local institutional review board. Participants first completed an online screening survey, followed by demographic and contact

information, and information on recent substance use and other health behaviors to obscure inclusion criteria. Eligible participants then completed an online survey and virtual training session on EMA procedures with research assistants. Over 8 weeks, participants received brief EMA surveys via text five times daily on social weekends (Thursday to Sunday), plus one on Monday mornings to capture Sunday night behavior. EMAs were sent within five 3-hr blocks between 9 a.m. and 11 p.m. (i.e., morning, midday, afternoon, evening, and late evening), with at least 1 hr between surveys. Participants were initially sent one reminder at 30 min if they had not completed their survey; we changed this to 20- and 40-min reminders after the first 60 participants to increase response rates. Participants received \$50 for the baseline survey and could earn \$1 per EMA, with a \$5 bonus for completing 80% of weekend EMAs (\$258 total possible).

Retention and Missing Data

The mean response rate was 60.5% ($SD = 27.3\%$, range = 0.11%–98.8%). Half of the participants had response rates of at least 70% ($n = 244$, $M = 82.9\%$, $SD = 7.38$), while the low responders ($n = 252$) had a mean response rate of 38.9% ($SD = 21.6$). We imputed missing data for all relevant variables included in the final models, as detailed in the analysis section.

Measures

Outcome and Predictor

Loss of Control Over Drinking. This was calculated as the difference between the intended number of drinks and the actual number consumed. Participants reported their intention to drink later that night on a visual analog scale (0–15 drinks) during the second prompt of each EMA day. Alcohol use was reported during morning EMA assessments using a visual analog scale (0–30 drinks) to indicate the number of drinks consumed the previous night. If participants missed the morning assessment, they reported alcohol use during the subsequent assessment.

Self-Control Demands. This was assessed using two items from a four-item scale by Muraven et al. (2005) that assessed perceptions of emotional and cognitive self-control demands. At each report, participants rated their need to regulate moods and thoughts in the past hour (e.g., “In the past hour, have you needed to control/fix your moods,” “In the past hour, have you needed to control/fix your thoughts”) on a 100-point visual analog scale (0 = *not at all*, 100 = *very much*). Self-control demands before drinking on a given day were determined as the average reported demands preceding a drinking episode. For instance, if a participant began drinking in the afternoon (i.e., the third prompt), their self-control demands before drinking that day would be the average of the first two prompts.

Moderators

Impulsivity. The Urgency – Premeditation – Perseverance – Sensation Seeking–Positive Urgency questionnaire (Whiteside & Lynam, 2001) was administered at baseline, with responses on a 4-point Likert scale from *strongly agree* to *strongly disagree*. It includes five dimensions: negative urgency, positive urgency,

premeditation, perseverance, and sensation seeking. Urgency was calculated as the average of negative urgency and positive urgency (Billieux et al., 2021). In this study, the Cronbach’s α coefficients for negative urgency, positive urgency, premeditation, and perseverance were .88, .93, .84, and .86, respectively.

Peer Exposure. At each report, participants were asked if they were with peers (i.e., friends, acquaintances, roommates, classmates, coworkers, or partners) in the past hour. Peer exposure was coded as 1 if participants reported being with peers at the start of the drinking episode and 0 if not. For instance, if participants began drinking in the afternoon (i.e., the third prompt), peer exposure information from the third prompt will be used.

Covariates

Since affect (Dora et al., 2023), gender (White, 2020) and age (A. C. Carter et al., 2010) have influence on drinking behavior, we included them as covariates in all models.

Negative and Positive Affect. At each assessment, participants were presented with 14 randomly selected emotion words from a word bank, encompassing three positive affect dimensions (i.e., joviality, attentiveness, serenity) and four negative affect dimensions (i.e., anger, sadness, anxiety, general negative affect), each dimension represented by two words. The word bank was developed based on the Positive and Negative Affect Schedule–Expanded Form (Watson & Clark, 1994) and prior research (Jacobson et al., 2023; Larson & Lampman-Petratis, 1989). Participants rated their experience of each emotion in the past hour on a 100-point visual analog scale (0 = *not at all*, 100 = *very much*). Each EMA assessment averaged the eight items measuring negative affect within each person, with assessments completed before the drinking episode averaged into a daily negative affect score. The same procedure applied to positive affect. For the reliability test, the multilevel reliability function in R was used (Revelle, 2020), yielding reliability over k fixed days values of 0.98 for negative affect and 0.97 for positive affect.

Gender and Age. Demographic information was collected at baseline. Participants were asked to report their month and year of birth, and gender was categorized into male (–1), female (1), and gender expansive (0).

Analyses

Data Transformation

Continuous within-participant predictors (i.e., self-control demands, affect) were standardized at the participant level, whereas continuous between-participant predictors (i.e., age, negative urgency) were standardized across the sample. Peer exposure were dummy-coded.

Data Exclusion

Our analysis only included data from days on which alcohol was consumed ($n = 3,611$), as instances of “drinking more than intended” can only occur on drinking days. Moreover, if a drinking event took place before the collection of self-reported intended drinking at the second prompt, data from that day were excluded from our analysis ($n = 364$).

Multiple Imputation of Missing Data

We addressed planned missing data at the item level and unplanned missing data at the observation level via multilevel multiple imputation with the mice package in R (Van Buuren & Groothuis-Oudshoorn, 2011). Multiple imputation handles missing data by establishing a joint distribution for all variables, from which missing data values can be generated. Our imputation model used a mix of information from the baseline and EMA surveys. Mirroring our analyses, information from EMA surveys was nested in participants in this imputation model. In this way, we created 20 imputed data sets and fitted our models on them. We imputed the following variables on days on which we know that participants drank: intention to drink, self-control demands, affect, and peer exposure. We also passively imputed the interaction terms of “Self-Control Demands \times Peer Exposure,” “Self-Control Demands \times Negative Urgency,” “Self-Control Demands \times Premeditation,” and “Self-Control Demands \times Perseverance.” We chose not to estimate alcohol consumption for days when this variable was missing due to concerns about the accuracy of such imputation. Instead, by imputing other relevant variables for days of known alcohol consumption, we aimed to maximize data availability while minimizing bias from missing data in these variables, thus avoiding skewed analyses that could arise from inaccurately imputing a zero-inflated count variable. The success of the imputation was assessed by examining the consistency and variability across the imputed data sets.¹

Model Building

All analyses were conducted using the lme4 package in R (Bates et al., 2015). Given the normal distribution of the outcome “overdrinking (i.e., exceeding planned amounts),” we used linear mixed-effects models for prediction. Each model included a random intercept and random slope nested within participants, allowing for variation in both the baseline level of “overdrinking” and the impact of “self-control demands” on it across participants. Following the application of multiple imputations, analyses were independently conducted on each of the 20 imputed data sets, and thereafter, results were pooled to derive final estimates and standard errors using Rubin’s rules (Rubin, 1976). The initial model assessed the main effect of self-control demands, adjusting for covariates (age, gender, and affect). A subsequent model explored the interaction between self-control demand and trait negative urgency, while another investigated the interaction with peer exposure. Additionally, considering Billieux et al.’s (2021) suggestion of negative and positive urgency as a unified construct, we also examined the interaction between self-control demand and trait urgency (i.e., the mean of positive and negative urgency).

