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The Influence of Parental Marital Status on Teen Drinking Outcomes

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ABSTRACT

The study examines the influence of parental marital status on teen drinking outcomes (parent-teen communication, teen drinking frequency, teens' alcohol-related consequences, and teen-perceived parental permissiveness). Participants included 160 parent-teen dyads who engaged with the *REAL Parenting* (RP) application, a pilot trial intervention designed to provide parents with information and advice about teen alcohol use. The app included brief videos and text designed to prevent alcohol outcomes among teens, and the app tracked parent interaction with the material. Parents (M_{age}=45.64 [*SD*=7.18]; 52.5% female; 11.3% Hispanic; 47.5% White; 12.5% Black; 5.0% Other; 1.3% two or more races) and teens (M_{age}=16.31 [*SD*=0.95]; 51.9% female; 25.6% Hispanic; 73.1% White; 18.8% Black or African American; 2.5% American Indian or Alaskan Native; 7.5% Asian; 0.0% Native Hawaiian or Pacific Islander; 4.4% Mixed) completed an initial survey (T1) and a follow-up survey 3 months later (T2). Teens completed 3 additional surveys at 3-month intervals (T3, T4, T5). Parents were grouped together by whether they were married (*n*=126; 78.8%) or unmarried (*n*=34; 21.3%). Parents rated the usefulness and interestingness of the app as well as the quality of their communication with their teens about various topics. Teens reported the frequency of their drinking habits, the consequences they experienced from drinking, and their perception of their parents' permissiveness towards drinking. Results indicated that children of unmarried parents experienced significantly greater consequences from drinking than children of married parents. Parental marital status did not influence how parents responded to the RP program, and it did not affect any additional drinking variable outcomes. Future research should target children of unmarried parents for intervention to prevent further adverse health consequences.

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Introduction

Underage drinking is a significant concern throughout the U.S. (Centers for Disease Control and Prevention [CDC], 2017). Nearly one-third (29.8%) of high schoolers consume alcohol according to a 2017 national survey (CDC, 2017). Underage drinking has been associated with numerous adverse academic, social, and health consequences including poor academic performance, misbehaving in school, skipping class, engaging in riskier behaviors, drunk driving, interpersonal violence, poor social and mental health, injuries, and suicides (Lee et al., 1997; Patrick & Schulenberg, 2013; Substance Abuse and Mental Health Service Association [SAMHSA], 2014; 2020; 2022; Waterman et al., 2019).

Parents can have a significant impact on teen drinking (Litt et al., 2020; Maggs & Staff, 2018; Spirito et al., 2015). Numerous factors including parent communication and parenting style (e.g., permissive parenting) influence adolescents' behaviors (Alexopoulos & Cho, 2019; Hinnant et al., 2015; Litt et al., 2020; Spirito et al., 2015; Staff & Maggs, 2019; Zuquetto et al., 2019). Limited research exists on the differences that parental marital status has on parent communication, teen drinking frequency, teens' consequences of alcohol use, and parental permissibility towards drinking. Parental divorce and separation may be a contributing risk for teen drinking frequency, but it is unclear whether underage drinking differences exist between children of married and unmarried parents (Jackson et al., 2016; Waldron et al., 2014). The current study investigates the effects of marital status on parent communication with their teen, teen drinking frequency, teens' consequences experienced from alcohol use, and perceived parental permissiveness towards drinking.

Teen Drinking Frequency

Among those who participated in drinking practices, a majority of drinkers also engaged in binge drinking (Esser et al., 2017; Gilson et al., 2023). Esser and colleagues (2017) define binge drinking as consuming at least five alcoholic drinks on a single occasion for more than one day within 30 days of the study. Although Gilson and colleagues (2023) found that many students did not actually drink at high school senior functions, many students shared the perception that drinking was common. Only about a third of students drank the day-of various functions like prom (33.8%), graduation parties (30.2%), homecoming (26.8%), and other school dances (27.0%), matching the CDC's statistic that 29.8% of high schoolers reported consuming alcohol in 2017 (CDC, 2017; Gilson et al., 2023). Frequent drinking is associated with an increased risk for alcohol-related consequences and health-related risks (O'Malley et al., 1998).

Teen Consequences of Alcohol Use

Teens face many adverse consequences from drinking (Cleveland et al., 2012; Cohen & Rice, 1997; Haas et al., 2019; Lee et al., 1997; Lees et al., 2020; Patrick & Schulenberg, 2013; SAMHSA, 2022; Skala & Walter, 2013; Spear, 2018; Squeglia et al., 2014). Adolescent underage drinking can have adverse effects on the brain and brain structures (including poor neuronal myelination, impaired white matter, poor limbic system functioning, etc.). Disruption of integral neural pathways can lead to poor memory development and critical thinking skills (Lees et al., 2020; Spear, 2018). Increased drinking can lead to other adverse consequences including blackouts, poor social relationships in school, missing class, poor grades, and symptoms of

mental health disorders including depression (Haas et al., 2019; Patrick & Schulenberg, 2013; SAMHSA, 2022; Squeglia et al., 2014).

Parent Communication

Parents' communication with their children about adolescent drinking can reduce underage drinking (Alexopoulos & Cho, 2019; Ford et al., 2018; Hurley et al., 2019; Litt et al., 2020; Spirito et al., 2015; Williams et al., 2010). Parents who speak more frequently with their teens about alcohol-related topics reduce late adolescent drinking and increase protective strategies against drinking (Abar et al., 2011; Litt et al., 2020). Parent-based intervention (PBI) trials are successful at reducing underage alcohol use when the messages are personalized for the parents, and parents are taught specific information and strategies (e.g., setting rules about alcohol use, having clear and open communication about alcohol use, etc.) that are useful and helpful for their teens (Hurley et al., 2015; Spirito et al., 2015). These interventions produced lower underage drinking outcomes than interventions that provided parents with generic information about alcohol and alcohol-related risks (Hurley et al., 2019; Spirito et al., 2015).

Parental Permissiveness

Teen-reported parental permissiveness (e.g., parental tolerance towards underage drinking) is associated with higher rates of underage drinking (Cohen & Rice, 1997; Hinnant et al., 2015; Pape et al., 2015; Staff & Maggs, 2019; Varvil-Weld, Crowley, et al., 2013; Zuquetto et al., 2019). Student-reported surveys indicated that high frequencies of parental permissiveness towards drinking and underage drinking rates were associated with greater consequences from

drinking (Cohen & Rice, 1997). Parental permissiveness is associated with more frequent teen drinking episodes, heavier drinking episodes, and association with peers who participate in riskier behaviors (Hinnant et al., 2015; Staff & Maggs, 2019; Zuquetto et al., 2019). Parental permissive attitudes also potentially have a stronger effect on underage binge drinking and non-binge drinking episodes than other parental factors (e.g., parental drunkenness; Staff & Maggs, 2019; Zuquetto et al., 2019).

Sex and Drinking

Sex is defined as a biological variable in clinical research (Arnegard et al., 2020; Miller et al., 2017; Stachenfeld, 2020). Sex as a biological variable (SABV) is very instrumental in guiding studies to understand the effects of various adverse events, treatments, and diseases on humans. Sex helps researchers understand differences in various conditions (Arnegard et al., 2020). Physiological differences exist within humans based on sex (e.g., hormones, sex chromosomes; Miller et al., 2017; Stachenfeld, 2020).

