## Annotated Bibliography: 21st Birthday Cards

*RCT = Randomized Control Trial, QE = Quasi Experimental Design, CS = Case Study, Anecdotal = Anecdotal Evidence*

<table>
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<th>Study</th>
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| LaBrie et al. (2009)         | RCT    | 81 students turning 21 | • Birthday card  
• Control = no card               | Card recipients consumed fewer drinks and reached lower BACs than control participants | 48     |
| Lewis et al. (2008)          | RCT    | 1,313 students turning 21 | • Birthday card and eBAC calculator  
• Control = no card                | • No reductions in drinking or associated negative consequences for card recipients vs. control  
• More accurate perceptions of 21st birthday consumption for card recipients vs. control  
• Students with lower perceptions vs. those with higher perceptions spent fewer hours drinking, consumed less alcohol, and reached lower eBACs | 12     |
| Smith et al. (2006)          | RCT    | 944 students turning 21 | • B.R.A.D. card  
• Safe drinking tips (INFO) card  
• Social norms (SN) card  
• COMB card (INFO + SN)  
• Control card | Intervention cards had no effect on drinking or alcohol-related problems | 0      |
| Neighbors et al. (2005)      | RCT    | 164 students turning 21 | • Birthday card  
• Control = no card               | No impact on any measures of alcohol use | -6     |
| Taylor, F. (2008)            | CS     | Holy Cross students who just turned 21 | • Birthday card | • Small number of students claimed the card influenced their decisions regarding alcohol  
• Most students used a series of safe drinking strategies | 6      |
| Hembroff et al. (2007)       | CS     | 1731 MSU students turning 21 | • B.R.A.D. card with wallet insert  
• B.R.A.D. card with wallet insert and alcohol-poisoning information  
• B.R.A.D. card with wallet insert and gender tailored messages  
• No card control | • Students who received, read, and remembered the card consumed less alcohol, used more protective behaviors, and had less unhealthy outcomes | 13     |
| University of Virginia (2003-2004) | CS   | 239 students turning 21 | • Birthday cards  
• No card control | • Few students claimed to drink less because of the card  
• The average number of drinks was substantially lower for those who received the card vs. those who didn't  
• Reduced likelihood of completing the Corner Crawl for card recipients  
• Knowledge gain about alcohol poisoning for card recipients | 12     |
| Grizzell (2000)              | CS     | 300 Cal Poly students turning 21 | • Birthday Card  
• Control = no card               | • Females and males who received the card drank less than expected relative to control  
• The card had no impact on negative consequences | 4      |
Background Research


   **Overview:** Alcohol expectancies for 21st birthdays were assessed to determine if they differ from general alcohol expectancies and how 21st birthday expectancies are associated with actual alcohol use and consequences experienced on 21st birthdays, above and beyond expectancies for typical drinking. Participants were college students (N=585; 54% women) who were turning 21 within a week, and intended to drink 4/5 (female/male) drinks on their birthday.

   **Results:** Both negative expectancies (impairment, risk and aggression, negative self-perception) and positive expectancies (social, liquid courage, sex) were significantly greater for 21st birthday drinking than for typical drinking. While 21st birthday expectancies were not uniquely related to actual birthday drinking, several positive and negative 21st birthday expectancy subscales were associated with 21st birthday drinking-related consequences, even when controlling for typical drinking expectancies.

   **Conclusion:** Incorporating expectancy challenging into interventions aimed specifically at these subscales may be effective at tempering alcohol-related consequences that result from 21st birthday drinking.


   **Overview:** This study assessed the effectiveness of a harm reduction e-card administered to a random sample of students turning age 21 at a state university to determine whether or not a harm reduction e-card intervention would be beneficial in increasing protective drinking behaviors while reducing risky drinking behaviors and negative outcomes during a celebratory 21st birthday event. This study analyzed data from two months of the e-card administration.

