Alcohol Issues Prior to Training in the United States Air Force

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Abstract

The negative impact of alcohol is a significant concern to the US military given the costs associated with alcohol-related offenses. Despite considerable research in active duty personnel, relatively little is known about the current extent of alcohol use among incoming recruits. We examined the history of alcohol use and harmful patterns of alcohol consumption among recruits entering the United States Air Force (USAF; $N = 50,549$) over the span of 4 years (2010 - 2014). Across all years, drinking rates reflected national average trends for those aged 18-24 (NIDA, 2014). However, when abstainers were excluded, those under 21 ($n = 10,568$) reported an average of 18.4 drinks per week, whereas those age 21 and over ($n = 14,188$) reported an average of 14.1 drinks per week, suggesting that for those who drink, those under 21 are exhibiting more risky drinking rates. Alcohol Use Disorders Identification Task (AUDIT) scores for drinkers reflected these same trends. For those under 21, 58% scored in risk categories of 2 or higher (risky drinking warranting attention), compared with 40% for those age 21 and over. These scores indicate that for recruits in the USAF, approximately half report alcohol use immediately prior to basic training, resulting in the inheritance of these potential alcohol related issues for those conducting training of these recruits. Based upon these numbers, brief alcohol interventions could have a potential positive impact on individuals in their initial training stages of the USAF to prevent these baseline issues from resulting in problems later in their military careers.

Keywords: Alcohol; USAF; AUDIT; military; Basic Training

1. Introduction

Despite advances in reducing tobacco and illicit substance use among those in the United States Military, alcohol use remains a significant problem (Bray, Pemberton, Lane, Hourani, Mattiko, & Babeu, 2010). Data from the 2011 Department of Defense (DoD) Health Related Behavior Surveys suggest that across all military branches (Army, Navy, Marine Corps, Air Force), 84.5% of those in active duty report using alcohol, and over 25% report moderate to heavy use (DoD, 2013). Longitudinally, alcohol use problems in military personnel appear to be on the rise; trends across the years 1998 to 2008 show significant increases in the percentage of individuals who have engaged in recent heavy alcohol use among those in active duty (DoD, 2013). While 25% of the population may seem like a relatively small percentage, this subpopulation creates problems of considerable consequence. A survey of TRICARE Prime beneficiaries in 2006 estimated that alcohol misuse cost the DoD an estimated \$1.2 billion (Harwood, Zhang, Dall, Olaiya, & Fagan, 2009). Additionally, the DoD is the world's largest employer at 3.2 million employees, far eclipsing employers worldwide such as Wal-Mart (2.1 million) and McDonalds (1.9 million; Alexander, 2012). In terms of active duty, there are 1.4 million uniformed personnel currently serving in the four military branches of the United States DoD, and close to 220,000 enlisted each year across branches (DoD, 2014). Aside from monetary costs, alcohol use problems affect individuals in the military in many of the same adverse ways as civilians, including poor work productivity

Heavy alcohol use among military personnel carries many of the same adverse outcomes as in civilian populations. Waller, McGuire and Dobson (2015) found that alcohol use among those in the Australian Defense Force was associated with lower

general health scores, work limitations because of physical health issues, and poorer social functioning. As well as decreasing health-related outcomes, heavy alcohol use in military settings has been shown to be associated with behavioral and performance issues (Macmanus, Dean, Al Bakir, Iversen, Hull, Fahy, et al., 2012; Fisher, Hoffman, Austin-Lane, & Kao, 2000). For example, Mattiko and colleagues found that heavy alcohol use was associated with serious consequences for those in active military duty in the US (e.g., passed over for promotion; Uniform Code of Military Justice punishments; DUI or other alcohol-related arrest; alcohol-related injury or accident; physical fights), as well as with reduced work productivity (e.g., hurt on the job; being late for work or leaving early; not coming to work because of an illness or a personal accident; performing below normal level of performance caused by drinking; being drunk while working; or being called in during off-duty hours feeling drunk; Mattiko, Olmsted, Brown, & Bray, 2011). The considerable financial and behavioral costs associated with active drinking in the military suggest that increasing prevalence trends need to be explored (DoD, 2013).

