Published in final edited form as:

J Ethn Subst Abuse. 2017 ; 16(1): 91–108. doi:10.1080/15332640.2015.1095667.

DIFFERENCES BY GENDER AT TWELVE MONTHS IN A BRIEF INTERVENTION TRIAL AMONG MEXICAN-ORIGIN YOUNG ADULTS IN THE EMERGENCY DEPARTMENT

Judith Bernstein,

Boston University School of Public Health, Boston, MA

Edward Bernstein,

Boston University School of Public Health, Boston, MA

Dantia Hudson,

Boston University School of Public Health, Boston, MA

Candice Belanoff,

Boston University School of Public Health, Boston, MA

Howard J. Cabral,

Boston University School of Public Health, Boston, MA

Cheryl J. Cherpitel,

Public Health Institute, Alcohol Research Group, 6475 Christie Avenue, Suite 400, Emeryville, CA, 510 597-3453, Fax: 510 985-6459

Jason Bond,

Public Health Institute, Alcohol Research Group, 6475 Christie Avenue, Suite 400, Emeryville, CA, 510 597-3453, Fax: 510 985-6459

Yu Ye,

Public Health Institute, Alcohol Research Group, 6475 Christie Avenue, Suite 400, Emeryville, CA, 510 597-3453, Fax: 510 985-6459

Robert Woolard,

Texas Tech University Health Science Center, El Paso, TX

Susana Villalobos, and

Texas Tech University Health Science Center, El Paso, TX

Rebeca Ramos [Executive Director]

Alliance for Border Collaboratives, El Paso, TX

Abstract

This study investigates the role of gender in prevalence and consequences of binge drinking and brief intervention outcomes among Mexican origin young adults aged 18–30 at the U.S.-Mexico

border. We conducted a secondary analysis, stratified by gender, from a randomized controlled trial of a brief motivational intervention in a hospital emergency department. Intervention effects for males included reductions in drinking frequency, binge drinking and alcohol-related consequences. For females the intervention was associated with reduction in drinking frequency and binge drinking, but did not have a significant effect on alcohol-related consequences. Results suggest a new direction for tailoring interventions to gender.

Keywords

young adult; binge drinking; gender; brief intervention

INTRODUCTION

The border separating Mexico from the United States runs from Tijuana, Baja California, and Imperial Beach, California, in the west to Matamoros, Tamaulipas, and Brownsville, Texas, in the east. Mexican-Americans living in the 24 counties on the U.S. side report higher rates of heavy and problem-related drinking compared to Mexican-Americans living elsewhere in the U.S. (Vaeth, 2012). Young adults in the U.S. have the highest rates of alcohol consumption and alcohol-related problems compared to other age groups, and dependence occurs most often during the period in which they transition to independence (Li, 2004). Those residing at the U.S.-Mexico border are especially vulnerable to alcohol misuse and problems (Wallish, 1998; Wallish and Spense, 2006; Lawrence, 1998). Younger people often visit Mexico specifically to drink legally at local bars, which target them with all-you-can-drink and ladies' night specials, but bar attendance is also high on the U.S. side. Mills et al. (2014) hypothesize that the bar setting is a greater contributor to high levels of young adult consumption than norms, beliefs and alcohol expectancies.

According to the 2013 Youth Risk Behavior Survey (Kann, 2014), during the past 30 days, 37.5% of Hispanic high school students drank some amount of alcohol, while 23% of these students reported binge drinking. Additionally, students reported risky behavior after drinking alcohol such as driving after drinking (12%) or riding with a driver who had been drinking (29%). For U.S. high school students living on the U.S.-Mexico border, rates of binge drinking (45%), drinking and driving (19%), and riding with a driver who had been drinking (46%) were higher than national rates (McKinnon, 2004). This is the pattern of drinking that young adults may either age out of as they mature, or alternatively follow the trajectory to alcohol dependence in their mid-twenties (Li, 2004).

Among Mexican Americans living along the U.S.-Mexico border, the binge drinking rate is higher among younger than older men, but is similar to non-border Mexican American men generally in binge drinking and the volume of alcohol consumed (Caetano, 2012). However we have known for several decades that women aged 18–29 along the border report higher quantity of alcohol and more incidents of binge drinking than non-border Mexican-American women (Gilbert, 1986). Female border residence is also linked to significantly higher rates of dependence (Gilbert, 1986; Caetano, 2013) and alcohol-related social problems (Vaeth, 2012).

There are important differences by gender that underlie this pattern of difference by race/ethnicity and geographic region (Chen, 2004). In a national survey, more than half of young men (7.1 million) exceeded the recommended daily limit compared with two fifths of the young women (5.3 million). Similarly, 17.4 percent or 2.4 million young men exceeded the recommended weekly limit compared with 11.5 percent or 1.6 million young women.

This study is a secondary analysis of a trial of an evidence based brief motivational intervention (Cherpitel, 2015), a 30 minute conversation about alcohol use delivered in an emergency department (ED) setting among young adults of Mexican origin residing in Texas along the border between the United States and Mexico. The brief intervention methodology used here was a replication of a randomized clinical trial with youth in an urban ED setting in the Northeast (Bernstein, 2010). Brief interventions in health care settings with adolescents and young adults have been shown to have a significant impact on motivation to change unhealthy drinking (Bernstein, 2010), and alcohol consumption (McCambridge, 2004). Moreover, several meta-analyses have demonstrated positive findings (Tripodi, 2010; Tanner-Smith, 2015). The rationale for the ED setting was that youth often use the ED as a gateway for or substitute for primary care (de Cosio and Boardella, 1999), and they are thus likely to be representative of this age group. The purpose of this secondary analysis was to analyze differences by gender in drinking patterns, consequences and intervention effectiveness over a one year period in order to understand best practices for tailoring future interventions to the different risks experienced by young men and women of Mexican origin.