   **Results:** The findings reveal no significant differences between the experimental (n=19) and control (n=16) groups in regards to self-reported protective behaviors, risky drinking behaviors, and negative outcomes from drinking during their 21st birthday celebrations.

   **Limitations:** Because the sample sizes are so small, it is unknown whether the findings are due to the small sample size and lack of statistical power or if the e-card is not effective in meeting its intended objectives. As such, the primary recommendations are to continue the data collection over the next academic year and to explore the possibility of providing an incentive to encourage students to participate in the follow-up survey in order to increase the sample size, statistical power, and the generalizability of the results.

Overview: To gain a better understanding of 21st birthday drinking, a personalized normative feedback (PNF) intervention was employed. The intervention assessed students' recognition of symptoms of alcohol poisoning and their willingness to help other students in an attempt to determine if a medical amnesty policy would be effective with a college student population. Participants (n=306) completed two 50-minute online assessments of drinking behaviors (frequency & drinks per week), negative consequences, recognition/observation of and concern for symptoms of alcohol poisoning, and helping behaviors prior to and after their birthday. Students also received a web-based intervention of normative feedback about their 21st birthday intentions prior to their birthday.

Results:
- Personalized feedback had no main effect on drinking behavior
- Most students (59.8%) reported experiencing at least one negative consequence on their birthday
- Most students (86%) report having helped another student with symptoms of alcohol poisoning (14% reported never having helped)
- Students most often seek help from other students and parents
- Students who tend not to help their peers do not seek help because they do not perceive that there is a risk
- Students show a moderate level of concern for alcohol poisoning symptoms
- Students have witnessed an average of 5 symptoms of alcohol poisoning
- Most students have helped a friend exhibiting signs of poisoning

The authors conclude:
- “Personalized normative feedback alone is not enough to change behavior on 21st birthdays”
- Students can identify alcohol poisoning symptoms, but cannot distinguish non-symptoms from symptoms
- Students show a moderate level of concern for symptoms
- Students underestimate the risk of alcohol poisoning
- Students most often seek help from other students and parents
- Fear of getting into trouble is not the reason they don’t seek help

CPN note: This study demonstrates the importance of examining students’ ability to recognize symptoms of alcohol poisoning and their willingness to get help in order to assess whether a medical amnesty policy would be effective with a college population.


Overview: This study aimed to explore the problem of 21st birthday drinking. Data from a sample of 2,518 21 year-old college students was collected over a four year period. Students were asked the following after their birthday:
- Whether they drank on their birthday
- The number of drinks consumed and over what period of time
Results:
- 4 of every 5 participants (83%) reported drinking to celebrate
- 12% of birthday drinkers (men and women) reported consuming 21 drinks
- About half of birthday drinkers exceeded their prior maximum number of drinks

Conclusions:
- “21st birthday drinking is a pervasive custom in which excessive consumption is the norm”
- Women engaged in 21st birthday drinking as often as did men
- Many abstainers drank at high levels for the first time
- Many who are typically light drinkers may drink at high levels on their 21st birthday

Limitations: Data gathered from single campus (which is characteristic of having higher drinking rates), self-reported data, information about consequences was not gathered


Overview: The unique drinking patterns of college students call for Event-Specific Prevention (ESP) strategies that address college student drinking associated with peak times and events. Despite limited research evaluating ESP, many college campuses are currently implementing programming for specific events. This research provides a review of existing literature related to ESP and offers practical guidance for research and practice.

The prevention typology proposed by DeJong and Langford in 2002 provides a framework for strategic planning, suggesting that programs and policies should address problems at the individual, group, institution, community, state, and society level, and that these interventions should focus on knowledge change, environmental change, health protection, and intervention and treatment services. From this typology, specific examples are provided for comprehensive program planning related to orientation/beginning of school year, homecoming, 21st birthday celebrations, spring break, and graduation. In addition, the University of Connecticut’s efforts to address problems resulting from its annual Spring Weekend are described as an illustration of how advance planning by campus and community partners can produce a successful ESP effort.