Parental sex influences communication with teens about alcohol use (Madkour et al., 2017). Paternal communication about alcohol use is negatively associated with adolescent alcohol use and related risk-taking behavior at each age while maternal communication about alcohol use is not negatively associated with adolescent alcohol use until age 18 (Alexopoulos & Cho, 2019; Madkour et al., 2017). Mothers and fathers who rely critical communication and are more likely to argue with their children are more likely to have adolescents who consume alcohol (Varvil-Weld, Scaglione, et al., 2013). Parental sex influences permissibility towards alcohol use (Najman et al., 2021; Nelson et al., 2017; Strandberg et al., 2014; Van Der Vorst et

al., 2010). Mothers are more likely to be permissive towards their daughters partaking in underage drinking than their sons partaking in underage drinking (Najman et al., 2021; Nelson et al., 2017; Strandberg et al., 2014). Research on paternal permissiveness is limited, but fathers who are more accepting of alcohol use are more likely to have adolescents who consume alcohol (Varvil-Weld, Scaglione, et al., 2013). Sons are more receptive to paternal permissiveness towards alcohol use while daughters are more responsive towards maternal permissiveness (Mallet et al., 2019).

Teen sex also influences parental communication, teen drinking frequency, consequences from drinking, and perceived parental permissiveness (Kyrrestad et al., 2020; McKee & McRae-Clark, 2022; Nelson et al., 2017; Schulte et al., 2009; Van Der Vorst et al., 2010). Parents are more likely to talk with their sons about how often they drink alcohol, but more parent-teen communication about alcohol use is associated with greater drinking frequency in males (Van Der Vorst et al., 2010). Female teens are more likely to report parental monitoring of alcohol use and greater familial social support (e.g., talking with family members about alcohol use) than males; therefore, females report lower drinking rates than males (Nelson et al., 2017). Females experience more adverse health-related consequences from drinking than men too (McKee & McRae-Clark, 2022; Schulte et al., 2009; Squeglia et al., 2011).

Aims of the Current Study

The current study expands on previous research by examining the effects of parental marital status on parent communication, teen drinking frequency, teens' alcohol-related consequences, and parental permissibility towards drinking as part of a larger, nationally

representative, randomized pilot trial. Parental marital status may contribute to differences in teen drinking outcomes because single parents (particularly single mothers) spend less time with their children than married parents, so they have less of an opportunity to interact with their children and discuss topics related to drinking (Meier et al., 2016; Raley et al., 2012). Single parents are too preoccupied performing the responsibilities of both parents to discuss drinking outcomes with their children (Meir et al., 2016; Raley et al., 2012). The trial focused on student alcohol use and outcomes, and it examined the impact of parental engagement on these outcomes. The study's first aim was to assess parental satisfaction with the intervention, measured by usefulness and interest. It is important to establish fidelity in the intervention by ensuring no discrepancies exist in how married and unmarried parents responded to the program. Fidelity means that the program intervention works as intended by the researchers, and it is crucial for both the validity and reliability of the study (Feely et al., 2018). The study's second aim was to assess the impact of marital status on four outcomes associated with drinking. Hypothesis 1 predicts that unmarried parents will be less likely to communicate with adolescents about the risks associated with drinking than married parents. Alexopoulos and Cho (2019) found that differences in parental communication exist based on parental sex, so it is possible that the absence of a parent may affect these differences. Hypothesis 2 predicts that children of unmarried parents will be more likely to drink than children of married parents. Unmarried parents are more tolerant of drinking which encourages teen drinking behaviors (Gustavsen et al., 2015; Hemovich & Crano, 2009; Isohanni et al., 1994; Waldron et al., 2014). Hypothesis 3 predicts that children of unmarried parents are more likely to experience more frequent consequences from alcohol use than children of married parents. Teens who are more likely to drink are more likely to experience adverse consequences from drinking (Haas et al., 2019;

Squeglia et al. 2014). Hypothesis 4 predicts that unmarried parents will be more permissive towards adolescent drinking than married parents. Studies conducted by Isohanni and colleagues (1994) and Waldron and colleagues (2014) found that unmarried parents are more permissive towards alcohol use, causing teens to engage more frequently in drinking. Unmarried parents, especially separated or divorced parents, are more likely to be reported by their children as having weaker parenting skills, which is associated with increased drinking behaviors (Gustavsen et al., 2015; Thompson et al., 2008).

Methods

Recruitment and Study Procedures

Parent-teen dyads were recruited from a national panel overseen by the information company, Ipsos. Eligible parents and students (*N*=1,155) were selected based on the criteria that each household contained one parent or legal guardian who had one child between the ages of 15-18. Participants were contacted via email to participate in the study, and parents were required to provide consent for their teen. In total, 306 teens met the criteria of being in grades 10-12, and they completed the initial baseline survey. Parent-teen dyads were then randomly assigned to either the treatment condition (*n*=160; 52.3%) or the attention-matched control-condition (*n*=146, 47.7%).

Following the baseline survey, parents in the treatment condition received an email with a link to the *REAL Parenting* (RP) app. Parents in the attention-matched control condition received an email with a link to a handout on underage drinking from the National Institute on Alcohol Abuse and Alcoholism (2019). Pairs in both conditions received several follow-up surveys after the baseline survey (T1). The first follow-up occurred 90-days after baseline (T2), the second follow-up occurred 6-months after baseline (T3), the third follow-up occurred 9-months after baseline (T4), and the final follow-up occurred 12-months after baseline (T5). From the initial sample, 248 dyads completed the follow-up survey (81%; treatment=126; control=122). Parents received $10 for each survey completed, and they received an additional $5 compensation for completing the survey within 48-hours. Parents in both the treatment and control conditions received the same compensation. Teens received $15 per survey.

Participants

The current study only examined participants assigned to the treatment condition. Parents received the RP app (*N*=160) as part of a larger, randomized, pilot trial. Parental mean age was 45.64 years-old (*SD*=7.18); half of parent participants were female (*n*=84, 52.5%), and parents either identified as Hispanic (11.3%), White (47.5%), Black (12.5%), Other (5.0%), or two or more races (1.3%). Parents also indicated whether they were single and never married (*n*=21; 13.1%), married or in a domestic partnership (*n*=126; 78.8%), widowed (*n*=0; 0.0%), divorced (*n*=12; 7.5%), or separated (*n*=1; 0.6%).

Teens identified their ethnicity as either Hispanic (25.6%) or not (73.1%), and they identified their race as either White (73.1%), Black or African American (18.8%); American Indian or Alaskan Native (2.5%), Asian (7.5%), Native Hawaiian or Pacific Islander (0.0%), or Mixed (4.4%). The mean age of teens in the study was 16.31 years (*SD*=0.95), and half of teen participants were female (*n*=83; 51.9%).

REAL Parenting Intervention

REAL Parenting (RP) targeted parents of high school students via a 15-minute web-based application accessible via smartphones. The application was adapted from a parent handbook on parent-teen communication (Turrisi et al., 2001). The handbook was 35 pages long, and it contained comprehensive information on college-bound teen alcohol use for parents to read. The handbook's first aim was to provide ways for parents to address topics about alcohol use with their teens, and the handbook's second aim was to allow parents the opportunity to provide feedback and criticisms about the handbook. The intention of the latter aim was to improve the

handbook design for future trials (Turrisi et al., 2001). The intention of the RP app was to allow parents to interact with the app as many times as they preferred in any order they wanted. Content was divided into four different interactive sections or screens, titled modules ("What should I know about alcohol use and teens?" "How can I improve my communication?" "How do I start the conversation?" "What should I say when talking about alcohol?"; see Figure 1). Each module contained both text and a brief video designed to encourage parents to talk with their teens. Figure 1 shows three separate screenshots of the application. The first photo shows the RP app's home page. The middle screenshot depicts the four different interactive modules for viewers to access. The right-most screenshot shows a checklist that identifies important talking points and suggestions for parents to discuss with their teens which are covered in the app. The RP app was developed over a 1-year period and included the following steps: building the website that would host the application; hiring animators to create the animated videos; hiring voice-over actors to record the videos; testing the web-based app on devices such as cell phones, tablets, computers, and laptops; and the instituting four main topics (modules) with which parents could interact.