Exploratory Analyses

Furthermore, we conducted several exploratory analyses. First, we removed affect as a covariate in the model, as it may correlate with the independent variable self-control demands. Second, we redefined loss of control over drinking as consuming no less than three drinks beyond what was planned, since drinking only one additional beverage may not be robust enough.

Last, we investigated the interaction between self-control demands and two additional impulsive dimensions—premeditation and perseverance—since, according to the dual process model (Carver et al., 2008), self-regulation failures may be more closely linked to the effortful control and the planning system (Vohs, 2006).

Results

Descriptive Statistics

We excluded nondrinking days, as well as drinking episodes occurring in the morning and midday, since in those cases the drinking episode started before participants reported their drinking intentions. As a result, our analysis included 3,247 drinking days from a final sample of 418 participants ($M_{\text{age}} = 20.55$, $SD_{\text{age}} = 1.22$). The sample consisted of 192 females, 172 males, and 54 individuals who identified as gender expansive. Baseline negative urgency ($M = 3.26$, $SD = 0.58$), urgency ($M = 3.05$, $SD = 0.51$), premeditation ($M = 4.07$, $SD = 0.51$), and perseverance ($M = 3.75$, $SD = 0.57$) exhibited moderate levels with minimal variability. The average negative affect prior to drinking was low ($M = 8.93$, $SD = 8.10$), while the positive affect was moderate ($M = 47.30$, $SD = 15.30$). Figure 1a illustrates the distribution of drinks consumed per drinking day ($M = 3.58$, $SD = 3.00$). Alcohol consumption was distributed throughout the day: 7.67% occurred in the afternoon, 37.05% in the evening, and 55.28% in the late evening, and 60.90% of the sessions involved peers. Figure 1b–1d display the distributions of intended drinking ($M = 1.72$, $SD = 2.13$), overdrinking (i.e., exceeding planned amounts, $M = 1.86$, $SD = 2.73$), and self-control demands ($M = 16.75$, $SD = 18.83$), respectively.

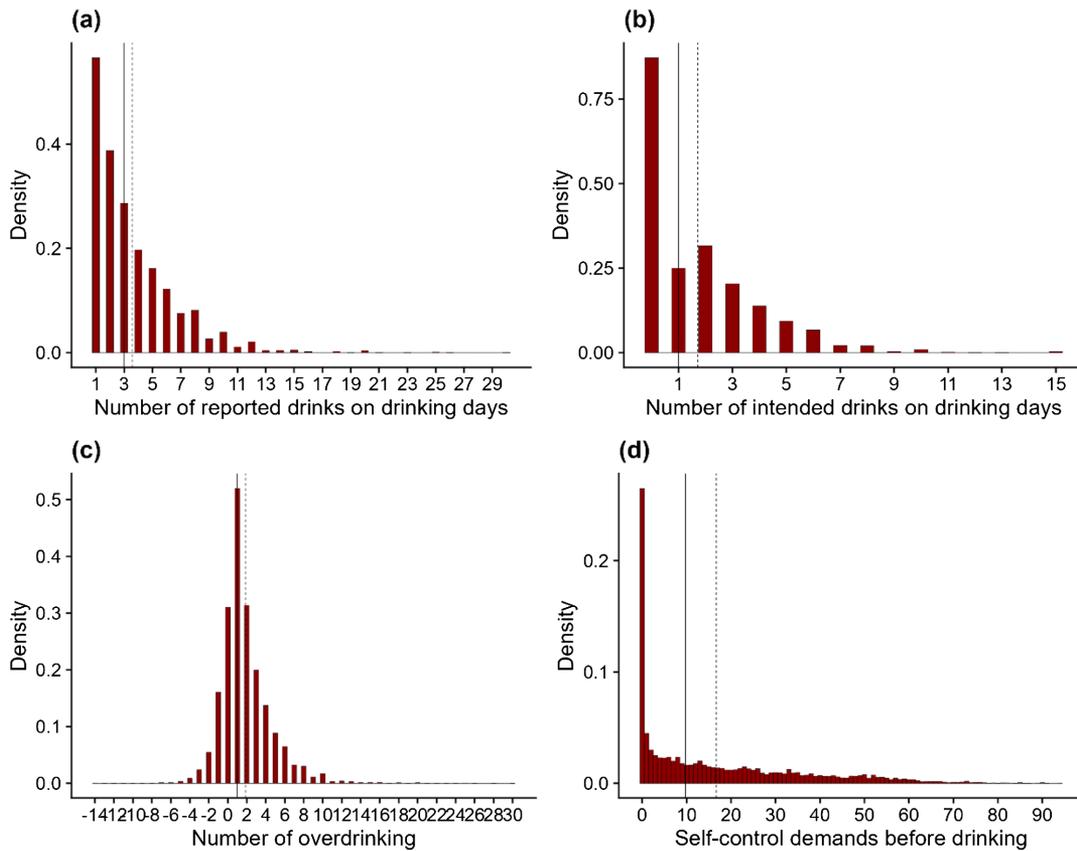
Hypothesized Effects

Table 1 presents the results from the first model, and Figure 2 displays all main effects and interactions in these four hypothesized models and the two exploratory models.² The data did not support the hypothesized associations. In our study, higher perceived self-control demands were not significantly associated with subsequently exceeding planned drinking amounts. Our model estimated with high precision that as self-control demands increase, overdrinking amounts neither increase nor decrease. At the same time, there was variability in this effect across participants. Figure 3 illustrates the random slopes of the relationship between self-control demands and subsequent overdrinking among 50 randomly selected participants, highlighting substantial variation in intercepts (i.e., the average amount of overdrinking) but minimal and symmetric variation around the fixed null association between demands and overdrinking. This association was not moderated by peer exposure, $B = 0.009$, $SE = 0.009$, $t(117.613) = 1.003$, $p = .318$ (Figure 4); trait negative urgency, $B = -2.180$, $SE = 0.006$, $t(1553.66) = -0.371$, $p = .710$ (Figure 5); or urgency, $B = -1.716$, $SE = 0.007$, $t(1239.517) = -0.256$, $p = .798$ (Figure 6). The main effect of peer exposure was not significant, $B = 0.320$, $SE = 0.164$, $t(44.66) =$

¹ The resulting figures have been uploaded and can be viewed at <https://osf.io/ypumn/>.

² Results based on the original nonimputed data set are the same with imputed ones with the exception that the main effect of peer was significant, $B = 0.5528$, $SE = 0.1273$, $t(1984) = 4.344$, $p < .001$.

Figure 1
Descriptive Statistics



Note. Panels a–d: The solid and dashed lines represent the respective median and mean. See the online article for the color version of this figure.

1.953, $p = .057$, whereas the main effects of negative urgency, $B = 0.335$, $SE = 0.154$, $t(1844.621) = 2.176$, $p = .030$, and urgency, $B = 0.439$, $SE = 0.172$, $t(1820.718) = 2.555$, $p = .011$, were significant. That means if negative urgency increases by 1 *SD*, a participant was estimated to overdrink an additional 0.335 drinks (0.439 for urgency). Furthermore, males were more likely to lose control over drinking than females, $B = 0.646$, $SE = 0.194$, $t(1826.299) = 3.324$, $p < .001$, and gender expansive, $B = 0.734$, $SE = 0.303$, $t(1451.174) = 2.420$, $p = .016$, but the latter two

groups did not differ from each other, $B = -0.087$, $SE = 0.300$, $t(1284.718) = -0.291$, $p = .771$.