METHODS

Design

This investigation consists of a secondary analysis of data from a randomized controlled trial of screening and brief intervention conducted at the Texas Tech Health Science Center ED in El Paso. The majority of the authors of the analysis described here were involved in the design, implementation and analysis of the parent study.

Sample

Patients aged 18 to 30 presenting to the ED between 10:00 am and 10:00 pm were screened for eligibility. Those who self-identified as Mexican-origin, spoke either Spanish or English, lived in the local county, and reported either 15 or more drinks per week (for men), or 8 or more (for women), or 5 or more drinks in a day for men and 4 or more for women, or were positive on the Rapid Alcohol Problems Screen (RAPS4) (Cherpitel, 2000) as an indication of alcohol dependence were eligible to participate. Participants were randomized into one of 3 study conditions: group 1) screened only but not assessed at baseline, with 3-month contact (to update contact information) and a 12-month assessment (S); group 2) assessed with 3-month and 12-month follow-up assessments (A); and group 3) assessed and received the intervention with 3-month and 12-month follow-up assessments (I). The purpose of the screened-only group was to provide a control for assessment affects, and for potential maturation bias. Group 2 (screened and assessed) served as a control group against which the intervention group could be compared. We did not include the screened-only group in the outcome analysis, because without assessment there would be no way to assure that the

groups were similar on key characteristics at baseline. Those admitted for inpatient treatment, in police custody, currently in alcohol treatment, having a psychiatric condition, or planning to leave the El Paso metropolitan area in the next year were excluded.

Recruitment occurred from November 2010 to April 2012. A total of 3,176 individuals were screened (88% of study eligible approached); 26% (n=824) screened positive and of these, 85% (n=698) were recruited into the study: 78 were randomized to the screened-only condition and 310 to each of the assessment and intervention conditions. Data are reported here for the latter two groups only. Follow-up rates at 3 months were 76% (n=237) and 72% (n=223), and at 12 months, 78% (n=243) and 75% (n=231) for the assessment and the intervention condition, respectively.

Measures

Participants in A and I groups completed standardized instruments administered during baseline assessment, and participants in all three groups completed follow-up assessments conducted via telephone by an interviewer blinded to study group status. Instruments were translated into Spanish and verified by either back-translation according to Beslin (1986) or attested by an expert experienced in cross-cultural investigations. Of the 620 assessments, 462 were conducted in English, 64 in Spanish, and 94 in a mixture of both languages.

The *Timeline Followback* (Sobell, 1992) assessed the number of drinks consumed on each of the last 28 days from which number of drinking and heavy-drinking days, and the average and maximum number of drinks per drinking day were derived.

The *Short Inventory of Problems* (SIPs + 6) (Miller, 1995) assessed negative consequences related to drinking over the last 3 months at baseline and again 12 months. This 21-item inventory is a brief version of the 45-item Drinking Inventory of Consequences (DrInC) developed by project MATCH. It includes alcohol-related physical, social responsibility, intrapersonal, impulse control and interpersonal consequences. The SIPs + 6 has six additional questions from the original instrument on injury and drinking and driving.

The Intervention

A brief motivational intervention in English or Spanish, with language selected by enrollees, was delivered by community-based Mexican-origin peer health promotion advocates, or *promotores*, advocates reported to successfully provide low-cost, culturally-appropriate prevention services among ethnic populations (Ramos and Ferreira-Pinto, 2006; Ramos, 2006). *Promotores* were trained for this intervention in the Brief Negotiation Interviewing (BNI) protocol (Bernstein, 1997; Bernstein, 2008; Bernstein, 2009; Bernstein, 2009a), which addresses unhealthy alcohol use with a focus on binge drinking, the most common presentation in the age group of interest. The interview, a respectful, non-judgmental and collaborative approach, generally occurred while the patient was waiting for treatment and took about 20 minutes to complete. The intervention was tailored for adolescents and young adults [Bernstein, 2010] and integrated elements of motivational interviewing, feedback, negotiation, and readiness to change (Miller, 1991; Prochaska, 1992). It concluded with a prescription for change facilitated by the promotore but elicited from the enrollee, and

referrals to resources selected by the participant. The intervention protocol is described in detail in the report of findings from the original study (Cherpitel, 2015).

Training of the *promotores* was provided on site in both languages, using a curriculum manual, role plays and video recording with feedback (Bernstein, 2007; Academic ED SBIRT Research Collaborative, 2007). To assure fidelity, interventions were initially observed by study staff with a patient's consent and later taped. Feedback was provided by a team of experts, and a final review for adherence was conducted using a tested and validated scoring system (Pantalon, 2012).

Outcomes

Primary outcomes include number of days of binge drinking, defined as five or more drinks on one occasion for males and four or more for females, and RAPS4+ score within the last three months. Secondary outcomes include number of drinking days/week, number of drinks/drinking day, maximum # drinks, and SIPS+6 count. Binge drinking and symptoms of dependence were the primary outcomes, because of high prevalence in the selected age group, and quantity, frequency and consequence measures were the secondary outcomes of the parent study. Findings from the original study include analysis at both 3-months and 12-months post enrollment, and showed a similar pattern of intervention effectiveness at both time points (Cherpitel, 2015). We therefore chose to limit this analysis to the 12-month time interval, largely because more distal outcomes may suggest a more lasting clinical effect on health status.