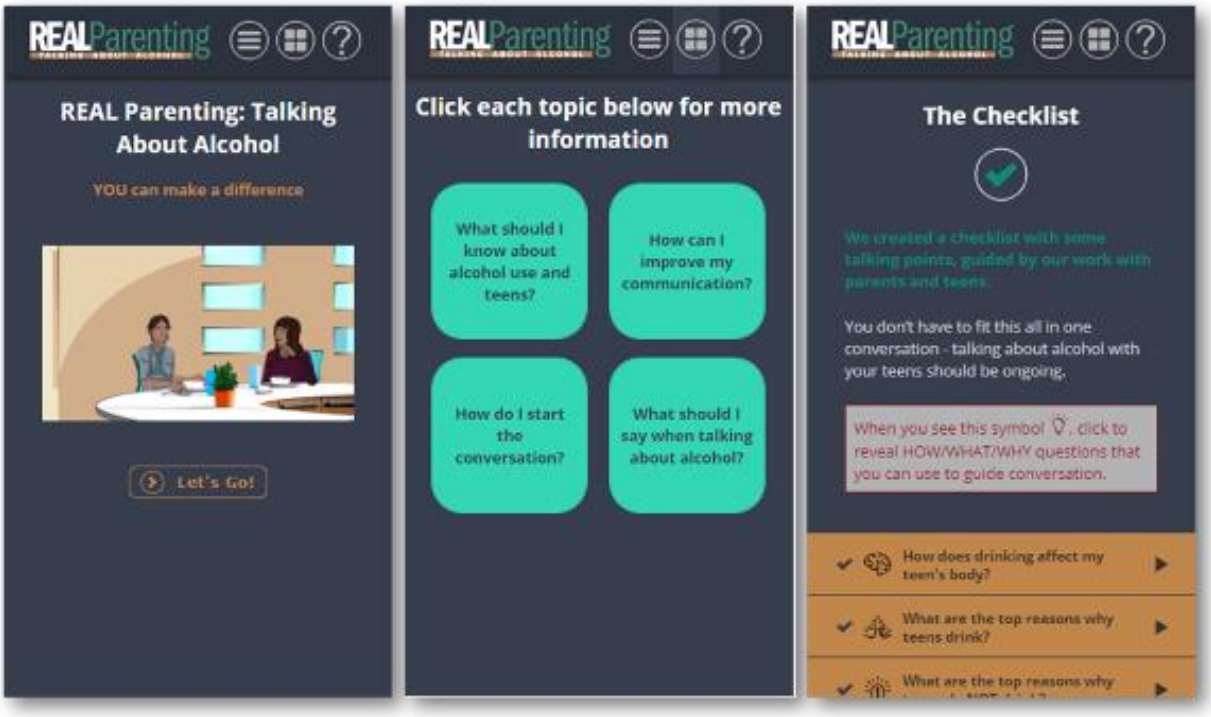

Figure 1. Screenshots of Three *REAL Parenting* Application Pages.

Parental Marital Status

Parents who received the RP application were asked, "What is your marital status?" Parents could choose from five options (0= Single or Never Married; 1= Married or in a Domestic Partnership; 2= Widowed; 3= Divorced; 4= Separated). To account for the small sample of single, widowed, divorced, and separated parents, the data was recoded in SPSS to group together all married parents (*n*=126; 78.8%) and unmarried parents (*n*=34; 21.3%; 0= Married; 1= Not Married).

Useful and Interesting Scores

In the T2 survey, parents indicated how useful and interesting they found the application overall as well as each of the four modules. They rated each of the items via a 4-point scale (0= Not at all useful/interesting; 3= Highly useful/interesting). The mean useful scores were measured for unmarried parents (n=27; μ=1.89; SD=0.61) and married parents (n=98; μ=1.61; SD=0.75). Mean interest scores were measured for unmarried parents (n=27; μ=1.82; SD=0.70) and married parents (n=98; μ=1.59; SD=0.76). Higher average scores indicate that parents found the material from the RP application to be more useful and interesting for talking with their teens about alcohol use.

Parent Communication

Parental reports of communication with their teens were assessed at T1 and T2. A total of four items were used to assess parent communication with their teen, measured via a 5-point scale (0= "Strongly disagree," 4= "Strongly agree;" "Please indicate if you spoke to [FC] about the following topics in the past month: 'The negative social experiences that could happen because of drinking,' 'The dangers of riding in a car with someone who has been drinking,' 'How people may think they are sober when in fact they are not,' 'How to deal with peer pressure'"). The means for the collective items' scores were calculated at T1 (μ=1.64; SD=0.92) and T2 (μ=1.85; SD=0.89). Higher parental communication scores indicate greater parent-teen communication about the adverse effects of alcohol.

Teen Drinking Frequency

Teen reports of drinking were assessed at T1 and T3. Teen drinking frequency was assessed by a single question ("During the past 3 months, on how many days did you have at least one drink of alcohol?"). The item was measured on a 7-point scale (0= "0 days;" 1= "1 or 2 days;" 2= "3 to 5 days;" 3= "6 to 9 days;" 4= "10 to 19 days;" 5= "20 to 29 days;" 6= "30 days or more"). The means for drinking frequency were calculated at T1 (μ=0.32; *SD*=0.77) and T3 (μ=0.44; *SD*=0.88). Higher drinking frequency scores indicate more instances where teens drank alcohol.

Teens' Consequences of Alcohol Use

Teens' consequences related to alcohol use were measured at T1 and T3. Teens' consequences were assessed through seven items ("During the past 3 months, how many times did you… 'Drive a car or other vehicle when you had been drinking alcohol?' 'Have a hangover [headache, sick to stomach] the morning after you had been drinking?' 'Feel very sick to your stomach or throw up after drinking?' 'Say or do embarrassing things while drinking?' 'Take foolish risks while drinking?' 'Not remember large chunks of time when drinking heavily?' 'Do poorly on a schoolwork as a result of drinking?'"). The items were measured according to a 5-point scale (0= "0 times;" 4= "4 or more times;"). A sum of the consequences was calculated at T1 (μ=0.33; *SD*=1.27; [0, 10]) and T3 (μ=0.40; *SD*=1.5; [0,10]). Higher average scores indicate teens experienced more adverse consequences from drinking.

Parental Permissiveness

Teens were asked to rate their perceptions of parents' permissiveness towards underage alcohol use at T1 and T5. A total of four items were measured using a 5-point scale (0= "Strongly disagree;" 4= "Strongly agree;" "Please indicate whether you agree or disagree with the following statements: 'My mother thinks it is okay if I drink alcohol on special occasions outside the home [e.g., at a friend's party];' 'My mother doesn't mind if I drink alcohol once in a while;' 'My father thinks it is okay if I drink alcohol on special occasions outside the home [e.g., at a friend's party];' 'My father doesn't mind if I drink alcohol once in a while'"). Mean scores for parental permissiveness were assessed at T1 (μ=0.71; *SD*=0.93) and T5 (μ=0.73; *SD*=0.94). Higher scores indicate higher perceived permissibility towards teen drinking.