There are a number of reasons why alcohol use remains such a significant problem specifically for those in the United States military. For active duty and reserve personnel, problems directly associated with active duty, such as self-reported stress over deployment, disrupted relationships, depression, financial problems, injury, and trauma, are all related to problematic alcohol use (Foran, Smith Slep, & Heyman, 2011; Lande, Marin, Chang, & Lande, 2008), and combat deployment itself has been shown to be a risk factor for later drinking (Jacobson et al., 2008). In addition, there is a widely held belief that military culture looks positively on drinking behavior, and this belief is

upheld by empirical work. A study by Ames and colleagues showed the influence of military culture on drinking behavior in multiple workplace settings of the Navy (Ames, Cunradi, Moore, & Stern, 2007). Interviews revealed an environment that encouraged drinking in response to negative emotions (e.g., stress, loneliness) and drinking as a part of a cultural tradition with specific rituals and routines.

Aside from increased risk associated with exposure to military stressors and culture, it is also possible that issues with alcohol use are present prior to recruitment. Those who typically pursue military careers represent a high-risk population with regard to demographics and other risk factors that likely contribute high rates of alcohol use (DoD, 2004; Zuckerman, 2007). For instance, in addition to being primarily male (DoD, 2004), the typical age range of military recruits (18-24) is that known to be at the highest risk for alcohol use (Substance Abuse and Mental Health Services Administration, 2014). Additionally, those who join the military often do so out of the appeal of experiencing excitement and adventure (Zuckerman, 2007), the same factors known to underlie alcohol use (Stautz & Cooper, 2013). Trait sensation seeking is known to be at its peak in late adolescence to young adulthood, and for young men, this period of risk-taking vulnerability lasts well into their 20s (Shulman, Chein, & Steinberg, in press).

Despite wide research on prevalence of alcohol use and misuse among those in active duty, relatively few studies have explored alcohol use immediately prior to entering military training. Given the known risks associated with military career events, base rates of drinking are likely to be important indicators of problems in the future. In support of this, Bray and colleagues (2010) explored alcohol use prior to and following military training in a cohort of Navy and Air Force trainees ($N = 4,962$). These authors

found that those who engaged in heavy alcohol use before basic training were more likely to re-initiate heavy episodic drinking after the drinking ban during training was lifted and to do so relatively quickly (1-6 weeks). We are aware of only one large scale study that explored prevalence of alcohol use prior to training. Taylor, Haddock, Poston, and Talcott (2007) examined history of alcohol problems in a large sample of Air Force recruits ($N = 37,858$) and found that close to 80% of recruits reported prior drinking, but 43% of these individuals reported light use (defined as 1 drink per day or less), and another 24% reported moderate use (defined as 2 to 4 drinks per day). Not surprisingly, those who had a history of drinking moderately or heavily had a higher probability of negative alcohol related outcomes (e.g., being injured as a result of drinking, been in a fight because of drinking, not able to stop drinking).

While an important start, these studies have several relative limitations. First, Taylor and colleagues (Taylor et al., 2007) did not utilize age of recruits as a potential risk factor. This is important information, given that the many factors that may inhibit underage drinking for some (e.g., differential availability of alcohol, legal consequences if caught) do not necessarily thwart this behavior in those of legal drinking age, suggesting that the underage drinker is engaging in differential forms of risk than a drinker who is of legal drinking age. Blanket prevalence rates are unable to examine whether underage drinking is a common behavior in the population, or whether higher prevalence is simply carried by those of legal drinking age. Examining the prevalence of underage drinking among recruits allows the military to address this risk specifically.