Analysis

Differences by gender were confirmed for each 12-month outcome in a linear regression model adjusting for the baseline value of each outcome, gender and group assignment. We then proceeded to a within-gender analysis to determine patterns of intervention effectiveness. Differences in means and in distributions of categorical variables across groups were tested at baseline using t-tests and chi-square tests of independence. We used linear generalized estimating equations (GEE) to estimate the association of the intervention with each of the primary outcomes of interest, accounting for clustering at the level of participants because of repeated measurements (Liang & Zeger, 1986). We estimated the main effects of time (for the 12M follow-up) and intervention group (with assessment-only as the reference category), and modeled their interaction (time $\times$ group) in order to estimate the difference in differences across the two groups. Age, national origin, injury as reason for ED visit, and drinking within 6 hours prior to the event that precipitated the ED visit were included as covariates. Continuous measures were log-transformed; GEE results are reported as L'Beta estimates (exponentiated).

RESULTS

Baseline (Table 1)

Figure 1 shows the consort diagram (Schultz, 2010), with enrollees described by gender. Mexican-American young adults living along the U.S. border were similar by gender in age, national origin, primary language and RAPS4 scores. Mean age for females was 23.9 (sd

3.4) and 24.1 (sd 3.5) for males. The majority of young men and women were born in in the U.S. (76.7% for females, 81.6% for males, $p=0.155$). There were non-significant differences by gender in language spoken at home. More women than men reported any of the RAPS4 items for alcohol dependence (55.6% vs. 41.1%) though the difference was not significant ($p=0.128$).

Because the original randomization was not stratified by gender, assessment and intervention groups differed in ratio of males to females at both baseline and follow-up. The percentage of females in the assessment-only group at baseline was 52%, compared to 42% in the intervention group. At the 12-month follow-up, 49% of the assessed-only participants were female, vs. 42% of the intervention group. Randomization produced similar groupings for all other key characteristics.

There were gender differences at baseline in all measurements of quantity and frequency of alcohol use, with higher mean levels for males. Males reported twice the number of days of binge drinking (4.0, vs. 1.7, $p=0.0001$), a slightly higher number of drinking days per week (1.3, vs 1.0, $p=0.000$), a higher average number of drinks per drinking day (7.1, vs. 4.8, $p=0.000$), and a higher maximum of drinks per drinking day (10.2, vs 6.4, $p=0.000$).

There were also differences in consequences at baseline. The mean SIPS+6 count for females was 3.0 vs 4.8 for males ($p=0.003$). Females were less likely than males to report an injury requiring a visit to the emergency department in the last three months prior to enrollment (24.8% vs. 44.5%, $p=0.000$) or alcohol use six hours prior to that injury (10.0% vs 20.4%, $p=0.000$).

Differences in outcomes at 12 months post-enrollment by group assignment

Differences by gender—Key drinking outcomes, adjusting for 1) baseline values of each outcome, 2) group assignment and 3) gender, differed significantly by gender for all outcomes (see Table 2). [An analysis of these outcomes by intervention status is presented in the original report of the parent study findings (Cherpitel, 2015).] In the analysis for this secondary study, outcomes differed by both group and gender for mean number of drinks per week, mean number of drinks per drinking day, and maximum number of drinks per drinking day and alcohol associated consequences. The number of binge drinking days in the last 28 days was significantly different by gender, but not by intervention status.

Differences within gender—In an unadjusted comparison of differences in 12 month outcomes by group assignment (see Table 2), there were reductions among women in the intervention group compared to the assessed-only group in the mean number of days of binge drinking ($I=0.85$, vs. $A=1.52$, $p.019$), the mean number of drinking days per week ($I=0.45$, vs $A= 0.76$, $p.007$), the mean number of drinks per drinking day ($I=1.32$, vs $A=2.20$, $p.005$), and the mean maximum number of drinks ($I=1.93$, vs $A=3.21$, $p.006$). There was no difference by group status at 12 months in the number of consequences reported (SIPS+6 scores) or in RAPS4 scores.

Among men, the intervention reduced drinking measures in only two drinking parameters: the mean number of days of binge drinking ($I=1.88$, vs $A=3.30$, $p.003$), and the mean

number of drinking days per week ($I=4.34$ vs. $A=5.94$, $p=.014$). SIPS+6 scores measuring the number of alcohol related consequences differed significantly by group among males at 12 months ($I=1.28$, vs. $A=2.01$, $p=.002$).

After adjustment for age, national origin, injury as a reason for the ED visit and alcohol within six hours of the event that precipitated the ED visit (see Table 3), neither women nor men experienced a significant intervention effect over time for the number of days of binge drinking or RAPS4 score. However there were different patterns by gender of response to intervention for number of drinks per drinking day, maximum drinks, and consequences related to alcohol use. Women in the intervention group had a 13.48% greater reduction in their average drinking days per week ($p<.05$), a 24.04% greater reduction in number of drinks per drinking day ($p<.05$), and 26.53% greater reduction in maximum number of drinks ($p<.05$) compared to women in the assessment-only group. Men in the intervention group had a 21.79% greater reduction in consequences ($p<.05$), and a 15.56% greater reduction in average drinking days per week than men in the assessment-only group ($p<.05$). For all other outcomes, there were not significant differences in the reduction of risk between the two groups.

DISCUSSION

We found gender differences in quantity and frequency of alcohol use and consequences at baseline well as differences in intervention effectiveness for each of the outcomes we measured.

Gender differences in drinking patterns at baseline

In this study population, a quarter of those screened met criteria for at-risk or dependent drinking, a finding similar to other studies of brief intervention (Academic ED SBIRT Research Collaborative, 2007; Bernstein, 2008; Cherpitel, 2010; Daepen, 2007, Longabaugh, 2001).