Analytic Plan

All data analyses were conducted in SPSS version 29. A correlation matrix of the observed variables was run to determine any associations between the outcomes, marital status, and the sex-control variables. To fulfill aim 1 of the study, separate T-tests were used to assess the useful and interesting scores based on marital status. To assess aim 2 of the study, regression models were run for each variable related to drinking addressed in the hypotheses: T2 parent communication, T3 teen drinking frequency, T3 consequences for teen drinking, and T5 parental permissiveness. All aim 2 regression models used parental marital status as the treatment variable, and they controlled for teen sex, parent sex, and each respective variable's T1 measurement.

Results

Table 1. Correlation Matrix of Observed Variables.

	1.	2.	3.	4.	5.	6.	7.	8.
1. Marital Status								
2. Useful	.16							
3. Interesting	.13	.92**						
4. T2 Communication	.05	.34**	.29**					
5. T3 Drinking Frequency	.07	-.17	-.10	.06				
6. T3 Consequences	.14	-.07	-.07	.11	.63**			
7. T5 Permissiveness	.04	-.26**	-.19*	-.23*	.52**	.26**		
8. Parental Sex	.09	.13	.11	-.01	-.17	-.05	-.19*	
9. Teen Sex	-.07	.09	.09	.16	-.18*	.02	-.18*	.43**

*p<0.05; **p<0.01

Correlation Matrix

Several variables were significantly, strongly associated with each other in the correlation table. For example, useful and interesting were positively correlated (r=0.92, p<0.01) and useful and parent communication were positively correlated (r=0.34; p<0.01). Parents who reported the RP application as being useful also reported the application to be interesting; parents who reported the RP application as being useful reported higher parental communication scores at T2.

Aim 1: Usefulness and Interesting Scores

Parental reports of the RP app's usefulness did not significantly differ between married parents and unmarried parents (t=1.76; p=0.08). Parental reports of the interestingness of the RP app did not differ significantly between married parents and unmarried parents (t=1.46; p=0.15).

Table 2. Summarized Regression Models.

Models	B-values	SE	t-value	Significance
Model 1: Parent Communication (T2)				
Parent Communication (T1)	.50	.07	6.81	<.001
Teen Sex	.25	.15	1.66	.10
Parental Sex	-.15	.15	-1.00	.32
Marital Status	.06	.17	.38	.71
Model 2: Teen Drinking Frequency (T3)				
Teen Drinking Frequency (T1)	.79	.07	10.61	.00
Teen Sex	-.12	.13	-.93	.35
Parent Sex	-.11	.13	-.87	.38
Marital Status	.05	.14	.33	.74
Model 3: Teen Consequences (T3)				
Teen Consequences (T1)	.82	.08	10.75	<.001
Teen Sex	-.10	.21	-.45	.66
Parental Sex	-.10	.21	-.46	.6
Marital Status	.57	.23	2.44	.02
Model 4: Parental Permissiveness (T5)				
Parental Permissiveness (T1)	.59	.07	8.16	<.001
Teen Sex	-.17	.14	-1.13	.26
Parental Sex	-.17	.15	-1.12	.27
Marital Status	-.11	.17	-.65	.52

Aim 2: Regression Model Hypotheses

Table 2 presents the relationship between parental marital status and all the drinking variables measured in the study: T2 parental marital status, T3 teen drinking frequency, T3 teen consequences, and T5 parental permissiveness. Marital status showed no significant association with parent communication with teens (β=0.06, p=0.71), teen drinking frequency (β=0.05, p=0.74), and parental permissibility (β=-0.11, p=0.52). Marital status was positively associated with teens' consequences for alcohol use (β=0.57, p=0.02). No significant associations between the drinking variables and teen or parent sex were observed.

Discussion

Aim 1: Influence of Parental Marital Status on Usefulness and Interesting Scores

The study's first aim assessed parents' usefulness and interest scores for the RP application. Neither the usefulness scores nor the interest scores of the RP application differed significantly between married and unmarried parents. The study assessed usefulness and interest scores to establish fidelity within the study. Ensuring fidelity guaranteed no major differences existed in the how married parents and unmarried parents rated the application. If one parental group did rate the app as more useful or interesting, then response bias would exist and render the results unreliable. Previous research involving parent-reported usefulness and interest of PBI programs is limited. Mean parental scores of the intervention's usefulness and interestingness were low compared to mean scores from previous studies from which the RP app was derived. Turrisi and colleagues (2013) reported mean scores that ranged from 3.07 to 3.71 which were higher than the means of the RP app. A potential explanation for the low scores is that parents used a phone application. Parents who use phone apps more frequently tend to report higher disengagement with their children and greater cognitive dissonance (Johnson, 2017). The study's sample of parents may not have been receptive to the digital format of the material. Data were also collected during the COVID-19 pandemic beginning in January 2021, and finishing in December 2021. Parental stress was high throughout the pandemic, and many parents faced many extra responsibilities with children being home for school. Parents were mainly worried about changes in their schedules (since their children were at home), online school, and the effects of the COVID-19 pandemic (Adams et al., 2021). Parents were not as preoccupied with

teen drinking, so they may not have found the RP application and the material as useful or as interesting as they would have prior to the pandemic.

Aim 2: Influence of Parental Marital Status

The second aim of the study assessed differences in parental communication, teen drinking frequency, teens' consequences related to alcohol use, and teen-perceived parental permissiveness based on parental marital status. The first hypothesis was not supported by the results of the study. The data showed no significant association between parent communication with teens at T2 and parental marital status. The findings differ from Laursen's (2005) results. In the observational study, the researcher investigated the role of family structure and parental marital status in household conflict. Single (divorced) mothers were more likely to engage in arguments and verbal altercations with their children than married or remarried mothers. Single mothers disagreed more often with their children and had poorer communication skills than married parents (Laursen, 2005). The current study's findings suggest marital status does not influence parent communication with teens about drinking, though. Children of unmarried parents experienced greater consequences from drinking, but no differences in parental communication were observed. The data suggest that marital status may not affect parent-teen communication on alcohol use.

The study's results do not support the second hypothesis which predicted that teens of unmarried parents would drink more frequently. No significant difference in drinking frequency was found between teens of unmarried parents and teens of married parents at T3. The findings differ from previous research which found drinking rates to be higher among children of

unmarried parents than married parents (Isohanni et al., 1994; Jackson et al., 2016; Waldron et al., 2014). Of the initial 160 participants, 82% (*n*=130) did not drink at baseline (T1), and 73% (*n*=90) of the 124 participants who completed the T3 survey did not drink. Amid the COVID-19 pandemic in 2021, underage alcohol use was down to 19.5% compared to 29.8% in 2017 (Brener et al., 2022; CDC, 2017). Studies investigating underage drinking during the COVID-19 pandemic discovered that drinking had declined, potentially due to the stay-at-home orders, so there was less of an opportunity for social gatherings (Kapetanovic et al., 2022; Pelham et al., 2021; Sutton, 2021). The current study's data were also collected during the COVID-19 outbreak. If teens did not have the opportunity to socialize, then they had fewer opportunities to consume alcohol. The data were collected during the pandemic, so teens would not have drunk alcohol as frequently, regardless of parental marital status. No differences were therefore observed between married and unmarried parents.

The third hypothesis was supported by the results of the study. Children of unmarried parents reported significantly higher consequences related to drinking than children of married parents at T3. The results support existing evidence that parental marital status may factor into teen drinking-related consequences (Jackson et al., 2016; Thompson et al., 2008; Waldron et al., 2014). Children of unmarried parents are more likely to develop problems from alcohol use, and factors like parental separation and divorce are predictors of risky drinking behaviors and adverse health outcomes among adolescents (Jackson et al., 2016; Thompson et al., 2008; Waldron et al., 2014). The current study's findings suggest that parental marital status has a stronger influence on teens' consequences from drinking than previously understood.