Exploratory Analyses

Concerning the exploratory analyses, we found that the association between self-control demands and overdrinking amounts was not moderated by premeditation, $B = 0.0003$, $SE = 0.007$, $t(1377.985) = 0.043$, $p = .966$, and perseverance, $B = -0.004$, $SE = 0.006$,

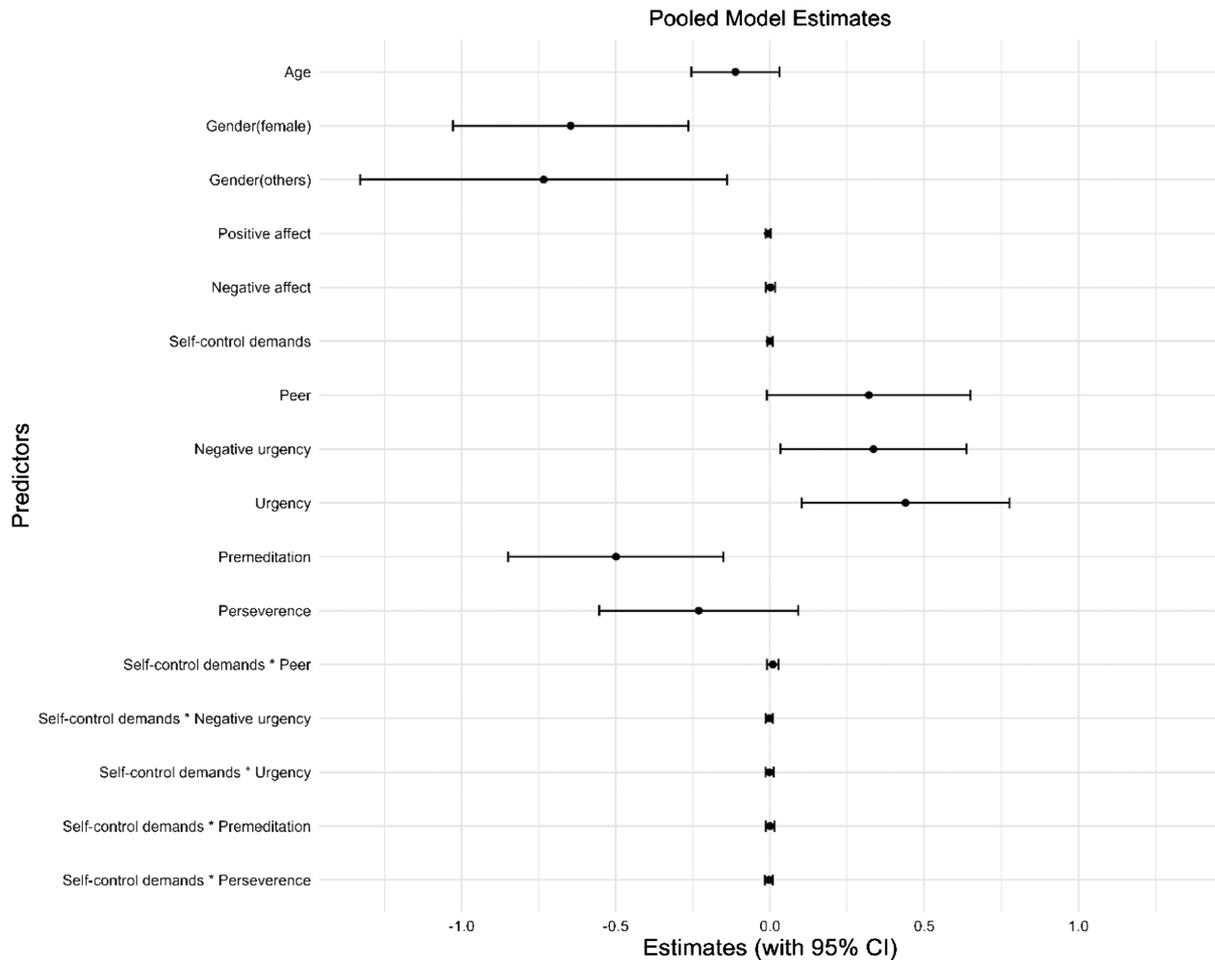
Table 1
The Effect of Self-Control Demands in Predicting Overdrinking Amounts

Variable	<i>B</i>	<i>SE</i>	<i>t</i>	<i>df</i>	<i>p</i>	95% CI
Intercept	2.3753	0.142	16.777	2246.870	<.001	[2.098, 2.653]
Self-control demands	-0.0002	0.004	-0.036	393.325	.971	[-0.009, 0.008]
Age	-0.1121	0.073	-1.530	772.393	.126	[-0.256, 0.032]
Gender (expansive)	-0.7336	0.303	-2.420	1451.174	.016	[-1.328, -0.139]
Gender (female)	-0.6464	0.194	-3.324	1826.229	<.001	[-1.028, -0.265]
Negative affect	0.0012	0.008	0.153	705.252	.878	[-0.014, 0.016]
Positive affect	-0.0063	0.004	-1.444	401.181	.150	[-0.015, 0.002]

Note. CI = confidence interval; SE = standard error.

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Figure 2
The Effect of All Predictors and Its Confidence Interval



Note. CI = confidence interval.

$t(1391.052) = -0.599, p = .550$. The main effect of perseverance, $B = -0.231, SE = 0.165, t(2090.858) = -1.404, p = .160$, was not significant, whereas the main effect of premeditation, $B = -0.500, SE = 0.178, t(2118.212) = -2.808, p = .005$, was significant. We also observed that omitting affect from the model and raising the threshold for the dependent variable had no impact on the results. We report the relevant results in the additional online material at <https://osf.io/zy2k6>.

