

12-1-2023

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Recommended Citation

Bridget Freisthler, Joselyn Sarabia, and Jennifer Price Wolf. "Using ecological momentary assessments to understand how drinking during special occasions relates to parenting behaviors" *Alcohol: Clinical and Experimental Research* (2023): 2343-2353. <https://doi.org/10.1111/acer.15206>

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RESEARCH ARTICLE



Using ecological momentary assessments to understand how drinking during special occasions relates to parenting behaviors

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Funding information

Ohio State University Office of Research COVID-19 Seed Grant Program

Abstract

Background: Drinking on special occasions (e.g., Super Bowl, Christmas) often results in more alcohol consumed. Further, police often report higher levels of crime, such as assaults and domestic violence, on days of major sporting events (e.g., Super Bowl, World Cup). Yet, drinking behaviors of parents during special occasions or large sporting events have not been assessed for their effects on parenting behaviors. Here, we assess the relationship between drinking during the Super Bowl and on Valentine's Day to determine whether they differ.

Methods: Participants, recruited from social media, completed a 40-min baseline survey and 14 days of three daily Ecological Momentary Assessments (EMAs) about parenting. Two hundred fifty-five participants (with 684 EMAs) were enrolled on the Super Bowl and 184 (492 EMAs) were enrolled on Valentine's day. Measures of parenting include aggressive, punitive, and nonpunitive discipline and positive techniques. Drinking was assessed on days 7 and 14 of the EMA and corresponded to the EMA time frame during the previous week. Participants were largely White, well-educated mothers. Data were analyzed using multilevel logistic regression models.

Results: Parents who reported drinking on the day of the Super Bowl were more likely to use aggressive discipline (OR=2.560; 95% CI: 1.308, 5.150) and punitive parenting (OR=2.701; 95% CI: 1.394, 5.257) during the time that drinking occurred. In contrast, parents who reported drinking on Valentine's Day were less likely to use aggressive discipline (OR=0.197; 95% CI: 0.077, 0.502).

Conclusions: The differential relationship between drinking and parenting measures could be the result of differing norms or differences in who is present during the special occasions studied here. Identifying and understanding how alcohol use on special occasions contributes to parenting could help to create environments that are most conducive to positive parenting behaviors and reduce harms related to harsh or aggressive parenting.

KEYWORDS

alcohol use, ecological momentary assessment, parenting, special occasion drinking, Super Bowl

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INTRODUCTION

There are several events and occasions throughout the year where an individual may consume alcohol, but this atypical alcohol use does not get reported on surveys (Bellis et al., 2015; Lloyd et al., 2013). Some of these special occasions (e.g., New Year's Eve, funerals) are often opportunities to gather with friends and families to celebrate or commiserate while enjoying each other's company and providing support (Bellis et al., 2015). Other special occasions may be around specific high profile sporting events, such as the Super Bowl or the World Cup. These events may have different norms and traditions around alcohol use that may shape behaviors, including parenting. Lack of documentation of drinking that occurs during special occasions, leading to an underestimation of likely volume consumed (Bellis et al., 2009; Nelson et al., 2010; Stockwell et al., 2008). This underestimation ranges from around 30% in the United States (Nelson et al., 2010) to 80% in Australia (Stockwell et al., 2008). These differences could occur because most survey measures on alcohol use are capturing typical or routine drinking behaviors (Bellis et al., 2015; Lloyd et al., 2013).

Drinking on special occasions

Individuals drink during a range of special occasions, where their drinking behaviors may differ. These include nights before public holidays (Lloyd et al., 2013), sporting events (Trendl et al., 2021), or at infrequent special events (e.g., bachelor/ette parties; American Addiction Centers, 2023). Much of what has been studied about special occasion drinking focuses on college-aged young adults and events specific to that age, such as homecoming, 21st birthday celebrations, spring break, and graduations (Neighbors et al., 2007). Among this age group, approximately 20% of drinking days are unplanned (Stevens et al., 2021). Examining posts from social media, festivals, holidays (including Christmas), and parties were the most common special occasion drinking events, with fewer depictions of alcohol use on Valentine's day (Phan et al., 2019). To date, little is known about drinking on special occasions and parenting behaviors. Parents who only drink on special occasions may experience more impairments to their parenting (Kepple et al., 2022), but this relationship may differ due to the type of special occasion.

Sporting events as a unique case of special occasion drinking

Domestic violence (primarily intimate partner violence) appears to occur more often on the days of major sporting events, including tournaments like the FIFA World Cup and NFL Super Bowl (Forsdike et al., 2022; Gantz et al., 2006; Kirby et al., 2014). In England, on days when the national team played in the World Cup soccer tournament, significantly more domestic violence incidents were reported to police compared to nontournament days (Kirby et al., 2014). Similarly,

one study reports a significant increase in domestic violence police dispatches on Super Bowl game days across 5 years and 15 cities in the United States (Gantz et al., 2006).