The fourth hypothesis was not supported by the results of the study. No significant difference in parental permissiveness was found between unmarried and married parents. The

findings support the research performed by Cohen & Rice (1997), which concluded that permissiveness was unrelated to marital status. The findings challenge other studies which concluded that unmarried parents were more likely to be permissive towards drinking than married parents and possessed weaker parenting skills to manage underage drinking (Isohanni et al., 1994; Thompson et al., 2008; Waldron et al., 2014). The current study's results show no evidence to support the hypothesis that teen-perceived parental permissiveness differs based on parental marital status.

Parental sex showed no significant differences in teen drinking outcomes in the study. The current study's results challenge previous studies' findings on the influence of parental sex on factors related to underage drinking. Single fathers have been found to be the most permissive to teen drinking and substance use, and in the correlation matrix, parental permissiveness was negatively correlated with parental sex, meaning male parents were more likely to be permissive to teen drinking than female parents (Hemovich & Crano, 2009). The regression models, though, indicated that sex did not have a significant impact on permissiveness, countering past research findings which found that parental sex did influence teen drinking outcomes (Najman et al., 2021; Nelson et al., 2017; Strandberg et al., 2014; Van Der Vorst et al., 2010).

No differences in teen sex were found among any of the drinking variables examined in the study, refuting previous literature which claimed that males report significantly higher alcohol-related consequences than females, and females of divorced and single parents reported increased drinking rates than any other group (Abar et al., 2009; Gustavsen et al., 2015; Muchiri & dos Santos, 2018). Madkour and colleagues (2017) concluded that parent-teen communication about alcohol does not differ between males and females during adolescence. Drinking frequency also did not differ between sexes. Males don't drink as frequently as females until

later adolescence (ages 18 and 19), explaining why no drinking differences were observed in the current sample (Cheng & Anthony, 2016; 2018; Orcutt & Schwabe, 2011).

Limitations

Several limitations affect the validity of the study's results. Data were collected during the COVID-19 pandemic, so none of the data are representative of standard, pre-pandemic reports (Kapetanovic et al., 2022; Pelham et al., 2021; Sutton, 2021). Second, the initial follow-up survey (T2) occurred 2 months after the T1 survey, and parents were allowed to access the RP application at any time between the two surveys. The time in which parents accessed the app likely affected their recollection and opinion of the material since a parent who accessed the app closer to the T2 survey was more likely to remember the information than a parent who accessed the app earlier. Third, the overall study sample, particularly the sample of unmarried parents, was low. When the data were analyzed, the collective unmarried parents' group was comprised of several different marital status groups (single/never married, widowed, divorced, and separated). It is likely that differences in the reported outcomes exist between each group of parents, but because the sample was too low, all the unmarried marital statuses were grouped together.

Future Implications and Conclusions

The current study adds to existing literature by examining differences in teen drinking-related variables based on parental marital status. The study focused on measuring the effect of parental marital status on parent-teen communication about alcohol use, teen drinking frequency, teens' consequences related to drinking, and teen-perceived parental permissiveness towards

drinking. Data shows marital status is significantly associated with teen drinking consequences. Teens of unmarried parents are more likely to experience greater consequences related to drinking than teens of married parents. The results suggest that teens of unmarried parents are at greater risk for poorer academic performance, poorer decision-making, poorer memory, and feeling sick from drinking, so further research is needed to examine the behavioral and health effects of alcohol on teens of unmarried parents compared to teens of married parents. More evidence is needed to inform different programs and interventions that can be targeted towards children of unmarried parents to reduce the risk of experiencing greater consequences related to underage drinking (Isohanni et al., 1994; Jackson et al., 2016; Waldron et al., 2014).

Future research can expand on this study by expanding the sample size and recruiting parents with more diverse marital statuses. The study can then more effectively examine the differences in the dependent variables based on the different parent-teen dyads. Research can also expand on the consequences teens experience from drinking. Numerous other health-related consequences can be experienced from drinking, so these alternative consequences can be further explored and provide greater insight into the effects of alcohol on teens. The study was conducted during the COVID-19 pandemic, so drinking data were relatively low. The trial will need to be revised and retested under more favorable conditions to better examine the effect of the program on teen drinking and consequences. Future research is needed to further validate the results and better assess the role of parental marital status on factors related to teen underage drinking.

BIBLIOGRAPHY

Abar, C., Abar, B., & Turrisi, R. (2009). The impact of parental modeling and permissibility on alcohol use and experienced negative drinking consequences in college. *Addictive Behaviors*, *34*(6-7), 542–547. https://doi.org/10.1016/j.addbeh.2009.03.019

Abar, C. C., Fernandez, A. C., & Wood, M. D. (2011). Parent–teen communication and pre-college alcohol involvement: A latent class analysis. *Addictive Behaviors*, *36*(12), 1357–1360. https://doi.org/10.1016/j.addbeh.2011.07.044

Adams, E. L., Smith, D., Caccavale, L. J., & Bean, M. K. (2021). Parents are stressed! patterns of parent stress across COVID-19. *Frontiers in Psychiatry*, *12*. https://doi.org/10.3389/fpsyt.2021.626456

Alexopoulos, C., & Cho, J. (2019). A moderated mediation model of parent–child communication, risk taking, alcohol consumption, and sexual experience in early adulthood. *Archives of Sexual Behavior*, *48*(2), 589–597. https://doi.org/10.1007/s10508-018-1181-z

Arnegard, M. E., Whitten, L. A., Hunter, C., & Clayton, J. A. (2020). Sex as a biological variable: A 5-year progress report and call to action. *Journal of Women's Health*, *29*(6), 858–864. https://doi.org/10.1089/jwh.2019.8247

Brener, N. D., Bohm, M. K., Jones, C. M., Puvanesarajah, S., Robin, L., Suarez, N., Deng, X., Harding, R. L., & Moyse, D. (2022). Use of tobacco products, alcohol, and other substances among high school students during the COVID-19 pandemic — Adolescent behaviors and experiences survey, United States, January–June 2021. *MMWR Supplements*, *71*(3), 8–15. https://doi.org/10.15585/mmwr.su7103a2

Centers for Disease Control and Prevention. (2017). *Youth Risk Behavior Survey Data*. Retrieved from www.cdc.gov/yrbs. Accessed on December 28, 2022.

Cheng, H. G., & Anthony, J. C. (2016). A new era for drinking? epidemiological evidence on adolescent male–female differences in drinking incidence in the United States and Europe. *Social Psychiatry and Psychiatric Epidemiology*, *52*(1), 117–126. https://doi.org/10.1007/s00127-016-1318-0

Cheng, H. G., & Anthony, J. C. (2018). Male-female differences in the onset of heavy drinking episode soon after first full drink in contemporary United States: From early adolescence to young adulthood. *Drug and Alcohol Dependence*, *190*, 159–165. https://doi.org/10.1016/j.drugalcdep.2017.12.035

Cleveland, M. J., Lanza, S. T., Ray, A. E., Turrisi, R., & Mallett, K. A. (2012). Transitions in first-year college student drinking behaviors: Does pre-college drinking moderate the

effects of parent- and peer-based intervention components? *Psychology of Addictive Behaviors*, *26*(3), 440–450. https://doi.org/10.1037/a0026130

Cohen, D. A., & Rice, J. (1997). Parenting styles, adolescent substance use, and academic achievement. *Journal of Drug Education*, *27*(2), 199–211. https://doi.org/10.2190/qpqq-6q1g-uf7d-5utj