At baseline, we found gender differences in quantity and frequency of alcohol intake and in patterns of alcohol-related consequences. In this study of young adults, females reported half the mean number of days of binge drinking as males, but were equally likely to be positive on RAPS4, an indicator of dependence. Across race/ethnicity and geographic location, girls generally report more alcohol intake unrelated to binge drinking, but binge drinking rates similar to those of boys (Miller, 2007). Among females, border residence has been linked to significantly higher rates of dependence (Caetano, 2013). Our result is consistent with findings from the U.S. National Alcohol Survey which suggest that Hispanic drinkers are more likely to experience social consequences of drinking and alcohol dependence symptoms (Mulia, 2009).

The lower rate of binge drinking among females is of particular interest in light of our finding of a lower likelihood of an ED visit related to injury for females compared to males, and the similarly lower proportion with alcohol use related to an injury or medical problem that occasioned an ED visit. In several studies, lower rates of binge drinking are associated with fewer consequences (Miller, 2007; McKinnon, 2004; Treno, 1999; McCarty, 2004;

White, 2005). In this study females reported a similarly lower baseline SIPS+6 score representing consequences compared to males. A developmental perspective that examines diverging alcohol trajectories by gender suggests that as youth move into young adulthood, a constellation of factors place males at greater risk for disruptive drinking, including later maturation, greater estimates of perceived peer alcohol use, and socialization into traditional gender roles (Shulte, 2009).

In a study of Mexican-Americans living along the US-Mexico border, and in two metropolitan areas away from the border, border men resembled those living away from the border, but women along the border appeared to be more vulnerable than men in the proportion of drinkers and binge drinkers, and in the volume of alcohol consumption (Caetano, 2012). Consumption patterns for U.S. Hispanics are similar to the general population, with two exceptions: being divorced or separated appears to elevate drinking levels among Hispanics, and Hispanic males are at greatest risk for problematic consumption patterns in their thirties rather than during their twenties (Treno, 1999). Social disadvantage, particularly in the form of racial/ethnic stigma, may contribute to racial/ethnic differences in heavy episodic drinking (Mulia, 2009). Acculturation stress has also been proposed as a contributor to the etiology of alcohol abuse among Mexican Americans (Gilbert, 1986). In an analysis of gender roles and binge drinking among Latino emerging adults, males born outside the US with greater Spanish language usage scored higher on social masculinity (forceful and dominant) and were at greater odds of binge drinking (Vaughn, 2014).

Gender differences in intervention effects

The primary outcomes of this study showed that the number of days of binge drinking and RAPS4 scores decreased from baseline to 12 months for all enrollees. Males and females had similar intervention effects, with a significant decrease in number of days of binge drinking post-intervention compared to the assessed-only control group, but no difference between intervention and controls for either gender in RAPS4 score, a measure of alcohol dependence. After adjustment for known predictors of drinking outcomes, however, neither men nor women demonstrated an intervention effect over time for the number of days of binge drinking.

Regression to the mean has been identified as a contributor to decreases in alcohol intake over time (Bernstein, 2010a). Time from baseline to 12 months was an equally important predictor of secondary outcomes for both groups by gender, but patterns of decrease varied within gender by intervention status in both unadjusted and adjusted analyses. For females, there were significant reductions in number of drinking days per week, number of drinks per day and maximum drinks per day, but no change in consequences by intervention status. Males in the intervention group experienced a greater reduction in drinking days but no significant change in number of drinks per day or maximum number of drinks per drinking day. Unlike females, the males did show a significant reduction in consequences in the intervention group, compared with controls. These differences by gender are consistent with differences in adolescent alcohol use related to developmental trajectories and responses to social conditioning (Shulte 2009; Treno 1999; Vaughn, 2014). It is also possible that

reductions in consequences among females could escape detection due to the low number of baseline consequences reported.

Studies of brief motivational interventions in the ED setting have had mixed results (D'Onofrio, 2014; Daepfen, 2007). Unlike studies that have found a decrease in intervention effects over time (Nilsen, 2008), our findings suggest long term intervention effects, as reported elsewhere (Cherpitel et al, 2010; Longabaugh, 2001; Monti 1999, 2007). The efficacy of brief alcohol interventions among youth and young adults has not been sufficiently tested in geographically and demographically diverse samples.

While the use of *promotores* is an accepted clinical model (Ramos and Ferreira-Pinto, 2006, Ramos, 2006; Warrick, 1992; Williams 2001), *promotores* have not been commonly used for alcohol interventions. However the work of several investigators (Field and Caetano, 2010; Vasquez, 2007; Comas-Dias, 2006; Marin, 1995; Marin, 1989; Casas, 2000; Vasquez, 2007) suggests that ethnic matching for the delivery of other health interventions may be effective, especially among the less acculturated.

More work needs to be undertaken to understand specific effects by gender/ethnic subgroups, but it is perhaps time to consider the application of a model for intersectionality, such as the one proposed by Gita Sen and adopted by WHO (Sen, 2009), in which multiple social predictors are considered and their interrelationships explored. Alcohol abuse and alcohol problems happen to a broad, diverse sector of the U.S. population, but alcohol trajectories and consequences differ by gender, by age, by national origin, by race/ethnicity, and by access to resources, and combinations thereof. We need to approach our understanding of intervention effectiveness and the task of tailoring interventions to subgroup needs from the perspective that these social predictors of high risk behavior are not simply categories or identification labels, but interact with one another and that interaction has implications for intervention success. For example, we found intervention effects for consequences among men but not women, while the parent study reported no effect overall. This study was a secondary analysis that did not have the advantage of data sources selected in advance specifically for the analysis we present here—for example, stress related to high levels of violence in the two cities on either side of the U.S.-Mexico border where this study took place. More sophisticated approaches are possible and necessary in a theory-driven program of research that evaluates gender along with other key contributors to intervention effects on drinking behavior and outcomes.