Second, the Taylor et al. (2007) data are dated, with surveys collected over 15 years ago (1995-1997), leaving quite a large historical gap that may evidence changes

in drinking behavior. In addition, although Bray and colleagues (2010) did utilize age for comparison of drinking groups, these groups were formed using the answer to a single item that addressed binge drinking exclusively (e.g., how many days in the 30 days before basic training did respondents consume 5 or more drinks for men, 4 or more for women). Utilization of a single binge drinking item provides considerably less detail than is necessary to examine alcohol risk among a large group with potentially varied drinking habits. Based upon responses to this item, Bray and colleagues (2010) found that 55.8% of those under 21 and 33.4% of those age 21 and over abstained from binge alcohol use prior to basic military training. Among those who reported drinking, 7.8% of those under 21 and 12.9% of those age 21 and over were classified as “non-heavy episodic” drinkers, 13.2% of those under 21 and 20.1% of those age 21 and over reported “infrequent heavy episodic” drinking, and 23.3% of those under 21 and 33.6% of those age 21 and over were classified as “frequent heavy episodic” drinkers. These numbers are considerably higher than the national average (85.5% of those age 12-20 and 75.6% of those age 21 and over do not report any form of binge drinking in the past 30 days; Substance Abuse and Mental Health Services Administration, 2014), which is consistent with hypotheses regarding high pre-existing alcohol use among those who self-select into the military. However, it is difficult to draw firm conclusions about the prevalence of use given the limited assessment in this study.

Finally, and perhaps most importantly, these studies may misrepresent rates based upon participant recruitment and the consequences of reporting. These studies did not report consent process and confidentiality assurances to recruits (that data would be utilized by researchers only), and the degree of identifying information

collected in Bray and colleagues (2010) indicates that some participants could be identified based upon this data collection. The possibility of being identified could be of considerable concern to underage recruits; in the Air Force, underage drinking represents a violation of the Uniformed Code of Military Justice and so results in punitive action. As a result, individuals who have or currently engage in underage use may be much less likely to report this for fear of consequences. Therefore, anonymous assessment of alcohol use may elicit more candid responses regarding alcohol use prior to basic training.

This study explored current alcohol use prevalence and problem drinking risk prior to entry into basic military training in a large sample of individuals in Technical Training for the United States Air Force (USAF) through anonymous assessment. Based upon risk factors common to military recruits (young, male), we predicted that alcohol use prior to enlistment would be similar to studies of alcohol use in early stages of training (close to 80%; Taylor et al., 2007), and that even those who had not yet reached legal drinking age would be exhibiting high levels of use, as evidenced in smaller samples (Bray et al., 2010). This study also explored trends in alcohol use over the course of four years and examined potential differences in use across training sites, although these analyses were exploratory. Estimates of risk, such as the findings from this study, provide information regarding the alcohol use problems inherited by the USAF prior to any additional impact of stress, trauma, or culture on drinking, and have the potential to inform intervention programming to ensure that individuals are provided best practices care to prevent future alcohol-related problems.

2. Materials and Methods

2.1. Participants

Participants were 50,549 Airmen in the first phase of Technical Training, the period of training immediately following the 7 and ½ weeks of basic training, and a period where all Airmen are tobacco and alcohol free. Air Force personnel, including those in Technical Training, are referred to as “Airmen” regardless of gender or rank. This term will be utilized in all subsequent references to Air Force recruits in Technical Training. Upon completing basic training, Airmen are assigned to one of four major Technical Training sites where they learn the skills for their designated job in the Air Force (e.g., security forces, medical, maintenance, pararescue, supply). These sites include Lackland (San Antonio, TX), Ft. Sam Houston (San Antonio, TX), Sheppard (Wichita Falls, TX), or Keesler (Biloxi, MS). The length of Technical Training varies but averages approximately 2.5 months, and represents the final training period before Airmen are assigned to their first duty station. During the first transition period of Technical Training, Airmen are required to maintain the ban on alcohol and tobacco products, but in subsequent weeks are allowed more personal freedom in terms of tobacco and alcohol use (approved for legal-aged individuals only) and unsupervised leave.