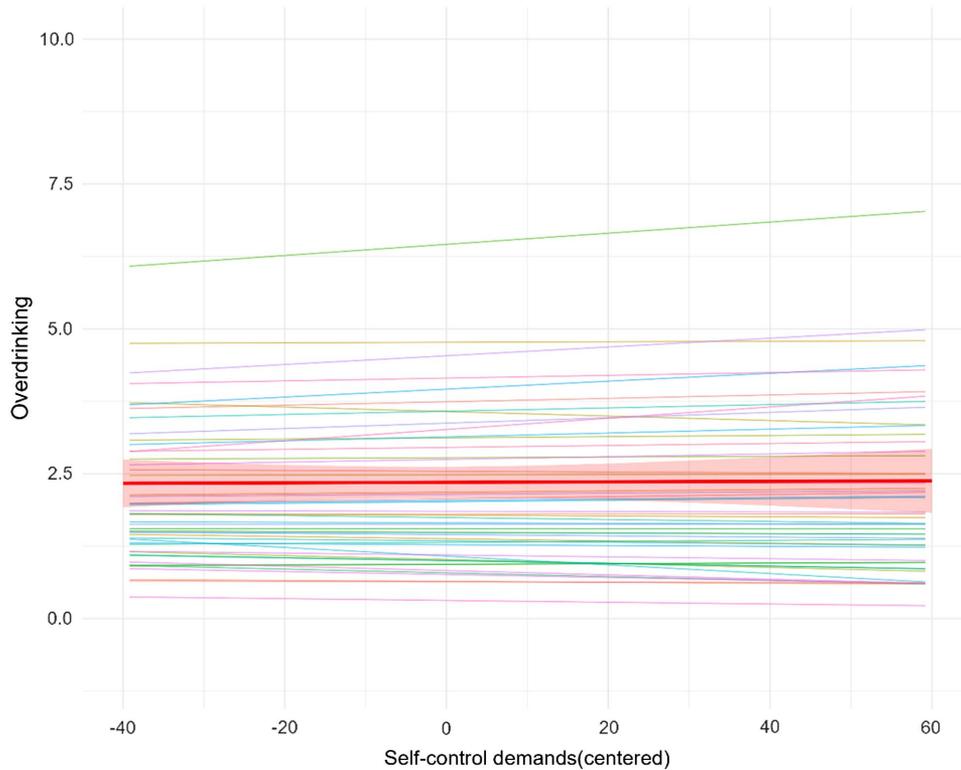
Discussion

As outlined in the *Diagnostic and Statistical Manual of Mental Disorders, fifth edition*, a key characteristic of AUD is the loss of control over drinking, characterized by consuming alcohol in larger amounts or over a longer period than intended, as well as unsuccessful attempts to cut down or quit (American Psychiatric Association, 2013). In this study, we examined whether daily perceptions of self-control demands over moods and thoughts predict drinking more than planned in young adults and explored contextual factors (e.g., peer exposure) and individual factors (e.g., impulsivity) that may influence this effect.

Null Effect of Self-Control Demands

To date, three EMA studies have examined the relationship between self-control demands and loss of control over drinking to some extent, and the results were mixed (Carey et al., 2019; Muraven et al., 2005; Walters et al., 2018). In our data, we observed little ambiguity—the precision and consistency of the null results clearly indicate the lack of a within-person relationship between self-control demands and loss of control over drinking. We believe there are several reasons to take these null results at face value and conclude that perceiving higher emotional and cognitive self-control demands throughout the day is unlikely to increase the likelihood of people drinking more than planned. First, our sample size was very large (nearly 500 participants observed over 32 days), and the methodological rigor (preregistered hypotheses and analyses, power simulation, multiple imputation of missing data) of our present study was high. Moreover, self-control demands were assessed five times a day instead of just once in the evening, as done in the other three studies, which significantly reduced recall bias. Furthermore, averaging self-control demands before drinking allows for a more

Figure 3
Random Slopes of the Effect of Self-Control Demands on Overdrinking Amounts for 50 Randomly Selected Participants



Note. Figures 3–6 were plotted based on the first imputation. See the online article for the color version of this figure.

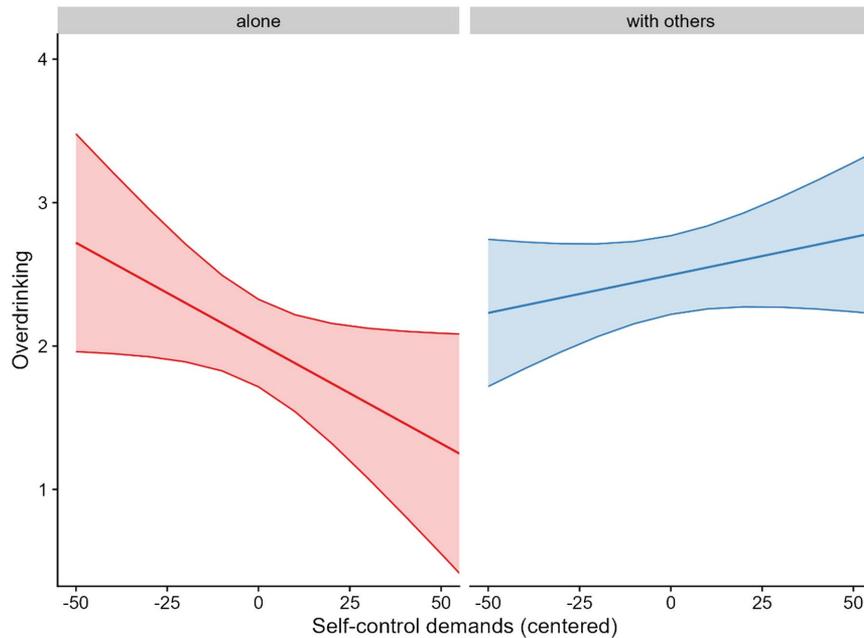
accurate capture of participants' experiences. In contrast, Muraven et al. (2005) had participants report self-control demands an average of 4 hr before they started drinking, potentially missing relevant experiences during that interval. Additionally, our sample is more diverse, including not only university students but also a broader demographic range beyond predominantly White females. These improvements over previous studies should increase our confidence that the observed null relationship between emotional and cognitive self-control demands and drinking more than planned truly reflects the situation within the investigated population.

It may also be that our operationalization of loss of control over drinking and perceived self-control demands influenced our findings. Regarding loss of control over drinking, on the one hand, we defined it as the difference between planned and actual consumption, which aligns more closely with the *Diagnostic and Statistical Manual of Mental Disorders, fifth edition* criteria (American Psychiatric Association, 2013) and reflects an expectation violation. In contrast, Carey et al. (2019) and Muraven et al. (2005) defined overdrinking as the discrepancy between actual consumption and the intended maximum number of drinks, which may better reflect a "limit" violation. On the other hand, we measured individuals' prior drinking intentions as the specific number of drinks they planned to consume in an evening, whereas other studies (Lewis et al., 2020) have assessed drinking intentions in a coarser manner (e.g.,

intentions to drink 1/2 drinks vs. 4/5+ drinks), potentially aligning more closely with individuals' heuristics regarding their drinking behavior. Additionally, other researchers have examined perceptions of loss of control (e.g., Walters et al., 2018), focusing on experiences such as drinking more than intended or being unable to stop or limit alcohol use. In sum, it remains unclear whether these various measures are equivalent and which measurement approach most accurately characterizes the fundamental concept of loss of control in relation to AUDs. Regarding self-control demands, while the present study focused specifically on demands to regulate moods and thoughts, prior research (Muraven et al., 2005; Walters et al., 2018) assessed a broader range of scenarios (e.g., stress management, overwhelming situations). It is possible that the distinct findings are due to these slight measurement differences: Those prior studies also included items about perceived stress/distress (e.g., "dealt with something stressful; felt overwhelmed") in addition to the measures used in the present study. At the same time, our prior data (Dora et al., 2024) indicated that these items were highly correlated with perceptions of self-control demands on moods and thoughts ($r > 0.48$). Research on the construct validity of measures of self-control demands will be important to move this line of research forward.

