WORK STRESS, ALCOHOL, AND THE YOUNG WORKER:

MODELING DIRECT AND INTERACTION EFFECTS

by

HANNAH K. KNUDSEN

(Under the Direction of Paul M. Roman)

ABSTRACT

While the risky drinking practices of college students have been well documented, less attention has focused on their peers who are employed in the full-time labor force. Young workers between the ages of 18 and 24 are expected to drink in patterns similar to that of college students, which will be substantially different from older workers. In addition, this research models the associations of job-related stressors, such as low job autonomy, low substantive complexity, and high job pressure, on alcohol-related measures using the "self-medication" framework. It also examines the relationship between abusive supervision and alcohol outcomes. It is hypothesized that young workers are more likely to experience negative working conditions, which results in greater alcohol consumption and greater problem drinking than older workers. Furthermore, interactions between age and these work-related variables on the alcohol-related measures are estimated to test the argument at younger workers face unique risks due to having limited coping resources. Using data from a nationally representative sample of full-time American workers, the results indicate support for the argument that young workers engage in drinking behaviors similar to those of college students. In addition, younger workers consume more alcohol, engage in more binge drinking, and are more likely to be alcohol dependent than older workers. There is general support for the "self-medication" model of drinking behaviors, such that stressful working conditions are associated with greater alcohol consumption and problem drinking. Compared to older workers, younger workers are at greater risk of experiencing negative working conditions. There is modest support for a model that includes interaction effects, suggesting several instances where the associations are stronger for younger workers. These findings suggest that younger worker drinking is a social problem on par with that of college student drinking, and therefore warrants a similar public health response. The devotion of greater research resources towards studying younger workers and the development of targeted prevention and intervention techniques may yield important public health benefits and benefit employers.

INDEX WORDS: Alcohol, Alcohol abuse, Age, Work stress, Supervisor abuse, Young workers

WORK STRESS, ALCOHOL, AND THE YOUNG WORKER:

MODELING DIRECT AND INTERACTION EFFECTS

by

HANNAH K. KNUDSEN

B.A., The University of Puget Sound, 1997

M.A., The University of Georgia, 1999

A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

DOCTOR OF PHILOSOPHY

ATHENS, GEORGIA

2003

WORK STRESS, ALCOHOL, AND THE YOUNG WORKER:

MODELING DIRECT AND INTERACTION EFFECTS

by

HANNAH K. KNUDSEN

Major Professor: Paul M. Roman

Committee: William Finlay
James E. Coverdill
Jody Clay-Warner

Electronic Version Approved:

Maureen Grasso
Dean of the Graduate School
The University of Georgia
May 2003

DEDICATION

To my parents, Teri and Steve Knudsen, who taught me to believe that anything is possible with enough hard work.

ACKNOWLEDGEMENTS

Nobody makes it through the process of graduate school without the support of a group of people, and this is my attempt to convey in words the gratitude that I have for each of them. I'm not sure that words can truly encompass how thankful I am, but I'm going to try. First and foremost, I must recognize the incredible opportunities and guidance that Paul Roman has offered me in the last six years. Paul is the reason that I came to the University of Georgia, and he is the reason why I will be staying here for the foreseeable future. His work inspired an interest in studying the connections between work and alcohol that pre-dated my arrival in Athens in 1997. On a basic level, I would not have moved across the country had it not been for the NIAAA Training Program that he led. Being a trainee under Paul's direction offered me the opportunity and resources to pursue my own research agenda, which is a luxury that most graduate students do not have; for that I am grateful. I am also grateful that he has continually supported my ambitions and extended further opportunities to help me to develop professionally. Paul, thank you so much for being my mentor and supporting me. I have learned so much from you, and I feel so fortunate that I will be able to continue working with you in the future.

I also want to take this opportunity to thank my committee members, William Finlay, Jim Coverdill, and Jody Clay-Warner. Each has offered a unique perspective that strengthened the final product that is represented here. I also want to thank them for working with me on what was a crazy timetable for completing this project.

My colleagues and friends at the Center for Research on Behavioral Health and Human Services Delivery deserve much thanks as well. Aaron Johnson deserves a lot of recognition for always making the time to read my work and give me feedback; he also gets major credit for listening to the ranting and raving that has accompanied the peaks and valleys of graduate school. Carrie Oser also deserves recognition for providing the kind of friendship and unconditional support that prevented me from spiraling into insanity during this process. She has never failed to be there for me as a friend since the day that we met. I feel very lucky to have her in my life. Thank you, Carrie, for taking such good care of me when I know I wasn't much fun to be around. I also want to thank Diana Wall, Heath Hoffmann, Beth Montemurro, Tanja Link, Shannon Tinney, and Callie Burt for providing a foundation of friendship that pushed me to consider new ideas, that shared the triumphs and travails of graduate student life, and that provided a safety net of love when this whole experience felt completely overwhelming. This journey would have been impossible without each of you.

Finally, I feel incredibly blessed to have parents who have been unwavering in their love and support. While it has been hard to be physically far away from them, I have always felt that their love has transcended that distance. I know that my accomplishments are very much grounded in the values and standards that they taught me. Mom and Dad, I love you.

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

CHAPTER 1

INTRODUCTION

In sociological analyses of alcohol consumption and problem drinking, age is frequently included as a control variable since there is generally a linear association between age and alcohol outcomes. Most research points to a negative association between age and alcohol outcomes, with younger adults consuming more alcohol and therefore being at greater risk of negative alcohol-related consequences compared to older adults. Alcohol consumption tends to peak when adults are in their twenties with gradual decreases in use over the remaining life-course (Hilton, 1991).

A specific group of young adults has been studied frequently for their alcohol consumption and alcohol abuse problems: college students. Enormous research effort and funding have been devoted to examining the drinking patterns of this particular subset of young adults, particularly students on residential campuses (Dowdall and Wechsler, 2002). For researchers and policymakers, the prevalence of "binge drinking"[1] constitutes a drinking pattern that puts college students as well as the people that surround them at significant risk. These significant negative consequences include injury, property damage, and even death (Wechsler, 1998). The conventional argument in this literature is that the frequent binge drinking of college students represents a major public health problem that calls for concerted effort in the development and diffusion of

[1] "Binge drinking" is also called "heavy episodic drinking" in the alcohol literature, and generally refers to the consumption of five or more drinks in a single sitting for men, and four or more drinks in a single sitting for women (Wechsler and Austin, 1998).

effective methods of prevention and intervention (Boyd and Faden, 2002; Wechsler et al., 1995a).

With the attention of alcohol researchers focused primarily on college students, the spotlight is rarely turned to adults of similar age who are employed in the labor force. Most research on employment and alcohol treats age in a linear fashion, simply noting that it is an important covariate in analyses of more substantive issues such as the relationships between job stress and drinking (Roman and Blum, 1992). Because age is generally treated as a control variable, much less is known about the extent to which the younger worker sub-population, that is those who are between the ages of eighteen and twenty-four[2], is at risk for problematic alcohol-related outcomes similar to their college-enrolled counterparts. Estimates of overall consumption and binge drinking in this sub-population are relatively rare compared to the massive body of research that monitors and documents college student drinking. If younger workers' drinking patterns approximate those of college students or are substantially greater than older workers, then there may a parallel need for public health interventions, as well as further research on the younger worker population.

Studying the unique experiences of younger workers contributes to the substantive research that has examined the relationship between workplace experiences and drinking outcomes. Sociological analyses have revealed associations between stressful working conditions, particularly in terms of unrewarding job characteristics, and

---

[2] Highlighting this definition of younger worker is important because there is a substantial line of research on the effects of adolescent employment that tends to label adolescents as "young workers" (c.f. McMorris and Uggen, 2000; Paschall et al., 2002; Valois et al., 1999). This research does not examine the adolescent sub-population. Justification for the use of the age bracket of eighteen to twenty-four year olds will be discussed Measurement section.

alcohol outcomes. More recent work has examined stressful interpersonal workplace experiences, such as supervisor abuse, and their effects on drinking behavior. In general, this research treats age as a covariate to be controlled so that the more "substantive" relationships can be uncovered (Roman and Blum, 1992). Rarely in this literature are the working conditions of younger workers compared to older workers' conditions, which could help to explain the greater alcohol consumption and risk of problem drinking that members of the former group face. Rarer still are examinations of how the associations between working conditions and drinking may differ in magnitude between younger and older workers, which could allow for the building of more theory about the association between age and drinking.

This project is grounded in a set of research questions that focus upon the intersection between age, work experiences, and alcohol outcomes. The following general questions serve as a guiding framework for this research.

First, what are the drinking patterns of young workers who are employed on a full-time basis, and how do they compare to older full-time workers?

Second, to what extent do these patterns indicate that younger workers and college students are at similar levels of risk for alcohol-related negative consequences?

Third, to what extent is age relevant in examining the associations between work and alcohol outcomes? That is to say, to what extent are differences in work experiences, specifically unrewarding job characteristics and supervisor abuse, putting younger workers at risk of worse alcohol outcomes?

Finally, are there interaction effects based on age status in terms of the magnitude of the associations between work experiences and alcohol outcomes?

To summarize, this research evaluates the types of unique risks that younger workers face, which can provide valuable information for policymakers who are interested in reducing the negative health and other social consequences of alcohol. While these substantive research questions represent an innovative framework for studying age, work, and alcohol, this research makes an additional contribution through the methodology employed. In contrast to studies of employee drinking that focus on single sites of employment, this research uses a nationally representative random sample of Americans who are employed on a full-time basis. The National Employee Survey (NES) includes a sufficiently large number of workers that detailed analyses of sub-groups within the working population can be investigated, which also represents an advantage over many previous alcohol-related research designs. The strengths of the NES in terms of its design represents a significant advance in the field of alcohol studies since it allows for the evaluation of research questions that require more complex models of drinking behavior.

Prior to discussing the specific literature that informs the hypotheses considered in this research, I will address the following sociological topics that relate to drinking behaviors. First, I offer an analysis of how alcohol consumption, a seemingly individual behavior, can be viewed in sociological terms. Then in Chapter 2, I examine how the drinking patterns of younger adults have been socially constructed via the emphasis in the literature on college student drinking. I argue that this focus has resulted in a paucity of knowledge about younger adults not enrolled in college, although I attempt to summarize the existing literature on younger adult drinking in Chapter 3. Also in this chapter, I shift the focus to previous research on work experiences and drinking behaviors. My

hypotheses appear at the conclusion of Chapter 3. In the fourth chapter, I provide specific information about my research design and methods. The following chapters then report my findings with descriptive statistics and model fitting procedures appearing in Chapter 5, an analysis of the alcohol measures by age in Chapter 6, and models of drinking with additive and interaction effects in Chapter 7. The final chapter summarizes the key findings of this research project and suggests avenues for future research.

CONCEPTUALIZING DRINKING BEHAVIORS: A SOCIOLOGICAL PERSPECTIVE

Before proceeding with a review of the literature relevant to this analysis, drinking behavior needs to be framed in sociological terms. Alcohol has long been consumed by human societies and has served a variety of social functions, ranging from symbolic usage in religious rituals (Glassner and Berg, 1980) to enhancing social integration in early America (Rorabaugh, 1979). The social meaning of alcohol consumption varies by cultural contexts and historical periods as well as by the lens through which it is viewed. Consideration of alcohol consumption in modern contexts, particularly by American researchers, tends towards a social problem orientation (Gusfield, 1996), with principal concern for the negative social and health consequences associated with particular patterns of consumption. To some extent, that is the perspective that informs this research.

As noted by Roman (1982), alcohol research has been dominated by biomedical researchers with sociologists playing a more limited role in the development of the empirical knowledge base about why individuals consume alcohol. Even within sociology, alcohol research is not a particularly popular area of research (Roman, 1982).

It is perhaps useful to ask the question: "Why should we as sociologists care about drinking?" I will focus my reply on three central reasons. First, from the perspective of public health, patterns of drinking are associated with a variety of consequences that raise the risk of harm to individual drinkers as well as others around them (Midanik et al., 1996). Second, certain drinking patterns such as heavy episodic drinking represent a failure of social control, which is a topic that has been of particular interest to sociologists. Finally, if patterns of risky drinking are in part associated with social conditions, and if certain social groups are at higher risk, then a sociological perspective can help to uncover key issues that need to be considered by policymakers who want to reduce the negative impact of alcohol in society.

For those sociologists interested in health and social well-being, alcohol consumption can be constructed as a source of risk. The issue of the extent of this risk has been the source of lengthy debate in the alcohol literature, but there is compelling epidemiological evidence suggesting that alcohol consumption poses some risk to individual drinkers as well as others in the proximity of drinkers. Midanik et al. (1996) used a national US sample of 22,102 current drinkers (the 1988 National Health Interview Alcohol Supplement) to consider the issue of risk associated with alcohol consumption in terms of three outcomes: alcohol dependence, driving after drinking, and job-related problems. These three consequences have implications both for the individual (e.g. injuries and legal problems that may arise from driving after drinking; Harford, 1996) as well as others in society (e.g. productivity losses to organizations associated with poorer job performance; Makela, 1996; Room, 1996).

In their analysis of these data, Midanik et al.'s (1996) results revealed several important findings for those interested in the public health. First, overall alcohol consumption, a measure involving the average quantity consumed per day, was positively associated with the three negative consequences. Even at low levels of alcohol consumption, there was some risk of negative consequences, which according to Johnstone and Fillmore (1996) may offset the health benefits of lower levels of alcohol consumption for reducing coronary heart disease risk. In addition, heavy episodic drinking, or the consumption of five or more drinks in a single drinking occasion, was strongly associated with the three consequences. Midanik et al.'s risk curves became substantially steeper in terms of their slopes when the individual reported at least one episode of heavy drinking. As noted by Makela (1996), these findings suggest that researchers measure both overall consumption of alcohol and heavy episodic drinking because of their health and social implications.

Midanik et al.'s (1996) results are just one example of the social "costs" of drinking. Numerous other scholars have considered this topic with some calculating the monetary losses related to alcohol, while others have explored the causal associations between drinking and negative social and health outcomes (Ames et al, 1997; Bennett and Lehman, 1998; Blum et al., 1993; Forsberg et al., 2002; Mangione et al., 1999; Stevenson and Lee, 2001; Wyllie et al., 2000). The point of this discussion is not to demonize all alcohol consumption, but rather to note that there are legitimate social and individual consequences that provide a rationale for gaining a sociological understanding of drinking behaviors.

On a more theoretical level, these risky drinking practices link up with broader issues of social control and deviance. Sociologists have long noted that the stable functioning of society assumes that individuals will perform social roles in a predictable manner according to the norms associated with the roles. The consumption of alcohol, particularly in terms of heavy episodic drinking, produces changes in behavior that inhibit people's abilities to perform their social roles. Heavy drinking can therefore be seen as an "opting out" of proper social role performance, a form of deviance, which then poses a threat to the larger social order.

Further evidence of the deviance associated with heavy drinking can be seen in the myriad of ways that society attempts to regulate alcohol consumption. For example, legal regulations attempt to rein in drinking behaviors by placing negative sanctions on those who operate vehicles while "under the influence," regardless of whether individuals or property are damaged by the driver. In addition to direct control via legal regulations, the state attempts to indirectly control the consumption of alcohol by certain individuals, such as those below a specific age threshold and pregnant women, through public health campaigns (Wagenaar and Toomey, 2002). Other social institutions also attempt to exert control over drinking behaviors. Some employers intervene and offer services through employee assistance programs (EAPs) when workers are no longer adequately performing on the job (Roman and Blum, 1985). Educational institutions, such as universities, spend substantial amounts of money on programs of prevention and intervention that seek to change the drinking patterns of their students (DeJong and Langford, 2002).

The preceding examples suggest that drinking patterns, with their implications for social control, are worthy of sociological interest. This is not to say that society does not have a legitimate interest in regulating the drinking of its members, but rather to highlight how certain patterns of consumption threaten the social order and therefore motivate social institutions to respond with mechanisms of social control. American experience with the Temperance movement, enactment of Prohibition, and its subsequent repeal document cultural and societal attitudes that once held such control in the forefront of significant social issues (Clark, 1976). Today however drinking behaviors are not constructed as a threat as large as those posed by illegal drugs. Certainly the sheer amount of resources dedicated to the War on Drugs demonstrates the way that these other drugs have been constructed as larger social problems than alcohol. However, despite its status as a legal drug, alcohol is constructed as a sufficient threat to social stability that efforts to regulate its consumption enjoy widespread public support.

A final reason for sociological inquiry into drinking patterns is the long history of evidence that points to drinking behaviors being patterned across social groups and under certain social conditions. Sociological research methods offer useful tools to uncover these patterns. In the next two chapters, I consider sociological approaches to the study of drinking behaviors, with emphasis on the dominant trends in this literature. Two approaches are of particular interest for my proposed research. First, I examine the construction of college student drinking as a social problem and discuss the implications of this research focus on the state of knowledge regarding similarly aged individuals who are employed on a full-time basis. Then, I move to the work and alcohol literature,

noting some of the weaknesses in this line of research that my research attempts to address.

CHAPTER 2

ALCOHOL, AGE, AND RISK: THE SOCIAL CONSTRUCTION OF COLLEGE STUDENT DRINKING AS A SOCIAL PROBLEM

For researchers and university administrators, it is taken for granted that the drinking patterns of college students are a significant social problem, particularly when characterized as heavy episodic or binge drinking (Wechsler, 1998). To get a sense of how this issue is socially constructed it is useful to consider two claims made in the literature on college student drinking. Henry Wechsler, the principal investigator on Harvard's College Alcohol Study (CAS), and colleagues (1995a:921) frame their report on the correlates of college student binge drinking in these terms: "Thus, binge drinking is the No. 1 public health hazard and the primary source of preventable morbidity and mortality for the more than 6 million full-time college students in America." Wechsler et al. make absolutely clear that college student binge drinking falls within the domain of a significant social problem. Tied to this significance, and providing further evidence of it, is a more recent point made by Dowdall and Wechsler (2002:14), who write, "Perhaps no topic in alcohol research has been more intensively studied and widely discussed in the past decade as college student alcohol use and associated problems."[3] Thus, the legitimacy of college student binge drinking as a social problem, and the magnitude of its

[3]Dowdall and Wechsler's (2002) article appears in a supplemental issue of the *Journal of Studies on Alcohol* that presents a set of review articles as the culmination of the effort of the Task Force on College Drinking, sponsored by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). These review articles summarize the major findings of well-designed research on college student drinking, and such represent the "state of the art" when it comes to alcohol research.

significance, has been reinforced by rather concrete indicators, namely the devotion of funding and research effort. Of further interest is that these assertions appear in a publication underwritten by the NIAAA, which is the federal agency providing nearly all of the funding opportunities for this large body of research. To put this in further perspective, it is interesting to note that while college student research was the most widely studied topic within alcohol research in recent years, the college student population in 1995 comprised only about 2.3% of the US population.[4] This suggests a disproportionate amount of resources are directed at researching a rather small sub-population, the vast majority of which represent the middle and upper strata of American society.

The sociological study of college student drinking dates back about fifty years, but the construction of it as a major social problem worthy of research, prevention, and intervention is a more recent social accomplishment. Research on the drinking behaviors of college students began with Straus and Bacon's (1953) *Drinking in College*, a study of added significance since it was one of the first major epidemiological studies of American drinking patterns. Straus and Bacon's work continues to serve as a sort of benchmark against which more recent data has been compared. For example, Dowdall and Wechsler (2002) as well as O'Malley and Johnston (2002) note that recent estimates of college student drinking, particularly in terms of the prevalence of any alcohol consumption in the previous month, are relatively similar to the patterns revealed by Straus and Bacon.

---

[4] This figure is based on an estimate that there were 263 million people living in the US in 1995 (US Bureau of the Census, 2000b).

In the years following the publication of *Drinking in College*, relatively few additional studies of college student drinking were conducted until the 1980s (O'Malley and Johnston, 2002). Many of these more recent studies have significant limitations in their design, including a focus on drinking at a single institution, the use of convenience sampling, and small sample sizes (Baer, 2002; Dowdall and Wechsler, 2002). However, in a report by O'Malley and Johnston (2002), published as part of the National Institute on Alcohol Abuse and Alcoholism's (NIAAA) Task Force on College Drinking's findings, five sources of reliable, valid data are identified: The National Household Survey on Drug Abuse (a repeated annual survey sponsored by SAMHSA), the National College Health Risk Behavior Survey (a single cross-sectional study conducted by the Centers for Disease Control in 1995), The Core Alcohol and Drug Use Survey (four surveys conducted between 1989 and 1994, sponsored by the US Department of Education through funding to Southern Illinois University), Monitoring the Future (a longitudinal panel study of youth and conducted annually since 1980, funded by the National Institute on Drug Abuse through grants to the University of Michigan), and the College Alcohol Study (three cross-sectional surveys in the 1990s, funded by the Robert Wood Johnson Foundation through grants to the Harvard School of Public Health).

When comparable measures are available, these studies offer similar findings with regard to the prevalence of binge drinking. For example, the prevalence rate of drinking any alcohol in the last 30 days among college students tends to fall within the 65% to 70% range. In addition, "heavy episodic drinking" or what is also known as "binge drinking" (that is, drinking five or more drinks in a single sitting within the previous two weeks) is generally around 40% of the college students in these sources of data. The

Monitoring the Future study is the only dataset that allows for longer-term trend data from 1980 to 1999, which indicates a slight decrease in the prevalence of any drinking in the previous month but relative stability in the prevalence of binge drinking (O'Malley and Johnston, 2002).

While the prevalence of binge drinking may not have changed, public interest in college student binge drinking has. For example, Wechsler and Austin (1998) note that after the initial publication of the College Alcohol Study results, the number of articles in the popular press about binge drinking among college students increased substantially.[5] In fact, using Lexis-Nexus to conduct this search of articles, they found an 11-fold rise in the number of articles. This attention paid to the issue of collegiate binge drinking in the larger culture, combined with the amount of research attention it receives, indicates its growing legitimacy as a social problem.

A primary reason for the attention to college student binge drinking is that these studies have connected college student binge drinking to a variety of negative consequences, including health and social consequences (Goldman, 2002). For example, Wechsler et al. (1994) document increased risk of unprotected and/or unplanned sexual activity, driving after consuming alcohol, trouble with police, and physical injury with

---

[5]It is also notable that Wechsler and his colleagues have not only drawn substantial media attention to binge drinking, but this proliferation of articles also points to Wechsler's success in redefining binge drinking. In the earliest studies of alcohol consumption, a binge referred to a period of consecutive days during which a person remained intoxicated and generally failed to perform his or her prescribed social roles. Although some academic outlets such as the Journal of Studies on Alcohol do not accept Wechsler's redefinition as evidenced by their replacement of "binge drinking" with "heavy episodic drinking" (Dowdall and Wechsler, 2002), it would be difficult to argue that Wechsler's approach to binge drinking has not assumed a position in the public nomenclature regarding college student drinking. To some extent, Wechsler can be characterized as a moral entrepreneur (Becker, 1963).

binge drinking behavior. College student drinking, particularly binge drinking, appears to increase the likelihood of being a victim of violence (Giancola, 2002) and sexual assault (Abbey, 2002), having multiple sexual partners (Cooper, 2002), and suffering from academic impairment (Perkins, 2002). In addition, alcohol-related property damage and the utilization of alcohol-related health services pose costs to universities and the surrounding community (Perkins, 2002). These risks involve potential harm to the drinker as well as others in society, thereby providing further support for the construction of collegiate binge drinking as a social problem.

Beyond these immediate social consequences, it is curious why, among young adults, college students' drinking is the topic of so much public attention, research, and targeted intervention. There is relative silence about this issue in the literature, but there are several plausible sociological explanations. First, on the basis of their socioeconomic origins, college students as a group possess a substantial level of social capital relative to other young adults. Second, society invests substantial social capital in college students. This investment takes the form of financial resources, including scholarships and student loans, as well as the effort expended in teaching them skills and substantive knowledge. It is well known that the costs of higher education almost always exceed tuition and fees that are assessed from students and their families. For college students to engage in drinking practices that put their health and well-being in jeopardy raises the likelihood that this social investment will not "pay off" in terms of students successfully entering adult social roles. The societal expectation of college students is that they will assume roles of leadership in the economy, in politics, and in other social institutions; as such, they may be judged as having more "value" to society. Given this investment, society

may perceive a legitimate interest in protecting their welfare. Finally, the interest in college student drinking by academic researchers most likely has some of its roots in the practical availability of this sub-population for research. Particularly in residential college settings, students are an easily available pool of research subjects, which supports the development of research projects that focus on their behaviors. These factors underlie the large body of research that has been devoted to quantifying the extent of the college student binge drinking on campuses and the negative consequences associated with that type of behavior.