Overview: Negative alcohol-related consequences often occur during specific events and in specific contexts (e.g., 21st birthday celebrations and tailgating parties). A lack of available event- and context-specific interventions suggests the need to better understand factors associated with heavy drinking in these contexts, with an eye toward developing specific interventions. The purpose of this research was to lay the foundation for developing personalized normative feedback interventions for 21st birthday celebratory drinking and tailgating drinking by evaluating whether students overestimate norms in these specific contexts, as they do more generally.
**Results:** Study 1 revealed that students overestimated peer drinking during 21st birthday celebrations, and this overestimation was associated with heavier drinking on one’s own 21st birthday. In Study 2, students underestimated the percentage of tailgaters who drank but overestimated typical consumption. Overestimation was consistently associated with heavier drinking during tailgating.

**Conclusions:** Successful correction of general normative misperceptions has been shown to reduce drinking in other research. Documentation of normative misperceptions for specific events and contexts provided by these results represents an important step in developing event- and context-specific interventions utilizing specific normative feedback.
Efficacy Research


**Overview:** This study aimed to assess the efficacy of a 21st birthday card. During the 2005-2006 academic year, students in two residence halls were randomly chosen to receive the card, and students in two other residence halls served as the control. The card encouraged moderate consumption and provided tips and protective strategies to reduce high-risk drinking surrounding birthday celebrations. Normative information about typical student drinking on the campus was also included. Students were surveyed one week after their birthday, and a total of 81 students completed the survey. Students (74%) who reported drinking on their birthday were included in the analysis.

**Results:**
- Males who received the card reported consuming 23.4% fewer drinks and had a 22.1% lower BAC than males who did not receive the card
- Females who received the card consumed 40.2% fewer drinks, and reached a 46.4% lower BAC level than females who did not receive the card

**Limitations:** low response rate, reliance of self-report data, and the cards were not focus-group tested


**Overview:** A randomized trial intended to evaluate the impact of a personalized normative feedback birthday card intervention at reducing perceptions, alcohol consumption, and negative consequences during 21st birthday celebrations.

Students turning 21 (n = 1,313) at a mid-sized, mid-western university were randomly selected to receive (n = 430) or not receive (n = 410) a birthday card one week prior to the date of their 21st birthday.

The birthday card presented three key pieces of information 1) perceptions of the drinks consumed by the average student, 2) the actual number of drinks consumed and 3) the number of drinks the student intended to consume while celebrating his or her own 21st birthday. This information was intended to show normative misperceptions for 21st birthday drinking and to point out that the student intended to consume more drinks than the typical student.

One week following their birthday, students were asked to complete a brief anonymous survey about:
- number of drinks consumed during 21st birthday celebration
- hours spent drinking
- perceived number of drinks consumed by typical students during 21st birthday celebration
• 21st birthday negative consequences—students were asked the number of times they experienced any of the 23 alcohol-related consequences
• whether they received the card
• whether they read the card
• whether they liked the card
• whether the card had an impact on their behavior

A total of 281 students who received the card returned the survey. Only students who reported consuming at least one drink while celebrating their birthday and who received and read the card were included in the analysis.

Results:
• Students reported that the card had little impact on their birthday drinking plans
• The birthday card intervention was not successful at reducing drinking or consequences
  Students who received the card did not report less drinking compared to the control group
• Students who received the card had more accurate perceptions of the number of drinks consumed by a typical student while celebrating his or her 21st birthday
• Students with lower or accurate perceptions spent fewer hours drinking, consumed less alcohol, and reached lower estimated blood alcohol concentrations compared with students with higher perceptions

The authors conclude: that it may be more effective to provide detailed personalized normative feedback using computerized or in-person formats so that feedback can be more tailored to student responses. They also discuss the benefits of using a normative referent that is closer in social proximity (such as same-sex peers) to participants.