Although there were no inclusion or exclusion criteria for participation, those with missing age, Alcohol Use Disorders Identification Task (AUDIT), and date of assessment ($n = 1619$) data were excluded from the analyses, resulting in a final sample of 48,930 eligible participants (3% of the population). All participants were in Technical Training at one of the four military installations. Due to their being located in the same city and the frequent movement of trainees across sites, Lackland and Ft.

Sam Houston are considered “joint bases”; therefore, data from Lackland and Ft. Sam Houston are combined in all analyses and termed *Lackland/Ft. Sam Houston*.

2.2. Demographics

No identifying information was collected to ensure the anonymity of the trainee. Airmen did not report on their gender or race for this study, but recent statistics from the Air Force suggest that Air Force recruits tend to be primarily male (81%), and white (73%; USAF, 2015). Airmen provided age on the questionnaire, as this was necessary information to calculate age-related norms necessary for use in the brief alcohol intervention, described below.

2.3. Procedure

Alcohol use data were collected between Fiscal Years 2010 and 2014. All Airmen completed pencil and paper alcohol use questionnaires immediately prior to a group-based, brief alcohol intervention program administered to all individuals in Technical Training. Alcohol use questionnaires were completed to provide Airmen information about normative use and personal risk. The brief intervention was developed based upon military need and utilizes education and goal-based discussion in an effort to encourage Airmen to use alcohol responsibly (see Klesges et al., 2013). Along with random breathalyzer testing for those under age 21, this brief intervention has been a universally implemented component of Technical Training across the four major Technical Training bases since 2010.

Airmen provided passive consent by choosing to turn in the anonymous pencil and paper alcohol surveys after the intervention concluded. Airmen were asked to report their alcohol use *prior to basic training*, as this was more representative of

baseline use given that all Airmen are required to remain abstinent during basic training. Use of this anonymous data was approved by the Institutional Review Board at Wilford Hall Ambulatory Surgical Center.

2.1. Measures

2.1.1. Drinks per week. Average number of drinks per week was assessed by asking participants how much alcohol they typically used on each day of the week prior to basic training. Responses were summed to create an average weekly number of drinks score. Participants who reported an average of “0” drinks per week were considered non-drinkers in subsequent analyses.

2.1.2. Alcohol Use Disorders Identification Task (AUDIT). The AUDIT (Babor & Grant, 1989) is a 10-item rating scale that assesses excessive alcohol use, harmful alcohol use, as well as possible alcohol dependence. The AUDIT can be scored as a total score, and in “zones” based upon the following guide: 1-7 = Low risk drinking or abstinence; 8-15 = Risky drinking meriting patient education; 16-19 = Harmful/hazardous drinking; 20+ = Extremely risky drinking. For the purposes of this study, the wording on each AUDIT question was adapted to ensure that Airmen reported on their alcohol use prior to basic training (e.g., AUDIT question #1: “Prior to basic military training, how often did you have a drink containing alcohol?”).

2.2. Statistical analysis

All of the analyses were performed with SASv9.4 (SAS Institute Inc., Cary, NC). Data were summarized using descriptive statistics, such as proportions, means, medians, standard deviations, and ranges. Equality of proportions between sites was done using a chi-square test. Group mean comparisons of drinks per week and AUDIT

scores by age and year were done using t-test, Wilcoxon two sample test, and simple robust ANOVA model. Further we applied robust ANOVA model to test these factors and their interaction within the same model. Effect sizes are reported as Cohen's *d*, where appropriate (Cohen, 1988). All of the associations were considered significant at the alpha level of 0.05.

3. Results

In the final analytic sample ($N=48,930$), the majority of Airmen were under 21 years old (60.5%; mean age = 20.7). Fifty percent of the sample ($n = 24,756$) reported having used alcohol prior to basic military training, although percentages differed according to age group; 35.5% of those under 21 reported engaging in prior alcohol use, whereas 73.3% of those age 21 and over reported prior alcohol use. Alcohol use data by Air Force base can be found in Table 1. Equality of proportions between sites was done using a chi-square test. Prior alcohol use was slightly different across sites, with rates of 50.8%, 51.0%, and 47.7% across Lackland/Ft. Sam Houston, Sheppard, and Keesler, respectively. Keesler was found to be significantly lower in prior drinking ($\chi^2 = 23.23, p < .001$).