Limitations

Social desirability bias may have contributed to reports of reduced consumption, in part because of a strong emphasis on harmony in interpersonal relationships and respect for authority figures in Mexican-American culture (Marin, 1996; Marin and Marin, 1997). Social conditioning based on gender expectations may have resulted in differential influence, but is unlikely to account for differences by intervention status.

Findings here may also be influenced by the low severity of drinking of those recruited into this study. Patients reported drinking on average about one day a week, but consuming 6 drinks per drinking day and over 8 drinks on a maximum drinking occasion, reflecting a

pattern of heavy episodic drinking characteristic of a fiesta drinking culture typical in this Mexican-origin population. Brief intervention directed toward patients in the milder range of drinking severity is less likely to show improvement in drinking outcomes (Bernstein and Bernstein, 2008), and findings based on this drinking style may not be generalizable to other cultures or populations with more frequent heavy drinking patterns. Furthermore this was a single site study in one border town, and thus may not be generalizable to the larger region.

Also potentially affecting study findings is attrition at follow-up. While a follow-up rate of 80% may be considered low in many settings, it is a difficult achievement among young adults who typically have family in both border cities and move back and forth across the border. Attrition did not differ by gender, but there were differences by status. While no significant differences were observed between those followed and those not followed in the assessed condition, those not followed in the intervention condition were heavier drinkers at baseline. One possible explanation for this is that those with a more serious drinking problem who undergo an intervention may find it more difficult to change their drinking behavior than those with a less severe problem, and therefore less inclined to participate at follow-up, due to the strong cultural emphasis on respect and obedience for authority figures in this ethnic group (Marin, 1996; Marin and Marin, 1997).

Despite these limitations, main findings related to both primary and secondary outcomes were similar to those from other BI studies, and intervention may have added benefits above assessment for specific subgroups of patients in the ED, an area that warrants additional study in the ED setting. Our analysis of intervention effects by gender is one of the first for brief intervention in the ED setting for youth and young adults.

Conclusion

Among a population of Mexican American young adults living in a city bordering Mexico, males drank more and more often at baseline and experienced more consequences than females. Intervention effects for males included reductions in frequency of drinking as well as reductions in alcohol-related consequences. For females the intervention appeared to be effective in reducing both quantity and frequency of drinking, but did not have a significant effect on alcohol-related consequences. Patterns of drinking are known to differ by gender; it appears that patterns of response to brief motivational intervention may also differ by gender. If future studies in other areas of the region prove similar, these findings would provide an opportunity to consider new directions for tailoring intervention protocols to gender differences.

Acknowledgments

Supported in part by grant #1 R01 AA018119-01A1 from the National Institute on Alcohol Abuse and Alcoholism

References

- Academic ED SBIRT Research Collaborative. The impact of screening, brief intervention, and referral for treatment on Emergency Department patients' alcohol use. *Ann. Emerg. Med.* 2007; 50:699–710. [PubMed: 17870206]

- Bernstein E, Bernstein J. Effectiveness of alcohol screening and brief motivational intervention in the emergency department setting. *Ann. Emerg. Med.* 2008; 51:751–754. [PubMed: 18436342]
- Bernstein E, Bernstein J, Feldman J, et al. An evidence-based alcohol screening, brief intervention and referral to treatment (SBIRT) curriculum for emergency department (ED) providers improves skills and utilization. *Subst. Abus.* 2007; 28:79–92. [PubMed: 18077305]
- Bernstein E, Bernstein J, Levenson S. Project ASSERT: an ED-based intervention to increase access to primary care, preventive services, and the substance abuse treatment system. *Ann. Emerg. Med.* 1997; 30:181–189. [PubMed: 9250643]
- Bernstein E, Topp D, Shaw E, et al. A preliminary report of knowledge translation: lessons from taking screening and brief intervention techniques (SBI) from the research setting into regional systems of care. *Acad. Emerg. Med.* 2009a; 16:1225–1233. [PubMed: 20053242]
- Bernstein E, Edwards E, Bliss C, Heeren T, Bernstein J. Screening and Brief Intervention to Reduce Marijuana Use Among Youth and Young Adults in a Pediatric Emergency Department. *Acad. Emerg. Med.* 2009; 16:1174–1185. [PubMed: 20053238]
- Bernstein J, Heeren T, Edwards E, Dorfman D, Bliss C, Winter M, Bernstein E. A brief motivational interview in a pediatric emergency department, plus 10-day telephone follow-up, increases attempts to quit drinking among youth and young adults who screen positive for problematic drinking. *Acad. Emerg. Med.* 2010; 17:890–902. [PubMed: 20670329]
- Bernstein J, Heeren T, Bernstein E. Mechanisms of change in control group drinking in clinical trials of brief alcohol intervention: implications for bias toward the null. *Drug Alcohol Rev.* 2010a; 29:498–509. [PubMed: 20887573]
- Breslin, RW. The wording and translation of research instruments. In: Lonner, WJ., Berry, JWs, editors. *Field methods in cross-cultural research*. Vol. 8. Newbury Park, CA: SAGE Publications; 1986. p. 137-165.
- Caetano R, Mills B, Vaeth PAC. Alcohol consumption and binge drinking among U.S.-Mexico border and non-border Mexican Americans. *Alcohol Clin. Exp. Res.* 2012; 36:677–685. [PubMed: 22017228]
- Caetano R, Vaeth PAC, A.Mills B, Rodriguez LA. Alcohol Abuse and Dependence among U.S.-Mexico Border and Non-Border Mexican Americans. *Alcohol Clin. Exp. Res.* 2013; 37:847–853. [PubMed: 23278433]
- Casas, JM., Vasquez, MJT., Ruiz de Esparza, CA. Counseling the Latina/o: a guiding framework for a diverse population. In: Pederson, PB.Draguns, JG.Lonner, WJ., Trimble, JEs, editors. *Counseling Across Cultures*. Thousand Oaks, CA: SAGE Publications, Inc.; 2002. p. 133-160.
- Chen CM, Dufour MC, Yi H. Alcohol consumption among young adults ages 18–24 in the United States: Results from the 2001–2002 NESARC survey. *Alcohol. Res. Health.* 28:269–280.
- Cherpitel CJ. Alcohol, injury and risk taking behavior: data from a national sample. *Alcohol. Clin. Exp. Res.* 1993; 17:762–766. [PubMed: 8214410]
- Cherpitel CJ. A brief screening instrument for problem drinking in the emergency room: the RAPS4. *J. Stud. Alcohol.* 2000; 61:447–449. [PubMed: 10807217]
- Cherpitel CJ, Korcha R, Moskalewicz J, Swiatkiewicz G, Ye Y, Bond J. Screening, brief intervention and referral to treatment (SBIRT): 12-month outcomes of a randomized controlled clinical trial in a Polish emergency department. *Alcohol. Clin. Exp. Res.* 2010; 34:1922–1928. [PubMed: 20659072]
- Cherpitel CJ, Ye Y, Bond J, Woolard R, Villalobos S, Bernstein J, Bernstein E, Ramos R. Brief intervention in the emergency department among Mexican-origin young adults at the U.S.-Mexico border: Outcomes of a randomized controlled clinical trial using promotores. *Alcohol Alcoholism.* 2015 in press.
- Comas-Dias, L. Cultural variation in the therapeutic relationship. In: Goodheart, CD.Kazdin, AE., Sternberg, RJs, editors. *Evidence-Based Psychotherapy: Where practice and research meet*. Washington, DC: American Psychological Association; 2006. p. 81-105.
- D'Onofrio GD, Fiellin DA, Pantalon MV, et al. A brief intervention reduces hazardous and harmful drinking in emergency department patients. *Ann. Emerg. Med.* 2013; 60:181–192. [PubMed: 22459448]