This relationship between professional sporting events and violence further extends to include nontournament events among sports like soccer, rugby, and American football (Forsdike et al., 2022). Soccer and rugby matches in Cardiff, Wales were related to significantly more assault incidents seen by emergency departments when the home team won and there were no differences in these assault-related visits for home and away games (Sivarajasingam et al., 2005). This may suggest that there is little to no difference in violent incidents related to attending a sporting event and viewing it on television (Sivarajasingam et al., 2005). Further, an increase in domestic violence reports to police in Glasgow, Scotland, was related to traditional local rivalry matches and particularly important nonrivalry matches that were televised (Dickson et al., 2016). Similar associations are found between American professional football and domestic violence as well (Adubato, 2016; Card & Dahl, 2011; Gantz et al., 2006), with upset losses being of specific concern and heightened for more meaningful games (Card & Dahl, 2011).

These sporting events include an element of violence that some theorize, via social learning theory, results in "copycat" violent behavior in the home (Adubato, 2016; Kirby et al., 2014). Sporting culture promotes and normalize a violent behavior as an important component of the game (Clark, 2017). Realistically, however, this relationship is likely more complex than directly resulting from sports that are more violent in nature (Ostrowsky, 2018). Other sports-related factors that could create conditions more conducive to violence could include perceived importance of the game (Card & Dahl, 2011; Dickson et al., 2016; Ostrowsky, 2018), crowd conditions (Ostrowsky, 2014, 2018), and whether gambling is involved (Swallow, 2017).

Alcohol use related to major sporting events has been previously established in empirical literature (Kingsland et al., 2016; Lloyd et al., 2013; Nelson & Wechsler, 2003; Ostrowsky, 2014, 2018; Pennay et al., 2023) and associated with domestic violence (Foran & O'Leary, 2008; Langenderfer, 2013; Wilson et al., 2014). There are multiple social and contextual factors that may influence risky drinking behavior in relation to sporting events (Pennay et al., 2023). Using ecological momentary assessments, a study in Australia found that single occasions of risky drinking were more likely when football games occurred in the early afternoon (before 3 PM), viewed in a stadium or pub, and among friends (Pennay et al., 2023). However, evidence specific to the relationship between alcohol use and violent behaviors among sports fans is limited and inconsistent (Ostrowsky, 2018). Similar to the sports-related factors mentioned above, sociocultural, event/venue, policing, and crowd variables could potentially influence sports fan violence and offer one explanation for the inconsistent findings regarding the role of alcohol use (Ostrowsky, 2018). Further, the specific relationship between alcohol use, major sporting events, and domestic violence has been explored in one study that only found a significant increase in reported domestic violence when alcohol was involved on the

days that England won in the national soccer tournament (Trendl et al., 2021). Given literature suggesting that violence increases with both attending and viewing televised athletic events (Sivarajasingam et al., 2005), alcohol may be a common denominator that can be consumed in multiple contexts and potentially elevate risk.

To date, this relationship between drinking and aggression-related sporting events has largely been studied for men (Foran & O'Leary, 2008; Langenderfer, 2013; Wilson et al., 2014). Mothers, who largely remain the primary caregivers for children especially during the pandemic (Dunatchik et al., 2021), may exhibit similar aggressive behaviors when drinking alcohol while watching aggressive sports. Further, alcohol use among mothers and fathers is a known risk factor for use of physical abuse (Stith et al., 2009) and corporal punishment (Freisthler & Gruenewald, 2013; Price Wolf & Dellor, 2019).

Special occasions, drinking context, and harsh parenting

The relationship of special occasions, regardless of drinking behaviors, to "harsh" parenting (e.g., spanking, hitting, yelling, or name calling; Chang et al., 2003) is largely unknown. Drake and Pandey (1996) examined the relationship of official rates of child abuse and neglect during days that held major sporting events, finding no relationship. There are known "seasonal" effects for reports of child abuse and neglect, largely before or immediately after school breaks as teachers are mandated reporters (Sedlak, 2001). Of note, Drake and Pandey (1996) focused on reports of possible male-perpetrated abuse and neglect for investigation by the child welfare system, limiting the reach of the findings as who is often reported for abuse or neglect is biased toward low-income people of color. In contrast, in this study, we focus on self-reports of parenting behaviors by mothers and fathers, which occur closer to real-time than when referrals for child welfare investigations may occur. Our investigation also includes behaviors that are less severe than official child abuse or neglect, yet more frequent (Freisthler & Gruenewald, 2013) and also related to negative outcomes for children (Gershoff, 2002). The prevalence of using corporal punishment, including spanking, appears to be about the same among mothers and fathers (Mehus & Patrick, 2021) where approximately one in three mothers use physical discipline (Runyan et al., 2010; Slep et al., 2022).

Where and with whom parents drink, particularly nonroutine drinking, appears to confer different parenting risks. Parents reported that they drink more frequently at family get-togethers, barbecues, or weddings with the idea that parenting would be a shared responsibility among all attendees (Price Wolf & Chávez, 2015). Further, parents who drank at "non-routine" locations were more likely to do so without their child present, with nonroutine locations defined as those that were outside of the activity spaces where the parent conducted most of their daily living (Freisthler et al., 2021). Further drinking at bars, home, or at parties more often is related to more frequent use of physical abuse and

corporal punishment (a form of "harsh" parenting that involves physical punishment; Freisthler, 2011; Freisthler et al., 2014; Freisthler & Gruenewald, 2013; Price Wolf & Dellor, 2019), with greater risks when drinking with a spouse (Price Wolf & Dellor, 2019). Conversely, drinking alcohol while at restaurants is related to less frequent use of physical abuse or corporal punishment (Freisthler et al., 2014; Freisthler & Gruenewald, 2013). Thus, the type of special occasion and where drinking occurs may affect parenting behaviors.

