

An Ecological Momentary Assessment Approach to Studying Alcohol Consumption

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Rationale for study

- Interested in processes that move moderate to heavy social drinkers into excessive drinking
- Examine a model of excessive drinking based on the limit violation effect (LVE).

Components of the LVE

- Self-imposed limit on alcohol intake
- Violation of limit
- Attribution of violation to self (i.e., self-blame)
- Negative affective reaction to limit violation/attribution
- Excessive drinking to repair negative affect/mood

Rationale for using EMA

- Provides a way to capture the transient components of the LVE (e.g., attributions, moods)
- More accurate information on alcohol intake, which varies situationally

Participants

- 37 (22 men, 15 women) heavy drinkers interested in "cutting down" on their drinking
- Mean age of 35.92 years (men = 33.82 years, women = 39.00 years)
- Mostly married ($n = 17$) or single ($n = 13$)
- European American ($n = 33$; 89%) and African-American ($n = 4$; 11%)
- Employment:
 - 21 (57%), "white collar" professions (e.g., teacher, stockbroker)
 - 5 (13%), women employed in their homes as mothers
 - 4 (11%), unemployed
 - 4 (11%), employed in manual labor (e.g., roofer, electrician)
 - 3 (8%), college students
- Average weekly intake of 22 standard drinks

Procedures

- Random assignment to behavioral intervention ($n = 25$) or self-monitoring only ($n = 12$) control conditions
- Completed questionnaires and a medical exam
- Individualized weekly sessions and ED self-monitoring for 8 weeks
- 2 weeks of ED self-monitoring at 3-, 6-, and 9-month follow-ups

ED Training

- 1 1/2 to 2 hours of individualized training in the use of the ED
- Training protocol manualized
- All staff trained to use manual and proficient users of the ED
- Provided with an ED for 2 to 3 days trouble shooting carry ED for 1 week at a time
- Participants could contact staff (via cell phone) whenever ran into difficulties
- Weekly appointments to upload data, change ED batteries, trouble shoot, feedback on use of the ED (e.g., compliance), and learn intervention strategies

Use the ED 24 hours/day for each week in the study

- Interact with the ED:
 - multiple (4 to 6) random prompts each day
 - initiate ED interview at the start of each day (morning interview)
 - at the start of each drinking episode (begin drinking)
 - at the end of each drinking episode (end drinking)
 - when going to sleep

ED Interviews

- Questions presented in simple language on a 4-line, 20 character, LCD screen.
- Content of ED interviews typically included assessment of
 - mood - 4-point Likert ratings of positive and negative descriptors
 - activities - Yes/No for working, leisure, driving,
 - social context - Yes/No for the presence of others (e.g., spouse, friend)
 - location - Yes/No of where located (e.g., home, bar, vehicle)
- End of drinking episode also assessed:
 - the number of drinks consumed
 - reasons for drinking - Yes/No for reasons (e.g., social pressure, urge/craving)
 - causal attributions for drinking (e.g., due to self)

Assessment of Mood

- Nine key affective terms (e.g., sad, relaxed, happy) based on the circumplex model of affect
- Each term rated on a 4-point Likert scale (NO!!, no??., yes??., YES!!)
- Rated overall feeling on a 5-point (very bad to very good) scale
- Rated overall level of arousal on a separate 5-point (very low to very high) scale

Compliance

- ED software is designed to prevent missing data and out of range responses
- Overall compliance with ED protocol based on “random prompts” data
- During the 8 weeks of carrying the ED, participants responded to a total of 7,593 random prompts
($M = 205.22$ /person)
- Most random prompts responded to as soon as they were received

Compliance (cont'd)

- Compliance failures
 - missed 7.4% of random prompts
 - failed to complete 8.2% of the prompts
- Inopportune prompts
 - suspend (i.e., turn off ED random prompting) = 12%
 - delay (i.e., put off responding to prompt for up to 20 minutes) = 4.7%

Compliance Related to Drinking Episodes

- "Begin drinking" interview
 - 87% of drinking episodes reported within 1 minute of starting to drink
 - 6% within 2-5 minutes
 - 7% 6 or more minutes into the episode.
- Amount consumed at the time the interview was initiated
 - 81% had not begun drinking
 - 12% had consumed less than one drink
 - 7% had consumed 1 or more drinks prior to initiating
- "End drinking" interview
 - 48% end episodes reported within 1 minute of ending drinking
 - 49% drinking episodes defined as ending within 1 minute of finishing drinking

Data Analysis

- Generalized Estimating Equations (GEE) to assess the role of theoretically interesting variables
- Independent variables: ED-assessed positive and negative mood
- Dependent variable: ED-assessed excessive drinking (>5 drinks)

Role of mood

- Positive mood before drinking episode was moderately and positively related to excessive drinking (i.e. celebratory drinking)
- Positive mood after drinking episode was moderately, but negatively, related to excessive drinking
- Negative mood was not a predictor of excessive drinking

Unfolding process of the role of quilt in the LVE

End drinking ED data related to amount consumed on a given day

- Whether violate limits
- Number of drinks
- Intoxication

Morning ED data

- Current mood
- Intentions to drink
- Negative effects of drinking
- Distress (felt bad? Guilty?) about previous day's drinking

Guilt in the LVE (cont'd)

- Used HLM to examine within person relationships among distress, limit violations, and alcohol intake
- Violation of limits led to more distress
- Distress increased intention to drink that day
- More distress about previous days consumption predicted more drinking the next day (2 day lag)
- Heavier drinkers responded to limit violations with greater distress and drinking
- Men were more sensitive to limit violations than women

Lessons Learned

- Well trained and highly motivated staff are crucial
- Planning and coverage for the inevitable glitches is essential
- Thorough screening of participants is important, cuts down on attrition
- Compensation (e.g., \$120 for 8 weeks) for intensive monitoring procedures
- Shorter EMA monitoring periods may fare better than 8 weeks
- Advantages
 - fewer biases in participant recall and retrieval
 - inability to fake compliance

Difficulties and Challenges

- Recruitment of highly motivated and engaged participants
- Daily demands of interacting with the ED
- Representativeness of highly compliant participants
- Definition of an “episode” of drinking

A drinking episode is "...the period of time during which you are consuming alcohol"

- Self-define a drinking episode within certain parameters
 - changes in one's location or physical surroundings
 - changes in time
- During the 8 weeks, participants reported 984 drinking episodes (M = 26.59; range = 5 to 58) .
- Self-definition of a drinking episode produced a very large range of between episode times (2 minutes to more than 1 week)

What would do differently

- Shorter duration of ED self-monitoring
- Younger age more comfortable with technology
- Consider different platforms