3.1. Alcohol use by age

All drinks per week and Alcohol Use Disorders Identification Task (AUDIT) data can be found in Table 2. Group mean comparisons of drinks per week and AUDIT scores by age and year were done using t-test, Wilcoxon two sample test, and simple robust ANOVA model. All of the associations were considered significant at the alpha level of 0.05.

3.1.1. Drinks per week. Average drinks per week scores are provided for the

overall sample (under 21 and age 21 and over), and for the sample excluding alcohol abstainers (under 21 and age 21 and over). For the overall sample, participants reported an average of 8.04 drinks per week. Those under 21 reported a significantly lower average number of drinks per week than those age 21 and over (6.6 and 10.3, respectively; $F = 37.89$, $P < .001$, $d = 0.29$). When those who reported no alcohol use prior to basic military training were excluded, a very different pattern of results emerged: The average number of drinks per week was 15.9, with those under 21 reporting significantly *higher* use than those age 21 and over (18.4 and 14.1, respectively; $F = 211.76$, $p < .001$, $d = 0.28$).

3.1.2. AUDIT. AUDIT scores are provided for the overall sample (under 21 and age 21 and over), and for the sample excluding alcohol abstainers (under 21 and age 21 and over). The mean AUDIT score for the overall sample was 4.5, indicating “low risk drinking.” Mean AUDIT scores for those under 21 were significantly lower than those age 21 and over (3.8 and 5.6, respectively; $F = 199.81$, $P < .001$, $d = 0.34$). All of these scores fell into the low risk range. When those who reported no alcohol use prior to basic military training were excluded, the mean AUDIT score across all ages was 8.2, indicating “risky drinking meriting patient education.” The mean AUDIT score for those under 21 was again significantly higher than the mean AUDIT score for those age 21 and over (9.3 and 7.3, respectively; $F = 231.79$, $P < .001$, $d = 0.39$).

Figure 1 shows AUDIT risk zone categories among those who drink. Panel A shows categories for those under 21. As can be seen in the figure, more than half of drinkers under 21 fall into an elevated risk category each year, with approximately 10% reaching the “Harmful/Hazardous” or “Extremely Risky/Dependence” categories each

year. Panel B shows categories for those age 21 and over. Fewer than half (approximately 40%) of those age 21 and over fall into an elevated risk category on the AUDIT.

3.2. Changes in Scores over Time

We applied robust ANOVA model to test drinks per week and AUDIT scores by age and year and their interaction within the same model. All of the associations were considered significant at the alpha level of 0.05.

3.2.1. Drinks per week. Trends for average drinks per week over time for the full sample ($n = 48,930$) are presented in Figure 2, Panel A. For the overall sample, the average number of drinks per week reported in 2011, 2012, and 2013 were significantly higher than those in 2014 ($B = 0.52$, $S.E. = .06$, $P < .001$; $B = 0.30$, $S.E. = .05$, $P < .001$; $B = 0.11$, $S.E. = .05$, $P < .05$, respectively). There was a main effect over time for age, with those under 21 reporting 3.18 fewer drinks per week than those age 21 and over ($S.E. = .04$, $P < .001$). No interactions between year and age were detected.

Trends for alcohol use over time for the portion of the sample excluding abstainers are presented in Figure 2, Panel B. Excluding abstainers, the average number of drinks per week reported in 2011 and 2012 were significantly higher than those in 2014 ($B = 0.64$, $S.E. = .20$, $P < .01$ and $B = 0.89$, $S.E. = .20$, $P < .001$, respectively). There was a main effect over time for age, with those under 21 reporting an average of 3.42 *more* drinks per week than those age 21 and over ($S.E. = .14$, $P < .001$) with abstainers omitted from analyses. No interactions between year and age were detected.