However, most previous work on alcohol use and parenting has not been able to link drinking to specific parenting behaviors, let alone alcohol use on special occasions. Previously, concurrent and preceding alcohol use was not related to aggressive discipline or punitive parenting using Ecological Momentary Assessment (EMA; Freisthler & Price Wolf, 2023). In fact, parents reported less non-punitive parenting during the same time frame as drinking and less positive parenting in the time frame after alcohol use (Freisthler & Price Wolf, 2023). Special occasion drinking, particularly in conjunction with sporting events, may differentially affect parenting behaviors. In this study, we assess the relationship between drinking and parenting during the Super Bowl and on Valentine's day to begin to understand this relationship.

MATERIALS AND METHODS

Sample and study design

We use data from Wave 2 of Central Ohio Family Life Study. Wave 1 was conducted during the initial stay-at-home orders during the COVID-19 pandemic (March–April 2020). We then recontacted the participants in February and March 2021 to participate in the study again. Inclusion criteria for Wave 1 of the study included being a parent or primary caregiver to at least one child between the ages of 2 and 12 years old, having custody of that child for at least 50% of the time, speaking English, and living in a seven county area in Central Ohio. We recruited participants from social media and word of mouth for a longitudinal study that consisted of an online 40 min baseline survey and 14 days of an Ecological Momentary Assessment (EMA) for the initial study. For the EMA, parents were sent a push notification through the Metricwire app at 10 AM, 3 PM, and 9 PM. Parents had up to 4 h to complete the short (<3-min) survey. At the 9 PM survey on days 7 and 14, parents were asked about whether they had consumed any alcohol in the past week.

We consented 343 individuals, with 331 completing at least one activity (taking a baseline survey, downloading the EMA app, completing EMA surveys, or turning on geotracking). We recontacted participants in February 2021 to participate in Wave 2 of the data collection. Over 90% ($n=307$ [of 331]) of our original sample re-engaged with the study and completed at least one study activity in Wave 2 (see Figure 1). Of the 307 remaining, two did not have complete data and 19 participants were not completing EMAs on either special occasion. Participants received \$50 for completing the baseline study, \$1 for each EMA, an additional \$2 on the days where

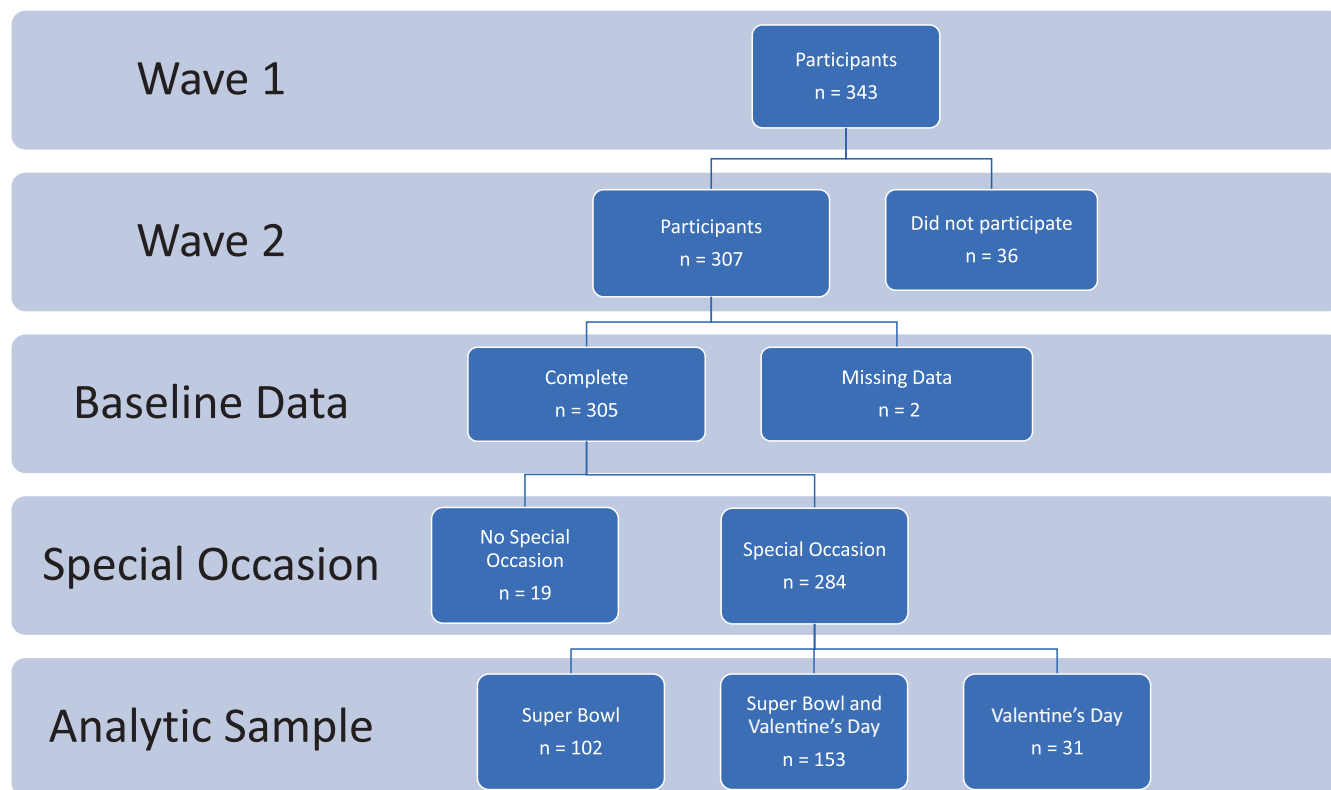


FIGURE 1 Sample disposition for this study.