Esser, M. B., Clayton, H., Demissie, Z., Kanny, D., & Brewer, R. D. (2017). Current and binge drinking among high school students — United States, 1991–2015. *MMWR. Morbidity and Mortality Weekly Report*, *66*(18), 474–478. https://doi.org/10.15585/mmwr.mm6618a4

Feely, M., Seay, K. D., Lanier, P., Auslander, W., & Kohl, P. L. (2018). Measuring fidelity in research studies: A field guide to developing a comprehensive fidelity measurement system. *Child and Adolescent Social Work Journal*, *35*(2), 139–152. https://doi.org/10.1007/s10560-017-0512-6

Gilson, M. S., Kilmer, J. R., Lee, C. M., & Larimer, M. E. (2023). Prom, graduation and parties: Alcohol use and normative perceptions among high school seniors during specific events. *Addictive Behaviors*, *138*, 107569. https://doi.org/10.1016/j.addbeh.2022.107569

Gustavsen, G. W., Nayga, R. M., & Wu, X. (2015). Effects of parental divorce on teenage children's risk behaviors: Incidence and persistence. *Journal of Family and Economic Issues*, *37*(3), 474–487. https://doi.org/10.1007/s10834-015-9460-5

Haas, A. L., Lorkiewicz, S., & Zamboanga, B. L. (2019). Replication of factors related to blackout incidence in U.S. high school students: A brief report. *Addictive Behaviors*, *93*, 104–107. https://doi.org/10.1016/j.addbeh.2019.01.035

Hemovich, V., & Crano, W. D. (2009). Family structure and adolescent drug use: An exploration of single-parent families. *Substance Use & Misuse*, *44*(14), 2099–2113. https://doi.org/10.3109/10826080902858375

Hinnant, J. B., Erath, S. A., Tu, K. M., & El-Sheikh, M. (2015). Permissive parenting, deviant peer affiliations, and delinquent behavior in adolescence: The moderating role of sympathetic nervous system reactivity. *Journal of Abnormal Child Psychology*, *44*(6), 1071–1081. https://doi.org/10.1007/s10802-015-0114-8

Hurley, E., Dietrich, T., & Rundle-Thiele, S. (2019). A systematic review of parent based programs to prevent or reduce alcohol consumption in adolescents. *BMC Public Health*, *19*(1). https://doi.org/10.1186/s12889-019-7733-x

Isohanni, M., Oja, H., Moilanen, I., & Koiranen, M. (1994). Teenage alcohol drinking and non-standard family background. *Social Science & Medicine*, *38*(11), 1565–1574. https://doi.org/10.1016/0277-9536(94)90118-x

Jackson, K. M., Rogers, M. L., & Sartor, C. E. (2016). Parental divorce and initiation of alcohol use in early adolescence. *Psychology of Addictive Behaviors*, *30*(4), 450–461. https://doi.org/10.1037/adb0000164

Johnson, D. J. (2017). Parents' perceptions of smartphone use and parenting practices. *UNLV Theses, Dissertations, Professional Papers, and Capstones*. 3141. http://dx.doi.org/10.34917/11889710

Kapetanovic, S., Ander, B., Gurdal, S., & Sorbring, E. (2022). Adolescent smoking, alcohol use, inebriation, and use of narcotics during the COVID-19 pandemic. *BMC Psychology*, *10*(1). https://doi.org/10.1186/s40359-022-00756-1

Kyrrestad, H., Mabille, G., Adolfsen, F., Koposov, R., & Martinussen, M. (2020). Gender differences in alcohol onset and drinking frequency in adolescents: An application of the theory of planned behavior. *Drugs: Education, Prevention and Policy*, *29*(1), 21–31. https://doi.org/10.1080/09687637.2020.1865271

Laursen, B. (2005). Conflict between mothers and adolescents in single-mother, blended, and two-biological- parent families. *Parenting*, *5*(4), 347–370. https://doi.org/10.1207/s15327922par0504_3

Lee, J. A., Jones-Webb, R. J., Short, B. J., & Wagenaar, A. C. (1997). Drinking location and risk of alcohol-impaired driving among high school seniors. *Addictive Behaviors*, *22*(3), 387–393. https://doi.org/10.1016/s0306-4603(96)00045-7

Lees, B., Meredith, L. R., Kirkland, A. E., Bryant, B. E., & Squeglia, L. M. (2020). Effect of alcohol use on the adolescent brain and behavior. *Pharmacology Biochemistry and Behavior*, *192*, 172906. https://doi.org/10.1016/j.pbb.2020.172906

Litt, D. M., Garcia, T. A., Lowery, A., LoParco, C., Galvin, A. M., Larimer, M. E., & Lewis, M. A. (2020). Examining the associations between alcohol-related parental communication, alcohol use, and protective behavioral strategy use among young adults. *Addictive Behaviors*, *107*, 106398. https://doi.org/10.1016/j.addbeh.2020.106398

Madkour, A. S., Clum, G., Miles, T. T., Wang, H., Jackson, K., Mather, F., & Shankar, A. (2017). Parental influences on heavy episodic drinking development in the transition to early adulthood. *Journal of Adolescent Health*, *61*(2), 147–154. https://doi.org/10.1016/j.jadohealth.2017.04.002

Maggs, J. L., & Staff, J. A. (2018). Parents who allow early adolescents to drink. *Journal of Adolescent Health*, *62*(2), 245–247. https://doi.org/10.1016/j.jadohealth.2017.09.016

Mallett, K. A., Turrisi, R., Reavy, R., Russell, M., Cleveland, M. J., Hultgren, B., Larimer, M. E., Geisner, I. M., & Hospital, M. (2019). An examination of parental permissiveness of alcohol use and monitoring, and their association with emerging adult drinking outcomes

across college. *Alcoholism: Clinical and Experimental Research*, *43*(4), 758–766. https://doi.org/10.1111/acer.13978

McKee, S. A., & McRae-Clark, A. L. (2022). Consideration of sex and gender differences in addiction medication response. *Biology of Sex Differences*, *13*(1). https://doi.org/10.1186/s13293-022-00441-3

Meier, A., Musick, K., Flood, S., & Dunifon, R. (2016). Mothering experiences: How single parenthood and employment structure the emotional valence of parenting. *Demography*, *53*(3), 649–674. https://doi.org/10.1007/s13524-016-0474-x

Miller, L. R., Marks, C., Becker, J. B., Hurn, P. D., Chen, W. J., Woodruff, T., McCarthy, M. M., Sohrabji, F., Schiebinger, L., Wetherington, C. L., Makris, S., Arnold, A. P., Einstein, G., Miller, V. M., Sandberg, K., Maier, S., Cornelison, T. L., & Clayton, J. A. (2017). Considering sex as a biological variable in preclinical research. *The FASEB Journal*, *31*(1), 29–34. https://doi.org/10.1096/fj.201600781r

Muchiri, B. W., & dos Santos, M. M. L. (2018). Family management risk and protective factors for adolescent substance use in South Africa. *Substance Abuse Treatment, Prevention, and Policy*, *13*(1). https://doi.org/10.1186/s13011-018-0163-4

Najman, J. M., Clare, P. J., Kypri, K., Aiken, A., Wadolowski, M., Hutchinson, D., Slade, T., Bruno, R., Vogl, L., Degenhardt, L., & Mattick, R. P. (2021). Gender differences in the supply of alcohol to adolescent daughters and sons. *The American Journal of Drug and Alcohol Abuse*, *47*(4), 508–520. https://doi.org/10.1080/00952990.2021.1927066

National Institute on Alcohol Abuse and Alcoholism [NIAAA]. (2019). *Underage drinking*. Retrieved from https://www.niaaa.nih.gov/sites/default/files/publications/NIAAA_Underage_Drinking.pdf

Nelson, K. M., Carey, K. B., Scott-Sheldon, L. A., Eckert, T. L., Park, A., Vanable, P. A., Ewart, C. K., & Carey, M. P. (2017). Gender differences in relations among perceived family characteristics and risky health behaviors in urban adolescents. *Annals of Behavioral Medicine*, *51*(3), 416–422. https://doi.org/10.1007/s12160-016-9865-x

O'Malley, P. M., Johnston, L. D., & Bachman, J. G. (1998). Alcohol use among adolescents. *Alcohol health and research world*, *22*(2), 85–93.