3.2.2. AUDIT. Trends for AUDIT scores over time for the full sample ($n = 48,930$) are presented in Figure 3, Panel A. For the overall sample, AUDIT scores in 2011, 2012, and 2013 were significantly higher than those in 2014 ($B = 0.79$, $S.E. = .06$, $P < .001$, $B = 0.41$, $S.E. = .06$, $P < .001$, and $B = 0.16$, $S.E. = .05$, $P < .01$, respectively). There was a main effect for age; AUDIT scores for those under 21 were, on average, 2.54 points lower than for those age 21 and over ($S.E. = .04$, $P < .001$). No interactions between year and age were detected.

Trends for AUDIT scores over time for the portion of the sample excluding abstainers ($n = 24,756$) are presented in Figure 3, Panel B. Excluding abstainers, AUDIT scores in 2011 and 2012 were significantly higher than those in 2014 ($B = 0.83$, $S.E. = .09$, $P < .001$, and $B = 0.45$, $S.E. = .09$, $P < .001$, respectively). Again, there was a main effect for age; AUDIT scores for those under 21 were, on average, 1.9 points *higher* than for those age 21 and over ($S.E. = .04$, $P < .001$) with abstainers omitted from analyses. No interactions between year and age were detected.

4. Discussion

This study explored the prevalence of alcohol use and alcohol use risk scores prior to basic military training in a large sample of Airmen in Technical Training in the United States Air Force. Data were collected over the span of 5 years to examine potential trends in use among different incoming cohorts. Results were collected anonymously, thereby allowing all young Airmen in training to report alcohol use freely and without the risk of consequence. Findings suggest that while drinking trends are declining over time, alcohol use remains quite prevalent among individuals entering training, with approximately half of the sample reporting use prior to basic military

training. The prevalence of alcohol use in this sample is lower than that of college students, a population notably at high risk for alcohol use (50% of Airmen vs. 80% of college students; National Institute on Alcohol Abuse and Alcoholism; 2014). However, the current results suggest that among drinkers, Airmen's Alcohol Use Disorder Identification Test (AUDIT) scores were higher than college students' (8.2 vs. 7.5, respectively; Kokotailo, Egan, Gangnon, Brown, Mundt, & Fleming, 2004). This suggests that Airmen who do drink may be a very high risk group, even when compared to other at-risk populations.

Another important finding from the current work is the severity of alcohol issues for those under the legal drinking age. Although the lifetime prevalence for Airmen age 21 and over is similar to the national average (73.3% of Airmen vs. 71.2% of civilians; Substance Abuse and Mental Health Services Administration, 2014), the prevalence for Airmen under age 21 is considerably higher than national rates (35.5% of Airmen vs. 22.7% of those age 12-20 report prior alcohol use; Substance Abuse and Mental Health Services Administration, 2014). While a smaller proportion of those under 21 (than those age 21 and over) endorsed drinking, those who did reported significantly higher drinks per weeks and associated risks than those age 21 and over, including drinking on average more than 18 (vs. 14) drinks per week, and AUDIT scores in the "risky drinking meriting patient education" range. In addition, over the years 2010 to 2014, more than half of underage drinkers fell into an elevated risk category on the AUDIT. These findings suggest that the most "at risk" group of individuals entering basic military training may very well be those under 21, as they are engaging in more severe alcohol-related behaviors. Notably, these age differences held over time, suggesting that any

national prevention/intervention programs that Airmen were exposed to prior to basic training (e.g., national campaigns such as the Federal Trade Commissions' "Campaign to Help Reduce Underage Drinking", or Substance Abuse and Mental Health Services Administration's "Talk. They Hear You." campaign) did not appear to change alcohol use.

These results speak to the inheritance of young recruits' alcohol use issues by the United States Military. Even before entering training, many young recruits are engaging in alcohol use, and for some, high risk use that warrants attention. This work provides information to the military about what issues trainees are likely to experience as they gain more freedom throughout their careers. Given results from Bray and colleagues (2010) suggesting that those who engage in heavy alcohol use before basic training are likely to quickly re-initiate heavy episodic drinking after training, and Taylor et al. (2007) who indicated that those who had a history of drinking had a higher probability of negative alcohol related outcomes in the Air Force, the current results suggest that the Air Force's decision to universally disseminate brief alcohol interventions and random breathalyzer testing during Technical Training is both timely and important (Klesges et al., 2013).