they completed all three assessments, and another \$10 if participants completed more than 90% of EMAs. Although not used in this study, parents were also asked to provide geotracking data during the 14 days for \$20. Thus, the total incentive of a participant over the course of Wave 2 was \$150. Parents consented to the study via the online baseline survey. Study procedures and protocol were approved by the Institutional Review Board at Ohio State University (ID: 2019B0547).

For this study, we use a subset of parent participants who took the EMAs on the day of the Super Bowl and/or Valentine's day. The total number of EMAs submitted during the day of the Super Bowl was 798. Of those initial EMAs, 84 were not with the focal child during the previous time period, 27 did not have alcohol use data associated with them, and three were for a participant that did provide any demographic data. Thus, for the nonaggressive discipline parenting measures, the final analytic sample for the assessments on the Super Bowl were 684 EMAs from 255 participants (for an average of 2.68 surveys per participant). On Valentine's day, 581 EMAs were completed, with 66 not being with the child during the assessment period and 23 not having alcohol use data, leaving an analytic sample of 492 EMAs from 184 participants (for an average of 2.67 surveys per participant) for positive, punitive, and nonpunitive parenting measures. Aggressive discipline measures were not asked during every EMA; thus, the analytic sample on the day of the Super Bowl was 637 EMAs from 254 participants and for Valentine's day was 420 EMAs from 179 participants. The number of parents who participated during one of the special occasion drinking events

differed due to the nature of the recruitment process where reminders were sent for up to 2 weeks and the need for parents to complete the baseline survey before completing the brief EMAs.

Table 1 presents the demographic characteristics of participants for the Super Bowl and the participants who responded on Valentine's day. We also show data for those participants who did not complete an EMA on either of our special occasions. Our sample is largely White, married, or living in a marriage-like relationship, well-educated mothers who had an average of two children. Alcohol use occurred during 6.3% of the EMAs when children were present on the day of the Super Bowl and 8.9% of assessments when children were present on Valentine's Day.

Measures

The primary dependent variables are parenting measures related to different types of parenting behaviors (positive, punitive, nonpunitive, and aggressive discipline). For parents who had more than one child aged 2–12, we identified a focal child. The focal child was the child who had the most recent birthday. Parents responded to parenting questions thinking about their own parenting behaviors for the focal child during the specified time frame (i.e., since the last time they took the EMA). If parents indicated that they had been with the focal child since the last assessment, they were asked about six different parenting behaviors. Nonpunitive, punitive, and aggressive discipline items were obtained from the Dimensions of

TABLE 1 Descriptive statistics by special occasion (Super Bowl, Valentine's day, or neither).

	Super Bowl	Valentine's day	Neither
	Mean (SD) or % (n)	Mean (SD) or % (n)	Mean (SD) or % (n)
Dependent variable (Level 1)			
Aggressive parenting			
Yes	2.8 (18)	4.0 (17)	5.4 (4)
No	97.2 (619)	96.0 (403)	94.6 (70)
Punitive parenting			
Yes	4.2 (29)	5.4 (29)	7.0 (6)
No	95.8 (655)	94.1 (463)	93.0 (80)
Nonpunitive parenting			
Yes	37.6 (257)	37.8 (186)	33.7 (29)
No	62.4 (427)	62.2 (306)	66.3 (57)
Positive parenting			
Yes	75.4 (516)	77.4 (381)	81.4 (70)
No	24.6 (168)	22.6 (111)	18.6 (16)
Event-level variables (Level 1)			
Alcohol use			
Yes	6.3 (43)	8.9 (44)	5.2 (5)
No	93.7 (641)	91.1 (448)	94.8 (91)
Individual characteristics (Level 2)			
Parent characteristics			
Parent gender			
Female	93.7 (239)	92.9 (171)	78.9 (15)
Male	6.3 (16)	7.1 (13)	21.1 (4)
Parent age	37.72 (5.71)	37.59 (5.70)	36.56 (7.4)
Marital status			
Married or living in a marriage-like relationship	87.8 (224)	89.1 (164)	68.4 (13)
Single/widowed/divorced	12.2 (31)	10.9 (20)	31.6 (6)
Parent education			
≤High school diploma	2.0 (5)	2.2 (4)	10.5 (2)
Some college	17.3 (44)	17.9 (33)	31.6 (6)
Bachelor degree	36.9 (94)	33.2 (61)	21.1 (4)
Graduate degree	43.9 (112)	46.7 (86)	36.8 (7)
Child characteristics			
Child biological sex			
Female	43.1 (110)	46.7 (86)	47.4 (9)
Male	56.9 (145)	53.3 (98)	52.6 (10)
Focal child age	6.02 (2.97)	5.68 (3.00)	7.32 (3.15)
Child race/ethnicity			
Caucasian/White	80.4 (205)	80.4 (148)	73.7 (14)
African American/Black	10.2 (26)	10.9 (20)	10.5 (2)
Other race or ethnicity	9.4 (24)	8.7 (16)	15.8 (3)
Family characteristics			
Number of children	2.13 (0.93)	2.07 (0.90)	2.32 (1.38)
Number of adults	1.97 (0.46)	1.97 (0.47)	2.05 (0.52)