Limitations: Lack of baseline assessment, low final survey response rate (20.9% for those who received the card and 23.7% for those who did not receive the card), there was just one school in the study, and self-reported measures were used.


Overview: The purpose of the study was to examine the efficacy of 21st birthday cards in preventing alcohol-related problems during celebrations. Two cohorts of college students (n=944) were randomly assigned to receive cards with one of the following messages:
• Neutral birthday greeting (control card)
• A card with messages about harm reduction and a description of the tragic death of a man during his 21st birthday celebration (“B.R.A.D.” card)
• A card that provides safe drinking tips (“INFO” card)
• A card that presents data to correct misperceptions about drinking norms (“SN” card)
• A card that combines the informational card and the social norming messages (“COMB” card)
With the exception of the B.R.A.D. card, different versions of the other cards were developed for the two cohorts.

One week after their birthday, students were called by a trained surveyor.

During the first year of the study (Cohort # 1), students were asked:

- how many drinks they consumed on their birthday
- if they experienced one of the 11 alcohol-related consequences
- what was the most memorable part of their birthday
- whether they took any other substances
- what percentage of other students they thought experienced the different negative consequences during 21st birthday celebrations
- whether they remembered receiving the card

The second cohort of students in the second year of the study was asked the same questions, plus the following:

- how many shots they consumed
- how many hours they spent drinking
- if they engaged in protective behaviors
- how many days they drank in the month prior to their birthday
- how much they typically drank per occasion that month before their birthday
- how much and for how long they drank on their peak drinking day during the previous month

The focus of this study was on drinking and alcohol-related problems.

**Results:**

- For both cohorts, the intervention cards had no effects on drinking or alcohol-related problems as compared to the control group

The authors note that individualized approaches or interventions that are more rigorous might have more of an impact.

**Limitations:** low response rate, use of self-reported data, cards were generic and not personalized, and lack of information on individual and subgroup predictors of response to the cards


**Overview:** The purpose of this study was to examine the amount of student drinking surrounding the 21st birthday and to evaluate the impact of a 21st birthday card on student drinking. Students were randomly assigned to receive a card (n=78) or not receive a card (n=86) one week before their birthday. The birthday card used was unrelated to the B.R.A.D. program card and focused on drinking in moderation. This card was “nonthreatening and did not incorporate any facts about deaths related to alcohol or alcohol poisoning.” The text read, “One or two pieces of cake are better than the whole thing. It seems everything is better in moderation.”
Approximately one week after the birthdays, all participants were sent a brief anonymous survey concerning their birthday celebration activities.

**Results:**
- The card had no impact on drinking (90% consumed alcohol, 75% went to a bar, 61% reached a blood alcohol content (BAC) above the legal driving limit, and 23% reached a BAC above .25.)
- Students liked the card

**Limitations:** self-reported assessments, data from a single campus


**Overview:** The purpose of this study was to evaluate the efficacy of the safe-drinking 21st birthday card, B.R.A.D., at Michigan State University. Students (n=1731) were sent the safe-drinking 21st birthday card with a laminated wallet card shortly before their 21st birthday. Students were then surveyed within 2 weeks of their birthday. A control group received no card.

The birthday card encourages responsible drinking. Inside the card is information about Brad McCue and his death from alcohol poisoning. A wallet card is included with information about the signs and symptoms of alcohol poisoning and how to get help.

There were four treatment conditions in which students were sent B.R.A.D. cards:
- B.R.A.D. card with wallet insert
- B.R.A.D. card with wallet insert and alcohol-poisoning information
- B.R.A.D. card with wallet insert and gender tailored messages
- No card control

Phone interviews were conducted and inquired about the following:
- How the birthday was celebrated
- Any planning they might have done to drink responsibly
- Whether students experienced negative consequences
- Students’ drinking level prior to their 21st birthday
- Any discussions they had with their parents ahead of time
- Recall of the B.R.A.D. card inserts
- Recollection of the facts presented on the card or inserts
- Basic demographic information