At the same time, several alternative explanations may account for the observed lack of relationship between self-control demands

Figure 4
The Null Interaction Between Self-Control Demands and Peer Exposure on Overdrinking Amounts



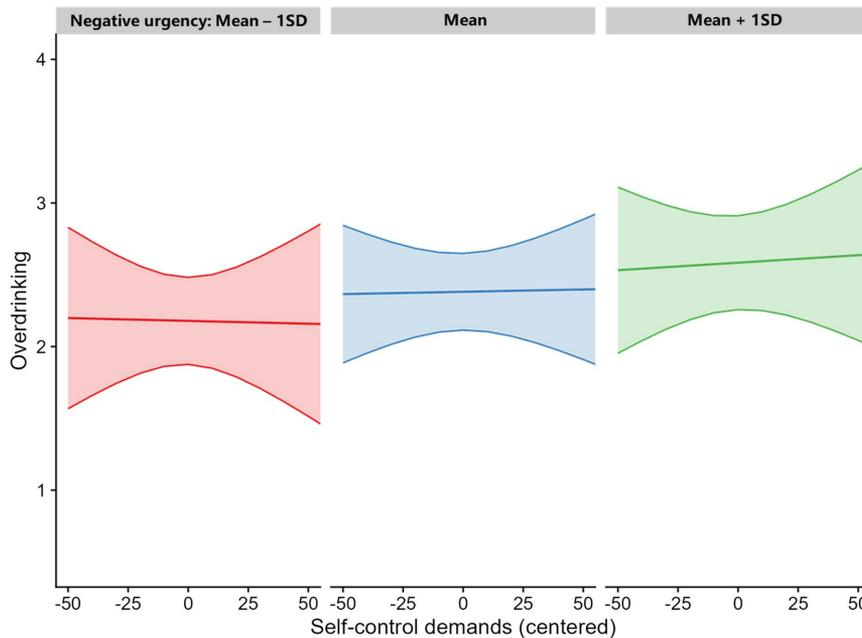
Note. See the online article for the color version of this figure.

and drinking more than planned. First, it is possible that while high generic self-control demands lead to generic self-control deficits, these deficits did not necessarily manifest as drinking more than planned in the present sample. For example, when faced with high self-control demands, our participants might alternatively spend excessive time on leisure activities such as watching streaming videos or playing video games rather than drinking, with their alcohol use being driven by factors other than demands (e.g., social context). In other words, self-control “failures” in people’s daily lives might be idiosyncratic and depend on people’s reinforcement histories as well as environmental constraints. Future studies could explore whether drinking-specific self-control, as opposed to global self-control, serves as a better predictor of daily loss of control over drinking (Geurts et al., 2023; Remmerswaal et al., 2019). Second, loss of control over drinking may be more accurately predicted by factors occurring during a drinking episode rather than solely by those that precede it, such as the self-control demands examined in this study. A key characteristic of adolescents and young adults who meet the criteria for AUD is their tendency to drink more or for longer than intended, indicating that they often aim to become intoxicated rather than adhere to specific limits (Chung & Martin, 2005). Therefore, future studies on adolescent and young adult overdrinking behavior could concentrate more on the factors involved during the drinking process. Some EMA studies have shown that social and physical contexts significantly influence alcohol consumption (Wray et al., 2014). For example, alcohol cue exposure (Ramirez & Miranda, 2014), being in the company of others who are drinking (O’Donnell et al., 2019), and predrinking (e.g., starting to drink at a private residence before going to bars) are associated with increased levels of consumption.

The Moderating Role of Peer Exposure and (Negative) Urgency

Contrary to our hypotheses, we did not find that peer exposure and urgency moderated the relationship under investigation. Regarding the effect of peer exposure, if self-control demands indeed deplete self-control resources, we expected that exposure to peers would make pursuing moderation or harm avoidance goals more difficult. This is because alcohol may seem more rewarding and easier to access in such situations (Albert et al., 2013; O’Brien et al., 2011). However, if self-control demands reflect an appraisal that someone wishes to change their current mood, then perceptions of self-control demands may not necessarily be influenced by the reward processes induced by peer exposure. Additionally, the measure of “whether you are with a peer or not at the beginning of drinking” is vague in capturing peer exposure throughout the entire drinking episode. In prolonged drinking sessions, participants may start drinking alone and later join peers, or vice versa. Moreover, in cases where participants reported being with strangers, we classified these instances as nonpeers since our measurement could not distinguish age-similar strangers. While this classification approach does not invalidate our findings regarding peer effects (as such cases comprised only 4% of drinking occasions), future studies could improve upon this by incorporating distinct categories for age-similar and age-dissimilar strangers. Furthermore, it has been found that larger groups (Cullum et al., 2012; Reed et al., 2013) and mixed-gender groups (Thrul et al., 2017) are associated with higher alcohol consumption. The rewarding effect of alcohol may be more pronounced in these contexts and may interact with self-control demands in influencing drinking behavior. This underscores the need

Figure 5
The Null Interaction Between Self-Control Demands and Negative Urgency on Overdrinking Amounts



Note. See the online article for the color version of this figure.

for a comprehensive and objective measure of the drinking context, such as those captured by portable/wearable electronic sensors (Bae et al., 2023).

Regarding the moderating role of negative urgency, if self-control demands caused self-control depletion, then the smaller the pool of self-control resources, the greater the effect of self-control demands on drinking behavior, as found in Muraven et al. (2005). However, the strength model of self-control has been challenged (E. C. Carter et al., 2015; Hagger & Chatzisarantis, 2013; Inzlicht et al., 2014), and the null findings for both interactions suggest that the situational appraisal view of self-control demands is more applicable than the ego depletion theory.

The Main Effect of (Negative) Urgency

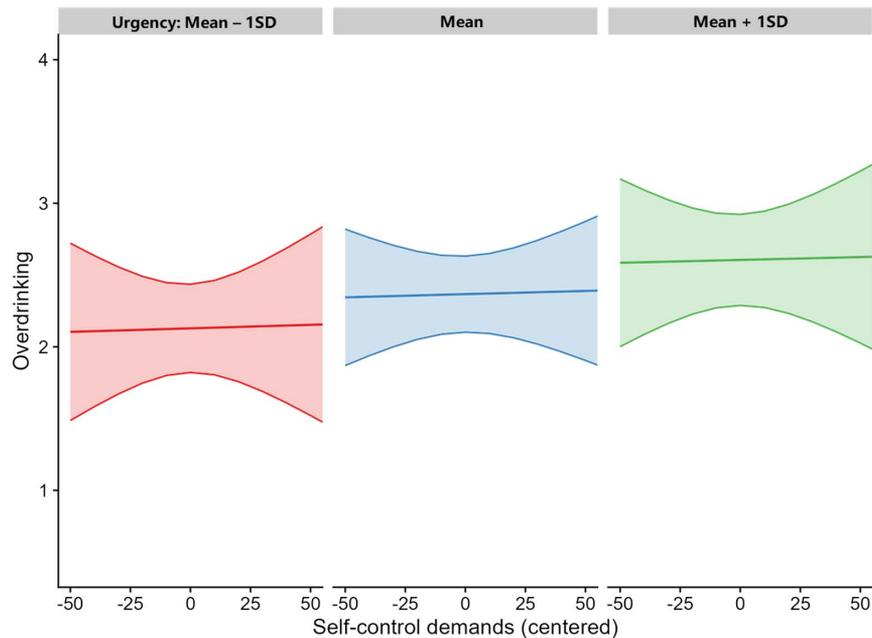
We found that individuals with high levels of urgency were more prone to overdrinking. This finding is consistent with two meta-analyses indicating that both negative and positive urgency are linked to alcohol consumption and related problems (Coskunpinar et al., 2013; Stautz & Cooper, 2013). Problematic alcohol use may stem from a tendency to act impulsively in response to heightened positive or negative emotions (Stautz & Cooper, 2013).