Discipline scale (Straus & Fauchier, 2007). The punitive and nonpunitive scales each contained 13 items. For positive parenting behaviors, we use subsets of items from the HOME Survey (nonobservational items), Alabama Parenting Scale, and the Active Parenting surveys. These scales show good reliability and validity (Essau et al., 2006; Jespersen et al., 2021; Totsika & Sylva, 2004). We include these measures because they reflect a continuum of parenting that is not just about discipline (e.g., I give my full attention to my child when she talks to me). Two items each for positive, nonpunitive, and punitive parenting were randomly assigned to one of 42 blocks of questions. Those blocks were then presented in a randomized order for each participant. Our aggressive discipline measure is comprised of items relating to corporal punishment and psychological aggression subscales of the punitive parenting scale. We dichotomized our outcomes measures such that “1” indicated that they reported type-specific parenting behavior (e.g., answered “yes” to a positive parenting behavior) during the assessment time period. We also included the full scales in the baseline survey completed by the participants. We then created dichotomous measures from those items that indicated whether a parent used aggressive, punitive, or nonpunitive discipline weekly over the past year for sensitivity analyses.

Alcohol use was our primary independent variable. Parents were asked about drinking during the past week on the 7th and 14th days of the EMAs during the 9 PM assessment (see Figure 2). We use the timeline follow back method of reporting substance use, where 7-day recall has shown more frequency of drinking than 30 recall (Hoeppner et al., 2010).

If they reported drinking, we asked them to check the days on which they drank. For each day, they were asked to provide the time frame in which they drank. These time frames corresponded with the EMA timeframes, allowing us assess alcohol use and parenting behaviors occurring concurrently.

We control for a number of sociodemographic variables in this study. Both parent and child age are continuous variables denoted by number of years. We include gender as female or male. We had no individuals who identified as nonbinary and one individual who identified as transgender male, and is identified as male in the analysis. For marital status, we dichotomize as those who are married or living in a marriage-like relationship compared to those who are

single, divorced, or widowed. We also include level of education as a covariate, where we have separate indicators for those who have a bachelor's degree, those who have a graduate degree, compared to those with less than a bachelor's degree. This was a highly educated sample with about 80% of participants having at least one 4-year college degree. Child characteristics included gender (male or female) and race (White compared to nonWhite), in addition to child age. We also included the number of children and number of adults in the household, both as continuous variables.

Data analysis

We analyzed attrition using chi-square analyses for categorical variables and independent t-tests for continuous variables. We conducted multilevel logistic models to analyze the relationship of alcohol use to parenting behaviors on Valentine's day and on Super Bowl Sunday. Multilevel models are appropriate here because we have observations (from the EMA) nested within individuals. Further, multilevel modeling is ideal for unbalanced data (i.e., not all individuals have the same number of longitudinal time points) which is the case in our study (Raudenbush, 1993; Tibon & Levy, 2015; Volpert-Esmond et al., 2018).

Level 1 included up to three observations per participant and included information about whether they were with their child since the last survey, parenting behaviors (if they were with their child), and alcohol use. Variables at the individual, child and family level (Level 2) were included as covariates and described above. We used the Benjamini-Hochberg procedure to decrease false discovery rates as a way to adjust for the multiple comparisons we have in this study (Benjamini & Hochberg, 1995). Thus, we use a stricter p -value ($p < 0.038$) to denote statistical significance, as we assume a false discovery rate at 0.20. We conducted two sets of sensitivity analyses. In the first, we conduct analyses with only mothers in our study to see if the results were unduly affected by fathers. For the second, we included a measure of parenting behavior on the same type of parenting behavior being analyzed. In other words, we used baseline weekly use of aggressive discipline in the models where aggressive discipline was the outcome. We did not include these analyses for

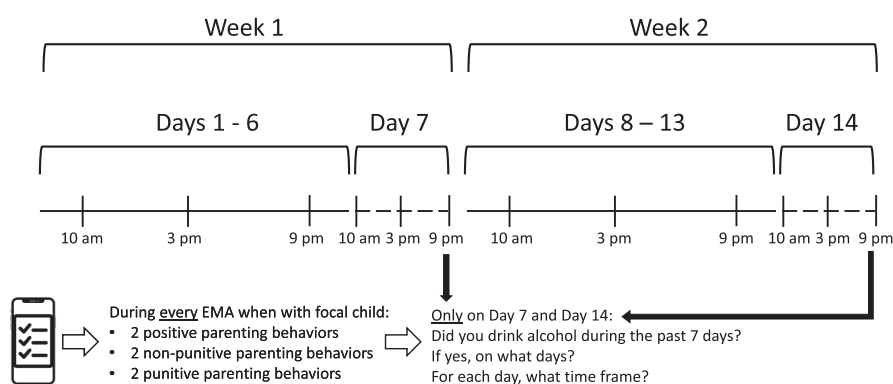


FIGURE 2 Data collection schedule for daily EMAs and weekly alcohol timeline follow back measures.

positive parenting behaviors as 100% of our sample reported using those behaviors weekly.