While there are significant negative consequences associated with college student binge drinking in particular, it is sociologically interesting to note that rarely are the behaviors of college students put into a larger context that compares their drinking to similarly aged individuals who are not enrolled in college. Of the five studies previously mentioned as benchmarks of college student drinking, only two (the National Household Survey on Drug Abuse and Monitoring the Future) include data collected from non-college students that would allow such comparisons.[6] Drawing firm conclusions about drinking behavior differences between these two groups is challenging. For example, the MTF data suggests that while a higher proportion of college respondents report consuming any alcohol in the last 30 days, a greater proportion of non-college respondents engage in drinking every day. The 30-day prevalence rate of about 60% for non-college students, albeit less than the 70% rate reported by college students, is hardly

[6]The comparisons made by O'Malley and Johnston (2002) do not consider employment status among the non-college enrolled respondents, which means that there is substantial diversity within the non-college group (e.g. unemployed, part-time worker, full-time worker). Thus, the college student versus non-college student comparison is not ideal. However, it does offer a ballpark estimate that begins to point to the importance of studying younger workers' drinking patterns.

negligible. Furthermore, the prevalence of binge drinking is about 35% in the non-college sample versus 40% among college students, which suggests that binge drinking could be constructed as a social problem among the non-college student population.

The preceding discussion is not intended to suggest that college student drinking is unworthy of study or that it is of no consequence, but rather to observe that they may be disproportionately studied in comparison to their non-college counterparts. While NIAAA has sponsored a Task Force on College Drinking, no such investment in money and research effort has been made to study similarly aged individuals who are not enrolled in college, such as those in the full-time labor force. While many younger adults attend college, they are a minority. Furthermore, substantial numbers of students exit college and enter the workforce before completing an undergraduate degree (Borman, 1991). Of 18 to 24 year olds, about 57% of men and 50% of women have no college experience (US Bureau of the Census, 2000a).[7] As is discussed in the following chapter, there are fruitful possibilities in focusing upon younger workers, the working conditions they face, and the consequences in terms of alcohol consumption and alcohol dependence.

[7]Data from the 2000 Census indicates that among women age 25 to 34, about 60% have not completed a college degree; for men in this age bracket, nearly 64% have not finished an undergraduate degree. In older cohorts, this rate of college non-completion is reasonably stable, suggesting that achievement of an undergraduate degree is predominantly a phenomenon that occurs between the ages of 18 and 24. These data do not take employment status into account. Average educational attainment may be higher within the sub-population of adults that have achieved stable full-time employment.

CHAPTER 3

YOUNG WORKERS AND ALCOHOL: CONSIDERING THE RISKS

Although age is linked to certain biological processes, its meaning is also social in that age is linked to the social roles that individuals come to inhabit (Sadava, 1995). As noted by researchers who study the life-course, the transition to adulthood is a process that occurs over time as individuals enter a set of "adult roles." Chief among these roles are becoming a full-time worker, entering marriage, and having children (Marini, 1987). Although entry into these roles often occurs during one's twenties, not all individuals enter these roles on that timeline or even enter all of those roles at all.

At the same time that there are increasing social pressures to assume adult roles, young adults receive cultural messages about drinking that may seem at odds with the responsibilities that are tied to adulthood. Indeed, the majority view is that early adulthood is a time when drinking is normative (Schulenberg and Maggs, 2002). In fact, Schulenberg et al., (1996:289) argue that heavy drinking during this time in the lifespan is "one of the few remaining, widely acknowledged rites of passage into adulthood." So while young adulthood is characterized as a time of increasing responsibilities and demands, there is also social sanctioning of drinking behaviors that may pose risks to the individual and others.

This social acceptability translates into concrete figures of alcohol consumption that demonstrate that drinking behaviors are stratified by age. Greenfield and Rogers (1999) note that while 27% of the US population is between the ages of 18 and 29, this

age group drinks 45% of the total alcohol consumed. Perhaps this disproportionate amount of consumption helps to explain some of the linkages between age and the onset of alcohol problems. Researchers have suggested that it is during young adulthood that the emergence of symptoms of alcohol problems and dependence emerge (Bucholz and Robins, 1989; Chilcoat and Breslau, 1996).

The following sections consider life-course research on drinking patterns, identifies weaknesses in the existing literature, and then specifically focus on one particular adult role: full-time worker. This review of the literature provides an empirical foundation for this proposed research, which aims to fill in a major gap in the literature, namely the inattention to the intersection of work, age, and alcohol.

AGE AND ALCOHOL: DRINKING OVER THE LIFE COURSE

Life-course research on drinking behaviors tends to fit into three categories: epidemiological studies that map drinking over the life-span, studies that focus on the transition to young adulthood from adolescence, and research on the protective effects of assuming conventional adult roles, such as marriage. These lines of research offer some evidence that can inform research on younger workers, but have certain limitations as will be discussed below.

If drinking is considered over the life-course, there is ample evidence that patterns of consumption vary with age. This relationship can best be described as curvilinear, meaning that in general, drinking peaks in early adulthood and then decreases gradually over time. Although there has been speculation that the timing of this peak varies across demographic groups, recent research by Johnson et al. (1998) demonstrates that the peak is similar across gender and racial groups. While the gradual decrease in average alcohol

consumption as individuals become older suggests a diminishing risk of negative alcohol-related consequences, it is important to remember that the greater consumption in young adulthood still places individuals at risk of alcohol dependence and negative consequences (Bennett et al., 1999; Chilcoat and Breslau, 1996).

Data from the general population (not limiting the analysis to workers), puts into perspective how drinking patterns are to some extent age-specific. For example, in a large nationally representative sample of American adults[8], Dee (2002) reports a prevalence of 13% for any binge drinking in the previous month. However, if age is considered, the rate of binge drinking among 18 to 24 year olds is 27% compared to 16% for those aged 25-55, and 4% for those 56 years old or greater.

A second line of research on young adults considers the transition into this phase of life. As noted by Bailey (1995), a large amount of the research devoted to the study of young adulthood emphasizes the extent to which drinking in adulthood parallels or differs from the alcohol consumption patterns reported in adolescence. There are correlations between these two time periods in terms of consumption, but there is still considerable variance in young adulthood drinking to be explained (Sadava and Pak, 1994). While a large number of young adults maintain either the low levels or high levels of drinking they engaged in during adolescence (Bennett et al., 1999), substantial numbers do change their patterns, suggesting the need to explore the influence of social factors unique to adulthood.

---

[8]Considering all adults has obvious limitations in that some of the 18 to 24 year olds may be college students. Also, it is unclear to what extent these 18 to 24 year olds are in the labor force.

The third major approach to the study of age and drinking is to consider the effect of taking on adult roles such as marriage and employment during the period of early adulthood. In general, scholars argue that these new roles mean that there are significantly higher "costs" associated with drinking, particularly heavy drinking, and that involvement in these roles constrains the amount of time that can be devoted to drinking (Johnson et al., 1998). Substantial evidence indicates that marriage reduces overall consumption and offers some protective influence from problem drinking (Johnson and White, 1995). Longitudinal evidence demonstrates how consumption increases for individuals during their twenties when they remain single, with consumption decreasing upon the transition into marriage (Sadava and Pak, 1995). Chilcoat and Breslau's (1996) longitudinal study also revealed that marriage decreased the incidence of alcohol disorders as well as the persistence of pre-existing disorders.[9] However, the age of transitioning to first marriage has been increasing in recent decades (Strombino et al., 2002). Recent Census data indicates that 78.9% of women and 88.2% of men between the ages of 18 and 24 have never been married (US Bureau of the Census, 2002). Thus, while marriage may serve as a protective factor, these data suggest that younger workers are decreasingly likely to benefit from this protection.

The implication of assuming the role of full-time worker is less clear than with marriage. The longitudinal studies by Chilcoat and Breslau (1996) and Sadava and Pak (1995) do not look at the effects of transitioning into full-time work. Johnston and White (1995) report that entry into full-time work results in greater consumption for women,

[9]Although parenthood is often expressed as a key adult role, Chilcoat and Breslau (1996) find that the effect of parenthood is completely mediated by the effect of marriage.

although others have not found this association (Ames and Rebhun, 1996; Wilsnack and Wilsnack, 1991).

Although employment has been constructed as a likely constraint on heavy drinking behavior, limiting the focus to employment status overlooks the potential of the stresses associated with this social role that have the potential for influencing drinking behavior. Perkins (1999) conducted longitudinal research that followed young adults from college into young adulthood with an emphasis on the connections between stress-related reasons for drinking and alcohol behaviors. Although Perkins reports a gradual decrease in consumption over the 13 years post-graduation, his data revealed a greater emphasis on stress-related reasons for drinking after graduation compared to pre-graduation. Furthermore, this measure was positively associated with consumption. Perkins argues that establishing a career results in exposure to stressors from which alcohol may serve as form of relief. This work by Perkins begins to move us toward understanding what may be a unique vulnerability among younger adults, although Perkins's evidence is not conclusive since he could not compare these younger adults to older adults.

The preceding discussion begins to provide a backdrop for understanding the drinking patterns of younger workers. The evidence from the general population suggests that young adulthood is a time of heavier consumption, which implies that younger workers will most likely engage in significantly different drinking patterns when compared to their older peers. However, these general population studies do not cross-tabulate their results in a way that allows precise comparisons between younger full-time employees and older full-time employees. Second, the lack of linkages between drinking

in adolescence and drinking in young adulthood points to the need to consider more adult-specific experiences when modeling alcohol outcomes. One avenue of consideration, and the focus of this research, is to consider the work experiences of younger and older adults. The research on the connections between work and alcohol is discussed below.

WORK AND ALCOHOL: STRESSFUL JOB DESIGN, SUPERVISOR ABUSE, AND DRINKING BEHAVIOR

Underlying the research on the associations between work and alcohol is a recognition of the importance of work as a social institution (Trice and Sonnenstuhl, 1990). While it has long been normative for men to engage in paid employment, women have developed stronger ties with formal employment, particularly in terms of full-time work, over the last fifty years (Sapiro, 1995). The workplace is a site where most adults will spend a significant portion of their lives (Trice, 1992), and as such, has considerable influence over individuals (Lehman et al., 1995, Martin and Roman, 1996).

A major stream of the research on the connections between the workplace and employee alcohol consumption has emphasized the importance of stressful working conditions. This approach suggests that the stresses experienced within the workplace "spill-over" into employees' non-work lives, particularly with regard to their use of alcohol (Grunberg et al., 1998). A variety of labels have been applied to stress-based perspectives, ranging from those that emphasize "alienation" inherent in jobs with low levels of control and low levels of skill (Greenberg and Grunberg, 1995; Seeman et al., 1988), to the "self-medication" arguments made by Martin et al. (1992) about the use of alcohol to relieve the distress associated with stressful work experiences. The common

thread in these studies is that poor working conditions, such as low levels of job autonomy and complexity as well as high levels of pressure on the job, create distress in individuals from which they seek relief. Alcohol, with its physiological and psychological effects, can fulfill that role. Thus, more stressful working conditions are viewed as likely to increase overall consumption of alcohol, and perhaps even raise the likelihood of heavy episodic or binge drinking as well as other forms of problem drinking.

A recent innovation in the work and alcohol literature has been to consider a new dimension of work stress: workplace abuse. As noted by Richman et al. (1997), the stress and drinking paradigm has generally operationalized stress in terms of characteristics of the job itself, rather than considering the quality of interpersonal relationships within the workplace. This focus on job characteristics has missed how the workplace is a social space, one in which people interact with others who possess varying levels of power within the hierarchy of this social institution. For example, a likely source of work-related stress are abusive experiences that may occur when interacting with one's supervisor, which is referred to as supervisor abuse. Examples of supervisor abuse include being yelled at, sworn at, or humiliated in front of other workers by one's supervisor. Richman et al. (1996) and Rospenda et al. (2000) argue that supervisor abuse may have stronger ties to alcohol outcomes because it is an unpredictable experience in comparison to stressful job characteristics which are more routine and therefore seen as "just part of the job." Indeed, the findings from a sample of workers a single university and a sample of medical students by Richman and her colleagues generally supports this argument. Supervisor abuse has been related to escapist drinking (Richman et al. 1996),

levels of alcohol consumption (Richman et al., 1997; Richman et al., 1996), binge drinking (Richman, 1999), and problem drinking (Richman et al., 1992; Rospenda et al, 2000).

DRINKING TO COPE AS A MEDIATOR BETWEEN WORK AND ALCOHOL OUTCOMES

The broader alcohol literature has established the importance of considering the beliefs that people hold about the functions of alcohol because these reasons for drinking may explain some of the variation in alcohol consumption and alcohol dependence. Drawing from social learning theory (Cooper et al., 1988), it has been suggested that part of the distinction between normal drinkers and problem drinkers is that these two groups differ in the expectancies about the effects of alcohol that they hold. In particular, researchers have identified escapist reasons for drinking, that is, beliefs that alcohol can reduce stress, as problematic. Believing that drinking will relieve stress and unwanted emotional states has been linked to a variety of alcohol measures including overall consumption and the frequency of heavy drinking (Abbey et al., 1993; Cooper et al., 1988; Smith et al., 1993). In addition, beliefs in the coping function of alcohol consumption are positively associated with measures of problem drinking (Cooper et al., 1988; Holyfield et al., 1995; Peirce et al., 1994). The importance of these beliefs in predicting alcohol outcomes has been further highlighted by Holahan et al.'s (2001) recent work. Their longitudinal panel data demonstrated that beliefs in alcohol as a coping mechanism at the start of the study predicted average alcohol consumption and problem drinking at four time-points within a ten year span.

From this work about general beliefs in the coping effects of drinking, researchers have considered beliefs specific to alcohol and work-related stress, suggesting that this is a key mediating variable that links work experiences with alcohol consumption. Fennell et al.'s (1981) work examined the direct effects of work stressors on the frequency of alcohol consumption, finding little support for the stress model. However, they found significant associations between work stressors and escapist reasons for drinking, meaning beliefs that drinking helped to relieve stress. Later research continued to explore this indirect relationship between job stress and alcohol measures. Martin et al. (1992) found indirect associations between work stressors and alcohol consumption via escapist reasons for drinking, as did Harris and Fennell (1988).

In these studies that have explored the connections between work and alcohol, age has been represented as a variable to be controlled, but not a variable of substantive interest. So while we may know that age is negatively associated with alcohol measures, there is no discussion about how age may be related to the other variables in the analysis. For example, are younger workers more likely than older workers to experience stress-producing job characteristics? Are they more likely to experience workplace abuse? Are they more likely to report that they believe that alcohol can relieve job-related stress? Affirmative evidence with regard to these questions would suggest that young workers may be prone to alcohol problems that have been masked in most previous analyses. This would suggest further that this group may be a worthy target of specifically designed prevention and intervention efforts.

Furthermore, beyond these potential mean differences, there is little research on how age may be a moderator in models of alcohol consumption and problem drinking. It

is unknown if the magnitude of the associations between stressors, escapist drinking beliefs, and alcohol outcomes are similar when younger workers and older workers are compared. Exploring these questions requires consideration of the intersections between age, status, and the workplace.

AGE AND THE RISK OF STRESSFUL WORK EXPERIENCES

Although recent management discourse has advocated for the flattening of hierarchies in the workplace (Drucker, 1993; Gordon, 1996), the empirical reality is that workplaces continue to be organized in hierarchies with certain positions being advantaged in terms of desirable working conditions, power, status, and tangible rewards. The literature on stratification in the workplace often emphasizes ascribed social statuses such as gender and race, with attention to how age is a relevant ascribed status in the workplace restricted to older employees who may be targets of discrimination (Kasschau, 1977; Schuster and Miller, 1984; Walker, 1999). However, evidence from sociological analyses of work does suggest that younger worker may face potential disadvantages at work. Although research on the linkages between work and alcohol generally do not explicitly consider this issue and how it places younger workers at greater risk, literature from other specialty areas suggests that this is the case.

Support for the argument that younger workers face unique risks regarding exposure to less rewarding working conditions can be drawn from the large literature on human capital, which is commonly applied to analyses of gender and racial stratification. Human capital theorists argue that access to higher status jobs, generally jobs that offer more autonomy and more complexity as well as greater income, is in part a function of the characteristics of the prospective employee (Cancio et al. 1996; England 1992). In

particular, educational attainment and work experience are characteristics that can increase the likelihood of being hired for these more rewarding types of jobs (Kalleberg and Loscocco, 1983; Loscocco and Kalleberg, 1988; Tomaskovic-Devey, 1993). Thus, according to this "job change hypothesis," older workers accumulate the resources that allow them move into more rewarding jobs over time (Wright and Hamilton, 1978).

Although young workers be considered "successful" in the sense that they have achieved full-time employment,[10] they are at higher risk of being in less rewarding jobs given their limited human capital. Even if some of these younger workers have attended some college or even reached a college degree, they still usually lack the work experience that would be advantageous in achieving better jobs. It is significant to note that in much of research that considers human capital, age is actually used as a proxy for work experience since many studies do not measure this particular variable.

Further support for this line of argument comes from other studies of working conditions, which often couch models of job satisfaction or organizational commitment in terms of the quality of one's job (Warr, 1992; Wright and Hamilton, 1978). Early work by Wright and Hamilton (1978) found age-graded differences in a variety of job characteristics, including decision-making authority, job demands, and opportunities for creativity and learning. They argue that these differences are most likely attributable to older workers being able to move out of unrewarding jobs as they accumulate greater amounts of human capital. Likewise, Janson and Martin (1982) report that rewarding working conditions, both in terms of job quality and income, generally increase as

[10]This notion of "success" is relative to their peers who face conditions of unemployment and underemployment, which younger workers seem to be at greater risk of given changes such as downsizing and re-structuring in the contemporary organizations (Loughlin and Barling, 2001).

workers increase in age; these findings are similar to that of Kalleberg and Loscocco (1983). More recent work reveals that these patterns persist. de Jonge et al. (1999) report a positive association between age and job autonomy, which means that younger workers were more likely to experience low levels of responsibility for making decisions at work. Schieman and Taylor (2001) found similar results, and also found that younger workers are more likely to be in jobs that require low levels of substantive complexity.

In addition to being at risk of working in jobs with less desirable characteristics, younger workers may also be at greater risk of being a victim of supervisor abuse. Younger workers most likely have less power in the workplace, in part due to their shorter tenure within organizations as well as due to broader cultural norms that ascribe less respect to younger people, which may put them at risk. Given the relative newness of sociological interest in supervisor abuse, there are few studies that test this proposition empirically. However, Rospenda et al. (2000) provide some empirical support for this argument in their finding that younger university employees were more likely to report experiencing workplace abuse.

Thus, there is reason to believe that younger and older workers will differ in their likely exposure to stressful working conditions. To the extent that these workplace experiences predict drinking behaviors, this may help to explain some of the differences in alcohol measures between younger and older workers.

A possible counter-argument to these hypothesized relationships relates to the values workers place on specific working conditions. One could argue that while younger workers may experience more stressful working conditions, they may not really experience negative emotions that require relief if they do not place much value on their

jobs. Implicit in such an argument is that the lower expectations and lower commitment to work exhibited by younger workers would actually be protective in the sense that they would not need to use alcohol as a coping mechanism. This argument rests then, on hypothesized age-related differences in orientations towards work and differences in what job characteristics are valued by younger and older workers. In general, empirical examination of such claims has not provided support for this line of argumentation. Mottaz (1987) reported that age was not a strong predictor of the values expressed regarding important job characteristics. In contrast, Janson and Martin (1982) actually found that younger workers actually placed more value on having jobs with rewarding characteristics.

An additional issue relates to the possibility that younger workers have unique vulnerabilities which strengthen the associations between stressful working conditions and alcohol outcomes. This possibility is under-studied, but research by Dee (2001) provides tangential evidence for such an interaction. Dee explored the association between the occurrence of economic recessions (as indicated by the unemployment rate), which he conceptualized as a stressor, and binge drinking. The direct effect was significant[11], but what was interesting is that the magnitude of this association was nearly double for younger workers between the ages 18 to 24 as compared to workers in the 25 to 55 age bracket. These results provide preliminary evidence that associations between stressors and alcohol outcomes may be stronger for younger workers.

---

[11]Among those who were employed, the prevalence of binge drinking in the past month was positively associated with the unemployment rate. Dee argues that economic recessions create stress even for those who are employed, and the increase in binge drinking represents an attempt to cope with that stress.

To summarize, there is some evidence to suggest that age may be important in work and alcohol models in two ways. First, younger workers may be more likely to experience work stressors, given their more limited access to higher quality jobs and lower-level positions within organizational hierarchies. Second, the effects of stressful working conditions may be greater for younger workers such that the magnitude of the associations between work stressors and alcohol variables are stronger for this sub-population. These two issues are summarized in several of the hypotheses that appear in the next section.

SUMMARY OF HYPOTHESES

Based on the literature, this research investigates the following set of hypotheses. For the sake of clarity, they are divided into three sub-areas, including the direct effects of age status on drinking, the associations between working conditions and alcohol outcomes, and the ways that age may shape the connections between work and alcohol.

Age and Drinking Behaviors

Hypothesis 1. The prevalence of any alcohol consumption and any binge drinking in the previous month will be significantly greater for younger workers as compared to older workers.

Hypothesis 2. Younger workers will report significantly greater amounts of alcohol consumption in the previous month than older workers.

Hypothesis 3. Younger workers will score higher on indicators of problem drinking, including the frequency of binge drinking and alcohol dependence (CAGE).

Hypothesis 4. Younger workers will report greater agreement with job-escapist reasons for drinking.

Work and Drinking Behaviors

Hypothesis 5. Stressful working conditions, including low job autonomy, low complexity, high job pressure, and high supervisor abuse, will have direct, but small, effects on the amount of alcohol consumed in the last 30 days.

Hypothesis 6. Stressful working conditions, including low job autonomy, low complexity, high job pressure, and high supervisor abuse, will have direct effects on problem drinking measures, including the frequency of binge drinking and alcohol dependence.

Hypothesis 7. Stressful working conditions, including low job autonomy, low complexity, high job pressure, and high supervisor abuse, will have indirect effects on alcohol consumption and problem drinking via job-escapist reasons for drinking.

Age, Work, and Alcohol

Hypothesis 8. Younger workers will report higher levels of stressful working conditions (low job autonomy, low complexity, high job pressure, and high supervisor abuse), than older workers.

Hypothesis 9. The magnitude of the associations between working conditions, job-escapist reasons for drinking, and the alcohol measures will be significantly greater for younger workers as compared to older workers.

CHAPTER 4

METHODS

DATA: THE 2001 NATIONAL EMPLOYEE SURVEY

With research support from the National Institute on Alcohol Abuse and Alcoholism (NIAAA), the Center for Research on Behavioral Health and Human Services Delivery, in collaboration with the DuPree College of Management at the Georgia Institute of Technology, began collecting data in 1991 from nationally representative samples of American workers who worked more than 35 hours per week. The principal aim of the study was to examine the relationships between work and drinking outcomes. Five national samples of full-time workers have been interviewed thus far, with each wave of data collection involving a new sample of respondents and an evolving interview instrument.

The most recent data collection effort began in April 2001, with data collection for the present research concluding in January 2002. Using random digit dialing, American households were randomly selected for interviewing. Two central eligibility requirements were employed: respondents must have been at least eighteen years of age at the time of the interview and had to work at least 35 hours per week. Given that many American households contain more than one wage-earner that meets these criteria, an additional level of random sampling was utilized to reduce bias. In households with more than one eligible respondent, the last birthday method is utilized to randomly select the participant (Salmon and Nichols, 1983).

The data for this research project included over 4000 interviews with American workers employed on a full-time basis. However, the interview instrument was amended after the first 500 participants were interviewed, so the sample for these analyses is 3535.[12] The response rate for the NES was about 55 percent.

THE 2001 NES AND THE EFFECT OF HISTORY

Although often discussed in the context of experimental research, history effects are potential threats to the internal validity of a project that occur when a major social occurrence has effects on the behavior under investigation (Neuman, 1997). Using data collected in 2001 raises the possibility that the data are biased due to the events of September 11th. The tragedy of September 11th could have affected the data, particularly with regard to alcohol consumption, for a couple of reasons. First, unlike most newsworthy events where the media reports the details after the fact, September 11th was a tragedy that unfolded in "real-time" on live television (Schuster et al., 2001). The images of the planes colliding with the towers of the World Trade Center and their eventual collapse were re-aired repeatedly for hours, dramatically increasing the number of viewers exposed to the day's events. Within hours, the day's events were characterized as having a scope beyond the direct victims who died or were injured. It was quickly constructed by the news media as an attack on America in general (Ollove 2001; Schuster et al. 2001).

[12] When the 2001 NES entered the field, the supervisor abuse items were not initially included in the survey, so those interviews that did not include these items are excluded from the analyses that follow. However, given the random selection of respondents and the large sample that remains, this smaller sample size does not compromise the integrity of the research findings.