Orcutt, J. D., & Schwabe, A. M. (2011). Gender, race/ethnicity, and deviant drinking: A longitudinal application of social structure and social learning theory. *Sociological Spectrum*, *32*(1), 20–36. https://doi.org/10.1080/02732173.2012.628553

Pape, H., Rossow, I., & Storvoll, E. E. (2015). Is drinking with parents associated with high-risk drinking among adolescents? *European Addiction Research*, *21*(6), 291–299. https://doi.org/10.1159/000381673

Patrick, M. E., & Schulenberg, J. E. (2013). Prevalence and predictors of adolescent alcohol use and binge drinking in the United States. *Alcohol Research: Current Reviews*, *35*(2), 193–200. https://doi.org/https://pubmed.ncbi.nlm.nih.gov/24881328/

Pelham, W. E., Tapert, S. F., Gonzalez, M. R., McCabe, C. J., Lisdahl, K. M., Alzueta, E., Baker, F. C., Breslin, F. J., Dick, A. S., Dowling, G. J., Guillaume, M., Hoffman, E. A., Marshall, A. T., McCandliss, B. D., Sheth, C. S., Sowell, E. R., Thompson, W. K., Van Rinsveld, A. M., Wade, N. E., & Brown, S. A. (2021). Early adolescent substance use before and during the COVID-19 pandemic: A longitudinal survey in the ABCD study cohort. *Journal of Adolescent Health*, *69*(3), 390–397. https://doi.org/10.1016/j.jadohealth.2021.06.015

Raley, S., Bianchi, S. M., & Wang, W. (2012). When do fathers care? mothers' economic contribution and fathers' involvement in child care. *American Journal of Sociology*, *117*(5), 1422–1459. https://doi.org/10.1086/663354

Schulte, M. T., Ramo, D., & Brown, S. A. (2009). Gender differences in factors influencing alcohol use and drinking progression among adolescents. *Clinical Psychology Review*, *29*(6), 535–547. https://doi.org/10.1016/j.cpr.2009.06.003

Skala, K., & Walter, H. (2013). Adolescence and alcohol: A review of the literature. *Neuropsychiatrie*, *27*(4), 202–211. https://doi.org/10.1007/s40211-013-0066-6

Spear, L. P. (2018). Effects of adolescent alcohol consumption on the brain and behaviour. *Nature Reviews Neuroscience*, *19*(4), 197–214. https://doi.org/10.1038/nrn.2018.10

Spirito, A., Hernandez, L., Cancilliere, M. K., Graves, H., & Barnett, N. (2015). Improving parenting and parent-adolescent communication to delay or prevent the onset of alcohol and drug use in young adolescents with emotional/behavioral disorders: A pilot trial. *Journal of Child & Adolescent Substance Abuse*, *24*(5), 308–322. https://doi.org/10.1080/1067828x.2013.829013

Squeglia, L. M., Jacobus, J., & Tapert, S. F. (2014). The effect of alcohol use on human adolescent brain structures and systems. *Handbook of Clinical Neurology*, 501–510. https://doi.org/10.1016/b978-0-444-62619-6.00028-8

Squeglia, L. M., Schweinsburg, A. D., Pulido, C., & Tapert, S. F. (2011). Adolescent binge drinking linked to abnormal spatial working memory brain activation: Differential gender effects. *Alcoholism: Clinical and Experimental Research*, *35*(10), 1831–1841. https://doi.org/10.1111/j.1530-0277.2011.01527.x

Stachenfeld, N. (2020). Introducing a special series, sex as a variable in human research: A systems approach. *The FASEB Journal*, *34*(7), 8776–8777. https://doi.org/10.1096/fj.202001425

Staff, J., & Maggs, J. L. (2019). Parents allowing drinking is associated with adolescents' heavy alcohol use. *Alcoholism: Clinical and Experimental Research*, *44*(1), 188–195. https://doi.org/10.1111/acer.14224

Strandberg, A. K., Bodin, M. C., & Romelsjö, A. (2014). Gender differences in the prediction of parental servings of alcohol to adolescents and youth drunkenness. *Substance Use & Misuse*, *49*(14), 1857–1866. https://doi.org/10.3109/10826084.2014.913628

Substance Abuse and Mental Health Service Association. (2014). Alcohol and drug combinations are more likely to have a serious outcome than alcohol alone in emergency department visits involving underage drinking. *The DAWN Report*. Retrieved from https://www.samhsa.gov/data/sites/default/files/spot143-underage-drinking-2014/spot143-underage-drinking-2014/spot143-underage-drinking-2014.pdf

Substance Abuse and Mental Health Service Association. (2020). Section 6 PE tables - Results from the 2019 National Survey on Drug Use and Health. Retrieved from https://www.samhsa.gov/data/sites/default/files/reports/rpt29394/NSDUHDetailedTabs2019/NSDUHDetailedTabs2019.htm.

Substance Abuse and Mental Health Service Association. (2022). The consequences of underage drinking. Retrieved from https://www.samhsa.gov/talk-they-hear-you/parent-resources/consequences-underage-drinking

Sutton, H. (2021). Study finds student drinking habits changed due to COVID-19. *Campus Security Report*, *17*(10), 9–9. https://doi.org/10.1002/casr.30752

Thompson, R. G., Jr, Lizardi, D., Keyes, K. M., & Hasin, D. S. (2008). Childhood or adolescent parental divorce/separation, parental history of alcohol problems, and offspring lifetime alcohol dependence. *Drug and Alcohol Dependence*, *98*(3), 264–269. https://doi.org/10.1016/j.drugalcdep.2008.06.011

Turrisi, R., Jaccard, J., Taki, R., Dunnam, H., & Grimes, J. (2001). Examination of the short-term efficacy of a parent intervention to reduce college student drinking tendencies. *Psychology of Addictive Behaviors*, *15*(4), 366–372. https://doi.org/10.1037//0893-164x.15.4.366

Turrisi, R., Mallett, K. A., Cleveland, M. J., Varvil-Weld, L., Abar, C., Scaglione, N., & Hultgren, B. (2013). Evaluation of timing and dosage of a parent-based intervention to minimize college students' alcohol consumption. *Journal of Studies on Alcohol and Drugs*, *74*(1), 30–40. https://doi.org/10.15288/jsad.2013.74.30

Van Der Vorst, H., Burk, W. J., & Engels, R. C. M. E. (2010). The role of parental alcohol-specific communication in early adolescents' alcohol use. *Drug and Alcohol Dependence*, *111*(3), 183–190. https://doi.org/10.1016/j.drugalcdep.2010.03.023

Varvil-Weld, L., Crowley, D. M., Turrisi, R., Greenberg, M. T., & Mallett, K. A. (2013). Hurting, helping, or neutral? the effects of parental permissiveness toward adolescent drinking on college student alcohol use and problems. *Prevention Science*, *15*(5), 716–724. https://doi.org/10.1007/s11121-013-0430-6