- Daepfen J-B, Gaume J, Bady P, et al. Brief alcohol intervention and alcohol assessment do not influence alcohol use in injured patients treated in the emergency department: a randomized controlled clinical trial. *Addiction*. 2007; 102:1224–1233. [PubMed: 17565563]
- de Cosio, FG., Boadella, A. Demographic factors affecting the U.S.–Mexico border health status. In: Loustaunau, MO., Sanchez-Bane, Ms, editors. *Life, Death, and Inbetween on the U.S.–Mexico Border*. Así es la vida. Westport, CT: Bergin & Garvey; 1999. p. 1-22.
- Eysenck SGB, Eysenck HJ. The place of impulsiveness in a dimensional system of personality description. *Br. J. Soc. Clin. Psychol.* 1977; 16:57–68. [PubMed: 843784]
- Field CA, Caetano R. The role of ethnic matching between patient and provider on the effectiveness of brief alcohol interventions with Hispanics. *Alcohol. Clin. Exp. Res.* 2010; 34:262–271. [PubMed: 19951297]
- Gilbert MJ, Cervantes RC. Patterns and Practices of Alcohol Use among Mexican Americans: A Comprehensive Review. *Hisp. J. Behav. Sci.* 1986; 8:1–60.
- Kann, L., Kinchen, S., Shanklin, S. [Accessed December 10, 2014] Youth Risk Behavior Surveillance — United States, 2013. 2014. at <http://www.cdc.gov.ezproxy.bu.edu/HealthyYouth/yrbs/index.htm>.
- Lawrence, PA. Psychological risk factors and substance abuse among young adults. A comparison of non-Hispanic Whites and Mexican Americans. In: Power, JG., Byrd, Ts, editors. *U.S.–Mexico Border Health. Issues for regional and migrant populations*. Thousand Oaks, CA: SAGE Publications; 1998. p. 32-51.
- Li TK, Hewitt BG, Grant BF. Alcohol use disorders and mood disorders: a National Institute on Alcohol Abuse and Alcoholism perspective. *Biol. Psychiatr.* 2004; 56:718–720.
- Liang KY, Zeger SL. Longitudinal data analysis using generalized linear models. *Biometr.* 1986; 73:13–22.
- Longabaugh R, Woolard RF, Nirenberg TD, et al. Evaluating the effects of a brief motivational intervention for injured drinkers in the emergency department. *J. Stud. Alcohol.* 2001; 62:806–816. [PubMed: 11838918]
- Marin G. AIDS prevention among Hispanics: needs, risk behaviors, and cultural values. *Public Health Rep.* 1989; 104:411–415. [PubMed: 2508169]
- Marin G. Expectancies for drinking and excessive drinking among Mexican Americans and non-Hispanic whites. *Addict. Behav.* 1996; 21:491–507. [PubMed: 8830907]
- Marin G, Burhansstipanov L, Connell CM, et al. A research agenda for health education among underserved populations. *Health Educ. Q.* 1995; 22:346–363. [PubMed: 7591789]
- Marin G, Marin MA. Differential perception of drinkers of alcoholic beverages by Mexican-Americans and non-Hispanic whites. *Subst. Use Misuse.* 1997; 32:1369–1384. [PubMed: 9286005]
- McCarty CA, Ebel BE, Garrison MM, DiGiuseppe DL, Christakis DA, Rivara FP. Continuity of binge and harmful drinking from late adolescence to early adulthood. *Pediatr.* 2004; 114:714–719.
- McCambridge J, Strang J. The efficacy of single-session motivational interviewing in reducing drug consumption and perceptions of drug-related risk and harm among young people: Results from a multi-site cluster randomized trial. *Addiction*. 2004; 99:39–52. [PubMed: 14678061]
- McKinnon SA, O'Rourke KM, Thompson SE, Berumen JH. Alcohol use and abuse by adolescents: the impact of living in a border community. *J. Adolesc. Health.* 2004; 34:88–93. [PubMed: 14706410]
- Miller JW, Naimi TS, Brewer RD, Jones SE. Binge drinking and associated health risk behaviors among high school students. *Pediatr.* 2007; 119:76–85.
- Miller, WR., Tonigan, JS., Longabaugh, R. The Drinker Inventory of Consequences (DrInC): an instrument for assessing adverse consequences of alcohol abuse. Rockville, MD: National Institute on Alcohol Abuse and Alcoholism, National Institutes of Health; 1995. [NIH Pub. No. 95-3911].
- Mills BA, Caetano R, Vaeth P. Cross-border policy effects on alcohol outcomes: Drinking without thinking on the U.S.–Mexico border? *Alcoholism: Clin. Exper. Res.* 2014; 38:309–315.
- Monti PM, Colby SM, Barnett NP, et al. Brief intervention for harm reduction with alcohol-positive older adolescents in a hospital emergency department. *J. Consult. Clin. Psychol.* 1999; 67:989–994. [PubMed: 10596521]
- Monti PM, Barnett NP, Colby SM, Gwatney CJ, Spirito A, Rosenow DJ, Woolard R. Motivational interviewing versus feedback only in emergency care for young adult problem drinking. *Addiction*. 2007; 102:1234–1243. [PubMed: 17565560]