RESULTS

Attrition analysis

Among those individuals who did not participate in Wave 1, we found no significant differences by parent gender, marital status, child gender, parent age, kid age, number of children in the home, or number of adults in the home. We did find significant differences by education (fewer individuals with advanced degrees) and by child race (fewer White children).

Super Bowl

Table 2 shows the relationship between alcohol use and parenting that occurred during the same assessment on the day of the Super Bowl. Parents who reported drinking on the day of the Super Bowl were more likely to use aggressive discipline (OR=2.560; 95% CI: 1.308, 5.150) and punitive parenting (OR=2.701; 95% CI: 1.394, 5.257) during the time frame that drinking occurred. Alcohol use was not related to nonpunitive (OR=0.796; 95% CI: 0.397, 1.596) or positive parenting (OR=0.788; 95% CI: 0.407, 1.526) behaviors. In addition to alcohol use, more adults in the family were related to higher odds of aggressive and punitive discipline and boys had higher odds of punitive parenting. Older children had lower odds of being disciplined with nonpunitive parenting techniques.

Valentine's day

In contrast to the Super Bowl, Table 3 indicates that parents who reported drinking on Valentine's Day were less likely to use aggressive discipline (OR=0.197; 95% CI: 0.077, 0.502). Alcohol use was not related to punitive (OR=0.504; 95% CI: 0.200, 1.272), nonpunitive (OR=1.087; 95% CI: 0.557, 2.119) or positive parenting (OR=0.690; 95% CI: 0.354, 1.348) behaviors. Older children had lower odds of all types of parenting behaviors on Valentine's day and parents were less likely to use positive parenting behaviors with boys.

Sensitivity analyses

When looking at only mothers in our survey, our main findings related to alcohol use are similar for alcohol use during the Super Bowl (see Table S1) and on Valentine's day (see Table S2). Sensitivity analyses that included a baseline measure of weekly parenting behaviors corresponding to the outcome measure also resulted in similar relationships with alcohol use for the Super Bowl (see Table S3) and on Valentine's day (see Table S4).

DISCUSSION

In this study, we sought to examine how drinking during special occasions was related to different parenting behaviors. This study is notable as it includes reports of parenting behaviors that occur on the day of the special occasion and is largely a sample of women, who have not been studied in this context. As mothers and fathers use corporal punishment, one form of aggressive discipline, at approximately equal rates (Runyan et al., 2010; Slep et al., 2022), drinking on special occasions could affect parenting behaviors among both. No relationship was found between alcohol use and aggressive discipline or punitive parenting when assessing these relationships currently (Freisthler & Price Wolf, 2023). Yet, we know that certain types of violence often co-occur with special events, including large sporting competitions such as the Super Bowl (Forsdike et al., 2022; Gantz et al., 2006).

We identified two special occasion drinking events that occurred during our EMA study on parenting behaviors and alcohol use: Super Bowl and Valentine's Day. Importantly, the characteristics of each event are markedly different. The Super Bowl is a major sporting event and the most-watched television event in the United States (Shea, 2023), where risky behaviors (e.g., gambling, binge drinking) are prevalent (American Gaming Association, 2022; Dearing et al., 2014). Here, it may be more likely that parents and children are together when watching the game, alone as a family or at a larger party. On the other hand, Valentine's day is about celebrating romantic love and loved ones. Parents and other couples may be more likely to have dinner out or intentionally spend time together on this special occasion. Drinking on Valentine's day or "date night" is lower (American Addiction Centers, 2023; Phan et al., 2019). Thus, the parenting conditions are likely to differ on those 2 days. Indeed, we found that drinking on a special occasion was differentially related to use of aggressive parenting by parents.

Previous work examining the relationship between sports and use of aggression have focused primarily on men and theorized that it was the aggressive nature of the sport that increased aggressive and violent behaviors (Adubato, 2016; Clark, 2017; Kirby et al., 2014). However, alcohol use has been found to a factor that may increase the risk of violent behaviors when watching or attending an aggressive sporting event (Foran & O'Leary, 2008; Langenderfer, 2013; Wilson et al., 2014). That our findings appear to be context-specific for alcohol use, where drinking is related to higher odds of using aggressive discipline during the Super Bowl, but lower odds for Valentine's day, suggest that it may be a combination of characteristics of alcohol use (e.g., drinking companions, location of drinking) and norms for the special occasion that might be at play here. As one example, drinking more often at restaurants, which may be more likely to occur on Valentine's day rather than the Super Bowl, is related to less frequent use of corporal punishment and child physical abuse (Freisthler, 2011; Freisthler & Gruenewald, 2013). Interestingly, alcohol use was not to be related to aggressive discipline when studied over a 14-day period (Freisthler & Price Wolf, 2023). Thus, our findings appear

TABLE 2 Logistic multilevel model of alcohol use and parenting behaviors on Super Bowl Sunday (February 7, 2021) for aggressive discipline ($n=637$ events, $n=254$ participants) and punitive, nonpunitive, and positive parenting ($n=684$ events, $n=255$ participants).