Limitations and Future Directions

This study investigated the impact of emotional and cognitive self-control demands on loss of control over drinking (i.e., drinking more than planned) among young adult drinkers in a community sample, demonstrating strong ecological validity. The sample's balanced gender ratio and diverse racial backgrounds enhance the

generalizability of the results. Notably, it featured the largest sample size and the most data points in this field to date, ensuring robust statistical power. Despite these strengths, there are limitations that warrant acknowledgment. First, our measure of self-control demands reflected the perceived need to regulate mood and thoughts may not capture all situations requiring self-control. Future studies should also consider measuring stress management and the extent to which individuals force themselves to perform unwanted tasks and resist desired activities, as tested in previous studies (Muraven et al., 2005; Walters et al., 2018). Furthermore, construct confusion regarding self-control and impulsivity in a broader context has been noted (King et al., 2014, 2020). Therefore, rigorous validation work is necessary to assess the robustness of the measures of self-control demands in this field. Second, our predictor of self-control demands is based on perception or appraisal, whereas our outcome measure, which involves subtracting planned drinking from actual drinking, reflects a more objective assessment (although "actual drinking" may be more prone to error at higher levels of drinking). Future studies may benefit from utilizing an outcome measure that also captures the perception, such as "to what degree did you lose control over drinking yesterday?" (Muraven et al., 2005). Third, the study focused on young adults with high levels of problematic alcohol use. Future research should investigate how these findings apply to populations with a broader age range and varying levels of alcohol consumption. Fourth, although our results did not support the notion that self-control demands lead to loss of control over drinking in the form of "drinking more than planned," this finding may not generalize to other aspects of loss of control, such as unsuccessful efforts to cut down consumption, which warrants further investigation in the future. Finally, while the EMA study design provides a

Figure 6
The Null Interaction Between Self-Control Demands and Urgency on Overdrinking Amounts



Note. See the online article for the color version of this figure.

better understanding of the temporal relationships between self-control demands and drinking, the nonexperimental design precludes causal inferences.

Conclusion

The study revealed that higher-than-average self-control demands over moods and thoughts within individuals did not predict an increased loss of control over drinking (i.e., drinking more than planned), regardless of age or emotional state. Additionally, trait urgency and peer exposure did not influence this relationship. We conclude from this investigation that it is unlikely that global self-control demands play a role in young adult's tendency to lose control over their drinking. Open questions remain regarding self-control demands that are more specific (e.g., when occurring in a context where alcohol is readily accessible and normative). Factors occurring during a drinking episode may have a more significant predictive role in the loss of control over drinking than factors that occur beforehand. These insights open new avenues for future research aimed at advancing theoretical understanding and gaining a deeper perspective on daily drinking behavior.

References

- Albers, C., & Lakens, D. (2018). When power analyses based on pilot data are biased: Inaccurate effect size estimators and follow-up bias. *Journal of Experimental Social Psychology, 74*, 187–195. <https://doi.org/10.1016/j.jesp.2017.09.004>
- Albert, D., Chein, J., & Steinberg, L. (2013). The teenage brain: Peer influences on adolescent decision making. *Current Directions in Psychological Science, 22*(2), 114–120. <https://doi.org/10.1177/0963721412471347>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5)*.
- Babor, T. F., & Grant, M. (1989). From clinical research to secondary prevention: International collaboration in the development of the Alcohol Disorders Identification Test (AUDIT). *Alcohol Health and Research World, 13*(4), 371–375.
- Bae, S. W., Suffoletto, B., Zhang, T., Chung, T., Ozolcer, M., Islam, M. R., & Dey, A. K. (2023). Leveraging mobile phone sensors, machine learning, and explainable artificial intelligence to predict imminent same-day binge-drinking events to support just-in-time adaptive interventions: Algorithm development and validation study. *JMIR Formative Research, 7*, Article e39862. <https://doi.org/10.2196/39862>
- Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software, 67*(1), 1–48. <https://doi.org/10.18637/jss.v067.i01>
- Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). The strength model of self-control. *Current Directions in Psychological Science, 16*(6), 351–355. <https://doi.org/10.1111/j.1467-8721.2007.00534.x>
- Billieux, J., Heeren, A., Rochat, L., Maurage, P., Bayard, S., Bet, R., Besche-Richard, C., Challet-Bouju, G., Carré, A., Devos, G., Flayelle, M., Gierski, F., Grall-Bronnec, M., Kern, L., Khazaal, Y., Lançon, C., Lannoy, S., Michael, G. A., Raffard, S., ... Baggio, S. (2021). Positive and negative urgency as a single coherent construct: Evidence from a large-scale network analysis in clinical and non-clinical samples. *Journal of Personality, 89*(6), 1252–1262. <https://doi.org/10.1111/jopy.12655>
- Boness, C. L., Lane, S. P., & Sher, K. J. (2019). Not all alcohol use disorder criteria are equally severe: Toward severity grading of individual criteria in