Several other points deserve mention. First, although statistically significant, the range of drinking scores does not vary by site by a marked degree. This suggests the dissemination of brief alcohol interventions (in conjunction with breathalyzer assessments for those under age 21) in Air Force Technical Training is addressing an important need to ensure that all recruits are receiving education and skills to encourage responsible, legal use. In addition, one of the advantages of this work is the

current nature of the findings, examining the time period between 2010 and 2014.

Importantly, while rates are decreasing over time, this does not minimize the importance of addressing binge and episodic drinking in the military, particularly those under 21.

This information is considerably valuable for those contemplating the value of prevention and intervention programs for those entering military training. The DoD investment in training for every recruit is considerably large. Dismissal of an Airman (or recruit from any military branch) due to an alcohol-related offense carries more than just lost training costs, but also adjudication costs and costs to society, depending on the offense. For the individual, an alcohol-related offense (even more minor infractions such as underage drinking or buying alcohol for a minor) can mean demotion of rank, marred reputation, or being overlooked for responsibilities. By intervening at early stages of training, it appears that many adverse outcomes could be prevented (see Klesges et al., 2013). While this part of military training is not often highlighted as a critical time for alcohol intervention (Larson, Mohr, Adams, Wooten, & Williams, 2014), the clear link between these pre-existing alcohol issues and later drinking problems upon the completion of training periods (Bray et al., 2010; Taylor et al., 2007), suggests otherwise.

While relatively easy to implement, prevention programs do carry the cost of time out of training, a very valuable commodity in the United States military. However, the current results suggest that use of broad prevention programming would indeed be worthwhile for the large proportion of Airmen who have prior drinking experience. In addition, approximately half of young Airmen will experience an important milestone during their military training – turning 21. Inclusion of universal alcohol prevention

programming for those who will begin drinking during their time in the military, as has been implemented in Air Force Technical Training, is likely to be extremely useful as well. We are currently implementing a brief, group-based program for all Airmen in Technical Training that is coupled with randomized breathalyzer implementation at each site. Initial results suggest that this program has significantly reduced alcohol-related incidents and offenses throughout the Technical Training period (please see Klesges et al., 2013), although whether there are continued benefits past this period is not known and is the focus of current research being conducted in the United States Air Force (DOD Award W8/XWH-141-0378).

4.1. Limitations and Future Directions

While we feel that the analogous collection of data was important, there are several drawbacks to these types of data acquisition strategies. First, due to the possible identification based upon gender and race/ethnicity, we did not collect this information from Airmen. This is a notable limitation given the large gender and race/ethnicity differences in drinking behavior, a divergence also found in the United States military (Larson et al., 2014). Future work would do well to assess gender and race/ethnicity to more adequately assess risk. In addition, due to our decision to collect data in a manner that protected Airmen's identities, we were unable to assess to link this data to future events, such as later alcohol-related problems and offenses (e.g., underage drinking, alcohol dependence, driving under the influence, sexual assaults). While there are constraints to tracking individuals in the military with their personal identifiers, this information would be useful to understand whether these prevalence estimates lead to negative outcomes. Certainly, Bray and colleagues (Bray et al., 2010)

have provided important findings that suggest that these pre-existing alcohol use behaviors may lead to later issues in one's military career. It will be necessary for future work to further illustrate what other factors contribute to the maintenance of alcohol issues in this setting.

5. Conclusions

The current study anonymously assessed prevalence of alcohol use and alcohol use risk prior to basic military training in a large sample of individuals in Technical Training in the United States Air Force. Results indicated that approximately half of Airmen engaged in alcohol use prior to basic military training, and for those under 21 who drink, alcohol-related risks are considerably higher. Rates over time and across site varied, but these differences do not minimize the need to continue intervention efforts across Technical Training. It is recommended that all US active duty military training consider universal prevention programming for all young recruits entering basic military training, as these efforts may prevent later alcohol use issues as individuals progress in their military careers.