This construction of a generalized attack raised empirical questions, such as whether Americans increase their consumption of alcohol in order to cope with the negative emotions that they were experiencing post-September 11th. News outlets provided anecdotal evidence to suggest that substance abuse may have increased after the attacks (CASA, 2001; Osnos, 2001). Furthermore, researchers who study the social consequences of disasters indicate that disasters may have effects on people not directly involved, but who identify with those harmed in the disaster. These "peripheral victims" may experience negative emotions for which alcohol can serve a self-medication function (Dixon et al., 1993). If Americans in general perceive themselves to be "peripheral victims" of September 11th, the literature on disasters would suggest that there may be a history effect on alcohol consumption, although the trauma and disasters literature also suggests that this effect would decrease over time (McFarlane 1998; Chilcoat and Breslau 1998; Stewart et al. 1998).

To investigate this possibility, Knudsen and Roman (2002) took a "snapshot" of the 2001 NES data, examining interviews conducted between April 2001 and mid-December 2001 for any effects of September 11th on alcohol consumption. Their analysis included a multivariate model of alcohol consumption that compared groups of respondents based on the date of interview (groups were constructed into 2 week intervals post-September 11th) to those respondents pre-September 11th. Gender, race, income, marital status, and geographical proximity to the Northeast were controlled in the analysis. There were no significant differences between the pre-September 11th group and any of the other groups created by their date of interview's proximity to September

11th. This analysis suggests that a history effect of September 11th does not threaten the validity of the findings of the current research.

MEASUREMENT

This research utilizes items from the 2001 NES in its consideration of the connections between age, work stressors, and alcohol outcomes. In this section, specific information is presented regarding the content, construction, and utility of these measures. The wordings of all items in the 2001 NES instrument are included in Appendix A.

Measuring Alcohol Outcomes

Drinking behavior can be measured in a variety of ways, although certain conventions have emerged in the literature. A primary concern is the validity of using self-reported measures of drinking as compared to biologically-based tests. After considerable debate in the field, a consensus has emerged that self-reported measures of alcohol outcomes are generally valid and reliable (Dufour, 1999), particularly when respondents are asked to report on relatively recent behavior, such as within the previous month (Dowdall and Wechsler, 2002).

The 2001 NES allows for the construction of six main alcohol measures. First, *prevalence of consumption in the last 30 days*, a dichotomous measure, is measured by a single item that asks the frequency of drinking in the last 30 days. This dichotomous measure (1 = consumed any alcohol in the previous 30 days) is frequently used in well-designed studies within the college student drinking literature (O'Malley and Johnston, 2002). Given that claims about the significance of college student drinking often begin

by citing prevalence rates of any consumption, this is an important measure to include in this research.

A related consumption measure is the total number of drinks consumed in the last thirty days. *Alcohol consumption in the last 30 days* is one of the predominant measures utilized in drinking studies in the US (Dufour, 1999; Midanik and Room, 1992; Room, 1991). Following other alcohol studies, this measure is calculated by multiplying the number of drinking days in the previous month by the average number of drinks consumed on a drinking occasion. This overall measure of alcohol consumption has been linked to a variety of negative alcohol-related consequences, such as negative effects on physical health as well as negative effects on more social variables including family relationships and employment outcomes (Fillmore et al., 1997).

In addition to overall consumption measures, researchers in the field have called for measures that indicate drinking patterns that jeopardize the drinker as well as others (Cahalan and Room, 1974; Martin et al., 1992; Blum and Roman, 1997), which are often lumped under the term, "problem drinking." Three measures related to problem drinking are included in the 2001 NES. Binge drinking, also known as heavy episodic drinking, is often employed in the college student drinking literature (Wechsler and Austin, 1998) as well as in longitudinal studies of youth (Johnston et al., 1996). Binge drinking is indicated by consuming five or more drinks in a row for men and four or more drinks in a row for women (Dowdall and Wechsler, 2002). In the literature, this type of drinking is viewed as problematic because it is linked to increased risk of negative alcohol-related consequences, both in terms of physical and social well-being (Clark, 1991; Goldman, 2002; Midanik and Room, 1992). The reasoning behind the use of different cutoff points

for men and women relates to gender differences in the processing of alcohol (Wechsler et al., 1995b). Women's smaller average body mass as well as gender differences in metabolizing alcohol results in their reaching intoxication sooner than men and hence being at risk of negative consequences related to alcohol at a lower threshold (Wechsler et al., 1994).

Binge drinking is measured in two ways. First, *the prevalence of binge drinking in the past 30 days* is based on a dichotomous measure (1 = any binges in the previous month). Given the frequency that this measure is employed in the college student drinking literature (Dowdall and Wechsler, 2002), it is important to consider in this research. Second, *the frequency of binge drinking in the past 30 days* is an additional continuous variable that will be analyzed. Since more frequent binge drinking increases the risk of negative alcohol-related consequences, this is an important outcome variable.

A final measure of problem drinking commonly employed in alcohol research is the CAGE, which indicates *alcohol dependence* (Ewing, 1984; Ewing and Rouse, 1970). The brief CAGE has proved to have utility in predicting the alcohol dependence indicated by more extensive screening devices (Mayfield et al, 1974; Smart et al., 1991). The CAGE consists of four questions with dichotomous response categories (1 = yes). Responses to the CAGE items are summed and then collapsed into a dichotomy, where 1 represents a summed score of 2 or higher (indicating alcohol dependence) and 0 represents a summed score of less than 2 (indicating an absence of alcohol dependence; Mayfield et al., 1974). The issue of the appropriate cutoff has been raised in the alcohol literature, notably by Ewing (1998) who recommends using an affirmative reply to one CAGE question as an indication of alcohol dependence. Using this lower threshold,

however, runs the risk of inflating the estimate of alcohol dependence; the more traditional score of 2 as the cut-point is more conservative and allows this research to be more comparable with the existing literature. Therefore, this research will use the threshold of an additive CAGE score of 2 as the cut-point indicating alcohol dependence.

In addition, this research will consider one job-specific alcohol outcome: *job-escapist reasons for drinking*. These three items were developed by Quinn et al. (1975) and indicate the extent to which alcohol is used as a means of coping with job-related stress. Responses range from 1 to 4, with higher values indicating greater job-escapist drinking. In some formulations, job-escapist reasons are treated as an outcome in and of themselves since they are often associated with higher risk of negative alcohol-related consequences. As discussed previously, these job-escapist reasons for drinking are often found to mediate the relationships between work stressors and more consumption-oriented alcohol outcomes. This research will treat job-escapist reasons for drinking in both ways. In some analyses, this indicator will serve as a dependent variable and in others, it will represent an intervening variable.

Measuring Age Status

A central aim of this research is to consider the social significance of being a younger worker in terms of drinking behaviors. Therefore, defining "younger worker" is a critical task. For this research, respondents between the ages of 18 and 24 are designated as "younger workers." The rationale for this criterion is three-fold. First, it represents an age group that comes close to mirroring the participants in college drinking studies, such as the College Alcohol Study. Wechsler et al.'s nationally representative CAS study of 17,592 college students had an age distribution where 45% were under the

age of 21, 38% were between the ages of 21 and 23, and 17% were age 24 or greater. Thus, there is reasonable evidence that using the 18-24 age bracket to define younger worker will yield a group that reasonably parallels the age group studied in college student drinking research.

A second rationale for using this age bracket comes from the economic literature on employment (Dee, 2002). In this literature, the lower boundary of "primary working age" is defined as age 25 (Feng et al., 2001). For example, in their consideration of the effects of problem drinking on employment status, Mullahy and Sindelar (1996) restrict their analysis to those at least 25 years of age, arguing that including 18 to 24 year olds would bias their results given the likely differences in drinking behaviors and working conditions among this younger cohort. By including 18 to 24 years olds, the present research can tease out these differences empirically.

This definition of "younger worker" also gains support from psychologists and sociologists who work from a "life-course perspective" who describe early adulthood as ranging from 18 to 24 years of age. Scholars working in the life-course tradition note that young adults in the 18 to 24 age range are making some of the largest life changes that occur during the life-span, such as exiting the familial home, entering the labor force, and even beginning families of their own[13] (Johnson and White, 1995; Schulenberg et al., 1996).

Thus, there is reasonable support for defining younger workers as those who are between the ages of 18 and 24. For the dichotomous variable of age status, younger

[13]However, it should be noted that the age of first marriage and of childbearing in women has been rising in recent years (Strobino et al., 2002).

workers are coded 1, with workers in the 25 and greater age range coded as 0.[14] However, it is important to note that at times, the "older worker" category is broken into more specific measures, such as five-year age brackets. This differentiation in age groups allows for more detailed analyses of age, work, and alcohol.

Measuring Work Experiences

Four measures of work experiences are included as predictors of the alcohol outcomes: *job autonomy, substantive complexity, job pressure,* and *supervisor abuse.* Job autonomy, substantive complexity, and job pressure are multi-item measures based on items from the 1969 Survey of Working Conditions, and the 1972 and 1977 Quality of Employment Surveys (Karasek, 1979; Quinn et al., 1975). Four indicators assess job autonomy, three items represent the dimension of substantive complexity, and five items measure job pressure. Likert response categories range from 1 to 4 with higher values indicating more of the construct. The reliability and validity of these items have been well-established in previous research (e.g., Kalleberg 1974; Karasek 1979; Martin and Roman 1996).

The measure of supervisor abuse is based on three items that ask respondents to indicate the frequency in the past year that they have been yelled at, sworn at, or humiliated in front of others by their supervisors. These items are adapted from Richman et al. (1996) who originated the literature on workplace harassment and alcohol

[14]As mentioned earlier, full-time workers between the ages of 18 and 24 may be at risk of less rewarding jobs due to their lower educational attainment. Consideration was given to the notion of creating further restrictions on the meaning of "younger worker" by introducing an educational attainment threshold of less than a college degree. However, this was deemed unnecessary since educational attainment will be controlled for in the multivariate models, thereby removing the effect of educational attainment on job quality and the alcohol outcomes.

outcomes. As with the other work experience variables, a four-point Likert response format is utilized with greater values being associated with more frequent abuse.

Socio-Demographic Control Variables

In addition to considering work experiences as predictors of alcohol outcomes, it is important to include standard demographic control variables. Drinking behaviors have been repeatedly shown to vary by demographic variables and thus, this research includes these demographic characteristics as control variables in multivariate analyses.

Marital status has often been linked to drinking patterns. Married individuals generally drink less in terms of overall consumption (Dee, 2002; Fillmore et al., 1997; Wilsnack and Wilsnack, 1991), are less likely to engage in binge drinking (Dee, 2002; Herd and Grube, 1993; Hilton, 1991; Schulenberg et al., 1996), and more likely to be abstainers when compared to single or divorced individuals. Thus, a set of dummy variables consisting of single, divorced/separated, widowed, and married (omitted category) will be utilized in the multivariate models.

Gender is also an important variable to include in models of drinking behavior because research has consistently documented significant differences between women and men. Research has demonstrated that women are more likely to abstain from alcohol (Blum and Roman, 1997; Hilton, 1991), to consume less (Blum and Roman, 1997; Fillmore et al., 1997; Rodgers et al., 2000; Shore, 2001; Shore, 1997), to be less likely to binge drink (Dee, 2001; Shore, 1990; Wechsler et al., 1995a), and to be less likely to be a problem drinker (Rodgers et al. 2000; Smart et al. 1991).

In addition, *race/ethnicity* is frequently associated with drinking behavior. Whites on average consume more alcohol than other ethnic groups, while African Americans and

Hispanics are more likely to abstain from the consumption of alcohol (Hilton, 1991), consume less overall (Herd and Grube, 1993), and engage in less binge drinking (Dee, 2001). Thus, the multivariate models of the alcohol measures includes a set of dummy variables for race/ethnicity consisting of African American, Asian American, Hispanic/Latino American, Other/Multi-Racial Race, and White (omitted category).

Two variables associated with socio-economic status are important control variables in alcohol research. *Educational attainment* and *earnings* are often positively associated with alcohol consumption measures and binge drinking (Herd and Grube, 1993). Since the NES asks respondents to categorize their educational achievement (that is to say, the NES does not measure years of education as a continuous variable), educational attainment is measured in a set of dummy variables: less than a high school degree, high school degree (omitted category), some college, college degree, greater than a college degree. The measure of earnings in the NES is categorical with earnings brackets based on increments of $10,000 up to an open-ended category of $90,000 or more. Given the categorical nature of the data, the technique described by Parker and Fenwick (1983) for converting income categories to their midpoints and estimating the value of the open-ended maximum category is utilized. For the 2001 NES data, the median midpoint of the open-ended category was $116,800. For the point of data handling, earnings is expressed in thousands.

ANALYTIC TECHNIQUES

The hypotheses outlined in Chapter 3 lend themselves to the employment of a variety of statistical techniques, and therefore, numerous techniques are used in this research. Hypotheses 1, 2, 3, 4, and 8, which focus upon mean differences between

younger and older workers lend themselves to the use of independent samples t-tests. In addition, further testing of the effect of age status occurs in the multivariate models.

Evaluating the remaining hypotheses is a more complex task. Two techniques are utilized: structural equation modeling and logistic regression. Structural equation modeling can be used to examine overall alcohol consumption in the past month and frequency of binge drinking in the past month because these are continuous dependent variables. Structural equation modeling allows for the construction of latent variables[15] that can then be assessed using confirmatory factor analysis. Then structural equation modeling can estimate direct and indirect parameters within a causal, or structural, model. A key advantage of this technique is that measurement error is parceled out, allowing for the estimation of more accurate associations between variables (Long, 1983). The parameters are then interpreted in a manner similar to that of regression coefficients, using completely standardized estimates when the independent variable is continuous and partially standardized estimates when the independent variable is dichotomous (Muthen and Muthen, 1998). The root mean square error of approximation (RMSEA) is a measure of model fit, with values of less than 0.10 representing good fit and values below 0.05 representing a very good fit to the data (Kelloway, 1998). According to Muthen and Muthen (1998), the RMSEA is a more accurate measure of fit than other common fit indices such as the goodness of fit index (GFI) or the adjusted goodness of fit index (AGFI). All structural equations analyses are based on Mplus, a

[15]In this case, latent variables will be created for the four work experiences constructs as well as job-escapist reasons for drinking because multiple indicators are available. The dependent variables of overall alcohol consumption and frequency of binge drinking will be observed variables since they are measured with single items.

structural equations modeling software package developed by Muthen and Muthen (1998).

A weakness of the existing version of Mplus is that it is unable to estimate parameters using latent variables to predict a dichotomous dependent variable for which there is only one indicator. The CAGE measure, representing alcohol dependence, is such a variable. Therefore, analyses of the CAGE require a conventional logistic regression approach (Menard, 1995). Hypothesis 9 proposes interaction effects between the work experiences and alcohol outcomes based on age status. Mplus allows for the examination of subgroups with the estimation of parameters for each group. Logistic regression also allows for the creation and evaluation of interaction terms. These approaches are used to test Hypothesis 9.

A final analytical issue deserving of mention relates to which respondents are included in the analyses. As with most research, list-wise deletion is utilized, which means that only respondents who provide complete information are included. The second issue involves the decision of whether to include or exclude alcohol abstainers. On the one hand, given the interest in understanding causal mechanisms between stressful working conditions and drinking behaviors, it seems that including abstainers is important since they most likely experience stress in the workplace (Martin et al., 1992). However, the predominant convention in the alcohol literature is to exclude long-term abstainers from the sample under analysis (Fennell et al., 1991). In particular, many researchers use a minimum threshold of at least one drink in the previous year as the inclusion criterion, labeling this group "current drinkers" (Bailey, 1999; Greenfield and Rogers, 1999, Johnson et al., 1999; Smart et al., 1991; Wechsler et al., 1994). To not

follow this convention makes it more difficult to compare this proposed research to previous studies. However, as argued by Blum (1984), excluding abstainers introduces bias into the analyses by altering the patterns of variation, and hence, measurement of means. Thus, these analyses include non-drinkers as well as current drinkers.

CHAPTER 5

DESCRIPTIVE STATISTICS, FACTOR ANALYSES, AND PRELIMINARY RESULTS

Prior to estimating multivariate models of drinking behaviors, a variety of descriptive statistics for the independent variables were calculated and appear in this chapter. This descriptive examination of the 2001 NES considered distributions of the socio-demographic characteristics of the sample as well as the means on the work experience variables. In addition, this chapter provides information on the confirmatory factor analyses for the work experience latent variables constructed for the structural equation models that are tested in Chapters 7 and 8. Finally, a preliminary analysis of drinking status is reported. This multinomial logistic regression model uses socio-demographic characteristics and work-related measures as independent variables to predict three categories of drinking status, namely abstainers, infrequent drinkers, and recent drinkers.

SOCIO-DEMOGRAPHIC CHARACTERISTICS

Given its importance to the overall research project, it is important to consider the distribution of age among respondents within the 2001 NES. The average NES respondent is 40.7 years old (SD = 11.4). The distribution of age in five-year brackets[16] appears in Table 1. It is notable that this distribution approximates a normal curve.

---

[16] The youngest age bracket is the exception to this categorization based on five-year brackets. Respondents aged 18 to 24 are grouped in the first bracket. The rationale for this grouping appears in Chapter 4.

TABLE 1: DISTRIBUTION OF AGE

Age Category	Percent (N)
18-24 years old	8.9% (295)
25-29 years old	10.4% (345)
30-34 years old	12.1% (402)
35-39 years old	14.6% (486)
40-44 years old	15.0% (498)
45-49 years old	15.3% (509)
50-54 years old	11.9% (397)
55-59 years old	6.8% (226)
60 years old or greater	5.1% (171)

In terms of marital status, the majority of NES respondents are currently married (56.6%). The next largest group is comprised of individuals who are single (26.9%), followed by those who are divorced or separated (13.9%) and finally those who are widowed (1.6%). The small percentage of widowed individuals is in part a function of the mean age of NES respondents. Given that only employed persons are eligible to participate in the NES, the average age of the NES respondents is younger than the overall mean for the US population.

The research literature often posits that marriage is a protective factor in terms of reducing risky drinking behavior. This association suggests that it is worth cross-tabulating age by being married. Table 2 presents the percent of individuals currently married by age groups. As expected, marriage is relatively rare among those between the ages of 18 and 24; only 15.7% of respondents in this age bracket are currently married. Those in the next age bracket of 25 to 29 years old are much more likely to be married, as seen in the increase of 28 percentage points to 43.7% for this older age category. With

increasing age, the percentage of respondents who are married continues to rise until roughly the age 40 to 44 bracket, where the percentage of married individuals plateaus.

TABLE 2: CURRENTLY MARRIED BY AGE

Age Category	Percent Currently Married
18-24 years old	15.7%
25-29 years old	43.7%
30-34 years old	54.6%
35-39 years old	61.3%
40-44 years old	69.8%
45-49 years old	61.1%
50-54 years old	68.1%
55-59 years old	69.5%
60 years old or greater	67.6%

The marital status of the youngest full-time workers in the NES differs slightly from recent Census data for the entire US population (US Bureau of the Census, 2002), particularly when respondents are separated by gender. In the US, about 78.9% of women between the ages of 18 and 24 have never been married, but this figure for the NES is 83.9%. Conversely, among men, 88.2% of US men between the ages of 18 and 24 are single compared to 79.9% of men in the NES sample. These differences may reflect different norms about gender. Some have argued that work for younger women, particularly full-time work, gives them the resources that make delaying marriage feasible. However, there are still norms about "breadwinning" for men such that younger married men are likely to seek full-time employment.

As for the ascribed social statuses of gender and race, about 52.2% of the NES respondents are female and the vast majority (82.5%) of respondents identify themselves

as white. About 9.0% of respondents are African American, 3.6% are Hispanic/Latino American, 0.9% are Asian American, and 3.9% identify themselves as multi-racial or some other racial/ethnic background.

In terms of educational attainment, attending at least some years of college appears to be the norm for the NES sample. Only 3.7% of respondents report that they did not complete high school and 25.7% indicate that high school graduation was the termination of their educational careers. However, not all NES respondents that attended college achieved a baccalaureate degree. About 31.0% of NES respondents report attending some college, while 22.7% report that their terminal degree was at the undergraduate level. About 16.9% of the sample has extended their education beyond a baccalaureate degree.

Perhaps a more useful analysis considers educational attainment by age, particularly in terms of the attainment of at least a baccalaureate degree. These results appear in Table 3. As might be expected, those respondents between the ages of 18 and 24 who are already employed on a full-time basis are considerably less likely than the older cohorts to have achieved at least an undergraduate degree. About 20.1% of these younger workers possess at least an undergraduate degree, compared to 42.4% of 25 to 29 year olds. For the more part, the remaining age brackets have similar rates of completing a baccalaureate degree or higher. The notable exceptions are those age 60 or greater for whom the percentage drops to 31.2%. However, this finding is not surprising since this cohort was born at a time when a high school education was the normative level of educational attainment; a collegiate education did not become more normative until later in the 20th century (Parsons and Platt, 1972).

TABLE 3: PERCENT WITH BACCALAUREATE DEGREE OR HIGHER BY AGE

Age Category	Percent B.A. Degree or Higher
18-24 years old	20.1%
25-29 years old	42.4%
30-34 years old	45.8%
35-39 years old	41.7%
40-44 years old	40.3%
45-49 years old	38.7%
50-54 years old	44.1%
55-59 years old	42.9%
60 years old or greater	31.2%

In terms of earnings, the average NES respondent earned $45,872 (SD = 27,242) during the past twelve months. Table 4 presents mean earnings by age. The earnings distribution by age reflects the trends in earnings that have often been reported by sociologists. A one-way analysis of variance (ANOVA) indicates a significant overall differences in earnings, $F_{(8, 2831)} = 22.839$, $p<.001$. Age initially has a positive effect on income, as seen in the increase in mean income from $27,419 for 18 to 24 year olds, to $40,750 for 25 to 29 year olds, and so on. The average earnings of the oldest cohorts are lower than the middle cohorts, particularly for those at least 60 years of age (mean = $43,784, SD = 28626). However, post hoc tests of mean differences using the Bonferroni correction did not indicate that the earnings of this oldest age bracket were significantly different from the middle cohorts (results not shown). Indeed the pairwise comparisons show that beginning with the 40 to 44 age bracket through 55 to 59 age bracket, mean differences in earnings are not significant within these middle cohorts; the only significant pairwise comparisons are with the two youngest cohorts (18 to 24 year olds and 25 to 29 year olds). In contrast, the mean differences in earnings between the

youngest workers and all other cohorts are significant. Given that age is also a proxy for work experience, the NES results replicate findings by others of the curvilinear association between age and earnings, with diminishing returns for increases in work experience later in life.

TABLE 4: MEAN EARNINGS BY AGE

Age Category	Mean (SD)
18-24 years old	$27,419 (14,661)
25-29 years old	$40,750 (22,516)
30-34 years old	$45,659 (25,764)
35-39 years old	$46,179 (25,230)
40-44 years old	$51,242 (30,996)
45-49 years old	$49,535 (27,593)
50-54 years old	$51,650 (28,345)
55-59 years old	$49,157 (28,758)
60 years old or greater	$43,784 (28,626)

The earnings data, particularly about the earnings of younger workers, provides preliminary evidence about the employment circumstances of 18 to 24 year olds who are already in the labor force. Certainly earnings are partly a function of tenure on the job (Cancio et al. 1996; England 1992), which younger workers obviously lack. However, earnings are also an indicator of job quality, as jobs with more desirable characteristics including greater autonomy and complexity tend to also be rewarded with greater pay (Kilbourne et al. 1994; Macpherson and Hirsch 1995; Rosenfeld & Kalleberg 1990). Thus, this difference in earnings between younger workers and other cohorts points to likely differences in the work experience measures, particularly job autonomy and

substantive complexity. Examination of work experiences by age is presented in Chapter 7.

WORK EXPERIENCES: MEANS

Since most of the analyses involve latent variables constructed from individual measures, it is perhaps most useful to examine the means the individual work-related indicators. Table 5 presents the means for the measures of job autonomy, substantive complexity, job pressure, and supervisor abuse. In addition, the means for the job-escapist reasons for drinking items are included. Responses for each item ranged from 1 to 4 with higher values reflecting greater amounts of the construct. The first column presents the means for the entire sample, while the means for the sub-sample of current drinkers appear in the second column.

With regard to the job characteristics and supervisor abuse, the average NES respondent appears to have a mix of rewarding and stressful work experiences. In general, NES respondents report having considerable decision-making authority in terms of discretion over how they perform their jobs. They also report having jobs with substantial skill requirements. However they also report experiencing sizable pressure on the job. Supervisor abuse, conceived as an interpersonal work stressor, is a fairly rare experience as seen in the relatively smaller means on these items.

In addition to the work-related variables, Table 5 also includes the means for the job-escapist reasons for drinking indicators. As with the supervisor abuse variables, there is relatively low endorsement with these work-related reasons for drinking.[17]

[17] Means for the other perfectly measured alcohol-related variables, such as alcohol consumption, problem drinking, and alcohol dependence, are discussed in Chapter 6.