Varvil-Weld, L., Scaglione, N., Cleveland, M. J., Mallett, K. A., Turrisi, R., & Abar, C. C. (2013). Optimizing timing and dosage: Does parent type moderate the effects of variations of a parent-based intervention to reduce college student drinking? *Prevention Science*, *15*(1), 94–102. https://doi.org/10.1007/s11121-012-0356-4

Waldron, M., Vaughan, E. L., Bucholz, K. K., Lynskey, M. T., Sartor, C. E., Duncan, A. E., Madden, P. A. F., & Heath, A. C. (2014). Risks for early substance involvement associated with parental alcoholism and parental separation in an adolescent female cohort. *Drug and Alcohol Dependence*, *138*, 130–136. https://doi.org/10.1016/j.drugalcdep.2014.02.020

Waterman, E. A., Lee, K. D. M., & Edwards, K. M. (2019). Longitudinal associations of binge drinking with interpersonal violence among adolescents. *Journal of Youth and Adolescence*, *48*(7), 1342–1352. https://doi.org/10.1007/s10964-019-01035-w

Zuquetto, C. R., Opaleye, E. S., Feijó, M. R., Amato, T. C., Ferri, C. P., & Noto, A. R. (2019). Contributions of parenting styles and parental drunkenness to adolescent drinking. *Brazilian Journal of Psychiatry*, *41*(6), 511–517. https://doi.org/10.1590/1516-4446-2018-0041

ACADEMIC VITA

Matthew T. McHugh
The Pennsylvania State University

EDUCATION

2023 (expected)	B.S., Biobehavioral Health with Honors College of Health and Human Development | Schreyer Honors College The Pennsylvania State University
	Honors Thesis in Biobehavioral Health *The Influence of Parental Marital Status on Teen Drinking Outcomes.* College of Health and Human Development | Schreyer Honors College The Pennsylvania State University *Advisor: Dr. Marie Cross, Ph.D.* *Supervisor: Dr. Rob Turrisi, Ph.D.*

HONORS AND AWARDS

Year	Award
2022	Penn State College of Health and Human Development Dean's List – Fall Semester
2022	Penn State College of Health and Human Development Dean's List – Spring Semester
2021	Penn State College of Health and Human Development Dean's List – Fall Semester
2021	Penn State College of Health and Human Development Dean's List – Spring Semester
2020	Penn State College of Health and Human Development Dean's List – Fall Semester
2020	Penn State College of Health and Human Development Dean's List – Spring Semester
2019	Penn State College of Health and Human Development Dean's List – Fall Semester
2019	Schreyer Honors College Academic Excellence Scholarship

RESEARCH SUPPORT | CURRENT GRANTS

Year	Position	Grant Description
2022-23	**Undergraduate Research Assistant**	R01AA012529-14. NIH/NIAAA. *Examining a brief parent intervention to reduce college student drinking and consequences.* Assisted with coding data using SPSS, analyzing recorded interviews with participants to ensure efficient delivery of health intervention information, and conducted literature.
2022-23	**Undergraduate Research Assistant**	R44AA025293. NIH/NIAAA. *Feasibility of a mobile parent-based intervention to reduce alcohol use by high school seniors.* Assisted with coding data using SPSS and conducting literature reviews regarding relevant health material.
2022-23	**Undergraduate Research Assistant**	R01AA025301-01. NIH/NIAAA. *Examining an intervention to reduce DUI and riding with impaired drivers.*

Assisted with conducting literature reviews on related health material.

CONFERENCE PRESENTATIONS

Glenn, S. D., Turrisi, R. J., Hecht, M. L., Russell, M. A. **McHugh, M. T.,** & Ray, A. E. (2023, May). App-based program analytics vs. self-report measures of program acceptability and usability: Which better predicts short-term outcomes of a parent-based intervention to prevent teen alcohol use? *Poster submitted to the 6th Annual Founder's Endowment for Excellence and Innovation Research Day, University Park, PA.*

Glenn, S. D., Turrisi, R. J., Hecht, M. L., Russell, M. A. **McHugh, M. T.,** & Ray, A. E. (2023, May). App-based program analytics vs. self-report measures of program acceptability and usability: Which better predicts short-term outcomes of a parent-based intervention to prevent teen alcohol use? *Poster submitted to the 31st Annual Meeting of the Society for Prevention Research Conference, Washington, D. C.*

McHugh, M., Glenn, S. D., Turrisi, R., & Lenker, L. (2022, April). Examining a digital parent-based intervention to improve parent teen communication about alcohol use. *Poster presented at the Undergraduate Exhibition for Research, University Park, PA.* https://youtu.be/R9PC4ocUxmA

Glenn, S. D., Waldron, K. A., Kornack, E. C., Nolte, N., **McHugh, M.,** Ko, S., Stull, P., Lenker, L., Turrisi, R., & Mallett, K. A. (2022, April). Alcohol-induced blackout consequences predict alcohol dependency symptoms among college student drinkers. *Poster presented at the 5th Annual Founder's Endowment for Excellence and Innovation Research Day, University Park, PA.*

Waldron, K. A., Glenn, S. D., Ko, S., Lenker, L., Stull, P., Kornack, E., Nolte, N., **McHugh, M.,** & Turrisi, R.J. (2022, April). Comparing single vs. dual parent households on a brief parent-based drinking intervention for underage teens. *Poster presented at the 5th Annual Founder's Endowment for Excellence and Innovation Research Day, University Park, PA.*

Kornack, E., Nolte, N., **McHugh, M.,** Waldron, K.A., Glenn, S.D., Turrisi, R.J., & Mallett, K.A. (2022, April). Longitudinal associations between self-efficacy and drinking outcomes among college students. *Poster presented at the Undergraduate Exhibition for Research, University Park, PA.* https://youtu.be/fa0uoFyJXXg

TECHNICAL SKILLS

SPSS, Microsoft Office, WordPress, Canva, Adobe PremierePro, Adobe Photoshop,

EXTRACURRICULAR EXPERIENCE:

Organization	Year	Position and Description

Lion Ambassadors	**2021-23**	**Executive Vice President** (2022-23) – Oversaw and managed all 13 internal and external projects on behalf of the Penn State Student Alumni Corps as well as managing the project budgets and member retention in addition to all general member responsibilities. **General Member** (2021-22) - Served as a tour guide for Penn State. Also acted as a representative member of the Strategic Planning Committee to ensure the success of the organization's mission and strategic goals and a member of the New Member Education Committee to test the prospective members of the organizations and ensure they were able to meet the requirements of ambassadorship.
State of State	**2019-23**	**Executive Director** (2021-23) - Planned and executed a conference designed for the Penn State community. Managed a team and oversee the financial, external, and internal operations of an organization committed to facilitating dialogue for the sake of creating change throughout the community. **Operations Director** (2020-21) - Redesigned the organization's website and facilitated the execution of a virtual University-wide conference engaging community leaders. **Content Committee Member** (2019-20) - Worked with a student to write and deliver a speech to an audience of students, faculty, and community members.
THON	**2020-21**	**Rules and Regulations Committee Member** – Worked to ensure the safety of the participants of THON 2021. Served as Liaison-in-Training to represent my committee in discussions to fundraise across the entire Rules and Regulations team. Acted as Family Relations Chair to prepare and present material at weekly meetings regarding families affected by pediatric cancer.
Leadership JumpStart	**2019**	**Member** - Worked in a team with 5 other members to spread awareness of and education about Autism throughout Penn State. Learned valuable leadership lessons and applied them to classroom activities and discussions with community and school leaders throughout University Park, PA and State College, PA