- college drinkers. *Psychology of Addictive Behaviors*, 33(1), 35–49. <https://doi.org/10.1037/adb0000443>
- Borsari, B., & Carey, K. B. (2001). Peer influences on college drinking: A review of the research. *Journal of Substance Abuse*, 13(4), 391–424. [https://doi.org/10.1016/S0899-3289\(01\)00098-0](https://doi.org/10.1016/S0899-3289(01)00098-0)
- Carey, T. M., Mailliet, M. A., & Grouzet, F. M. E. (2019). Self-regulation of student drinking behavior: Strength-energy and self-determination theory perspectives. *Motivation Science*, 5(3), 202–219. <https://doi.org/10.1037/mot0000111>
- Carter, A. C., Brandon, K. O., & Goldman, M. S. (2010). The college and noncollege experience: A review of the factors that influence drinking behavior in young adulthood. *Journal of Studies on Alcohol and Drugs*, 71(5), 742–750. <https://doi.org/10.15288/jsad.2010.71.742>
- Carter, E. C., Kofler, L. M., Forster, D. E., & McCullough, M. E. (2015). A series of meta-analytic tests of the depletion effect: Self-control does not seem to rely on a limited resource. *Journal of Experimental Psychology: General*, 144(4), 796–815. <https://doi.org/10.1037/xge0000083>
- Carver, C. S., Johnson, S. L., & Joormann, J. (2008). Serotonergic function, two-mode models of self-regulation, and vulnerability to depression: What depression has in common with impulsive aggression. *Psychological Bulletin*, 134(6), 912–943. <https://doi.org/10.1037/a0013740>
- Chung, T., & Martin, C. S. (2005). What were they thinking? Adolescents' interpretations of DSM-IV alcohol dependence symptom queries and implications for diagnostic validity. *Drug and Alcohol Dependence*, 80(2), 191–200. <https://doi.org/10.1016/j.drugalcdep.2005.03.023>
- Coskunpinar, A., Dir, A. L., & Cyders, M. A. (2013). Multidimensionality in impulsivity and alcohol use: A meta-analysis using the UPPS model of impulsivity. *Alcohol, Clinical and Experimental Research*, 37(9), 1441–1450. <https://doi.org/10.1111/acer.12131>
- Cullum, J., O'Grady, M., Armeli, S., & Tennen, H. (2012). The role of context-specific norms and group size in alcohol consumption and compliance drinking during natural drinking events. *Basic and Applied Social Psychology*, 34(4), 304–312. <https://doi.org/10.1080/01973533.2012.693341>
- Cyders, M. A., Coskunpinar, A., & VanderVeen, J. D. (2016). Urgency: A common transdiagnostic endophenotype for maladaptive risk taking. In V. Zeigler-Hill & D. K. Marcus (Eds.), *The dark side of personality: Science and practice in social, personality, and clinical psychology* (pp. 157–188). American Psychological Association. <https://doi.org/10.1037/14854-009>
- Cyders, M. A., & Smith, G. T. (2007). Mood-based rash action and its components: Positive and negative urgency. *Personality and Individual Differences*, 43(4), 839–850. <https://doi.org/10.1016/j.paid.2007.02.008>
- de Ridder, D. T. D., Lensvelt-Mulders, G., Finkenauer, C., Stok, F. M., & Baumeister, R. F. (2012). Taking stock of self-control: A meta-analysis of how trait self-control relates to a wide range of behaviors. *Personality and Social Psychology Review*, 16(1), 76–99. <https://doi.org/10.1177/1088868311418749>
- DeHart, T., Longua Peterson, J., Richeson, J. A., & Hamilton, H. R. (2014). A diary study of daily perceived mistreatment and alcohol consumption in college students. *Basic and Applied Social Psychology*, 36(5), 443–451. <https://doi.org/10.1080/01973533.2014.938157>
- Dora, J., McCabe, C. J., van Lissa, C. J., Witkiewitz, K., & King, K. M. (2024). A tutorial on analyzing ecological momentary assessment data in psychological research with Bayesian (generalized) mixed-effects models. *Advances in Methods and Practices in Psychological Science*, 7(1). <https://doi.org/10.1177/25152459241235875>
- Dora, J., Piccirillo, M., Foster, K. T., Arbeau, K., Armeli, S., Auriacombe, M., Bartholow, B., Beltz, A. M., Blumenstock, S. M., Bold, K., Bonar, E. E., Braitman, A., Carpenter, R. W., Creswell, K. G., De Hart, T., Dvorak, R. D., Emery, N., Enkema, M., Fairbairn, C. E., ... King, K. M. (2023). The daily association between affect and alcohol use: A meta-analysis of individual participant data. *Psychological Bulletin*, 149(1–2), 1–24. <https://doi.org/10.1037/bul0000387>
- Dora, J., Schultz, M. E., Shoda, Y., Lee, C. M., & King, K. M. (2022). No evidence for trait- and state-level urgency moderating the daily association between negative affect and subsequent alcohol use in two college samples. *Brain and Neuroscience Advances*, 6. <https://doi.org/10.1177/23982128221079556>
- Feil, M., Halvorson, M., Lengua, L., & King, K. M. (2020). A state model of negative urgency: Do momentary reports of emotional impulsivity reflect global self-report? *Journal of Research in Personality*, 86, Article 103942. <https://doi.org/10.1016/j.jrp.2020.103942>
- Geurts, S. M., Koning, I. M., & Finkenauer, C. (2023). How specific is alcohol-specific self-control? A longitudinal study of the mediating role of alcohol-specific self-control in the relation between general self-control and adolescent alcohol use. *Journal of Prevention*, 44(5), 501–520. <https://doi.org/10.1007/s10935-023-00737-z>
- Gius, B. K. (2020). *Motivation matters: The interaction of approach and avoidance alcohol motivation and self-control demands in college drinkers*. University of South Florida.
- Griffin, S. A., Freeman, L. K., & Trull, T. J. (2021). Predictors of unplanned drinking in daily life: The influence of context, impulsivity, and craving in those with emotion dysregulation. *Addictive Behaviors*, 118, Article 106901. <https://doi.org/10.1016/j.addbeh.2021.106901>
- Griffin, S. A., & Trull, T. J. (2021). Alcohol use in daily life: Examining the role of trait and state impulsivity facets. *Psychology of Addictive Behaviors*, 35(2), 199–207. <https://doi.org/10.1037/adb0000679>
- Hagger, M. S., & Chatzisarantis, N. L. D. (2013). The strength model of self-control: Recent advances and implications for public health. In P. A. Hall (Ed.), *Social neuroscience and public health: Foundations for the science of chronic disease prevention* (pp. 123–139). Springer Science + Business Media.
- Hagger, M. S., Chatzisarantis, N. L. D., Alberts, H., Anggono, C. O., Batailler, C., Birt, A. R., Brand, R., Brand, M. J., Brewer, G., Bruyneel, S., Calvillo, D. P., Campbell, W. K., Cannon, P. R., Carlucci, M., Carruth, N. P., Cheung, T., Crowell, A., De Ridder, D. T. D., Dewitte, S., ... Zwieneberg, M. (2016). A multilab preregistered replication of the ego-depletion effect. *Perspectives on Psychological Science*, 11(4), 546–573. <https://doi.org/10.1177/1745691616652873>
- Inzlicht, M., & Schmeichel, B. J. (2012). What is ego depletion? Toward a mechanistic revision of the resource model of self-control. *Perspectives on Psychological Science*, 7(5), 450–463. <https://doi.org/10.1177/1745691612454134>
- Inzlicht, M., Schmeichel, B. J., & Macrae, C. N. (2014). Why self-control seems (but may not be) limited. *Trends in Cognitive Sciences*, 18(3), 127–133. <https://doi.org/10.1016/j.tics.2013.12.009>
- Jacobson, N. C., Evey, K. J., Wright, A. G., & Newman, M. G. (2023). Integration of discrete and global structures of affect across three large samples: Specific emotions within-persons and global affect between-persons. *Emotion*, 23(4), 1202–1211. https://www.researchgate.net/publication/352858009_Integration_of_discrete_and_global_structures_of_affect_across_three_large_samples_Specific_emotions_within-persons_and_global_affect_between-persons
- Job, V., Dweck, C. S., & Walton, G. M. (2010). Ego depletion—Is it all in your head? Implicit theories about willpower affect self-regulation. *Psychological Science*, 21(11), 1686–1693. <https://doi.org/10.1177/0956797610384745>
- Job, V., Walton, G. M., Bernecker, K., & Dweck, C. S. (2013). Beliefs about willpower determine the impact of glucose on self-control. *Proceedings of the National Academy of Sciences of the United States of America*, 110(37), 14837–14842. <https://doi.org/10.1073/pnas.1313475110>
- Jones, A., Christiansen, P., Nederkoorn, C., Houben, K., & Field, M. (2013). Fluctuating disinhibition: Implications for the understanding and treatment of alcohol and other substance use disorders. *Frontiers in Psychiatry*, 4, Article 140. <https://doi.org/10.3389/fpsy.2013.00140>