TABLE 5: MEANS FOR WORK-RELATED VARIABLES

	Entire Sample Mean (n = 3535)	Current Drinkers Mean (n = 2481)
Job Autonomy		
I have a lot of say over what happens on my job.	3.030	3.057
My job allows me freedom to decide how I do my own work.	3.266	3.274
On my job I make a lot of decisions on my own.	3.359	3.394
On my job I get to take part in making decisions that affect me.	3.235	3.265
Substantive Complexity		
My job requires me to be creative.	3.162	3.190
My job requires that I keep learning new things.	3.527	3.540
My job requires a high level of skill.	3.396	3.429
Job Pressure		
I am free from conflicting demands on my job (reverse-coded).	2.365	2.394
My job requires me to work at a fast pace.	3.222	3.281
My job requires me to work very hard.	3.457	3.478
I am asked to do excessive amounts of work.	2.612	2.616
I have enough time to get the job done (reverse-coded).	1.859	1.870
Supervisor Abuse		
In the past year, how often have you been sworn at by your employer or supervisor?	1.195	1.209
…How often have you been yelled at by your employer or supervisor?	1.280	1.300
…How often have you been humiliated in front of others by your employer or supervisor?	1.199	1.206
Job-Escapist Reasons for Drinking		
A drink relaxes me after work.	1.905	2.292
A drink relieves some of the tension of my job.	1.616	1.878
A drink helps me forget about problems at work.	1.306	1.436

WORK EXPERIENCES: CONFIRMATORY FACTOR ANALYSIS RESULTS

Given that many of the hypotheses are examined using structural equation modeling, it is necessary to perform a confirmatory factor analysis (CFA) to insure that

the latent variables are appropriately constructed. The initial CFA fit the data well, but the modification indices, which indicate the need to correlate certain pairs of residuals, suggested that the model could be improved by correlating two pairs of items within the job pressure construct.[18] In addition, the substantive complexity item about the repetitiveness of work tasks loaded poorly; previous research using the NES has eliminated this item from the measure of substantive complexity for this reason (Knudsen, 1998). These adjustments, therefore, are made for all subsequent models. The final CFA results appear in Table 6 with the factor loadings for the items measuring job autonomy, substantive complexity, job pressure, and supervisor abuse. Since job-escapist reasons for drinking are also to be treated as a latent variable, it is included in this CFA. Given that many of the hypotheses were evaluated for the entire sample and a sub-sample of current drinkers[19], the CFA was estimated for both of these groups. Entire sample results appear in the first column, and the results for current drinkers appear in the second column. All of the indicators significantly loaded on their intended latent constructs.

The goodness of fit statistics indicate that the latent variables fit the data very well.[20] For the entire sample and the sub-sample of current drinkers, the SRMR statistics were .039 and .040, respectively, which are well below the .08 threshold. In addition, the RMSEA statistics were .037 for the entire sample and .038 for the current drinker sub-

---

[18] Specifically, the residuals of the first and fifth pressure indicators were correlated, as were the second and third indicators listed in Table 5.

[19] Current drinkers are individuals who have consumed alcohol in the past year.

[20] Since Mplus uses maximum likelihood (ML) as the estimator for the CFA, Hu and Bentler (1998) recommend using the standardized root mean square residual (SRMR) as the primary goodness of fit statistic with .08 or less as indicating a good fit. In addition, other fit statistics that can be used as supplementary measures of fit are the root mean square error of approximation (RMSEA <.06) and to a lesser extent the comparative fit index (CFI >.95) and the Tucker-Lewis Index (TLI>.95).

sample, which also indicate good fit. Finally for these two analyses the CFI values were .963 and .958 and the TLI values were .954 and .948 for the entire sample and sub-sample, respectively.

TABLE 6: CONFIRMATORY FACTOR ANALYSES

	Entire Sample Standardized Factor Loading (n = 3535)	Current Drinkers Standardized Factor Loading (n = 2481)
Job Autonomy		
I have a lot of say over what happens on my job.	.674	.657
My job allows me freedom to decide how I do my own work.	.625	.642
On my job I make a lot of decisions on my own.	.654	.636
On my job I get to take part in making decisions that affect me.	.661	.665
Substantive Complexity		
My job requires me to be creative.	.627	.654
My job requires that I keep learning new things.	.627	.624
My job requires a high level of skill.	.636	.641
Job Pressure		
I am free from conflicting demands on my job (reverse-coded).	.303	.317
My job requires me to work at a fast pace.	.490	.466
My job requires me to work very hard.	.556	.539
I am asked to do excessive amounts of work.	.617	.634
I have enough time to get the job done (reverse-coded).	.529	.536
Supervisor Abuse		
In the past year, how often have you been sworn at by your employer or supervisor?	.728	.721
…How often have you been yelled at by your employer or supervisor?	.849	.831
…How often have you been humiliated in front of others by your employer or supervisor?	.663	.658
Job-Escapist Reasons for Drinking		
A drink relaxes me after work.	.771	.691
A drink relieves some of the tension of my job.	.962	.964
A drink helps me forget about problems at work.	.621	.566

MODELING DRINKING STATUS: MULTINOMIAL LOGISTIC REGRESSION RESULTS

Given that many of the hypotheses are evaluated for the entire sample and then the sub-sample of current drinkers, it is important to consider what characteristics differentiate drinkers from abstainers. Furthermore, since the criterion for being a "current drinker" is only alcohol consumption in the previous year, there may be significant differences between those who have consumed alcohol in the past thirty days and those who consume alcohol on a more infrequent basis. To explore these possibilities, a multinomial logistic regression was conducted so as to compare three groups: abstainers (omitted category, 27.8% of respondents), recent drinkers (consumption in the past month, 58.5% of respondents), and infrequent drinkers (no consumption in the past month but some drinking in the last year, 13.7% of respondents). These results appear in Tables 7 and 8.[21] Overall, the model estimated was a significant improvement over the null hypothesis model ($\chi^2 = 264.464$, $df = 36$, $p<.001$).

Table 7 presents the comparison of recent drinkers to abstainers. The four measures of work experiences, including job autonomy, substantive complexity, job pressure, and supervisor abuse, do not differentiate recent drinkers from abstainers. None of these measures are statistically significant in this comparison. However, several of the socio-demographic characteristics are significantly associated with the likelihood of being a recent drinker relative to being an abstainer. First, gender is significantly associated, such that women are less likely to be recent drinkers (odds ratio = .811). Marital status also differentiates recent drinkers from abstainers. Single respondents

[21] These tables present results from the same multinomial logistic regression, but appear in two separate tables due to space considerations.

TABLE 7: MULTINOMIAL LOGISTIC REGRESSION RESULTS OF DRINKING STATUS, RECENT DRINKERS VERSUS ABSTAINERS

	b (S.E.)	Odds Ratio
Job Autonomy	.042 (.082)	1.043
Substantive Complexity	.018 (.084)	1.019
Job Pressure	-.013 (.084)	.987
Supervisor Abuse	.164 (.099)	1.179
Gender	-.209 (.082)	.811*
Marital Status		
Divorced/Separated	.498 (.146)	1.645**
Widowed	.499 (.352)	1.646
Single	.496 (.128)	1.641***
Race		
Black	-.905 (.156)	.404***
Asian	-1.642 (.582)	.194**
Hispanic	.060 (.265)	1.061
Multi-Racial/Other	-.649 (.238)	.523**
Education		
< HS Degree	-.223 (.264)	.800
Some College	.024 (.128)	1.025
College Degree	.057 (.146)	1.059
> College Degree	.372 (.172)	1.450*
Earnings	.016 (.002)	1.016***
Age (five-year brackets)	-.168 (.025)	.845***
Intercept	.554	

*p<.05 (two-tailed)
**p<.01
***p<.001

(odds ratio = 1.641) and divorced/separated respondents (odds ratio = 1.645) are significantly more likely than their married counterparts to be recent drinkers, relative to the odds of being an abstainer. Three of the four comparisons based on race are statistically significant. Compared to white respondents, African American (odds ratio = .404), Asian American (odds ratio = .194), and multi-racial/other respondents (odds ratio = .523) are significantly less likely to be recent drinkers. As for educational attainment and earnings, the two measures of socio-economic status, there are two statistically

significant associations. Earnings are positively associated with the odds of being a recent drinker (odds ratio = 1.016). Educational attainment is not, however, strongly associated with being a recent drinker. The exception is respondents who have attained education beyond a baccalaureate degree (odds ratio = 1.450) who are significantly more likely than high school graduates to be recent drinkers. Age, measured in five-year brackets, is negatively associated with being a recent drinker, such that older respondents are less likely to be recent drinkers (odds ratio = .845).

TABLE 8: MULTINOMIAL LOGISTIC REGRESSION RESULTS OF DRINKING STATUS, INFREQUENT DRINKERS VERSUS ABSTAINERS

	b (S.E.)	Odds Ratio
Job Autonomy	-.012 (.111)	.988
Substantive Complexity	-.134 (.113)	.874
Job Pressure	.027 (.116)	1.027
Supervisor Abuse	.148 (.132)	1.159
Gender	.366 (.148)	1.442*
Marital Status		
Divorced/Separated	.236 (.197)	1.266
Widowed	-1.038 (.766)	.354
Single	.120 (.177)	1.128
Race		
Black	-.845 (.236)	.430***
Asian	.577 (.515)	1.780
Hispanic	-.385 (.409)	.681
Multi-Racial/Other	-.332 (.324)	.717
Education		
< HS Degree	-.656 (.419)	.519
Some College	-.303 (.177)	.738
College Degree	-.113 (.199)	.893
> College Degree	.158 (.231)	1.171
Earnings	.011 (.003)	1.011**
Age	-.125 (.034)	.883***
Intercept	-.284	

*p<.05 (two-tailed)
**p<.01
***p<.001

Table 8 presents the multinomial logistic regression results that compare infrequent drinkers and abstainers. As with the comparison between recent drinkers and abstainers, none of the work-related variables are significantly associated with the likelihood of being an infrequent drinker compared to being an abstainer. Four of the socio-demographic characteristics significantly associated with being an infrequent drinker. Gender is positively associated with being an infrequent drinker (odds ratio = 1.442), which is to say that women were at greater odds of being an infrequent drinker relative to the odds of being an abstainer than men. African American respondents are less likely than whites to be infrequent drinkers (odds ratio = .430). Earnings are positively associated with being an infrequent drinker relative to being an abstainer (odds ratio = 1.011). Finally, age is negatively associated with being an infrequent drinker as opposed to being an abstainer (odds ratio = .883), meaning that older workers are less likely to be infrequent drinkers relative to their odds of being abstainers.

One final preliminary analysis re-estimates the multinomial logistic regression so that infrequent drinkers can be compared to recent drinkers. These results appear in Table 9. Five associations are statistically significant. First, women are more likely than men to be infrequent drinkers, relative to the odds of being a recent drinker (odds ratio = 1.777). Second, compared to white respondents, Asian Americans are more likely to be infrequent drinkers than recent drinkers (odds ratio = 9.196). Of the marital status comparisons, widowed respondents (odds ratio = .215) and single respondents (odds ratio = .687) are less likely than married respondents to be infrequent drinkers, relative to their odds of being recent drinkers. Finally, respondents with some college are less likely than high school graduates to be classified as infrequent drinkers (odds ratio = .844).

TABLE 9: MULTINOMIAL LOGISTIC REGRESSION RESULTS OF DRINKING STATUS, INFREQUENT DRINKERS VERSUS RECENT DRINKERS

	b (S.E.)	Odds Ratio
Job Autonomy	-.054 (.101)	.948
Substantive Complexity	-.153 (.102)	.858
Job Pressure	.039 (.105)	1.040
Supervisor Abuse	-.017 (.114)	.983
Gender	.575 (.132)	1.777***
Marital Status		
Divorced/Separated	-.262 (.175)	.770
Widowed	-1.537 (.749)	.215*
Single	-.375 (.155)	.687*
Race		
Black	.061 (.230)	1.063
Asian	2.219 (.533)	9.195***
Hispanic	-.444 (.365)	.641
Multi-Racial/Other	.316 (.306)	1.372
Education		
< HS Degree	-.434 (.406)	.648
Some College	-.328 (.161)	.721*
College Degree	-.170 (.178)	.844
> College Degree	-.214 (.202)	.808
Earnings	-.005 (.003)	.995
Age	.043 (.031)	1.044
Intercept	-.838	

*p<.05 (two-tailed)
**p<.01
***p<.001

Although there are a few significant differences between infrequent drinkers and recent drinkers, overall these two groups are quite similar. Thus, for the purpose of evaluating the proposed hypotheses, these two groups are combined into a group that is referred to as "current drinkers." For most analyses, estimates are provided for this sub-sample within the NES as well as for the entire sample. The intention is that by reporting results from the entire sample, estimates can be calculated that are conservative; in other words, these estimates do not unduly inflate the associations between experiences at work

and the alcohol outcomes. However, given that much of the alcohol literature excludes abstainers from their analyses, the second set of results, which only includes current drinkers, allows for this research to be compared to previous research that has examined the connections between work and drinking behaviors. This style of presentation begins in the next chapter, which explores the relationship between age and drinking patterns.

CHAPTER 6

THE DRINKING PATTERNS OF WORKERS: OVERALL PATTERNS AND DIFFERENCES BY AGE

Alcohol research that has considered the US population as a whole has often indicated that age is associated with measures of drinking behaviors, such as overall consumption (Greenfield and Rogers, 1999) and binge drinking (Dee, 2002). In addition, alcohol problems such as alcohol dependence have been found to emerge during young adulthood (Chilcoat and Breslau, 1996). Prior to consider the bivariate associations between age and drinking, this chapter presents descriptive statistics of the alcohol-related measures for the entire NES sample. Then, the first four hypotheses outlined in Chapter 3 are evaluated using bivariate statistics and multivariate models. To reiterate those hypotheses, they collectively predict significant differences in the various alcohol measures between younger and older workers with younger workers engaging in greater alcohol consumption and problem drinking than older workers.

Before examining these hypotheses, a brief discussion of those respondents who abstain from alcohol is in order. Overall, 27.8% of the NES respondents have not consumed alcohol in the previous year, the criterion used in the literature for labeling an individual as an abstainer. However, the likelihood of being an abstainer is significantly conditioned by age ($\chi^2 = 61.516$, $df = 8$, $p<.001$). For example, while 40.7% of respondents who are 60 years of age or older are abstainers, only 19.7% of those in the

youngest age group, those between 18 and 24 years of age, have not consumed alcohol in the last year. Alcohol abstention by age is presented in Table 10.

TABLE 10: ALCOHOL ABSTENTION BY AGE

Age Category	Percent Abstainers
18-24 years old	19.7%
25-29 years old	20.9%
30-34 years old	19.8%
35-39 years old	29.0%
40-44 years old	28.9%
45-49 years old	26.6%
50-54 years old	32.3%
55-59 years old	38.5%
60 years old or greater	40.7%
	$\chi^2 = 61.516$, $df = 8$, $p<.001$

Hypothesis 1 addresses two prevalence measures, namely prevalence of any alcohol consumption in the previous month and prevalence of any binge drinking in the previous month. Younger workers were expected to be more likely to consume any alcohol and engage in any binge drinking in the preceding month. In terms of this first measure, the overall prevalence of any drinking in the previous month for the entire sample was 58.3%.[22] However, there is evidence of significant differences between younger and older workers. Comparing 18 to 24 year olds to all other workers, the prevalence rate for younger workers was 64.9% and 57.7% for older workers ($\chi^2 = 5.678$, $df = 1$, $p<.05$). A more detailed account of the prevalence of any alcohol consumption in the previous month appears in Table 11, which reveals significant overall variation by

[22] For the measure of prevalence of any drinking in the previous month, there was no need to consider the abstainer versus current drinker distinction because all respondents were asked to report the number of drinking days in the previous month.

age. It appears that the prevalence of any alcohol consumption in the past month is fairly similar for the three youngest age brackets and then declines for the remaining cohorts.

TABLE 11: PREVALENCE OF ANY ALCOHOL CONSUMPTION IN THE PAST MONTH BY AGE

Age Category	Percent Any Consumption
18-24 years old	64.9%
25-29 years old	66.0%
30-34 years old	66.1%
35-39 years old	55.9%
40-44 years old	56.8%
45-49 years old	60.0%
50-54 years old	54.0%
55-59 years old	44.8%
60 years old or greater	48.2%
	$\chi^2 = 52.417$, $df = 8$, $p<.001$

This bivariate association was further examined through a logistic regression of any alcohol consumption in the previous thirty days that included the other socio-demographic characteristics (results not shown). Being a younger worker between the ages of 18 and 24 remained a statistically significantly predictor of consuming any alcohol in the previous month (odds ratio = 1.521, $p<.01$), net of gender, marital status, race, education, and earnings.

The second variable of interest in Hypothesis 1 is the prevalence of any binge drinking in the previous month.[23] For the entire sample (including abstainers), the

[23] The measure of prevalence of any binge drinking in the past month raises the issue of whether to include or exclude abstainers. For comparative purposes, descriptive statistics of this variable and the remaining alcohol measures are presented for both the entire sample and the sub-sample of current drinkers.

prevalence of any binge drinking in the previous month was 18.1%. However, this rate increases to 24.5% when abstainers are excluded. Analysis of the prevalence of any binge drinking in the previous month revealed significant differences between younger workers and older workers. Younger workers between the ages of 18 and 24 were considerably more likely to engage in any binge drinking than older workers. Including abstainers, the prevalence for younger workers was 32.1% compared to 17.0% for older workers ($\chi^2 = 40.180$, $df = 1$, $p<.001$); when abstainers are excluded these figures increase to 39.6% and 23.1%, respectively ($\chi^2 = 30.877$, $df = 1$, $p<.001$).

TABLE 12: PREVALENCE OF BINGE DRINKING IN THE PAST MONTH BY AGE

Age Category	% Any Binge (Entire Sample)	% Any Binge (Current Drinkers)
18-24 years old	32.1%	39.6%
25-29 years old	29.6%	36.3%
30-34 years old	25.9%	31.8%
35-39 years old	19.4%	26.8%
40-44 years old	16.3%	22.15%
45-49 years old	15.4%	20.4%
50-54 years old	8.4%	12.0%
55-59 years old	5.8%	9.4%
60 years or greater	4.9%	8.0%
	$\chi^2 = 154.236$, $df = 8$, $p<.001$	$\chi^2 = 118.875$, $df = 8$, $p<.001$

A more detailed analysis of prevalence of binge drinking by five-year age brackets appears in Table 12; the first column presents prevalence with abstainers included while the second column reports prevalence of binge drinking when abstainers are excluded. As expected, the youngest age group of workers is most likely to have engaged in binge drinking in the previous month, with the prevalence of binge drinking

decreasing with increasing age. At the bivariate level, Hypothesis 1 is strongly supported with younger drinkers being more likely to engage in any alcohol consumption and binge drinking than other older workers.

TABLE 13: LOGISTIC REGRESSION OF ANY BINGE DRINKING ON SOCIO-DEMOGRAPHIC CHARACTERISTICS

	Entire Sample	Current Drinkers	
	Odds Ratio	Block 1 Odds Ratio	Block 2 Odds Ratio
Younger Worker	1.427*	1.828**	1.211
Gender	.459***	.444***	.430***
Race			
African American	.334***	.466**	.401***
Asian American	.162	.181	.146
Hispanic	1.156	1.174	1.141
Multi-Racial/Other	.897	1.001	1.043
Education			
< High School Degree	1.161	1.430	1.431
Some College	.982	.988	.930
College Degree	.716*	.703*	.629**
> College Degree	.614**	.586**	.532**
Earnings	1.002	.997	.999
Marital Status			
Divorced/Separated	1.912***	-----	1.841***
Widowed	.962	-----	.972
Single	2.614***	-----	2.481***
Intercept	-1.417		
Model Chi-square	195.361***	120.932***	174.689***
Improvement	…	…	53.757***
-2 Log Likelihood	2493.279	2228.722	2174.965

*p<.05 (two-tailed)
**p<.01
***p<.001

As with the prevalence of any drinking, a multivariate logistic model of any binge drinking in the previous month was estimated for both the entire sample and current

drinkers. These results appear in Table 13. When the entire sample is considered, being a younger worker is significantly associated with engaging in any binge drinking (odds ratio = 1.427, $p<.05$). However, when the model is restricted to current drinkers, this measure of age is no longer significantly associated with the likelihood of binge drinking relative to older workers. To explore this finding further, marital status was entered as a separate block, which revealed that while being a younger worker is initially significant, it becomes nonsignificant when marital status is controlled. These results suggest that much of the greater likelihood of binge drinking for younger workers is intimately tied to their greater likelihood of not being married. Marital status is to some extent associated with age, as was demonstrated in Chapter 5. Younger workers between the ages of 18 and 24 are not very likely to be currently married; only 15.7% of workers in this age group are married. Thus, there is conditional support for Hypothesis 1.

For Hypothesis 2, overall alcohol consumption in the past month, a quantity-frequency measure, was examined. Again, the overall mean for this measure is affected by the inclusion of abstainers. For example, the average number of drinks consumed in the previous month for the entire sample including abstainers is 13.8. However, when abstainers are excluded, the mean increases to 19.2 drinks in the previous month.

As predicted, younger workers on average consume a greater number of drinks per month than older workers. When abstainers are included, the mean alcohol consumption for younger workers is 23.4 drinks in contrast to 13.0 drinks for older workers ($t = 3.078$, $p<.01$). Mean alcohol consumption for younger workers is 28.9 drinks and 18.1 drinks for older workers when abstainers are excluded from the analysis ($t = 2.639$, $p<.01$). Table 14 presents mean alcohol consumption by age groups for the

entire sample and the sub-sample of current drinkers . The ANOVA results indicate significant overall variation in both analyses, with entire sample, $F_{(8, 3266)} = 5.458$, $p<.001$, and current drinkers, $F_{(8, 2418)} = 3.151$, $p<.01$. In general, average monthly consumption appears to decrease with age, and the youngest workers consume the most alcohol on average. These bivariate results support Hypothesis 2.

TABLE 14: MEAN ALCOHOL CONSUMPTION IN THE PAST MONTH BY AGE

Age Category	Mean Consumption (Entire Sample)	Mean Consumption (Current Drinkers)
18-24 years old	23.4	28.9
25-29 years old	18.2	22.5
30-34 years old	15.7	21.4
35-39 years old	14.3	19.7
40-44 years old	11.1	15.5
45-49 years old	14.3	19.0
50-54 years old	10.0	14.4
55-59 years old	8.1	12.9
60 years or greater	8.1	13.1
	$F_{(8, 3266)} = 5.458$, $p<.001$	$F_{(8, 2418)} = 3.151$, $p<.01$

In Table 15, OLS regression results of alcohol consumption in the previous month are presented. The results for the entire sample indicates that younger workers consumed on average about 6.5 more drinks that the older workers in the previous month, which lends further support to Hypothesis 2. However, consideration of the sub-sample of current drinkers yielded more complicated results. The initially significant association between age and alcohol consumption becomes nonsignificant when marital status is added to the model. Therefore, Hypothesis 2 receives considerable, but not complete, support.

TABLE 15: OLS REGRESSION OF ALCOHOL CONSUMPTION ON SOCIO-DEMOGRAPHIC CHARACTERISTICS

	Entire Sample	Current Drinkers	
		Block 1	Block 2
	b (S.E.)	b (S.E.)	b (S.E.)
Younger Worker	6.456** (2.413)	10.984*** (3.402)	5.689 (3.267)
Gender	-12.920*** (1.338)	-16.909*** (1.855)	-17.545*** (1.856)
Race			
African American	-6.789** (2.215)	-4.854 (3.461)	-7.229* (3.448)
Asian American	-10.951 (6.732)	-12.945 (9.728)	-15.328 (9.645)
Hispanic	-1.139 (3.288)	-1.484 (4.564)	-2.132 (4.521)
Multi-Racial/Other	2.253 (3.227)	4.889 (4.774)	5.614 (4.729)
Education			
< High School Degree	4.480 (3.535)	10.146 (5.447)	9.845 (5.396)
Some College	-2.148 (1.681)	-2.880 (2.400)	-3.817 (2.381)
College Degree	-5.711** (1.870)	-8.072** (2.609)	-9.146*** (2.603)
> College Degree	-5.490* (2.116)	-6.881* (2.926)	-7.493* (2.916)
Earnings	.059* (.297)	.036 (.037)	.058 (.037)
Marital Status			
Divorced/Separated	7.838*** (1.858)	-----	12.263*** (2.585)
Widowed	-.177 (5.142)	-----	.646 (7.462)
Single	10.420*** (1.600)	-----	12.216*** (2.216)
Constant	17.087	29.071	24.443
R^2	.075	.066	.085

*p<.05 (two-tailed)
**p<.01
***p<.001

Hypothesis 3 focuses on two indicators of problem drinking, namely the frequency of binge drinking in the previous month and alcohol dependence as measured by the CAGE. It was expected that younger drinkers would engage in a greater number of binge drinking episodes per month and would have a greater rate of alcohol dependence. With regard to binge drinking, the average frequency of binge drinking for the entire sample was just slightly less than once a month (mean = .97). When abstainers are parceled out, the mean frequency of binge drinking exceeds one episode per month (mean = 1.32). As hypothesized, the frequency of binge drinking appears to be structured by age. For example, the youngest cohort of workers report an average of 2.19 episodes of binge drinking in the previous month (entire sample) compared to .87 episodes for the remaining cohorts. By limiting the analysis to current drinkers, the frequency of binge drinking in the previous month increases to 2.71 for younger workers and 1.19 for older workers. These differences are highly significant (entire sample, $t = 4.28$, $p<.001$, and current drinkers, $t = 4.06$, $p<.001$). Table 16 presents the average episodes of binge

TABLE 16: MEAN BINGE DRINKING EPISODES IN THE PAST MONTH BY AGE

Age Category	Mean Binge Drinking (Entire Sample)	Mean Binge Drinking (Current Drinkers)
18-24 years old	2.2	2.7
25-29 years old	1.6	2.0
30-34 years old	1.2	1.5
35-39 years old	1.0	1.3
40-44 years old	0.6	0.9
45-49 years old	0.9	1.2
50-54 years old	0.5	0.8
55-59 years old	0.4	0.6
60 years or greater	0.3	0.5
	$F_{(8, 3285)} = 8.365$, $p<.001$	$F_{(8, 2427)} = 6.374$, $p<.001$

drinking by age for the entire sample and for current drinkers. ANOVA results for both analyses indicate significant variation in the means of binge drinking episodes by age (entire sample, $F_{(8, 3277)} = 8.365$, $p<.001$; current drinkers, $F_{(8, 2427)} = 6.374$, $p<.001$).