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Table 1. *Drinking Rates Prior To Training in the United States Air Force as Reported by Each Technical Training Site, 2010-2014.*

	Number of Drinkers at Site	Percent of Drinkers at Site
Lackland/Ft. Sam Houston (<i>n</i> = 33,107)	16,823	50.8%
Sheppard (<i>n</i> = 8,769)	4,472	51.0%
Keesler (<i>n</i> = 6,657)	3,174	47.7%

Note. Total *N* = 48,533 for those with both site and alcohol use data.

Table 2. *Alcohol Use by Age Prior to Training in the United States Air Force Reported across Four Technical Training Sites, 2010-2014.*

	<i>N</i>	<i>M</i>	<i>SD</i>	Range	<i>F</i>	<i>P</i>
Age	48,930	20.7	2.84	17 – 40		
Average Drinks per Week						
<i>Overall sample</i>						
All Participants	48,930	8.1	13.4	0.0 - 160.0		
Under 21	29,612	6.6	13.1	0.0 – 160.0	37.9	<.001
Age 21 and over	19,318	10.3	13.5	0.0 – 153.0		
<i>Excluding Abstainers</i>						
All Participants	24,756	15.9	15.2	0.3 – 160.0		
Under 21	10,568	18.4	16.3	0.3 – 160.0	211.8	< .001
Age 21 and over	14,188	14.1	14.0	0.5 – 153.0		
AUDIT Total score						
<i>Overall sample</i>						
All Participants	48,930	4.5	5.5	0 – 40		
Under 21	29,612	3.8	5.6	0 - 40	199.8	< .001
Age 21 and over	19,318	5.6	5.1	0 - 40		
<i>Excluding Abstainers</i>						
All Participants	24,756	8.2	5.3	0 - 40		
Under 21	10,568	9.3	5.6	0 - 40	231.8	< .001
Age 21 and over	14,188	7.3	4.9	0 - 40		

Figure Legend

Figure 1. *Percentage of drinkers in each AUDIT risk zone prior to training in the United States Air Force reported across four Technical Training sites, 2010-2014.* AUDIT “zones” are based upon the following guide: 1-7 score = Zone 1: Low risk drinking or abstinence; 8-15 score = Zone 2: Risky drinking meriting patient education; 16-19 score = Zone 3: Harmful/hazardous drinking; 20+ score = Zone 4: Extremely risky drinking. Panel A = Under age 21: $N(2011) = 2287$, $N(2012) = 2203$, $N(2013) = 3207$, $N(2014) = 2871$. Panel B = Age 21 or over: $N(2011) = 2311$, $N(2012) = 2783$, $N(2013) = 4440$, $N(2014) = 4654$. Y axis = Percent of sample. X axis = AUDIT zone distribution by each assessment year.

Figure 2. *Average number of drinks per week prior to training in the United States Air Force reported across four Technical Training sites, 2010-2014.* Panel A = Overall sample. Panel B = Excluding abstainers. Y axis = Average number of drinks per week. X axis = Year of assessment.

Figure 3. *Average AUDIT scores by age prior to training in the United States Air Force reported across four Technical Training sites, 2010-2014.* Panel A = Overall sample. Panel B = Excluding abstainers. Y axis = Average AUDIT total scores. X axis = Year of assessment.

Figure 1. *Percentage of drinkers in each AUDIT risk zone prior to training in the United States Air Force reported across four Technical Training sites, 2010-2014.*

A) Under age 21

B) Age 21 or over

Figure 2. *Average Number of Drinks per Week prior to Training in the United States Air Force Reported across Four Technical Training Sites, 2010-2014.*

A) Overall sample

B) Excluding abstainers

Figure 3. Average AUDIT scores by age prior to training in the United States Air Force reported across four Technical Training sites, 2010-2014.

A) Overall sample

B) Excluding abstainers