- Jones, A., Tiplady, B., Houben, K., Nederkoom, C., & Field, M. (2018). Do daily fluctuations in inhibitory control predict alcohol consumption? An ecological momentary assessment study. *Psychopharmacology*, *235*(5), 1487–1496. <https://doi.org/10.1007/s00213-018-4860-5>
- King, K. M., Feil, M. C., Gomez Juarez, N., Moss, D., Halvorson, M. A., Dora, J., Upton, N. F., Bryson, M. A., Seldin, K., & Shoda, Y. (2024). Negative urgency as a state-level process. *Journal of Personality*. Advance online publication. <https://doi.org/10.1111/jopy.12961>
- King, K. M., Feil, M. C., Seldin, K., Smith, M. R., Halvorson, M. A., & Kuehn, K. S. (2020). Risky and impulsive behaviors. In E. A. Youngstrom, M. J. Prinstein, E. J. Mash, & R. A. Barkley (Eds.), *Assessment of disorders in childhood and adolescence* (5th ed., pp. 664–686). Guilford Press.
- King, K. M., Patock-Peckham, J. A., Dager, A. D., Thimm, K., & Gates, J. R. (2014). On the mismeasurement of impulsivity: Trait, behavioral, and neural models in alcohol research among adolescents and young adults. *Current Addiction Reports*, *1*(1), 19–32. <https://doi.org/10.1007/s40429-013-0005-4>
- Lafit, G., Adolf, J. K., Dejonckheere, E., Myin-Germeys, I., Viechtbauer, W., & Ceulemans, E. (2021). Selection of the number of participants in intensive longitudinal studies: A user-friendly shiny app and tutorial for performing power analysis in multilevel regression models that account for temporal dependencies. *Advances in Methods and Practices in Psychological Science*, *4*(1). <https://doi.org/10.1177/2515245920978738>
- Larson, R., & Lampman-Petratis, C. (1989). Daily emotional states as reported by children and adolescents. *Child Development*, *60*(5), 1250–1260. <https://doi.org/10.2307/1130798>
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.
- Leeman, R. F., Patock-Peckham, J. A., & Potenza, M. N. (2012). Impaired control over alcohol use: An under-addressed risk factor for problem drinking in young adults? *Experimental and Clinical Psychopharmacology*, *20*(2), 92–106. <https://doi.org/10.1037/a0026463>
- Leon, A. C., Davis, L. L., & Kraemer, H. C. (2011). The role and interpretation of pilot studies in clinical research. *Journal of Psychiatric Research*, *45*(5), 626–629. <https://doi.org/10.1016/j.jpsychires.2010.10.008>
- Lewis, M. A., Litt, D. M., King, K. M., Fairlie, A. M., Waldron, K. A., Garcia, T. A., LoParco, C., & Lee, C. M. (2020). Examining the ecological validity of the prototype willingness model for adolescent and young adult alcohol use. *Psychology of Addictive Behaviors*, *34*(2), 293–302. <https://doi.org/10.1037/adb0000533>
- Muraven, M., Collins, R. L., Shiffman, S., & Paty, J. A. (2005). Daily fluctuations in self-control demands and alcohol intake. *Psychology of Addictive Behaviors*, *19*(2), 140–147. <https://doi.org/10.1037/0893-164X.19.2.140>
- Muraven, M., & Slessareva, E. (2003). Mechanisms of self-control failure: Motivation and limited resources. *Personality and Social Psychology Bulletin*, *29*(7), 894–906. <https://doi.org/10.1177/0146167203029007008>
- O'Brien, L., Albert, D., Chain, J., & Steinberg, L. (2011). Adolescents prefer more immediate rewards when in the presence of their peers. *Journal of Research on Adolescence*, *21*(4), 747–753. <https://doi.org/10.1111/j.1532-7795.2011.00738.x>
- O'Donnell, R., Richardson, B., Fuller-Tyszkiewicz, M., Likhaitzky, P., Arulkadacham, L., Dvorak, R., & Staiger, P. K. (2019). Ecological momentary assessment of drinking in young adults: An investigation into social context, affect and motives. *Addictive Behaviors*, *98*, Article 106019. <https://doi.org/10.1016/j.addbeh.2019.06.008>
- Ramirez, J., & Miranda, R., Jr. (2014). Alcohol craving in adolescents: Bridging the laboratory and natural environment. *Psychopharmacology*, *231*(8), 1841–1851. <https://doi.org/10.1007/s00213-013-3372-6>
- Reed, M. B., Clapp, J. D., Martell, B., & Hidalgo-Sotelo, A. (2013). The relationship between group size, intoxication and continuing to drink after bar attendance. *Drug and Alcohol Dependence*, *133*(1), 198–203. <https://doi.org/10.1016/j.drugalcdep.2013.05.004>
- Remmerswaal, D., Jongerling, J., Jansen, P. J., Eielts, C., & Franken, I. H. A. (2019). Impaired subjective self-control in alcohol use: An ecological momentary assessment study. *Drug and Alcohol Dependence*, *204*, Article 107479. <https://doi.org/10.1016/j.drugalcdep.2019.04.043>
- Revelle, W. (2020). *psych: Procedures for psychological, psychometric, and personality research* (Version 2.5.3) [R Package].
- Rhemtulla, M., Fried, E. I., Aggen, S. H., Tuerlinckx, F., Kendler, K. S., & Borsboom, D. (2016). Network analysis of substance abuse and dependence symptoms. *Drug and Alcohol Dependence*, *161*, 230–237. <https://doi.org/10.1016/j.drugalcdep.2016.02.005>
- Rubin, D. B. (1976). Inference and missing data. *Biometrika*, *63*(3), 581–592. <https://doi.org/10.1093/biomet/63.3.581>
- Stautz, K., & Cooper, A. (2013). Impulsivity-related personality traits and adolescent alcohol use: A meta-analytic review. *Clinical Psychology Review*, *33*(4), 574–592. <https://doi.org/10.1016/j.cpr.2013.03.003>
- Steinberg, L. (2008). A social neuroscience perspective on adolescent risk-taking. *Developmental Review*, *28*(1), 78–106. <https://doi.org/10.1016/j.dr.2007.08.002>
- Thurl, J., Labhart, F., & Kuntsche, E. (2017). Drinking with mixed-gender groups is associated with heavy weekend drinking among young adults. *Addiction*, *112*(3), 432–439. <https://doi.org/10.1111/add.13633>
- Van Buuren, S., & Groothuis-Oudshoorn, K. (2011). mice: Multivariate imputation by chained equations in R. *Journal of Statistical Software*, *45*(3), 1–67. <https://doi.org/10.18637/jss.v045.i03>
- Vohs, K. D. (2006). Self-regulatory resources power the reflective system: Evidence from five domains. *Journal of Consumer Psychology*, *16*(3), 217–223. https://doi.org/10.1207/s15327663jcp1603_3
- Vohs, K. D., Schmeichel, B. J., Lohmann, S., Gronau, Q. F., Finley, A. J., Ainsworth, S. E., Alquist, J. L., Baker, M. D., Brizi, A., Buni, A., Butschek, G. J., Campbell, C., Capaldi, J., Cau, C., Chambers, H., Chatzisarantis, N. L. D., Christensen, W. J., Clay, S. L., Curtis, J., ... Albarracín, D. (2021). A multisite preregistered paradigmatic test of the ego-depletion effect. *Psychological Science*, *32*(10), 1566–1581. <https://doi.org/10.1177/0956797621989733>
- Walters, K. J., Simons, J. S., & Simons, R. M. (2018). Self-control demands and alcohol-related problems: Within- and between-person associations. *Psychology of Addictive Behaviors*, *32*(6), 573–582. <https://doi.org/10.1037/adb0000387>
- Watson, D., & Clark, L. A. (1994). *The PANAS-X: Manual for the positive and negative affect schedule-expanded form*. <https://doi.org/10.17077/48vt-m4t2>
- White, A. M. (2020). Gender differences in the epidemiology of alcohol use and related harms in the United States. *Alcohol Research Current Reviews*, *40*(2), Article 01. <https://doi.org/10.35946/arcrc.v40.2.01>
- Whiteside, S. P., & Lynam, D. R. (2001). The five factor model and impulsivity: Using a structural model of personality to understand impulsivity. *Personality and Individual Differences*, *30*(4), 669–689. [https://doi.org/10.1016/S0191-8869\(00\)00064-7](https://doi.org/10.1016/S0191-8869(00)00064-7)
- World Health Organization. (2019). *Global status report on alcohol and health 2018*.
- Wray, T. B., Merrill, J. E., & Monti, P. M. (2014). Using ecological momentary assessment (EMA) to assess situation-level predictors of alcohol use and alcohol-related consequences. *Alcohol Research Current Reviews*, *36*(1), 19–27.

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