The OLS regression results on the frequency of binge drinking, presented in Table 17, are similar to those reported with regard to overall alcohol consumption. In the multivariate model for the entire sample, younger workers (b = .633) engage in more frequent episodes of binge drinking than older workers, net of other socio-demographic characteristics. However, this association between age and binge drinking is nonsignificant in the current drinker sub-sample once marital status is included in the model.

The overall rate of alcohol dependence among NES respondents is low. This is consistent with existing literature on the prevalence of alcohol dependence in the general population. In the entire sample, about 4.6% of respondents report symptoms that fit the definition of alcohol dependence.[24] When abstainers are excluded from the analysis, this figure increases to 6.2%. However, there is some evidence that the age of the worker is associated alcohol dependence. When younger workers are compared to the other cohorts, they have a prevalence of alcohol dependence that is nearly double that of the remaining groups of workers. In the entire sample, 8.2% of younger workers had scores on the CAGE that indicated alcohol dependence, compared to 4.4% of remaining

[24] This percentage reflects the conventional, and rather conservative, approach to measuring alcohol dependence using a CAGE score of 2 as the threshold for alcohol dependence. Ewing (1998) has argued that a threshold of 1 could also indicate alcohol dependence; using such a measure would increase the rate of alcohol dependence to 12.1% for the entire sample and 16.7% for current drinkers.

TABLE 17: OLS REGRESSION OF BINGE DRINKING EPISODES ON SOCIO-DEMOGRAPHIC CHARACTERISTICS

	Entire Sample	Current Drinkers	
		Block 1	Block 2
	b (S.E.)	b (S.E.)	b (S.E.)
Younger Worker	.633* (.265)	1.185*** (.317)	.533 (.340)
Gender	-1.034*** (.147)	-1.322*** (.195)	-1.360*** (.195)
Race			
African American	-.702** (.244)	-.605 (.362)	-.840* (.360)
Asian American	-.865 (.743)	-1.014 (1.016)	-1.277 (1.007)
Hispanic	-.602 (.363)	-.765 (.485)	-.788 (.481)
Multi-Racial/Other	.106 (.356)	.267 (.485)	.339 (.508)
Education			
< High School Degree	.626 (.387)	1.344* (.574)	1.290* (.568)
Some College	-.176 (.185)	-.225 (.252)	-.330 (.250)
College Degree	-.522* (.206)	-.661** (.274)	-.807** (.274)
> College Degree	-.647** (.233)	-.878** (.307)	-.979** (.306)
Earnings	.002 (.003)	-.003 (.004)	-.0004 (.004)
Marital Status			
Divorced/Separated	.789*** (.205)	-----	.991*** (.272)
Widowed	.066 (.567)	-----	.212 (.821)
Single	1.155*** (.176)	-----	1.384*** (.234)
Constant	1.341	2.495	2.001
R^2	.055	.050	.068

*p<.05 (two-tailed), **p<.01, ***p<.001

workers ($t = 2.331$, $df = 323.0$, $p<.05$).[25] When the sample is restricted to current drinkers, about 10.1% of younger workers report alcohol dependence in contrast to 6.0% of the older workers ($t = 2.062$, $df = 268.0$, $p<.05$). Rates of alcohol dependence by age appear in Table 18. For the entire sample as well as the sub-sample of current drinkers, the ANOVA results indicate that rates of alcohol dependence significantly vary by age, with the youngest workers reporting the highest levels of alcohol dependence and the oldest workers reporting the lowest levels. These bivariate results provide support for Hypothesis 3.

TABLE 18: PERCENT ALCOHOL DEPENDENT BY AGE

Age Category	Percent Alcohol Dependent (Entire Sample)	Percent Alcohol Dependent (Current Drinkers)
18-24 years old	8.2%	10.1%
25-29 years old	6.7%	8.3%
30-34 years old	6.3%	7.7%
35-39 years old	4.6%	6.3%
40-44 years old	4.5%	6.2%
45-49 years old	4.4%	5.8%
50-54 years old	2.3%	3.3%
55-59 years old	2.3%	3.6%
60 years or greater	1.8%	2.8%
	$\chi^2 = 24.897$, $df = 8$, $p<.01$	$\chi^2 = 16.935$, $df = 8$, $p<.05$

Logistic regression models of alcohol dependence on the dichotomous measure of age and the other socio-demographic characteristics are presented in Table 19. For the

[25] Because the F statistic for Levine's test for equality of variances was significant ($p<.001$), the t-statistic reflects the value for when equal variances are not assumed.

model that included entire sample, the association between being a younger worker and alcohol became nonsignificant when marital status was controlled. The model for current drinkers did not indicate that there was a significantly increased likelihood of alcohol dependence based on being a younger worker between the ages of 18 and 24, net of the effects of the other socio-demographic variables. To summarize, Hypothesis 3 receives more limited support than the preceding hypotheses.

TABLE 19: LOGISTIC REGRESSION OF ALCOHOL DEPENDENCE ON SOCIO-DEMOGRAPHIC CHARACTERISTICS

	Entire Sample		Current Drinkers	
	Block 1 Odds Ratio	Block 2 Odds Ratio	Block 1 Odds Ratio	Block 2 Odds Ratio
Younger Worker	1.856*	1.276	1.539	1.107
Gender	.551**	.543**	.554**	.544**
Race				
African American	.671	.605	.843	.761
Asian American	2.276	2.047	2.481	2.113
Hispanic	1.526	1.471	1.494	1.450
Multi-Racial/Other	1.503	1.516	1.680	1.748
Education				
< High School Degree	.840	.823	.942	.953
Some College	.936	.893	.899	.851
College Degree	.651	.602	.594	.547*
> College Degree	.465*	.440*	.429*	.407**
Earnings	1.003	1.005	1.001	1.003
Marital Status				
Divorced/Separated	-----	2.222**	-----	2.073**
Widowed	-----	.011	-----	.022
Single	-----	2.467***	-----	2.234***
Intercept	-2.262	-2.640		
Model Chi-square	32.717**	56.471***	30.843**	49.930***
Improvement	…	23.754***	…	19.087***
-2 Log Likelihood	1051.985	1028.231	973.665	954.578

*p<.05 (two-tailed)
**p<.01
***p<.001

The final hypothesis regarding age and alcohol (Hypothesis 4) predicts that younger workers will report greater endorsement of job-escapist reasons for drinking. For this analysis, the three indicators of job-escapist reasons for drinking are treated as a mean scale.[26] The mean for this scale, which ranges from 1 to 4, was 1.60 for the entire sample and 1.86 for current drinkers. Independent samples t-tests indicated significant differences between younger workers and other workers in both the entire sample and sub-sample of non-abstainers. Among current drinkers, younger workers reported a mean of 2.01 on job-escapist reasons for drinking compared to a mean of 1.84 for older workers ($t = 2.447$, $p<.05$). As with the other drinking measures, the means are lower when the entire sample is considered (younger worker mean = 1.76, older worker mean = 1.59, $t = 3.154$, $p<.01$). ANOVA results indicate that job-escapist reasons for drinking vary by age, as evidenced by a steady decrease in agreement with these reasons for drinking with increasing age ($F_{(8, 2913)} = 5.043$, $p<.001$). Thus, Hypothesis 4 receives support at the bivariate level.

In Table 20, which presents an OLS regression of job-escapist reasons for drinking, the pattern of results is similar to the other multivariate analyses. For the entire sample model, being a younger worker is associated with greater endorsement of job-escapist reasons for drinking ($b = .159$. $p<.01$). However, the effect of age on job-escapist reasons for drinking becomes mediated by marital status when only current drinkers are analyzed.

---

[26] When abstainers are included, the reliability of this scale is .81. For analyses involving the sub-sample of current drinkers, Cronbach's alpha is .78. In later analyses involving structural equation modeling, these indicators are used to construct a latent variable rather than a mean scale.

TABLE 20: OLS REGRESSION OF JOB-ESCAPIST REASONS FOR DRINKING ON SOCIO-DEMOGRAPHIC CHARACTERISTICS

	Entire Sample	Current Drinkers	
		Block 1	Block 2
	b (S.E.)	b (S.E.)	b (S.E.)
Younger Worker	.159** (.061)	.178** (.066)	.081 (.071)
Gender	-.179*** (.033)	-.248*** (.039)	-.252*** (.039)
Race			
African American	-.193*** (.053)	-.060 (.070)	-.096 (.071)
Asian American	-.013 (.162)	.126 (.201)	-.087 (.200)
Hispanic	-.152 (.081)	-.215* (.097)	-.223* (.096)
Multi-Racial/Other	.003 (.079)	.146 (.101)	.152 (.101)
Education			
< High School Degree	-.101 (.086)	.075 (.115)	.071 (.115)
Some College	.007 (.041)	.034 (.051)	-.048 (.051)
College Degree	.010 (.046)	.062 (.056)	-.082 (.056)
> College Degree	-.037 (.052)	-.101 (.062)	-.115** (.062)
Earnings	.002*** (.001)	-.0003 (.001)	.0007 (.001)
Marital Status			
Divorced/Separated	.136** (.046)	-----	.129* (.055)
Widowed	.010 (.120)	-----	-.037 (.149)
Single	.219*** (.039)	-----	.193*** (.047)
Constant	1.557	2.018	1.957
R^2	.050	.038	.048

*p<.05 (two-tailed)
**p<.01
***p<.001

In summary, the hypothesized relationships between age status and drinking behaviors was supported at the bivariate level, but to a much lesser extent when other socio-demographic characteristics are controlled. Across a variety of alcohol measures, including prevalence of drinking, average consumption, problem drinking, and job-escapist reasons for drinking, younger workers consistently report drinking patterns that exceed that of the older workers in the study. However, much of these age differences appear to be attributable to differences in marital status between younger and older workers. These findings are interpreted and discussed in Chapter 8. In the next chapter, the model of job stress and drinking, which includes hypothesized associations between work experiences and drinking behaviors, is estimated.

CHAPTER 7

MODELING THE CONNECTIONS BETWEEN WORK AND DRINKING: DIRECT AND INDIRECT EFFECTS

Much of the literature regarding the connections between work and alcohol rests on the argument that alcohol consumption can be used to reduce the negative emotional state that arises from stressful work experiences (Grunberg et al., 1998). The tendency in much of this literature has been to estimate the direct effects of work variables on alcohol outcomes (Richman et al., 1997; Richman 1999). Hypothesis 5 posits direct associations between work stressors and overall alcohol consumption. Likewise, Hypothesis 6 suggests that work stressors will be associated with measures of problem drinking, particularly the frequency of binge drinking and alcohol dependence. However, some research has pointed to a model of indirect effects whereby work stressors are associated with job-escapist reasons for drinking, which in turn are associated with alcohol outcomes (Fennell et al., 1981; Martin et al., 1992). Thus, Hypothesis 7 asserts that the associations between work stressors and drinking behaviors are partially mediated by job-escapist reasons for drinking. These hypotheses are evaluated for the entire sample as well as for the sub-sample of current drinkers where abstainers are excluded from the analysis. Finally, Hypotheses 8 and 9 consider the associations between age and working conditions and the possible unique risks that younger employees face in the workplace.

MODELING ALCOHOL CONSUMPTION

Hypothesis 5, regarding the associations between work stressors and the quantity-frequency measure of alcohol consumption, received partial support. In the analysis that included all respondents (Table 21), two of the four work stressors had significant direct effects in the expected direction on alcohol consumption in the previous thirty days. As expected, there was a negative association between substantive complexity and alcohol consumption (beta = -.142). Respondents that whose jobs required lower levels of skill tended to consume more alcohol than those respondents who worked in higher skill jobs. Supervisor abuse was also a significant predictor of alcohol consumption. More frequent supervisor abuse was associated with greater alcohol consumption (beta = .135). As predicted, these direct effects are modest in magnitude.

One unexpected finding was that the association between job autonomy and alcohol consumption was in the opposite direction from that which was hypothesized. Hypothesis 5 predicted that job autonomy would be negatively associated with consumption, but there was actually a positive association between autonomy and the quantity-frequency measure of alcohol consumption (beta = .137). Thus, respondents who reported having more decision-making power on the job were more likely to consume more alcohol in the last 30 days than respondents with less autonomy in their jobs.

This model of alcohol consumption included six socio-demographic control variables for gender, marital status, race, education, earnings, and age. There were several significant associations between these characteristics and alcohol consumption, net of the effects of the work-related variables. Gender was a highly significant predictor

TABLE 21: STRUCTURAL MODEL OF ALCOHOL CONSUMPTION ON WORK-RELATED VARIABLES AND SOCIO-DEMOGRAPHIC CHARACTERISTICS

	Entire Sample		Current Drinkers	
Variables	b (S.E.)	beta	b (S.E.)	beta
Job Autonomy	6.868** (2.225)	.137	8.931** (3.110)	.141
Substantive Complexity	-7.502** (2.820)	-.142	-10.163** (3.686)	-.159
Job Pressure	3.843 (3.674)	.040	2.612 (4.663)	.024
Supervisor Abuse	9.868*** (1.768)	.135	16.343*** (2.408)	.190
Gender	-12.390*** (1.449)	-.180	-16.336*** (2.043)	-.194
Marital Status				
Divorced/ Separated	6.664*** (1.953)	.068	9.842*** (2.765)	.082
Widowed	2.605 (5.305)	.009	6.839 (8.437)	.018
Single	8.367*** (1.663)	.108	9.137*** (2.343)	.099
Race				
Black	-6.082** (2.323)	-.051	-6.567 (3.641)	-.041
Asian	-11.119 (6.923)	-.030	-17.812 (10.081)	-.039
Hispanic	1.431 (3.489)	-.008	-2.357 (4.823)	-.011
Multiracial/Other	-.157 (3.383)	-.001	1.343 (5.066)	.006
Education				
< HS Degree	5.168 (3.863)	.016	10.156 (5.963)	.039
Some College	-1.724 (1.765)	-.023	2.510 (2.554)	-.027
College Degree	-5.034* (2.008)	-.062	-7.116* (2.830)	-.072
> College Degree	-2.302 (2.315)	-.026	-2.445 (3.211)	-.023
Earnings	.066* (.030)	.052	.076 (.041)	.051
Age (5 yr. brackets)	-1.046** (.352)	-.068	-.930 (.507)	-.049
R^2	.106		.129	

*p<.05 (two-tailed)
**p<.01
***p<.001

of alcohol consumption, with women consuming about 12.4 fewer drinks per month compared to men. Two of three dummy variables for marital status were significant in the model. Compared to married respondents, people who were divorced or separated consumed about 6.7 more drinks in the past month. Single people consumed an average of 8.4 more drinks in the prior thirty days than their married counterparts. Only one of

the comparisons by race was significant. Black respondents consumed on average 6.1 fewer drinks per month compared to white respondents. For the comparisons of consumption by education, only the comparison of high school graduates and college graduates was significant. College graduates consumed an average of 5.0 drinks fewer than high school graduates in the previous month. The remaining comparisons by educational attainment were not significantly different from those who terminated their education with a high school degree. Earnings were positively associated with alcohol consumption (b = .066). The measure of age[27] (b = -1.046) was negatively associated with consumption in this model that included all respondents.

This model of alcohol consumption, which included all NES respondents, fits the data well but does not explain a large portion of the variance in alcohol consumption. The SRMR is .027 and the RMSEA is .035, which are below the .08 and .06 respective thresholds of good fit (Hu and Bentler, 1998). However, the model only explains 10.6% of the variance in alcohol consumption in the previous month.

The model was re-estimated for the sub-sample of current drinkers, which includes individuals that have consumed any alcohol in the past year. Again, Hypothesis 5 received partial support. The associations between alcohol consumption and autonomy (beta = .141), substantive complexity (beta = -.159), and supervisor abuse (beta = .190) remained significant and in the same direction as in the analysis of all respondents. However, the association between supervisor abuse and alcohol consumption was slightly larger in the analysis of current drinkers. Job pressure remains nonsignificant in this model.

---

[27] For all the models testing the hypotheses about work and drinking, the age variable reflects five-year age brackets.

Of the socio-demographic variables, there were several notable differences. When the analysis was limited to current drinkers, the gender gap in drinking became even larger, with women consuming 16.3 fewer drinks per month than men. As in the analysis of all respondents, being single (b = 9.1) or being divorced/separated (b = 9.8) was associated with greater consumption. The difference in alcohol consumption between high school graduates and college graduated expanded slightly to about 7.1 drinks per month. None of the comparisons by race were significantly associated with alcohol consumption in this model that is restricted to current drinkers. Age failed to reach statistical significance using a two-tailed test, although it would be significant if a one-tailed test was used. The model explains a slightly larger proportion of the variance (12.9%) than the model that included all NES respondents. The consistency between the two analyses with regard to the work experience variables allows for the conclusion that Hypothesis 5 is partially supported by the data.

MODELS OF PROBLEM DRINKING

While Hypothesis 5 relates to overall alcohol consumption, Hypothesis 6 focuses on measures of problem drinking, namely binge drinking and alcohol dependence. Mplus was used to estimate a model of binge drinking that estimated direct effects of the work-related variables while controlling for socio-demographic characteristics. Results for the entire sample and current drinkers appear in Table 22.

The analyses of binge drinking partially support Hypothesis 6. In the estimates for the entire sample, two of the associations between the work-related constructs and binge drinking were statistically significant and in the hypothesized direction. Substantive complexity was negatively associated with binge drinking (beta = -.136),

TABLE 22: STRUCTURAL MODEL OF BINGE DRINKING ON WORK-RELATED VARIABLES AND SOCIO-DEMOGRAPHIC CHARACTERISTICS

	Entire Sample		Current Drinkers	
Variables	b (S.E.)	beta	b (S.E.)	beta
Job Autonomy	.752** (.247)	.136	1.020** (.325)	.156
Substantive Complexity	-.799* (.317)	-.136	-1.105** (.387)	-.167
Job Pressure	.257 (.417)	.024	.312 (.489)	.027
Supervisor Abuse	1.056*** (.196)	.131	1.311*** (.249)	.148
Gender	-.973*** (.162)	-.128	-1.270*** (.214)	-.146
Marital Status				
Divorced/ Separated	.734*** (.218)	.068	.856** (.290)	.069
Widowed	.413 (.593)	.014	.870 (.868)	.023
Single	.918*** (.185)	.108	1.094*** (.245)	.114
Race				
Black	-.665* (.259)	-.051	-.809* (.381)	-.048
Asian	-.934 (.773)	-.023	-1.583 (1.057)	-.033
Hispanic	-.780* (.389)	-.038	-1.020* (.506)	-.045
Multiracial/Other	-.131 (.378)	-.007	.014 (.531)	.001
Education				
< HS Degree	.710 (.427)	.033	1.262* (.620)	.047
Some College	-.124 (.197)	-.015	-.232 (.267)	-.024
College Degree	-.423 (.224)	-.047	-.631* (.296)	-.062
> College Degree	-.340 (.258)	-.034	-.563 (.336)	-.062
Earnings	.004 (.003)	.026	.002 (.004)	.015
Age (5 yr. brackets)	-.131*** (.039)	-.076	-.118* (.053)	-.060
R^2	.088		.107	

*p<.05 (two-tailed)
**p<.01
***p<.001

meaning that respondents who reported greater skill requirements on the job, on average, engaged in fewer episodes of binge drinking in the previous month. In addition, more frequent experiences with supervisor abuse were associated with more frequent binge drinking (beta = .131). As with the models of alcohol consumption, job autonomy was

positively associated with binge drinking (beta = .136). This finding represents a relationship in the opposite direction from the stated hypothesis.

Several of the associations between socio-demographic characteristics and binge drinking model were similar to the findings for the model of overall alcohol consumption. Women engaged in significantly fewer episodes of binge drinking in the previous month than men (b = -.973). Two of the three marital status comparisons were significant. Divorced or separated respondents (b = .734) as well as single respondents (b = .918) engaged in more episodes of binge drinking in the previous month than individuals who were currently married. In terms of racial differences in binge drinking, African American reported less binge drinking (b = -.665) than white respondents. The comparison between Hispanic respondents and whites was also statistically significant, with Hispanic respondents engaging in less binge drinking than whites (b = -.780). Finally, age was negatively associated with binge drinking with older respondents engaging in significantly fewer episodes of binge drinking (b = -.131). This model explains 8.8% of the variance in the frequency of binge drinking.

In the sub-sample of current drinkers, these associations remained significant and were slightly larger in magnitude when compared to the results for the entire sample. Substantive complexity was negatively associated with binge drinking (beta = -.167), while supervisor abuse (beta = .108) was positively associated with the frequency of binge drinking. There was a significant positive association between job autonomy and the measure of binge drinking (beta = .148), but the relationship between job pressure and binge drinking failed to achieve statistical significance. These findings contribute further, albeit limited, support for Hypothesis 6. The associations between the socio-

demographic characteristics and binge drinking were similar to the results for the entire sample, such that women (b = -.973) engaged in less frequent binge drinking, as did African Americans (b = -.780) and Hispanics (b = -1.020) in comparison to whites. Likewise, divorced/separated respondents (b = .856) and single respondents (b = 1.094) reported more frequent binge drinking, relative to married individuals. Two of the educational attainment comparisons were significant, with non-high school graduates engaging in more binge drinking (b = 1.262) and college graduates engaging in less frequent binge drinking (b = -.631) than high school graduates. Age, measured in five-year brackets, was negatively associated with binge drinking (b = -.118). Overall, this model of binge drinking among current drinkers explains 10.7% of the variance.

The second part of Hypothesis 6 concerns the associations between work and alcohol dependence. The hypothesis, as seen in Table 23, received only marginal support. Of the work variables, only supervisor abuse was significantly associated with alcohol dependence (entire sample, odds ratio = 1.717; current drinkers, odds ratio = 1.756). Job autonomy, substantive complexity, and job pressure were not significantly associated with alcohol dependence. Of the socio-demographic variables, gender was negatively associated with alcohol dependence (entire sample, odds ratio = .577; current drinkers, odds ratio = .578). Marital status is also associated with alcohol dependence such that divorced/separated individuals (entire sample, odds ratio = 2.185; current drinkers, odds ratio = .1.987) as well as individuals who were single (entire sample, odds ratio = 1.893; current drinkers, odds ratio = 1.787) are at greater risk of alcohol dependence than their married counterparts. Educational attainment becomes significant when a one-tailed test is used, with college graduates (current drinkers, odds ratio = .617,

TABLE 23: LOGISTIC REGRESSION OF ALCOHOL DEPENDENCE ON WORK-RELATED VARIABLES AND SOCIO-DEMOGRAPHIC CHARACTERISTICS

	Entire Sample		Current Drinkers	
Variables	b (S.E.)	Exp(B)	b (S.E.)	Exp(B)
Job Autonomy	-.088 (.153)	.916	-.104 (.155)	.901
Substantive Complexity	.002 (.150)	1.002	-.020 (.151)	.980
Job Pressure	-.083 (.163)	.920	-.093 (.164)	.911
Supervisor Abuse	.540*** (.130)	1.717	.563*** (.134)	1.756
Gender	-.550** (.202)	.577	-.548** (.204)	.578
Marital Status				
Divorced/ Separated	.782** (.260)	2.185	.687** (.264)	1.987
Widowed	-4.122 (9.314)	.016	-3.559 (6.829)	.028
Single	.638*** (.227)	1.893	.581* (.231)	1.787
Race				
Black	-.543 (.383)	.581	-.323 (.388)	.724
Asian	.656 (.770)	1.927	.723 (.788)	2.062
Hispanic	.393 (.398)	1.481	.408 (.403)	1.503
Multiracial/Other	.239 (.403)	1.270	.388 (.411)	1.473
Education				
< HS Degree	.010 (.502)	1.010	.020 (.512)	1.020
Some College	-.026 (.230)	.975	-.070 (.233)	.932
College Degree	-.434 (.285)	.648	-.484 (.288)	.617
> College Degree	-.599 (.358)	.549	-.693 (.359)	.500
Earnings	.007 (.004)	1.007	.005 (.004)	1.005
Age (5 yr. brackets)	-.128* (.050)	.880	-.084 (.051)	.920
Intercept	-2.134		-1.776	
Model Chi-Square	82.626***		72.656***	
-2 Log Likelihood	955.327		889.919	

*p<.05 (two-tailed)
**p<.01
***p<.001

p<.05, one-tailed) and those with greater than a baccalaureate degree (entire sample, odds ratio = .549, p<.05, one-tailed; current drinkers, odds ratio = .500, p<.05, one-tailed) being at less risk of alcohol dependence than high school graduates. Finally, age was

negatively associated with alcohol dependence (entire sample, odds ratio = .880; current drinkers, odds ratio = .911, p = .05, one-tailed).