- Mulia N, Ye Y, Greenfield TK, Zemore SE. Disparities in alcohol-related problems among white, black, and Hispanic Americans. *Alcohol. Clin. Exp. Res.* 2009; 33:654–662. [PubMed: 19183131]
- Nilsen P, Baird J, Mello MJ, et al. A systematic review of emergency care brief alcohol interventions for injury patients. *J. Subst. Abuse Treat.* 2008; 35:184–201. [PubMed: 18083321]
- Ramos RL, Ferreira-Pinto JB. A transcultural case management model for HIV/AIDS care and prevention. *Journal of HIV/AIDS and Social Services.* 2006; 5:139–157.
- Ramos RL, Hernandez A, Ferreira-Pinto JB, Ortiz M, Somerville GG. Promovision: designing a capacity-building program to strengthen and expand the role of promotores in HIV prevention. *Health Promotion Practice.* 2006; 7:444–449. [PubMed: 16840772]
- Rodriguez-Martos Dauer A, Santamarina Rubio E, Martinez Gomez X, et al. Identificación precoz e intervención breve en lesionados de tráfico con presencia de alcohol: primeros resultados [Early identification and brief intervention in alcohol-related traffic casualties: preliminary results]. *Adicciones.* 2003; 15:191–202.
- Schulte MT, Ramo D, Brown SA. Gender Differences in Factors Influencing Alcohol Use and Drinking Progression Among Adolescents. *Clin. Psychol. Rev.* 2009; 29:535–547. [PubMed: 19592147]
- Schulz KF, Altman DG, Moher D. CONSORT 2010 Statement: Updated Guidelines for Reporting Parallel Group Randomized Trials. *Ann. Intern. Med.* 2010; 152:726–732. [PubMed: 20335313]
- Sen, Iyer A, Mukherjee C. A methodology to analyse the intersections of social inequalities in health. *J. Hum. Dev. Capabil.* 2009; 10:397–415.
- Sobell, LC., Sobell, MB. Timeline Follow-Back: a technique for assessing self-reported alcohol consumption. In: Litten, RZ., Allen, JPs, editors. *Measuring Alcohol Consumption: Psychosocial and biological methods.* Totowa, NJ: Humana Press; 1992. p. 41-72.
- Spirito A, Monti PM, Barnett NP, Colby SM, Sindelar H, Rosenow DJ, Myers M. A randomized clinical trial of a brief motivational intervention for alcohol-positive adolescents treated in an emergency department. *J Pediatr.* 2004; 145:396–402. [PubMed: 15343198]
- Tanner-Smith EE, Lipsey MW. Brief alcohol interventions for adolescents and young adults: A systematic review and meta analysis. *J. Subst. Abuse. Treat.* 2015; 51:1–18. [PubMed: 25300577]
- Treno AJ, Alaniz ML, Gruenewald PJ. Drinking among U.S. Hispanics: A Multivariate Analysis of Alcohol Consumption Patterns. *Hisp. J. Behav. Sci.* 1999; 21:405–419.
- Tripodi SJ, Bender K, Litschge C, Vaugh MG. Interventions for reducing adolescent alcohol abuse: A meta-analytic review. *Arch Pediatr. Adolesc. Med.* 2010; 164:85–91. [PubMed: 20048247]
- United States Census Bureau. American Community Survey. Washington, DC: 2012. Archived by WebCite® at <http://www.webcitation.org/69ifuxgD2> [Accessed: 2012-08-06]
- Vaeth PAC, Caetano R, Mills BA, Rodriguez LA. Alcohol-related social problems among Mexican Americans living in U.S.-Mexico border and non-border areas. *Addict. Behav.* 2012; 37:998–1001. [PubMed: 22564755]
- Vasquez MJT. Cultural differences and the therapeutic alliance: an evidence-based analysis. *The American Psychologist.* 2007; 62:878–885.
- Vaughan EL, Wong YJ, Middendorf KG. Gender roles and binge drinking among Latino emerging adults: a latent class regression analysis. *Psychol. Addict. Behav.* 2014; 28:719–726.
- Wallisch, LS. 1996 Survey of Substance Use on the Texas–Mexico Border and in Colonias. Full report. Austin, TX: Texas Commission on Alcohol and Drug Abuse; 1998.
- Wallisch LS, Spence RT. Alcohol and drug use, abuse, and dependence in urban areas and colonias of the Texas–Mexico border. *Hisp. J. Behav. Sci.* 2006; 28:286–307.
- White HR, Labouvie EW, Papadaratsakis V. Changes in Substance use during the Transition to Adulthood: A Comparison of College Students and Their Noncollege Age Peers. *J. Drug Iss.* 2005; 35:281–306.