	Aggressive discipline		Punitive parenting		Nonpunitive parenting		Positive parenting	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Intercept	0.002	0.001, 0.004***	0.003	0.002, 0.007***	0.543	0.434, 0.680***	3.402	2.775, 4.172***
Event-level characteristics ($n=10,045$)								
Alcohol use	2.560	1.308, 5.150**	2.701	1.394, 5.257**	0.796	0.397, 1.596	0.788	0.407, 1.526
Parent characteristics ($n=302$)								
Female (Reference: male)								
Parent age, in years	0.957	0.831, 1.102	0.885	0.775, 1.011	1.011	0.965, 1.058	1.020	0.978, 1.065
Married (Reference: not married)	0.125	0.012, 1.307	0.166	0.017, 1.578	0.568	0.215, 1.500	1.058	0.438, 2.554
Education (Reference: <college degree)								
Bachelor's degree	3.137	0.349, 28.171	3.674	0.555, 24.310	1.130	0.592, 2.157	0.619	0.341, 1.109
Advanced degree	5.422	0.644, 45.628	6.850	1.056, 44.425	1.083	0.574, 2.044	0.763	0.424, 1.374
Focal child characteristics								
Male (Reference: female)	3.616	0.900, 14.530	4.761	1.409, 16.094*	1.008	0.645, 1.577	0.948	0.636, 1.412
Child age, in years	0.972	0.753, 1.253	0.984	0.782, 1.237	0.854	0.779, 0.935***	0.922	0.851, 0.998
White race (Reference: non-White)	0.759	0.753, 1.253	1.414	0.327, 6.114	0.842	0.481, 1.476	1.067	0.642, 1.774
Family characteristics								
Number of children <18 years	1.340	0.641, 2.803	1.795	0.991, 3.250	1.055	0.816, 1.364	0.849	0.679, 1.060
Number of adults	7.945	2.177, 28.993**	7.661	2.174, 26.990**	1.045	0.548, 1.993	0.636	0.364, 1.113

* $p < 0.038$; ** $p < 0.01$; *** $p < 0.001$.

to be event-specific for the Super Bowl. This is the first time that the link between alcohol use and aggression has been found for parenting behaviors during a major sporting event and among a sample of primarily women.

We saw a different relationship between drinking and parenting on Valentine's Day. Alcohol use was related to lower odds of using aggressive discipline, and not related to any other type of parenting behavior. Here, although the rate of alcohol use is similar, the quantity of alcohol consumed might be lower on Valentine's day (American Addiction Centers, 2023) or parents be engaging in some harm reduction behaviors (e.g., having a babysitter when going to dinner with a significant other) that reduced the likelihood of aggressive discipline.

This differential relationship between alcohol use and parenting behaviors could be the result of the differing norms for the special occasions studied here. For example, on the day of the Super Bowl, parents might be much more interested in watching the game, which is more aggressive and violent than some other sports may be. Children who might be playing loudly or running around, including in front of television, might irritate parents. In response, parents might speak harshly or physically discipline their child(ren). In contrast, Valentine's day does not contain a specific event during which parents might be stressed; in addition, parents could have reduced time with children may result in a lower likelihood of using aggressive parenting behaviors.

Another contributing factor may be whether and what additional people are present during the drinking event. Parents drinking during the Super Bowl may be doing so at a party with other friends

and family members present, changing the dynamic of the environment. Social companionship support (i.e. the type of friendships that involve socializing) is related to more frequent use of physical abuse (Freisthler et al., 2014) and may also influence risky drinking behavior (Pennay et al., 2023). Valentine's day celebrations may be more likely to involve the couple and possibly their child(ren). Although not measured here, the mechanisms at play could be the amount of alcohol a person drinks and where they drink. These are important questions to be answered in future research. Special occasion drinking is often missed when people respond about their typical drinking behaviors and may account for up to 30%–80% additional drinking volume (Bellis et al., 2009; Nelson et al., 2010; Stockwell et al., 2008).

Drinking during the Super Bowl is likely to occur at your own home, parties in your home or at other people's homes, or at a sports bar. Parents who drink in these venues are more likely to use physical abuse and/or corporal punishment, forms of aggressive discipline (Freisthler, 2011; Freisthler et al., 2014; Freisthler & Gruenewald, 2013). For the Super Bowl, drinking could occur throughout the afternoon, increasing the likelihood of intoxication. A higher continued volume of alcohol is related to more frequent use of corporal punishment (Freisthler & Gruenewald, 2013). Parents who celebrate Valentine's day may choose to have dinner at a restaurant where they may have one or two drinks. Drinking at restaurants are negatively related to use of physical abuse and corporal punishment (Freisthler & Gruenewald, 2013). Thus, the confluence of the norms related to the special occasion, who is present at the celebration or event, how much they drink, and where they drink

TABLE 3 Logistic multilevel model of alcohol use and parenting behaviors on Valentine's day (February 14, 2021) for aggressive discipline ($n=420$ events, $n=179$ participants) and punitive, nonpunitive, and positive parenting ($n=492$ events, $n=184$ participants).