To summarize, Hypothesis 6 received partial support. In particular, there were a greater number of significant work-related variables in the model of binge drinking than in the logistic model of alcohol dependence. Three of the four work-related stressors were associated with binge drinking in the expected direction. In contrast, supervisor abuse was the only workplace variable directly associated with alcohol dependence.

WORK AND ALCOHOL: A MODEL OF DIRECT AND INDIRECT EFFECTS

While Hypotheses 5 and 6 focused upon the direct effects of work on alcohol consumption and problem drinking, Hypothesis 7 considers a model of direct and indirect effects. Previous research has identified job-escapist reasons for drinking as a variable that partly mediates the associations between work experiences and drinking behaviors. Theoretically, stressful work experiences are likely to be associated with greater endorsement of job-escapist reasons for drinking. These job-escapist reasons for drinking have been found to be associated with greater consumption as well as heightened risk of problem drinking. Thus, in order to test Hypothesis 7, structural equation models of consumption and binge drinking were estimated as well as a logistic regression model of alcohol dependence where the work variables and then job-escapist reasons for drinking were entered in blocks.

The structural equation models of alcohol consumption appear in Tables 24 and 25. The first column of Table 4 reports the effects of the work variables and socio-demographic characteristics on escapist reasons for drinking, and the second column presents the direct effects of work and job-escapist reasons for drinking on alcohol

consumption for the entire NES sample. Two of the four work-related variables were significantly associated with job-escapist reasons for drinking. First, job pressure is positively associated with job-escapist reasons for drinking (beta = .103), meaning that workers who report that their jobs are more demanding are more likely to endorse the idea that alcohol can relieve job stress. Second, individuals who reported more frequent experiences of supervisor abuse were more likely to consider alcohol to be a means to reducing work-related stress (beta = .078).

Consistent with other findings of differences in drinking behavior by gender, marital status, race, and age, these variables were significantly associated with escapist reasons for drinking. Women were less likely to endorse these reasons than men (beta = -.245). Divorced respondents (beta = .166) as well as single respondents (beta = .226) were more likely to view alcohol as a coping mechanism in dealing with job stress. African Americans reported less job escapist reasons for drinking relative to white respondents (beta = -.285). Finally, age was negatively associated with these with escapist reasons for drinking (beta = -.095). The socio-demographic characteristics and work variables explain about 7.7% of the variance in job-escapist reasons for drinking.

As seen in the second column of Table 24, job-escapist reasons for drinking are strongly associated with overall alcohol consumption. Greater endorsement of the belief that alcohol relieves stress was associated with greater alcohol consumption in the previous month (beta = .402). In addition, there were two significant direct associations between work variables and alcohol consumption. Substantive complexity is negatively associated with consumption (beta = -.070). The magnitude of this association is somewhat smaller when job escapist reasons for drinking are controlled, than in the direct

TABLE 24: STRUCTURAL MODEL OF ALCOHOL CONSUMPTION WITH JOB-ESCAPIST REASONS FOR DRINKING AS MEDIATOR (ENTIRE SAMPLE)

Variables	Escapist Reasons for Drinking b (S.E.)	beta	Alcohol Consumption b (S.E.)	beta
Escapist Reasons for Drinking	------	-----	14.660*** (.796)	.402
Job Autonomy	.027 (.063)	.022	3.922* (1.991)	.086
Substantive Complexity	-.081 (.079)	-.061	-3.384 (2.498)	-.070
Job Pressure	.250* (.106)	.103	-1.355 (3.310)	-.015
Supervisor Abuse	.151** (.054)	.078	7.432*** (1.715)	.106
Gender	-.210*** (.041)	-.122	-6.859*** (1.316)	-.110
Marital Status				
Divorced/ Separated	.142* (.056)	.057	1.377 (1.782)	.015
Widowed	.113 (.146)	.017	.140 (4.615)	.001
Single	.193*** (.048)	.099	5.067*** (1.522)	.071
Race				
Black	-.244*** (.064)	-.085	-1.418 (2.038)	-.014
Asian	.024 (.190)	.003	-9.930 (6.001)	-.031
Hispanic	-.128 (.100)	-.028	-.676 (3.154)	-.004
Multiracial/Other	-.009 (.096)	-.002	.371 (3.037)	.002
Education				
< HS Degree	-.137 (.111)	-.028	5.819 (3.494)	.033
Some College	-.009 (.050)	-.005	-.585 (1.595)	-.009
College Degree	-.005 (.058)	-.003	-4.172* (1.837)	-.056
> College Degree	-.017 (.067)	.008	-2.511 (2.105)	-.030
Earnings	.003*** (.001)	.089	.020 (.027)	.017
Age (5 yr. brackets)	-.037*** (.010)	-.095	-.175 (.318)	-.012
R^2	.077		.235	

*p<.05 (two-tailed)
**p<.01
***p<.001

effects model discussed earlier (see Table 21). In addition, there was a positive association between supervisor abuse and alcohol consumption (beta = .106).

Of the socio-demographic characteristics, there were some consumption differences by gender, marital status, and education. As has been demonstrated before,

women consumed less alcohol than men, net of work variables, other socio-demographic characteristics, and job-escapist reasons for drinking. Single respondents consumed significantly more alcohol on average. Finally, college graduates reported lower average

TABLE 25: STRUCTURAL MODEL OF ALCOHOL CONSUMPTION WITH JOB-ESCAPIST REASONS FOR DRINKING AS MEDIATOR (CURRENT DRINKERS)

	Escapist Reasons for Drinking		Alcohol Consumption	
Variables	b (S.E.)	beta	b (S.E.)	beta
Escapist Reasons for Drinking	------	-----	16.196*** (1.421)	.308
Job Autonomy	.024 (.067)	.021	6.206* (3.080)	.103
Substantive Complexity	-.120 (.078)	-.104	-5.811 (3.556)	-.095
Job Pressure	.301** (.105)	.147	-3.858 (4.661)	-.036
Supervisor Abuse	.148** (.057)	.089	15.993** (2.653)	.183
Gender	-.251** (.045)	-.164	-9.832*** (2.068)	-.122
Marital Status				
Divorced/ Separated	.096 (.061)	.044	4.605 (2.802)	.040
Widowed	.102 (.173)	.016	3.686 (7.911)	.011
Single	.143** (.052)	.084	6.501** (2.375)	.073
Race				
Black	-.135 (.077)	-.048	-3.428 (3.514)	-.023
Asian	.128 (.209)	.016	-18.952* (9.556)	-.046
Hispanic	-.192 (.105)	-.048	-.937 (4.814)	-.004
Multiracial/Other	.158 (.111)	-.038	-.567 (5.086)	-.003
Education				
< HS Degree	-.167 (.133)	-.035	10.404 (6.077)	.041
Some College	-.056 (.056)	-.034	-.781 (2.570)	-.009
College Degree	-.040 (.063)	-.022	-5.542 (2.879)	-.059
> College Degree	-.055 (.071)	-.029	-1.240 (3.231)	-.012
Earnings	.001 (.001)	.029	.071 (.041)	.049
Age (5 yr. brackets)	-.012 (.011)	-.036	-.434 (.506)	-.024
R^2	.080		.204	

*p<.05 (two-tailed)
**p<.01
***p<.001

alcohol consumption than high school graduates. The overall model explained 23.5% of the variance in alcohol consumption.

These findings for the entire sample were essentially replicated in the structural model of work variables, job-escapist drinking, and socio-demographic characteristics on alcohol consumption within the sub-sample of current drinkers (Table 25). Job pressure (beta = .147) and supervisor abuse (beta = .089) continue to be significant predictors of job escapist reasons for drinking, which these beliefs are positively associated with alcohol consumption (beta = .308). The model for current drinkers explains about 8.0% of variance in job escapist reasons for drinking and 20.4% of the variance in alcohol consumption. Thus, there is some support for Hypothesis 7, although not all of the work variables were associated with job escapist reasons for drinking.

Tables 26 and 27 present the structural equation models of binge drinking for the entire sample and current drinkers. The first column of Table 26 essentially duplicates the results about job-escapist reasons for drinking that appeared in Table 24. However, it is notable that there is a strong relationship between job-escapist reasons for drinking (beta = .314) and the frequency of binge drinking, which again provides some evidence in support of Hypothesis 7. Job pressure and supervisor abuse have indirect effects on binge drinking by way of job escapist reasons for drinking. The model explains 15.8% of the variance in binge drinking.

Finally, Table 28 presents logistic regression results of alcohol dependence for the entire sample and the current drinker sub-sample; this additional model adds job-escapist reasons for drinking as an independent variable. Job-escapist reasons for drinking are

TABLE 26: STRUCTURAL MODEL OF BINGE DRINKING WITH JOB-ESCAPIST REASONS FOR DRINKING AS MEDIATOR (ENTIRE SAMPLE)

Variables	Escapist Reasons for Drinking b (S.E.)	beta	Binge Drinking b (S.E.)	beta
Escapist Reasons for Drinking	------	-----	1.172*** (.082)	.314
Job Autonomy	.022 (.061)	.018	.340 (.207)	.075
Substantive Complexity	-.074 (.077)	-.056	-.322 (.263)	-.066
Job Pressure	.251* (.105)	.104	-.391 (.354)	-.044
Supervisor Abuse	.150** (.052)	.080	.749*** (.177)	.107
Gender	-.205*** (.040)	-.122	-.446*** (.138)	-.071
Marital Status				
Divorced/ Separated	.125* (.055)	.051	.283 (.186)	.031
Widowed	.169 (.140)	.027	.083 (.477)	.003
Single	.179*** (.046)	.094	.510** (.158)	.072
Race				
Black	-.221*** (.063)	-.079	-.291 (.213)	-.028
Asian	.038 (.184)	.004	-.763 (.627)	-.024
Hispanic	-.131 (.097)	-.029	-.550 (.331)	-.033
Multiracial/Other	-.015 (.093)	-.004	.055 (.317)	.003
Education				
< HS Degree	-.115 (.107)	-.024	.557 (.363)	.032
Some College	-.015 (.049)	-.008	.068 (.167)	.010
College Degree	-.006 (.056)	-.003	-.272 (.192)	-.037
> College Degree	.011 (.065)	.005	-.205 (.220)	-.025
Earnings	.003*** (.001)	.088	-.001 (.003)	-.009
Age (5 yr. brackets)	-.036*** (.010)	-.095	-.043 (.033)	-.031
R^2	.075		.158	

*p<.05 (two-tailed)
**p<.01
***p<.001

strongly associated with alcohol dependence (entire sample, odds ratio = 3.847; current drinkers, odds ratio = 3.129). Of the work variables, only supervisor abuse is statistically significant, as it was in the model of direct effects shown in Table 23. Greater supervisor abuse was associated with a greater likelihood of alcohol dependence (entire sample,

TABLE 27: STRUCTURAL MODEL OF BINGE DRINKING WITH JOB-ESCAPIST REASONS FOR DRINKING AS MEDIATOR (CURRENT DRINKERS)

	Escapist Reasons for Drinking		Binge Drinking	
Variables	b (S.E.)	beta	b (S.E.)	beta
Escapist Reasons for Drinking	------	-----	1.340 (.133)***	.273
Job Autonomy	.016 (.065)	.014	.570 (.290)*	.102
Substantive Complexity	-.109 (.075)	-.096	-.567 (.335)	-.101
Job Pressure	.294 (.102)**	.146	-.430 (.440)	-.043
Supervisor Abuse	.147 (.056)**	.090	1.054 (.248)***	.131
Gender	-.243 (.044)	-.161	-.630 (.194)**	-.085
Marital Status				
Divorced/ Separated	.086 (.060)	.040	.391 (.264)	.037
Widowed	.164 (.165)	.027	.389 (.731)	.013
Single	.138 (.050)**	.083	.708 (.223)**	.086
Race				
Black	-.126 (.075)	-.046	-.509 (.330)	-.037
Asian	.137 (.203)	.018	-1.490 (.900)	-.039
Hispanic	-.191 (.103)	-.048	-.690 (.457)	-.036
Multiracial/Other	.146 (.108)	.035	.031 (.479)	.002
Education				
< HS Degree	-.133 (.128)	-.028	1.024 (.566)	.044
Some College	-.053 (.055)	-.033	.055 (.242)	.007
College Degree	-.033 (.061)	-.019	-.397 (.271)	-.046
> College Degree	-.056 (.069)	-.030	-.284 (.304)	-.030
Earnings	.001 (.001)	.029	.000 (.004)	-.001
Age (5 yr. brackets)	-.012 (.011)	-.034	-.055 (.048)	-.032
R^2	.077		.157	

*p<.05 (two-tailed)
**p<.01
***p<.001

odds ratio = 1.744; current sample, odds ratio = 1.783). None of the socio-demographic variables were significantly associated with alcohol dependence when job-escapist reasons for drinking were controlled. Although these findings reiterate importance of

job-escapist reasons for drinking in modeling problem drinking, these results do not offer much support for Hypothesis 7.

TABLE 28: LOGISTIC REGRESSION OF ALCOHOL DEPENDENCE ON WORK-RELATED VARIABLES AND ESCAPIST REASONS FOR DRINKING

Variables	Alcohol Dependence (Entire Sample) b (S.E.)	O.R	Alcohol Dependence (Current Drinkers) b (S.E.)	O.R.
Escapist Reasons for Drinking	1.347*** (.140)	3.847	1.141 (.150)***	3.129
Job Autonomy	-.168 (.191)	.845	-.163 (.190)	.850
Substantive Complexity	-.110 (.187)	.896	-.138 (.186)	.871
Job Pressure	-.155 (.206)	.856	-.158 (.206)	.854
Supervisor Abuse	.556** (.169)	1.744	.578** (.170)	1.783
Gender	-.109 (.261)	.897	-.129 (.261)	.879
Marital Status				
Divorced/ Separated	.421 (.348)	1.462	.397 (.347)	1.487
Widowed	-4.019 (9.034)	.018	-4.479 (11.153)	.011
Single	.495 (.298)	1.640	.474 (.298)	1.606
Race				
Black	-.223 (.447)	.800	-.107 (.448)	.898
Asian	.055 (1.135)	1.057	.055 (1.130)	1.056
Hispanic	.122 (.646)	1.130	.104 (.641)	1.110
Multiracial/Other	.108 (507)	1.114	.185 (.507)	1.203
Education				
< HS Degree	.623 (.605)	1.864	.603 (.611)	1.828
Some College	.239 (.298)	1.270	.208 (.297)	1.232
College Degree	-.453 (.394)	.635	-.482 (.393)	.618
> College Degree	-.289 (.464)	.749	-.318 (.459)	.728
Earnings	.004 (.005)	1.004	.003 (.005)	1.003
Age (5 yr. brackets)	-.051 (.063)	.950	-.041 (.150)	.960
Intercept	-5.605		-4.922	
Model Chi-square	170.283***		125.624***	
-2 Log Likelihood	569.341		555.939	

*p<.05 (two-tailed)
**p<.01
***p<.001

The focus of this chapter has been upon modeling the connections between work experiences and drinking patterns. These findings suggest that certain working conditions are associated with greater consumption and greater problem drinking.

AGE AND WORK EXPERIENCES

The preceding models of work and alcohol have treated age in a manner consistent with much of the alcohol literature, which is to say, much like a control variable. Hypotheses 8 and 9 move in the direction of specifying how age intersects with these models of work and drinking. In Hypothesis 8, differences in working conditions by age are considered. Then, Hypothesis 9 examines possible interactions between age and the associations between work and drinking behaviors. These hypotheses aim to explore the disadvantages that younger workers may face as well as the potentially greater risk of drinking in response to work-related stressors.

Hypothesis 8 was tested through a series of structural equation models. First, age was dichotomized into younger workers (ages 18 to 24) and older workers (ages 25 and higher). Then a structural model evaluated the bivariate associations between this measure of age and the four work-related latent variables. The next step was estimating a structural model that included the other socio-demographic characteristics.[28] In addition these bivariate and multivariate models were re-estimated using the measure of age that collapses respondents into five-year age brackets.

These analyses provide partial support for Hypothesis 8. As seen in the first panel of Table 29, the bivariate analyses reveal that younger workers experience significantly more stressful working conditions on three of the four measures. Younger workers report

[28] Earnings are not included in these models since they are conceptualized as aconsequence the characteristics of the job that one holds.

TABLE 29: STRUCTURAL MODELS OF WORK-RELATED VARIABLES ON AGE AND OTHER SOCIO-DEMOGRAPHIC CHARACTERISTICS

	Job Autonomy b (S.E.) beta	Substantive Complexity b (S.E.) beta	Job Pressure b (S.E.) beta	Supervisor Abuse b (S.E.) beta
MODEL 1				
Younger Worker	-.229 (.048) -.098***	-.315 (.049) -.141***	-.014 (.026) -.012	.186 (.032) .115***
MODEL 2				
Younger Worker	-.138 (.052) -.059**	-.157 (.053) -.069**	.023 (.030) .019	.119 (.035) .074***
Gender	-.158 (.028) -.118***	-.079 (.028) -.061**	.084 (.017) .119***	-.051 (.018) -.055**
Marital Status				
Divorced/ Separated	-.118 (.041) -.060**	-.119 (.041) -.063**	.010 (.024) .010	.107 (.027) .080***
Widowed	-.108 (.109) -.020	.019 (.110) .004	-.110 (.064) -.039	.060 (.072) .016
Single	-.080 (.034) -.053*	-.111 (.035) -.076**	-.001 (.020) -.002	.076 (.023) .074***
Race				
Black	-.101 (.048) -.043*	-.003 (.048) -.001	-.075 (.028) -.061**	.000 (.032) .000
Asian	-.044 (.143) -.006	-.128 (.144) -.019	-.146 (.084) -.040	-.044 (.095) -.009
Hispanic	-.050 (.075) -.014	.018 (.076) .005	.012 (.044) .006	-.002 (.050) -.001
Other	-.046 (.071) -.013	-.073 (.071) -.022	.024 (.041) .013	.162 (.047) .068***
Education				
< HS Degree	-.064 (.079) -.017	-.119 (.079) -.033	-.008 (.046) -.004	.116 (.052) .046*
Some College	.081 (.036) .056*	.192 (.037) .137***	.071 (.022) .093**	-.062 (.024) -.063**
College Degree	.224 (.040) .140***	.448 (.041) .289***	.145 (.025) .173***	-.093 (.026) -.085***
> College Degree	.322 (.044) .180***	.649 (.046) .375***	.192 (.028) .205***	-.146 (.029) -.119***
R^2	.065	.162	.061	.045

lower levels of job autonomy than older workers (beta = -.098). In addition, there is an association between this measure of age and substantive complexity (beta = -.141).

Younger workers also reported more frequent supervisor abuse (beta = .115). The only nonsignificant association was between this measure of age and job pressure.[29] The second panel of results in Table 29 presents the associations between being a younger worker and the work-related constructs while controlling for other socio-demographic characteristics. In this multivariate model, the associations between age and job autonomy, substantive complexity, and supervisor abuse remain statistically significant. However the magnitudes of these associations become somewhat smaller when gender, marital status, race, and educational attainment are added to the model. For example, the standardized coefficient between age and job autonomy is -.098 in the bivariate model and decreases to -.059 in this multivariate model. Likewise, the association between substantive complexity and age decreases from -.141 to -.069 when other socio-demographic characteristics are controlled. The association between age and supervisor abuse also becomes smaller in magnitude, decreasing from .115 to .074. In part, these smaller associations may reflect how age is correlated with other variables, including educational attainment and marital status. As demonstrated in Chapter 5, younger workers are less likely to be married and have achieved lower levels of education, two factors that seem to exert protective factors with regard to stressful working experiences. Married respondents are significantly advantaged in terms of job autonomy and complexity while being less likely to experience supervisor abuse.

---

[29] Even this simple model fit the data well with a SRMR of .043 and RMSEA of .045. This dichotomous measure of age, admittedly, explains only a very small percentage of the variance in job autonomy (R2 = .010), substantive complexity (R^2 = .020), and supervisor abuse (R^2 = .013)

Increasing levels of educational attainment are significantly associated with all four work-related variables, clearly indicating that more highly educated individuals are advantaged in terms of job autonomy, substantive complexity and in avoiding supervisor abuse.[30] In general, these findings provide support for Hypothesis 8, with the exception of the nonsignificant association between being a young worker and job pressure.

An additional analysis re-estimated the multivariate modeling with the measure of age in five-year brackets rather than using the dichotomy of workers under age 25 compared to workers at least 25 years of age (results not shown). This measure of age was associated with three of the work variables. First, there was a significant linear association between age and job pressure such that lower job pressure was associated with increases in age ($b = -.016$, S.E. = .004, beta = -.104, $p<.001$). Second, there was a positive association between age and substantive complexity ($b = .016$, S.E. = .007, beta = .055, $p<.05$). Age was negatively associated with supervisor abuse ($b = -.023$, S.E. = .005, beta = -.110, $p<.001$). The association between age and job autonomy was only significant using a one-tailed test ($b = -.012$, S.E. = .007, beta = -.038, $p<.05$). The associations between the socio-demographic characteristics and the work variables were similar to those reported in Table 21.

YOUNGER WORKERS AND RISK: INTERACTION EFFECTS

While Hypothesis 8 is concerned with the associations between age and working conditions, Hypothesis 9 posits that younger workers may face unique risks such that the associations between work experiences and drinking are greater in magnitude for younger

[30] There does appear to be a "price" for the increased skill requirements and job autonomy for more educated respondents as seen in their reporting of greater levels of job-related pressure.

workers. There was only modest support for this argument. A series of regression models were estimated, with consideration given to interactions between being a younger worker between the ages of 18 and 24 and the work variables (complete results not shown). In general there were not significant interactions in these models of work experiences, job escapist reasons for drinking, socio-demographic variables, and interaction terms. However, there were several of exceptions. In the model of alcohol consumption in the past month the magnitude of the association between supervisor abuse and overall consumption was larger for younger workers. For younger workers, the standardized coefficient for this association was .205 (b = 18.789, S.E. = 6.585) in contrast to an association of .050 for older workers (b = 2.589, S.E. 1.066; significant difference in slopes, $t = 2.43$, $p<.05$). Two other significant interactions appeared in the model of binge drinking. First, the magnitude of the association between substantive complexity and binge drinking was significantly larger for younger workers (b = -1.072, S.E. = .484, beta = -.185) than older workers (b = -.007, S.E. = .108, beta = -.018; difference in slopes, $t = 4.038$, $p<.001$). Second, there was a significant interaction between age and job-escapist reasons for drinking. The association between job-escapist reasons for drinking and the frequency of binge drinking in the previous month was significantly larger for younger workers (b = 1.894, S.E. = .362, beta = .359) than the remaining older workers (b = 1.168, S.E. = .082, beta = .302; difference in slopes, $t = 1.96$, $p<.05$). Thus, there was only marginal support for the argument that the associations between work and drinking are of greater magnitude for younger workers in comparison to older workers. While there were a small number of significant

interactions, it would be hard to conclude that these build a persuasive case for this line of argumentation.

A RECAPITULATION OF THE HYPOTHESES

This project is framed in terms of nine hypotheses about the relationships between age, work and alcohol. Given the numerous analyses presented, this brief summary of the hypotheses and the evidence brought to bear upon them is offered.

Hypothesis 1 proposes that two measures of alcohol prevalence, namely the consumption of any alcohol in the previous month and engaging in any binge drinking during that same period, vary by age such that younger workers are more likely to report these behaviors compared to older workers. This hypothesis was supported at the bivariate level. In addition, multivariate logistic regression analyses revealed a significant association between being a younger worker and these two alcohol measures for the analysis of the entire sample. However, in the sub-sample of current drinkers, the association between being a younger worker and engaging in any binge drinking becomes nonsignificant when marital status is added to the model. Thus, there is conditional support for Hypothesis 1.