Figure 1.
Screening, recruitment and follow-up rates

Table 1

Demographic characteristics, alcohol quantity and frequency, and consequences at baseline, by gender, among enrollees randomized to assessment-only or intervention status

	Female N=270 (43.7%)	Male N=348 (56.3%)	p-Value
Age (mean, sd)	23.9 (3.4)	24.1 (3.5)	0.480
Born in the U.S. (%)	76.7	81.6	0.155
Language spoken at home (%)			
Spanish	30.0	30.2	0.973
English	28.6	27.7	
Both	41.4	42.1	
Emergency Department visit related to injury (%)	24.8	44.5	0.000
Alcohol within 6 hours of injury or medical problem related to ED visit (%)	10	20.4	0.000
<i>Primary Outcomes</i>			
# of days of binge drinking (mean, sd)	1.7 (2.4)	4.0 (5.0)	0.000
Any RAPS4, last 3 months (%)	55.6	41.1	0.128
<i>Secondary outcomes (last 28 days)</i>			
# of drinking days/week (mean, sd)	1.0 (1.0)	1.3 (1.4)	0.000
Average # of drinks/drinking day (mean, sd)	4.8 (3.7)	7.1 (5.1)	0.000
Maximum drinks/drinking day (mean, sd)	6.4 (5.2)	10.2 (8.3)	0.000
SIPS count (mean, sd)	3.0 (3.9)	4.8 (4.7)	0.003

Differences in drinking outcomes and alcohol-associated consequences at 12 months, by gender and group assignment

Table 2

Outcomes	Group assignment:	B	95%CI	p value	Gender:	B	95%CI	p value
#binge days per month		0.900	1.043, 0.757	0.169		0.183	0.038, 0.328	0.000
mean #DD* per week		0.839	0.751, 0.927	0.000		1.295	1.205, 1.384	0.000
mean #drinks per DD*		0.807	0.663, 0.952	0.009		1.513	1.364, 1.663	0.000
max drinks per DD*		0.764	0.591, 0.938	0.008		1.593	1.414, 1.772	0.000
#SIPS 3 consequences		1.197	1.064, 1.270	0.028		0.730	0.604, 0.855	0.000

Reference group=assessment only

Reference group=female

Drinking outcomes at 12-month follow-up, for assessment-only and intervention groups, within gender

Table 3

	<i>Female</i>		<i>Male</i>		<i>p-value</i> [*]
	Assessed N=119	Intervention N=96	Assessed N=124	Intervention N=134	<i>p-value</i> [*]
<i>Primary outcomes</i>					
# of days of binge drinking (mean, sd)	1.52 (3.30)	0.85 (2.17)	3.30 (4.75)	1.88 (3.28)	.003
Any RAPS4, last 3 months (%)	52.48	51.16	59.93	58.33	NS
<i>Secondary outcomes</i>					
# of drinking days/week (mean, sd)	0.76 (1.03)	0.45 (0.91)	5.94 (5.80)	4.34 (5.27)	.014
# of drinks/drinking day (mean, sd)	2.20 (2.55)	1.32 (2.05)	3.93 (3.20)	3.62 (3.41)	NS
Maximum drinks (mean, sd)	3.21 (3.81)	1.93 (3.11)	6.23 (5.89)	5.61 (6.29)	NS
SIPS count (mean, sd)	0.66 (1.69)	0.85 (2.19)	2.01 (2.87)	1.28 (2.65)	.002

^{*} All continuous measures were log transformed for t-test; Chi-square test was used for RAPS4+positive

Table 4

GEE model coefficients [†] for changes in drinking variables and consequences between BL and 12 months follow-up, adjusting for age, national origin, injury as reason for ED visit, and drinking within 6 hours of event that precipitated the ED visit.

FEMALE (n=215)	Time effect (BL to 12-mo)	95% CI	Interaction effect (time × group)	95% CI
<i>Primary Outcomes</i>				
# of days of binge drinking	0.638 ***	0.399, 0.878	1.200	0.852, 1.683
# RAPS4, last 3 months	-0.422 *	-0.566, -0.279	0.065	-0.164, 0.293
<i>Secondary Outcomes</i>				
# of drinking days/week	-0.140 **	-0.240, -0.040	0.865 ***	0.761, 0.984
# of drinks/drinking day	-0.717 *	-0.893, -0.540	0.735 ***	0.550, 0.982
Maximum # drinks	-0.785 *	-0.991, -0.580	0.760 ***	0.588, 0.981
SIPS count	-0.754 *	-0.933, -0.575	1.133	0.866, 1.484
MALE (n=258)				
<i>Primary Outcomes</i>				
# of days of binge drinking	0.000	-0.000, 0.000	0.000	-0.000, 0.000
# RAPS4, last 3 months	-0.364 *	-0.546, -0.182	-0.110	-0.361, 0.142
<i>Secondary Outcomes</i>				
# of drinking days/week	0.066	-0.058, 0.189	0.844 ***	0.717, 0.995
# of drinks/drinking day	-0.596 *	-0.773, -0.419	0.950	0.762, 1.217
Maximum # drinks	-0.609 ***	-0.821, -0.396	0.903	0.676, 1.207
SIPS count	-0.523 *	-0.701, -0.345	0.782 ***	0.614, 0.996

* <.001

** <.01

*** <.05

[†] All outcomes except RAPS4 analyzed using LN values; reported as L'Beta estimates (exponentiated)