	Aggressive discipline		Punitive parenting		Nonpunitive parenting		Positive parenting	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Intercept	0.002	0.001, 0.006***	0.012	0.007, 0.022***	0.549	0.431, 0.700***	4.029	3.115, 5.210***
Event-level characteristics ($n=10,045$)								
Alcohol use	0.197	0.077, 0.502***	0.504	0.200, 1.272	1.087	0.557, 2.119	0.690	0.354, 1.348
Parent characteristics ($n=302$)								
Female (Reference: male)	1.062	0.049, 23.075	0.541	0.087, 3.348	0.477	0.191, 1.187	0.622	0.209, 1.853
Parent age, in years	0.941	0.805, 1.101	1.000	0.900, 1.112	1.010	0.963, 1.060	1.011	0.960, 1.065
Married (Reference: not married)	0.425	0.017, 10.923	0.334	0.042, 2.629	0.358	0.124, 1.028	1.146	0.388, 3.391
Education (Reference: <college degree)								
Bachelor's degree	1.377	0.137, 13.799	0.421	0.095, 1.875	1.267	0.637, 2.519	0.660	0.317, 1.370
Advanced degree	1.148	0.121, 10.898	0.645	0.163, 2.560	0.836	0.433, 1.613	0.906	0.454, 1.807
Focal child characteristics								
Male (Reference: female)	0.783	0.181, 3.399	1.075	0.385, 3.004	0.942	0.591, 1.502	0.508	0.308, 0.838**
Child age, in years	0.640	0.422, 0.971*	0.772	0.611, 0.975*	0.804	0.729, 0.887***	0.907	0.825, 0.997
White race (Reference: non-White)	3.232	0.368, 28.411	0.743	0.206, 2.679	0.737	0.408, 1.330	1.190	0.636, 2.228
Family characteristics								
Number of children <18 years	0.614	0.219, 1.725	0.902	0.483, 1.687	1.042	0.792, 1.371	0.962	0.726, 1.276
Number of adults	3.896	0.858, 17.698	1.927	0.582, 6.381	0.873	0.441, 1.730	0.901	0.466, 1.744

* $p < 0.038$; ** $p < 0.01$; *** $p < 0.001$.

may all contribute to the whether aggressive or punitive discipline is used by parents.

Understanding when drinking during special occasions can lead to greater use of aggressive discipline and can lead to harm reduction strategies that could mitigate harsh parenting. For instance, during the Super Bowl, parents might consider hiring a babysitter during the game, planning a playdate, consider alternative activities for children who may be too young to watch the game, or provide a different place for children to watch the game with someone who is supervising them. As the risk is lower on Valentine's day, knowing more about where, when, and with whom drinking occurs may provide insight in other ways to reduce aggressive discipline. What is unique about this study is that both these occasions occurred on a Sunday and 1 week apart from each other. This addresses potential concerns about the drinking behaviors differing by the day of the week.

The lack of representativeness in our sample and small sample sizes are limitations of our study. Our sample was largely White well-educated mothers which limits our ability to generalize to other individuals. Both aggressive discipline and alcohol use are relatively rare events compared to other types of parenting behaviors. Due to the low base rates in both our primary independent and outcome measures, there could be instability in the models. We conducted a variety of sensitivity analyses to assess whether different specifications of the model would result in changes to the results. We found no differences in our findings related to alcohol use for any of those sensitivity analyses. Replication of these findings in more diverse and larger samples are needed to test the robustness of the findings.

We did not ask parents key questions about the drinking event, including how much they drank, who they were with, and where they were drinking. This microcontext information might better inform the differences in parenting that we observed during each drinking event. Further, we also know whether aggressive or punitive parenting happened during the same time period as the drinking, we do not know if one immediately preceded the other or if alcohol use was a precipitating event for specific types of parenting. Future work that addresses these limitations will enable the development of harm reduction strategies that support use of positive parenting techniques during times when parents are celebrating special events or consuming alcohol during other occasions that differ from their regular routines.

CONCLUSIONS

Examining special occasion drinking on parenting behaviors confers additional knowledge about those contexts where alcohol use may present additional risks. This remains significant as the difference in alcohol sales and drinking behaviors can be partially accounted for with understanding atypical or special occasion drinking (Bellis et al., 2015). For parents, we find alcohol use during the Super Bowl or on Valentine's day was differentially related to use of aggressive discipline. To the extent that we can identify and examine those special occasions where alcohol use might contribute to parenting could help us create environments that are most conducive to engaging in

positive parenting and reducing harms related to harsh or aggressive parenting.

FUNDING INFORMATION

This work was supported by The Ohio State University Office of Research COVID-19 Seed Grant program.

CONFLICT OF INTEREST STATEMENT

None.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Freisthler, B., Sarabia, J. & Price Wolf, J. (2023) Using ecological momentary assessments to understand how drinking during special occasions relates to parenting behaviors. *Alcohol: Clinical and Experimental Research*, 47, 2343–2353. Available from: <https://doi.org/10.1111/acer.15206>