In Hypothesis 2, younger workers are expected to consume more alcohol in the previous month than older workers. As with Hypothesis 1, there is bivariate support for this argument. For the entire sample, younger workers consume significantly more alcohol than older workers even when socio-demographic characteristics are controlled. When abstainers are excluded from analysis, this difference between younger and older workers becomes nonsignificant once marital status is taken into account. Similar

patterns of results occur for Hypotheses 3 and 4. Younger drinkers are expected to report greater problem drinking in terms of frequency of binge drinking and alcohol dependence (Hypothesis 3) as well as greater endorsement of job-escapist reasons for drinking (Hypothesis 4). These hypotheses are supported at the bivariate level, but the age differences generally become nonsignificant when marital status is controlled. The implications of these findings are discussed in the next chapter.

Hypotheses 5, 6, and 7 focus upon the associations between work experiences and drinking behaviors. Direct effects of job autonomy, substantive complexity, job pressure, and supervisor abuse on alcohol consumption in the past month are predicted in Hypothesis 5. This hypothesis receives partial support, since lower complexity and more frequent experiences of supervisor abuse are associated with greater alcohol consumption. However, job pressure is not a significant predictor of consumption and the association between autonomy and consumption is in the opposite direction from the hypothesis. Turning to Hypothesis 6, these work-related variables are hypothesized to be associated with the frequency of binge drinking and with alcohol dependence. The frequency of binge drinking model shows a pattern of results that is similar to those reported in Hypothesis 5, such that complexity and supervisor abuse are significant predictors of binge drinking, while job autonomy and job pressure do not perform as expected. Only supervisor abuse is directly associated with alcohol dependence. These data, therefore indicate partial support for Hypothesis 6. Finally, Hypothesis 7 is partially supported in that job pressure and supervisor abuse are significantly associated with job-escapist reasons for drinking which is in turn associated with alcohol consumption, binge drinking, and alcohol dependence.

Hypothesis 8 predicts that younger workers will report higher levels of the stressful working conditions. The data demonstrate that younger workers are employed in jobs with less complexity, greater risk of supervisor abuse, and lower job autonomy than older workers, net of socio-demographic characteristics. Finally, there is only modest support for Hypothesis 9, which proposes a model with significantly larger associations between the independent variables and dependent variables for younger workers. The associations between supervisor abuse and consumption, complexity and binge drinking, and job-escapist reasons for drinking and binge drinking were significantly larger for younger workers relative to older workers.

To summarize, the 2001 NES provides some support for the "spill-over" model of drinking, where stressors on the job are associated with greater alcohol consumption. Second, there are indications that younger workers may face certain greater risks with regard to heavier drinking practices due to less rewarding work experiences. Finally, there is only minimal evidence in support of the argument that younger workers face unique risks in terms of stronger associations between work stressors and drinking.

CHAPTER 8

CONCLUSIONS

After an extensive number of analyses, it is necessary to return to the broad research questions developed in the first chapter. This project began with the basic question: What are the intersections of age, work, and alcohol? This highlights the key findings and contributions of this research, making linkages between this project and broader sociological theory, considering the potential policy implications of the findings, and suggesting avenues for future research.

This project begins with a series of research questions that arose from the existing literature on age, drinking, and work. Of central interest are the possible differences between younger and older workers in terms of drinking patterns. An underlying concern about the extent to which the reported drinking patterns of the younger workers in the NES mirrored that of their college-aged peers necessitates analyses of alcohol consumption and problem drinking by age. In addition to these questions about the distributions of drinking behaviors, this research focuses upon how age-stratified work experiences may contribute to explanations of age-related differences in drinking. Such an analysis demands the assessment of the associations between work experiences and the alcohol measures. Finally, these associations between work and alcohol are examined for interactions to assess the extent to which the magnitude of the relationships between work and drinking are greater for younger workers.

THE DRINKING PATTERNS OF YOUNGER WORKERS: SIMILARITIES WITH COLLEGE STUDENT DRINKING

One of the major contributions of this research is to consider the drinking patterns of younger workers, between the ages of 18 and 24, so that these behaviors can be compared to their college-enrolled same-age peers. As argued earlier, college student drinking has been socially constructed as a major social problem to which enormous research resources have been directed (Dowdall and Wechsler, 2002; Wechsler et al., 1995). Given that these behaviors have been linked to negative health and social consequences (Goldman, 2002), additional resources have been directed at designing prevention and intervention programs on college campuses to reduce the risky drinking practices of college students (Walters et al., 2000; Wechsler et al., 2000). Evidence of similarities in drinking patterns between college students and younger workers may point to the need to direct greater resources to the sociological study of younger workers and the development of prevention and intervention strategies that focus upon them.

There is considerable evidence that younger workers between the ages of 18 and 24 engage in patterns of alcohol consumption that are quite similar to their peers who are enrolled in college. The percentage of abstainers within the younger worker group was 19.7%, which is quite close to the 16% of college students who abstain from alcohol (Wechsler et al., 1994). The prevalence of alcohol consumption in the previous month among younger workers in the NES sample is 64.9%, which is quite close to the most recent statistics on college student drinking in the Monitoring the Future study. For data collected in 2001, Johnston et al. (2002) reported that 67% of college students had consumed alcohol in the previous month. Likewise, among workers between the ages of

18 and 24 in the NES, about 32.1% have engaged in binge drinking in the previous month. This figure is somewhat lower than the percentage of 41% of college students who binge drank in the most recent Monitoring the Future results, but still suggests that binge drinking is not a rare behavior among young workers.[31]

The NES data also suggest a substantial degree of similarity in estimates of alcohol dependence among younger workers when compared to recent estimates of dependence in the college population. The 1999 College Alcohol Study reports that 6.3% of the students in its sample met the criteria of alcohol dependence (Knight et al., 2002). Similarly, 8.2% of all NES respondents between the ages of 18 and 24 were categorized as alcohol dependent.

The findings of large-scale studies such as the College Alcohol Study and Monitoring the Future have been used to justify the expenditure of considerable resources in terms of research funding as well as the effort of research investigators. These similarities between younger workers and college students with regard to the various alcohol-related measures, therefore, raise two broader policy issues. First, the similarities between college students and younger workers, particularly in terms of risky drinking practices, suggest that the alcohol consumption patterns of younger workers should also be considered a significant public health problem. Attaching such a label to the drinking practices of younger workers would then provide legitimacy for the investment of greater research resources into studying drinking and related consequences within this sub-

[31] As another measure of heavy drinking patterns, Knight et al. (2002) use a criterion of consuming on more than 10 occasions in the past month. Using data from the College Alcohol Survey, they report that 22.2% of college students met this cut-off value. Among 18 to 24 year olds in the NES, about 21.2% of respondents engaged in this pattern of very frequent drinking.

population. Numerous research questions flow from the findings reported in this project. For example, given the similarities of the drinking patterns of these two groups, an empirical question arises about the extent to which these behaviors are associated with similar negative consequences that have been reported in samples of college students (Abbey, 2002; Giancola, 2002; Wechsler et al., 1994).

Second, these similarities also imply the need for the development of alcohol problem prevention and intervention strategies for young adults other than just college students. The efficacy of a variety of intervention techniques in reducing college student drinking has been examined, suggesting that certain forms of cognitive behavioral skills training (Kivlahan et al., 1990), personalized assessments with feedback (Walters, 2000), and brief motivational enhancement interventions (Borsari and Carey, 2000, Marlatt et al., 1998) can reduce risky drinking practices. In addition, social marketing strategies that emphasize modifying incorrect perceptions about "normal" college student strategies have been shown to have efficacy (Larimer and Cronce, 2002; Perkins, 2002a).

It is empirically unknown if these types of interventions would be effective in reducing alcohol consumption among younger workers. There is clearly much research work to be done to develop a knowledge base about efficacious mechanisms for preventing alcohol-related problems in this sub-population. If strategies previously shown to work in college student populations are not shown to be effective among younger workers, then research funding should be directed towards the development of new prevention and intervention techniques. In either case, this type of research appears to be warranted given the similarities in risky drinking behaviors between college students and their same-aged non-college enrolled peers.

There is already a funding mechanism that has been instrumental in supporting research on college student drinking, namely the National Institute on Alcohol Abuse and Alcoholism (NIAAA). To date, however, NIAAA has not funded a large body of research on the employed same-age peers of college students. The findings of this research indicate that need for placing younger worker drinking as a research priority within the portfolio of projects supported by NIAAA.

AGE AND DRINKING AMONG AMERICAN WORKERS

While comparing younger workers to college students provides some support for constructing younger worker drinking as a social problem, further evidence emerges in the comparisons of drinking patterns between younger and older individuals in the full-time labor force. In the bivariate comparisons of younger and older workers, there was ample evidence that these two groups were significantly different with regard to their drinking practices. These comparisons consistently demonstrated that younger workers were more likely to drink any alcohol as well as engage in any binge drinking, that younger workers consumed more alcohol on average and engaged in more frequent binge drinking than older workers, and that younger workers were more likely to exhibit symptoms of alcohol dependence. These findings add to the argument for prevention and intervention efforts to address the risky drinking practices of younger workers.[32]

The results with regard to binge drinking, in particular, and age are somewhat similar to recent data published in *JAMA* by Naimi et al. (2003) with regard to the

[32] However, it is also important to address problem drinking, such as binge drinking in the general population, since even though those at least 25 years of age are less likely to engage in binge drinking, their greater representation in the overall population means that a large percentage of overall binge drinking episodes are accounted for by these older age groups (Naimi et al., 2003).

prevalence of binge drinking in the US adult population.[33] The overall prevalence of binge drinking in the past month was slightly higher in the NES (18.1%) compared to the entire (employed and unemployed) US population (14.3%). Naimi et al. reported that binge drinking, in both prevalence and frequency of episodes, decreased with age which was a finding similar to the results reported in this project.[34]

In addition to these significant bivariate differences in these alcohol-related measures, these age differences tended to persist in multivariate analyses that included all NES respondents with controls for gender, race, education, earnings, and marital status. However, in the analyses of current drinkers presented in Chapter 6, the differences between younger and older workers generally were nonsignificant once marital status was controlled.[35] Furthermore, in the models of work and drinking (Chapter 7) that included age in five-year brackets, age is for the most part, not a significant predictor of the alcohol measures. This unexpected result is worthy of further discussion.

One explanation for the variation between the entire sample and current drinker analyses relates to the issue of age and alcohol abstention. As noted in Chapter 6, older workers were more likely to abstain from alcohol completely than younger workers. The

---

[33] Naimi et al. (2003) note that their sample most likely does not include representative numbers of college students since dormitory residents were ineligible for inclusion in the Behavioral Risk Factor Surveillance System (BRFSS) survey. However, it is important to note that the study does not control for employment status of the respondent so the sample does differ from the NES in this manner.

[34] Given the importance of the Naimi et al. study as the first national study to estimate binge drinking for the entire adult US population, further comparisons of their findings and data from the NES appear in Appendix B.

[35] It is unfortunate that the Naimi et al. (2003) study of binge drinking does not include marital status as a variable in their analysis because it would allow for the comparison of the findings of the present project with this other large dataset. It is notable that the significant predictors of binge drinking in the current drinker analyses prior to the addition of marital status into the model are quite similar to those reported by Naimi et al.

effect of the age stratification in drinker status is to unequally depress the means on the alcohol measures such that the gap between these age groups is larger, and hence more likely to be significant, than if the sample were limited to current drinkers. This confounding of age and alcohol abstention becomes irrelevant in the analysis of the current drinkers. In this sub-sample, the dichotomous distinction of younger and older worker becomes nonsignificant once the marital status comparisons are added to the model.

This finding with regard to the importance of marital status in models of drinking is consistent with long line of sociological inquiry about the functions that marriage serves in society. Dating back to Durkheim (1897/1951), it has long been posited that greater social attachments to social institutions reduce the likelihood of deviant behavior (Hirschi, 1969). Entering marriage represents a commitment to conventionality as well as the formation of a specific social attachment. As noted previously, life-course researchers have previously found that entering into marriage reduces alcohol consumption as well as alcohol problems (Chilcoat and Breslau, 1996; Johnson and White, 1995; Sadava and Pak, 1995).[36] The NES data are consistent with these previous research endeavors.

Age does not become completely irrelevant, however, because younger workers remain at fairly low "risk" of being married (and even lower likelihood of being

[36] Marital status is also a powerful predictor of binge drinking among college students. Wechsler et al. (1995) report the odds of being a binge drinker is 3.55 times higher for those never married compared to married college students; this odds ratio is nearly three times larger than the independent effect of gender on the likelihood of being a binge drinker.

divorced[37]). Indeed only 15.7% of this group report being currently married, leaving the vast majority of younger workers in the "single" category. Throughout the results, being single is associated with higher values on the alcohol measures, including consumption, binge drinking, and alcohol dependence. Thus, even though age no longer has direct effects in the sub-sample of current drinkers, it is still relevant because the likelihood of marriage is stratified by age (Strombino et al., 2002).

The heavier drinking patterns of younger workers represents a health issue that most likely have negative consequences for the organizations that employ them. Predictability of production is a central goal of nearly any organization (Perrow, 1991), and employee alcohol abuse poses a threat to that predictability by reducing worker productivity and performance (Ames et al., 1997; Harris and Heft, 1989; Mangione et al., 1999). In addition to individual-level declines in productivity due to heavy drinking, there is also evidence that cooperative relations between co-workers, a necessary component of effective teamwork, can be negatively affected by heavy drinking members of work groups (Blum et al., 1993). These costs incurred by organizations due to alcohol use and abuse suggest that they have a legitimate interest in substance abuse prevention (Roman, 1996).

Many employers have developed human resource management practices that are intended to minimize the costs incurred by organizations from employee substance abuse. Examples of management practices that address substance abuse include drug testing (Knudsen et al., forthcoming) and employee assistance programs (Roman and Blum, 1985). Organizations began adopting EAPs as a management practice in the 1970s as a

[37] Only 2.3% of younger workers identified themselves as being divorced or separated.

mechanism to reduce the negative impact of alcohol abuse and other personal problems on employee productivity (Erfurt and Foote, 1992; Roman and Blum, 1999) and to make sure that employees had access to needed social services. Supervisors often perform the important function of identifying employees who are failing to meet performance objectives and referring them to the organization's EAP.[38] EAP services may be located as a department within the organization or the employer may contract with an external EAP provider. The EAP then serves as a linkage between troubled employees and health service providers; for example, an EAP may refer an alcohol-abusing employee to treatment services in the local community. In this manner, EAPs benefit not just the organization, but also help to improve employees' lives.

The findings of this research about the heavier drinking practices of younger workers raise management issues with practical implications. The effectiveness of EAPs in connecting employees in need with treatment services assumes that the referral mechanism is operating in an efficacious manner. Organizations, particularly those with large proportions of younger workers, may need to provide additional training for supervisors about the connections between age and drinking. Raising the awareness of supervisors about younger worker drinking may enhance their willingness to refer younger workers in need of health services to the organization's EAP. Indeed Blum et al. (1992) report that greater supervisory training about EAPs is associated with greater EAP utilization.

---

[38] Of course, supervisors effectively engaging in employee referral assumes a certain degree of civility in the workplace that may or may not be present. This project has demonstrated that abusive supervision is associated with more risky drinking behaviors. This issue of supervision is discussed in greater detail in the next section.

While EAPs have continued to diffuse in workplaces through the 1990s (Roman and Baker, 2001), not all organizations have adopted this human resource management strategy. One potentially problematic finding in the 2001 NES is that younger workers may have less access to EAPs. In a simple comparison using the dichotomous measure of age, younger workers appear to be less likely to work in organizations with EAPs. About 50.6% of younger workers report their employer has an EAP, while 61.6% of the older workers work for organizations that offer their employees access to an EAP. This difference indicates that existing EAPs may not be able to fully address the drinking problems of younger workers. From the perspective of public policy, their further implementation in American workplaces should be supported. While many organizations may not have the available resources to establish an internal EAP, these organizations should be encouraged to contract with external EAP service providers. EAPs serve the dual functions of helping employees in need as well as providing substantial productivity benefits to employers.

WORK EXPERIENCES AND DRINKING

A major line of research in the alcohol literature has focused on modeling the connections between working conditions and drinking behaviors. The predominant theoretical model explicated in these research endeavors has focused on a model of "spill-over," where the stresses of work continue to have effects on employees in their non-work lives (Grunberg et al., 1998). This intrusion of work stress beyond the confines of the workday has been argued to create negative psychological and emotional state. Alcohol is conceived of as a way to "self-medicate," which is to say that it is reduces the negative feelings generated by job stress (Martin et al., 1992).

Much of this research has focused on the task characteristics of the job itself, including substantive complexity, job pressure, job autonomy. This research found that both of these job characteristics were associated with the alcohol variables. Jobs with that require little creativity and provide few opportunities for continued learning of new skills were associated with greater drinking. In addition, pressure due to excessive work demands were associated with beliefs in the stress relieving properties of alcohol, a set of beliefs that was strongly associated with heavier drinking patterns. These findings indicate support for previous arguments made about the value of job enrichment strategies, where management can enhance employee welfare through the re-design of job characteristics.

The finding that job autonomy was positively associated with the alcohol measures was somewhat surprising, given that job autonomy is often associated with more positive attitudes about work such as job satisfaction (Martin and Roman, 1996). However, some have argued that the responsibility for decision-making, with the possible negative consequences associated with poor decisions, is itself stressful (Greenberg and Grunberg, 1995). Such an argument would be consistent with the "pampering theory" proposed by Roman and Blum (1984). In this theoretical formulation, alcohol consumption can be used as a technique for coping with situations in life where the individual feels unqualified for performing the social role that is required. High job autonomy is associated with greater education, a social institution that socializes its members into beliefs regarding the value of high achievement. Yet Roman and Blum note that these individuals often are improperly socialized in terms of the practical skills needed to successful perform these socially demanding roles. This inference appears to

fit well with the lower level of work experience and life experience that is implicit in the status of the younger worker. Responsibility for making decisions in the workplace may represent one situation where successful role performance is uncertain, and alcohol can serve as a temporary relief from this form of stress.

Thus, the finding that job autonomy is positively associated with heavier drinking practices should not be interpreted as justification for the minimization of job autonomy in the workplace. Rather, given the arguments made by Roman and Blum (1984), it points to the need for organizations to continue to invest in the training and continuing education of their workforce so as to enhance the perceptions of individuals in positions of decisions that they can perform their social roles effectively. Furthermore, such continued training would indicate that the organization is supportive of its employees. Some support for this suggestion relates to the finding about substantive complexity and drinking, where jobs that offered more opportunities for learning and creativity were associated with lower levels of consumption and problem drinking. It would be interesting for a future research project to test this proposition about the possible organizational value in continued training and drinking behaviors empirically. Furthermore, it would be interesting to see if other management practices that demonstrate organizational support for employees moderates this association between job autonomy and drinking.

As noted earlier, Richman and her colleagues have argued that this tradition of studying the design of work in terms of tasks and individual stressors has resulted in much less knowledge about interpersonal stressors in the workplace, such as abusive relationships between supervisors and employees (Richman et al., 1996; Rospenda et al.,

2000). Their work has demonstrated linkages between supervisor abuse and drinking in a study of workers within a single organization. This project represents the first study of the supervisor abuse and drinking patterns using a large nationally representative sample of employees. Consistent with Richman's work, NES respondents who report experiencing greater supervisor abuse consistently report consuming more alcohol, engaging in more binge drinking, and are more likely to be alcohol dependent. Furthermore, supervisor abuse has indirect effects on these alcohol measures via job-escapist reasons for drinking.

One issue of concern is the causal ordering of supervisor abuse and drinking. On the one hand, assuming that supervisor abuse results in greater alcohol consumption is consistent with the general model of self-medication. However, it is possible that individuals who are heavier drinkers are more problematic for supervisors, which can increase the likelihood that they are yelled at, sworn at, or humiliated in front of others. The NES data, because of its cross-sectional design, cannot conclusively prove the direction of causality, but the earlier work of Richman and her colleagues offers some insight. Richman et al. (1996), in their study of medical student interns, found significant associations between experiencing supervisor abuse and alcohol measures after controlling for drinking patterns in the year prior to the internship. Later work by Rospenda et al. (2000) incorporated a panel longitudinal design; they found that after controlling for drinking patterns reported at the first data collection, there was a significant association between abuse and drinking at the followup survey. Similar findings are reported by Wislar et al. (2002). These findings by Richman et al.,

Rospenda et al., and Wislar et al. offer some validation for the ordering of variables in the models examined in the present research.

Theoretically speaking, these findings may tie into earlier research on power in the workplace and drinking. Experiencing supervisor abuse indicates a disparity in power in workplace relationships, since employees with greater social power are most likely not going to be targeted by supervisors.[39] Supervisor abuse may indicate a degree of powerlessness within the workplace, which links this research to the literature on powerlessness and alcohol consumption. Cross-sectional research (Seeman and Anderson, 1983) and a later longitudinal project that re-examined the cross-sectional findings (Seeman et al., 1988) found that powerlessness was associated with greater alcohol consumption and higher levels of problem drinking.

AGE AND RISK: POWER IN THE WORKPLACE

The final contribution of this project was to consider the intersections of age, work, and alcohol. As described earlier, there was an interest in considering the "risks" faced by younger workers in the workplace, and the extent to which those risks were indicated by additive or interaction effects. There was some support for the former, particularly in terms of the likelihood of being in a lower skill job and experiencing supervisor abuse, which are both associated with the alcohol measures. Explanation of the first difference can perhaps be attributed to differences in work experience, which is intricately associated with age. Access to higher skill jobs often requires previous work experience, which younger workers simply do not have. In addition, the descriptive

[39] This argument gains further support from the findings in Chapter 7 about the socio-economic status correlates of supervisor abuse. Employees reporting greater educational attainment and earnings, two measures of SES and very loose proxies for power, were less likely to have experienced abusive relations with their supervisors.

statistics presented in Chapter 5 indicate that younger workers are less likely to have attained higher levels of formal education, which also puts them at risk of being limited to low skill work.[40] This reduced access to skilled employment offers some support for the argument that greater alcohol consumption by younger workers is partially attributable to disadvantages they face in the workplace.

In addition to being limited to jobs that offer less opportunity for creativity and the development of additional skills, the NES data demonstrate that younger workers are also at greater risk of being abused by their supervisors, even when other socio-demographic variables are controlled. Theoretically, such differences again most likely reflect power differentials in the workplace. This line of argumentation about power being protective with regard to exposure to workplace abuse received some support in supplemental analyses (not shown) of the associations between job autonomy, substantive complexity, and supervisor abuse. As might be expected, individuals who reported having more decision-making authority and being employed in higher skill jobs, two dimensions that indicate greater power, were less likely to have been abused by their supervisors in the previous year. For younger workers, their shorter tenure with their employing organizations, their positions in less autonomous and less skilled jobs, and general stereotypes that underlie the system of age stratification in this society combine to place them in a position of considerably less power than the workers around them. This power differential may make them vulnerable to abusive supervision, which then has implications for heavier drinking practices. The issue of supervisor abuse is one that must be addressed by the upper levels of management. Given the costs of alcohol abuse

---

[40] Indeed, educational attainment is associated with substantive complexity, as shown in Chapter 7.

to employers, they should be concerned with reducing abusive supervision in the workplace.

In addition to these additive effects, this research also considered the possible interactions between age and work with regard to drinking behaviors. There was very limited support for such a line of argumentation. The interaction between supervisor abuse and age was notable in that the association between abuse and consumption was stronger for younger workers. Likewise, the association between substantive complexity and binge drinking was larger in magnitude among the younger worker sub-sample. These interactions highlight the importance of greater attention being paid to the working conditions that younger workers face.

LIMITATIONS AND AVENUES FOR FUTURE RESEARCH

As with any research project, there are certain limitations inherent in the present design that should be addressed in future research. First, the NES is a cross-sectional survey, which means that conclusive proof of causality is not possible. Panel longitudinal data collection on these measures would greater enhance the strength of the results.

Second, future research should consider additional measures of both job characteristics and interpersonal relations in the workplace. The job characteristics measures, in particular, are of limited reliability when they are combined in a mean scale as was done in the logistic regression analyses.[41] Most of the analyses presented in this project use structural equation modeling, which parcels out measurement error to create latent variables which avoids some of the pitfalls of the mean scale measures. The

[41] However, their level of reliability is on par with previous cross-sectional waves of the NES (Knudsen, 1998).

addition of other workplace-related measures would enhance future research on the associations between working conditions and drinking.

Third, there needs to be further investigation into the predictors of job-escapist reasons for drinking. The models indicate that this is an important predictor of various alcohol measures, but the present formulation of workplace experiences failed to account for a large proportion of the variance in these beliefs.[42] This represents an important avenue of future research.