**Results:**
- Receiving, reading, and remembering the content of the B.R.A.D. card appeared to reduce the total number of drinks consumed
- Receiving, reading, and remembering the B.R.A.D. card was associated with the use of more protective behaviors against alcohol poisoning (e.g. setting limits, asking friends to help watch out for them)
- Receiving, reading, and remembering the B.R.A.D. card was associated with a decrease in the number of unhealthy outcomes experienced (e.g. getting sick, experiencing cognitive impairment)
- Those who read the B.R.A.D. card were less likely to drink shots of liquor ("66.3% of those who were not sent B.R.A.D. cards or who did not remember any of the content reported drinking at
least 1 shot, compared with 61.4% of those who received and remembered at least some of the card's content")

- 22% reported thinking about the card during their celebration
- 12% reported drinking less because of the card
- 15% reported learning something new about alcohol poisoning
- 98% believed that MSU and B.R.A.D. should continue sending cards to students
- Men were less likely than were women to have read and remembered all features of the cards
- There was no evidence that gender tailoring enhanced the card’s effectiveness

The authors conclude: “Receiving, reading, and recalling the content of the B.R.A.D. card appears to reduce the total number of drinks a celebrant consumes.”

Limitations: Possible inaccuracy of responses due to delayed post-interviews, conducted at single university, the fact that Brad McCue was a student at MSU may have increased student sensitivity towards issue.


Overview: The purpose of the 21st Birthday Card Project at the University of Virginia was to reduce the incidence of alcohol poisoning and mortality associated with 21st birthday drinking, especially for the perceived tradition “Corner Crawl,” where students often attempt to consume 21 shots on their 21st birthday.

The card reads “Happy 21st Birthday! We encourage you to celebrate responsibly” and includes a coupon from a local restaurant and a wallet-size information card about BAC and alcohol poisoning information. The project began in 2000. In June 2004, students who had turned 21 between November 2003 and April 2004 were invited to take an online survey.

Results:
- Only 4.6% of students said they drank less alcohol as a result of receiving the card
- The average number of drinks was substantially lower for those who received the card on or before their birthday compared to those who received it late or not at all
- Students who received the card on or before their birthday were much less likely to report completing the Corner Crawl
- Twenty six percent of students said they learned new information about alcohol poisoning


Overview: The goal of this study was to:

- Determine the perceived versus actual drinks consumed by Cal Poly students surrounding 21st birthday celebrations
- To develop a 21st birthday card that results in fewer negative consequences and reduced drinking
First, 850 Cal Poly students were surveyed on how they planned and actually celebrated their 21st birthday and their perceptions vs. actual drinks consumed.

Based on this data, birthday cards were created and sent to students a few weeks before their birthday (n=300). The cards contained social normative data of the 21st birthday drinking of Cal Poly students as well as safety tips. Students were surveyed after their birthday about their perceived vs. actual drinks consumed. A control group of students were surveyed as well.

**Results:**
- Women who received the card drank less than what they had expected to drink on their birthday and women who did not get the card drank more than they had expected
- Males who received the card drank less than what they had expected to drink, and men who did not get the card drank the same amount as they had expected
- Negative consequences did not vary for treatment vs. control

**Limitations:** low response rate (14%) for filling out survey, possibility of response bias


**Overview:** Holy Cross has been utilizing peer educators to create and distribute 21st birthday cards. The card includes information about “21 things to do at Holy Cross” as well as an insert with safe drinking tips. Holy Cross sends out 535 cards per year to students turning 21. After students receive the cards, they are invited by email to complete a survey about their 21st birthday drinking-related behaviors. Last year, they received 162 returned surveys.

**Results:**
- 14% of students claimed that the information in the card influenced their decisions regarding alcohol on their birthday
- 53.8% of students used a designated driver, 69.2% set a safe limit before drinking, 92.3% ate before drinking
- 46.2% of students reported that they drank slowly, 50.0% avoided drinking shots, and 76.9% kept track of their drinks