Finally, future research should examine the workplace experiences and alcohol consumption patterns of younger workers in greater depth. This project has revealed that they are a group that is at higher risk of problem drinking, and therefore, more research that focuses upon them is warranted. Such a focus would allow for more information to be collected about abusive workplace experiences as well as greater depth regarding the characteristics of the jobs that they hold. In addition, further investigation of their attitudes towards drinking may prove fruitful in constructing better model of drinking behavior.

The drinking patterns exhibited by younger workers between the ages of 18 and 24 should provoke concern among those with an interest in public health. Clearly, college enrolled individuals in this age group are not the only ones drinking in ways that put themselves and others around them at risk. In addition, employers likely incur losses associated with these heavier drinking patterns. Management may be able to minimize these costs through work re-design, the curbing of supervisor abuse, and the provision of

---

[42] Similar critiques could be leveled against the models of drinking on the whole. Rospenda et al. (2000) argue, however, that in models of alcohol consumption, even small effect sizes should be taken seriously. For further discussion of this issue, see Ahadi and Diener (1989).

EAP services to problem drinkers. These findings also have implications for public health policy, particularly in terms of the need to develop and implement effective alcohol problem prevention and intervention strategies. Naimi et al. (2003) note that alcohol abuse is the third leading cause of preventable death in the United States. Developing mechanisms to reduce risky drinking behaviors, such as those discussed in this project, may very well have very real consequences and positive benefits for society.

REFERENCES

Abbey, Antonia. 2002. "Alcohol-Related Sexual Assault: A Common Problem among College Students." *Journal of Studies on Alcohol* Supplement No. 14:118-128.

Abbey, Antonia, Mary Jo Smith, and Richard O. Scott. 1993. "The Relationship between Reasons for Drinking Alcohol and Alcohol Consumption: An Interactional Approach." *Addictive Behaviors* 18:659-670.

Ahadi, Stephan, and Edward Diener. 1989. "Multiple Determinants and Effect Size." *Journal of Personality and Social Psychology* 56:398-406.

Ames, Genevieve, Joel W. Grube, and Roland S. Moore. 1997. "The Relationship of Drinking and Hangovers to Workplace Problems: An Empirical Study." *Journal of Studies on Alcohol* 58:37-47.

Ames, Genevieve, and L. A. Rebrun. 1996. "Women, Alcohol, and Work: Interactions of Gender, Ethnicity, and Occupational Culture." *Social Science and Medicine* 43:1649-1663.

Aquilino, William S., and Leonard A. Loscuito. 1990. "Effect of Interview Mode on Self-Reported Drug Use." *Public Opinion Quarterly* 54:362-395.

Baer, John S. 2002. "Student Factors: Understanding Individual Variation in College Drinking." *Journal of Studies on Alcohol* Supplement No. 14:40-53.

Bailey, Susan L. 1999. "The Measurement of Problem Drinking in Young Adulthood." *Journal of Studies on Alcohol* 60:234-244.

Becker, Howard S. 1963. *Outsiders: Studies in the Sociology of Deviance.* London: Free Press.

Bennett, Joel B., and Wayne E. K. Lehman. 1998. "Workplace Drinking Climate, Stress, and Problem Indicators: Assessing the Influence of Teamwork (Group Cohesion)." *Journal of Studies on Alcohol* 59:608-618.

Bennett, Melanie E., Barbara S. McCrady, Valerie Johnson, and Robert J. Pandina. 1999. "Problem Drinking from Young Adulthood to Adulthood: Patterns, Predictors and Outcomes." *Journal of Studies on Alcohol* 60:605-614.

Blum, Terry C. 1984. "Problem Drinking or Problem Thinking? Patterns of Abuse in Sociological Research." *Journal of Drug Issues* 14:61-77.

Blum, Terry C., Jack K. Martin, and Paul M. Roman. 1992. "A Research Note on EAP Prevalence, Components, and Utilization." *Journal of Employee Assistance Research* 1:209-229.

Blum, Terry C., and Paul M. Roman. 1997. "Employment and Drinking." Pp. 379-394 in *Gender and Alcohol: Individual and Social Perspectives*, edited by Richard W. Wilsnack and Sharon C. Wilsnack (eds.). New Brunswick, NJ: Rutgers Center on Alcohol Studies.

Blum, Terry C., Paul M. Roman, and Jack K. Martin. 1993. "Alcohol Consumption and Work Performance." *Journal of Studies on Alcohol* 54:61-70.

Borman, Kathryn M. 1991. *The First "Real" Job: A Study of Young Workers.* Albany, NY: State University of New York Press.

Borsari, Brian, and Kate B. Carey. 2000. "Effects of a Brief Motivational Intervention with College Student Drinkers." *Journal of Consulting and Clinical Psychology* 68:728-733.

Boyd, Gayle M., and Vivian Faden. 2002. "Overview." *Journal of Studies on Alcohol* Supplement No. 14:6-13.

Bureau of Labor Statistics. 2002. *Current Population Survey: Design and Methodology, Technical Paper PR63RV*. Washington, DC: BLS.

Cahalan, Don, and Robin Room. 1974. *Problem Drinking Among American Men.* New Brunswick, NJ: Rutgers Center of Alcohol Studies Publication Division.

Cancio, A. Silvia, T. David Evans, and David J. Maume, Jr. 1996. "Reconsidering the Declining Significance of Race: Racial Differences in Early Career Wages." *American Sociological Review* 61:541-556.

Chilcoat, Howard D., and Naomi Breslau. 1996. "Alcohol Disorders in Young Adulthood: Effects of Transitions into Adult Roles." *Journal of Health and Social Behavior* 37:339-349.

Chilcoat, Howard D. and Naomi Breslau. 1998. "Investigations of Causal Pathways Between PTSD and Drug Use Disorders." *Addictive Behaviors* 23:827-840.

Cooper, M. Lynne. 2002. "Alcohol Use and Risky Sexual Behavior among College Students and Youth: Evaluating the Evidence." *Journal of Studies on Alcohol* Supplement No. 14:101-117.

Cooper, M. Lynne, Marcia Russell, and William H. George. 1988. "Coping, Expectancies, and Alcohol Use: A Test of Social Learning Formulations." *Journal of Abnormal Psychology* 97: 218-30.

Dee, Thomas S. 2002. "Alcohol Abuse and Economic Conditions: Evidence from Repeated Cross-Sections of Individual-Level Data." *Health Economics* 10:257-270.

DeJong, William, and Linda M. Langford. 2002. "A Typology for Campus-Based Alcohol Prevention: Moving toward Environmental Management Strategies." *Journal of Studies on Alcohol* Supplement No. 14:140-147.

Dixon, Penny, Graham Rehling, and Raj Shiwach. 1993. "Peripheral Victims of the Herald of Free Enterprise Disaster." *British Journal of Medical Psychology* 66:193-202.

Dowdall, George W., and Harry Wechsler. 2002. "Studying College Alcohol Use: Widening the Lens, Sharpening the Focus." *Journal of Studies on Alcohol* Supplement No. 14:14-22.

Drucker, Peter F. 1993. *Post-Capitalist Society.* New York: Harper Collins.

Dufour, Mary C. 1999. "What Is Moderate Drinking? Defining 'Drinks' and Drinking Levels." *Alcohol Research & Health* 23:5-14.

Durkheim, Emile. 1897/1951. *Suicide*. New York: The Free Press.

England, Paula. 1992. *Comparable Worth: Theories and Evidence.* New York: Aldine.

Erfurt, John C., and Andrea Foote. 1992. "Who Is Following the Recovering Alcoholic? Examining the Role of Followup in Employee Assistance Programs." *Alcohol Health and Research World* 16:154-159.

Ewing, John A. 1998. "Screening for Alcoholism Using CAGE (letter)." *JAMA* 280:1904.

Ewing, John A. 1984. "Detecting Alcoholism: The CAGE Questionnaire." *JAMA* 252:1905-1907.

Ewing, John A., and B. A. Rouse. 1970. "Identifying the Hidden Alcoholic." Presented at the 29th International Congress on Alcohol and Drug Dependence, Sydney, Australia, February 3.

Feng, Weiwei, Wei Zhou, Brenda M. Booth, and Michael T. French. 2001. "The Impact of Problem Drinking on Employment." *Health Economics* 10:509-521.

Fillmore, Kaye Middleton, Jacqueline M. Golding, E. Victor Leino, Michelle Motoyoshi, Carlisle Shoemaker, Howard Terry, Catherine Ager, and Heidi P. Ferrer. 1997. "Patterns and Trends in Women's and Men's Drinking. Pp. 19-48 in *Gender and Alcohol: Individual and Social Perspectives*, edited by Richard W. Wilsnack and Sharon C. Wilsnack. New Brunswick, NJ: Rutgers Center on Alcohol Studies.

Forsberg, L., J Halldin, S. Ekman, and S. Ronnberg. 2002. "Screening of binge drinking among patients on an emergency surgical ward." *Alcohol* 27:(2):77-82.

Giancola, Peter R. 2002. "Alcohol-Related Aggression during the College Years: Theories, Risk Factors, and Policy Implications." *Journal of Studies on Alcohol* Supplement No. 14:129-139.

Glassner, Barry, and Bruce Berg. 1980. "How Jews Avoid Alcohol Problems." *American Sociological Review* 45:647-664.

Goldman, Mark S. 2002. "Introduction." *Journal of Studies on Alcohol* Supplement No. 14:5.

Gordon, David M. 1996. *Fat and Mean: The Corporate Squeeze of Working Americans and the Myth of Managerial "Downsizing."* New York: Free Press.

Greenberg, Edward S., and Leon Grunberg. 1995. "Work Alienation and Problem Alcohol Behavior." *Journal of Health and Social Behavior*. 36:83-102.

Greenfield, Thomas K., and John D. Rogers. 1999. "Who Drinks Most of the Alcohol in the US? The Policy Implications." *Journal of Studies on Alcohol* 60:78-89.

Grunberg, Leon, Sarah Moore, and Edward S. Greenberg. 1998. "Work Stress and Problem Alcohol Behavior." *Journal of Organizational Behavior* 19:487-502.

Gusfield, Joseph. 1996. *Contested Meanings: The Construction of Alcohol Problems.* Madison, WI: University of Wisconsin Press.

Harford, Thomas. 1996. "Risk Curves for Alcohol Problems." *Addiction* 91:1444-1445.

Harris, Michael M. and Mary L. Fennell. 1988. "A Multivariate Model of Job Stress and Alcohol Consumption." *The Sociological Quarterly* 29: 391-406.

Harris, Michael M., and Laura L. Heft. 1992. "Alcohol and Drug Use in the Workplace: Issues Controversies, and Directions for Future Research. *Journal of Management* 18:239-266.

Herd, Denise, and Joel Grube. 1993. "Drinking Contexts and Drinking Problems among Black and White Women." *Addiction* 88:1101-1110.

Hilton, Michael E. 1991. "The Demographic Distribution of Drinking Patterns in 1984." Pp. 73-86 in *Alcohol in America: Practices and Problems*, edited by Walter B. Clark and Michael E. Hilton. Albany, NY: State University of New York Press.

Hirschi, Travis. 1969. *Causes of Delinquency.* Berkeley, CA: University of California Press.

Holahan, Charles J., Rudolf H. Moos, Carole K. Holohan, Ruth C. Cronkite, and Patrick K. Randall. 2001. "Drinking to Cope, Emotional Distress and Alcohol Use and Abuse: A Ten-Year Model." *Journal of Studies on Alcohol* 62:190-198.

Holyfield, Lori, Lori J. Ducharme, and Jack K. Martin. 1995. "Drinking Contexts, Alcohol Beliefs, and Patterns of Alcohol Consumption: Evidence for a Comprehensive Model of Problem Drinking." *Journal of Drug Issues* 25:783-798.

Hu, Li-tze, and Peter M. Bentler. 1998. "Fit Indices in Covariance Structure Analysis: Sensitivity to Underparameterized Misspecification." *Psychological Methods* 3:424-453.

Janson, Philip, and Jack K. Martin. 1982. "Job Satisfaction and Age: A Test of Two Views." *Social Forces* 60:1089-1102.

Johnson, Fred W., Paul J. Gruenewald, and Andrew J. Treno. 1998. "Drinking over the Life-Course within Gender and Ethnic Groups: A Hyperparametric Analysis." *Journal of Studies on Alcohol* 59:568-580.

Johnson, Valerie, and Helene Raskin White. 1995. "The Relationship between Work-Specific and Generalized Stress and Alcohol and Marijuana Use Among Recent Entrants to the Labor Force." *Journal of Drug Issues* 25:237-252.

Johnston, Lloyd L., Patrick M. O'Malley, and Jerald G. Bachman. 2002. *Monitoring the Future: National Survey Results on Drug Use, 1975-2001.* Volume 2. (NIH Publication No. 02-5107) Washington, DC: Government Printing Office.

Johnston, Lloyd L., Patrick M. O'Malley, and Jerald G. Bachman. 1996. *National Survey Results on Drug Use from the Monitoring the Future Study, 1975-1995.*

Volume 1. (NIH Publication No. 96-4139) Washington, DC: Government Printing Office.

Johnstone, Bryan M., and Kaye Middleton Fillmore. 1996. "The Conclusion? Analyses Incomplete." *Addiction* 91:1449-1453.

de Jonge, Jan, Marike J. G. P. Mulder, and Frans J. N. Nijhuis. 1999. "The Incorporation of Difference Demand Concepts in the Job Demand-Control Model: Effects on Health Care Professionals." *Social Science & Medicine* 48:1149-1160.

Kalleberg, Arne L., and Karyn A. Loscocco. 1983. "Aging, Values, and Rewards: Explaining Age Differences in Job Satisfation." *American Sociological Review* 48:78-90.

Karasek, Jr., Robert A. 1979. "Job Demands, Job Discretion Latitude, and Mental Strain: Implications for Job Redesign." *Administrative Science Quarterly* 24: 285-308.

Kasschau, Patricia. 1977. "Age and Race Discrimination Reported by Middle-Aged and Older Persons." *Social Forces* 55:728-742.

Kelloway. E. Kevin. 1998. *Using LISREL for Structural Equation Modeling: A Researcher's Guide*. Thousand Oaks, CA: Sage Publications.

Kilbourne, Barbara, Paula England, and Kurt Beron. 1994. "Effects of Individual, Occupational, and Industrial Characteristics on Earnings: Intersections of Race and Gender." *Social Forces* 72:1149-1176.

Kivlahan, Daniel R., G. Alan Marlatt, Kim Fromme, David B. Coppel, and Ellen Williams. 1990. "Secondary Prevention with College Drinkers: Evaluation of an

Alcohol Skills Training Program." *Journal of Consulting and Clinical Psychology* 58:805-810.

Knight, John R., Henry Wechsler, Meichun Kuo, Mark Seibring, Elissa R. Weitzman, and Marc A. Shuckit. 2002. "Alcohol Abuse and Dependence among U.S. College Students." *Journal of Studies on Alcohol* 63:263-270.

Knudsen, Hannah K. 1998. Downsizing Survival, The Experience of Work, and Organizational Commitment: A Comparison of Downsizing Survivors and Unaffected Workers in the United States. Unpublished Master's thesis, The University of Georgia, Athens, Georgia.

Knudsen, Hannah K., and Paul M. Roman. 2002. "A Changed America? The Effects of September 11th on Alcohol Consumption and Depression in the US." Presented at the annual meeting of the American Sociological Association, Chicago, August 16.

Knudsen, Hannah K., Paul M. Roman, and J. Aaron Johnson. Forthcoming. "Organizational Compatibility and Workplace Drug Testing: Modeling the Adoption of Innovative Social Control Practices." *Sociological Forum*.

Larimer, Mary E., and Cronce, Jessica M. 2002. "Identification, Prevention, and Treatment: A Review of Individual-Focused Strategies to Reduce Problematic Alcohol Consumption by College Students." *Journal of Studies on Alcohol* Supplement No. 14:148-163.

Lehman, Wayne E. K., David J. Farabee, Melvin L. Holcom, and D. Dwayne Simpson. 1995. "Prediction of Substance Use in the Workplace: Unique Contributions of

Personal Background and Work Environment Variables." *Journal of Drug Issues* 25:253-274.

Long, J. Scott. 1983. *Confirmatory Factor Analysis: A Preface to LISREL.* Newbury Park, CA: Sage Publications.

Loscocco, Karyn A., and Arne L. Kalleberg. 1988. "Age and the Meaning of Work in the United States and Japan." *Social Forces* 67:337-356.

Loughlin, Catherine, and Julian Barling. 2001. "Young Workers' Work Values, Attitudes, and Behaviours." *Journal of Occupational and Organizational Psychology* 74:543-558.

Macpherson, David A., and Barry T. Hirsch. 1995. "Wages and Gender Composition: Why Do Women's Jobs Pay Less?" *Journal of Labor Economics* 13:426-471.

Makela, Klaus. 1996. "How to Describe the Domains of Drinking and Consequences." *Addiction* 91:1447-1449.

Mangione, Thomas W., Jonathan Howland, Benjamin Amick, Jennifer Cote, Marianne Lee, Nicole Bell, and Sol Levine. 1999. "Employee Drinking Practices and Work Performance." *Journal of Studies on Alcohol* 60:261-270.

Marini, Margaret Mooney. 1987. "Measuring the Process of Role Change During the Transition to Adulthood." *Social Science Research* 16:1-38.

Marlatt, G. Alan, John S. Baer, Daniel R. Kivlahan, Linda A Dimeff, Mary E. Larimer, Lori A. Quigley, Julian M. Somers, and Ellen Williams. 1998. "Screening and Brief Intervention for High-Risk College Student Drinkers: Result from a 2-Year Follow-Up Assessment." *Journal of Consulting and Clinical Psychology* 66:604-615.

Martin, Jack K., Terry C. Blum, and Paul M. Roman. 1992. "Drinking to Cope and Self-Medication: Characteristics of Jobs in Relation to Workers' Drinking Behavior." *Journal of Organizational Behavior* 13:55-71.

Martin, Jack K., and Paul M. Roman. 1996. "Job Satisfaction, Job Reward Characteristics, and Employees' Problem Drinking Behaviors." *Work and Occupations* 23:4-25.

Mayfield, Demmie, Gail McLeod, and Patricia Hall. 1974. "The CAGE Questionnaire: Validation of a New Alcoholism Screening Instrument." *American Journal of Psychiatry* 131:1121-1123.

McFarlane, A. C. 1998. "Epidemiological Evidence about the Relationship Between PTSD and Alcohol Abuse: The Nature of the Association." *Addictive Behaviors* 23:813-825.

McMorris, Barbara J., and Christopher Uggen. 2000. "Alcohol and Employment in the Transition to Adulthood." *Journal of Health and Social Behavior* 41:276-294.

Menard, Scott. 1995. *Applied Logistic Regression Analysis.* Thousand Oaks, CA: Sage.

Midanik, Lorraine T., and Robin Room. 1992. "The Epidemiology of Alcohol Consumption." *Alcohol Health & Research World* 16:183-190.

Midanik, Lorraine T., Tammy W. Tam, Thomas K. Greenfield, and Raul Caetano. 1996. "Risk Functions for Alcohol-Related Problems in a 1988 US National Sample." *Addiction* 91:1427-1437.

Mottaz, Clifford J. 1987. "Age and Work Satisfaction." *Work and Occupations* 14:387-409.

Mullahy, John, and Jody Sindelar. 1996. "Employment, Unemployment, and Problem Drinking." *Journal of Health Economics* 16:409-434.

Muthen, Linda K. and Bengt O. Muthen. 1998. *Mplus User's Guide*. Los Angeles: Muthen & Muthen.

Naimi, Timothy S., Robert D. Brewer, Ali Mokdad, Clark Denny, Mary K. Serdula, and James S. Marks. 2003. "Binge Drinking Among US Adults." *JAMA* 289:70-75.

National Center on Addiction and Substance Abuse at Columbia University (CASA). 2001. "13 States, Four Major Cities See Increased Demand for Drug and Alcohol Treatment Since September 11th." Website article. http://www.casacolumbia.org/newsletter1457/newsletter_show.htm?doc_id=94254.

Neuman, W. Lawrence. 1997. *Social Research Methods: Qualitative and Quantitative Approaches.* 3rd ed. Boston: Allyn and Bacon.

Ollove, Michael. 2001. "Everything Changed Yesterday." *The Baltimore Sun* 12 September:1A.

O'Malley, Patrick M., and Lloyd D. Johnston. 2002. "Epidemiology of Alcohol and Other Drug Use among American College Students." *Journal of Studies on Alcohol* Supplement Number 14:23-39.

Osnos, Evan. 2001. "Alcohol Sales Up Sharply in NYC." Chicago Tribune Website. http://www.chicagotribune.com/news/nationworld/chi-0112160364dec16.story?co.

Parker, Robert Nash, and Rudy Fenwick. 1983. "The Pareto Curve and Its Utility for Open-Ended Income Distributions in Survey Research." *Social Forces* 61:872-885.

Parsons, Talcott, and Gerald M. Platt. 1972. "Higher Education and Changing Socialization." Pp. 236-291 in *Aging and Society, Volume 3: A Sociology of Age Stratification*, edited by Matilda White Riley, Marilyn Johnson, and Anne Foner. New York: Russell Sage Foundation.

Paschall, Mallie J., Christopher L. Ringwalt, and Robert L. Flewelling. 2002. "Explaining Higher Levels of Alcohol Use Among Working Adolescents: An Analysis of Potential Explanatory Variables." *Journal of Studies on Alcohol* 63:169-178.

Peirce, Robert S., Michael R. Frone, Marcia Russell, and M. Lynne Cooper. 1994. "Relationship of Financial Strain and Psychosocial Resources to Alcohol Use and Abuse: The Mediating Role of Negative Affect and Drinking Motives. *Journal of Health and Social Behavior* 35:291-308.

Perkins, H. Wesley. 2002a. "Social Norms and the Prevention of Alcohol Misuse in Collegiate Contexts." *Journal of Studies on Alcohol* Supplement No. 14:164-172.

Perkins, H. Wesley. 2002b. "Surveying the Damage: A Review on Consequences of Alcohol Misuse in College Populations." *Journal of Studies on Alcohol* Supplement No. 14:91-100.

Perrow, Charles. 1991. "A Society of Organizations." *Theory and Society* 20:725-762.

Quinn, Robert, Thomas Mangione, and Stanley Seashore (1975). *1972-73 Quality of Employment Survey*. Ann Arbor: Institute for Social Research, University of Michigan.

Rice, Dorothy P., et al. 1990. *The Economic Costs of Alcohol and Drug Abuse and Mental Illness: 1985.* (DHHS Publication No. ADM 90-1694). Washington, D.C.: Government Printing Office.

Richman, Judith A., Joseph A. Flaherty, and Kathleen M. Rospenda, and Michelle L. Christensen. 1992. "Mental Health Consequences and Correlates of Reported Medical Student Abuse." *JAMA* 267(5): 692-94.

Richman, Judith A., Joseph A. Flaherty, and Kathleen M. Rospenda. 1996. "Perceived Workplace Harassment Experiences and Problem Drinking Among Physicians: Broadening the Stress/Alienation Paradigm." *Addiction* 91(3): 391-403.

Richman, Judith A., Kathleen M. Rospenda, Stephanie J. Nawyn, Joseph A. Flaherty, Michael Fendrich, Melinda L. Drum, and Timothy P. Johnson. 1999. "Sexual Harassment and Generalized Workplace Abuse Among University Employees: Prevalence and Mental Health Correlates." *American Journal of Public Health* 89:358-363.

Rodgers, B., A. E. Korten, A. F. Jorm, P. A. Jacomb, H. Christensen, and A. S. Henderson. 2000. "Non-linear Relationships in Associations of Depression and Anxiety with Alcohol Use." *Psychological Medicine* 30:421-432.

Roman, Paul M. 1982. "Sociological Models For Understanding Deviant Drinking Behavior." Pp. 367-382 in *Encyclopedic Handbook on Alcoholism*, edited by E. Mansell Pattison and Edward Kaufman. New York: Wiley.

Roman, Paul M. 1996. "Alcohol Problem Management in the Workplace." *Primary Psychiatry* October:72-76, 82.

Roman, Paul M., and Suzanne C. Baker. 2001. "Workplace Referrals to Substance Abuse Treatment: An Analysis of the Rise and Fall of a System of Structural Support." Paper presented at the American Sociological Association Annual Meeting, Anaheim, CA.

Roman, Paul M., and Terry C. Blum. 1984. "Alcohol, Pampering, and The Rise of Social Stardom." *Contemporary Drug Problems* 12:223-242.

Roman, Paul M., and Terry C. Blum. 1985. "The Core Technology of Employee Assistance Programs." *The ALMACAN* 15(3):8-9, 16-19.

Roman, Paul M., and Terry C. Blum. 1992. "Life Transitions, Work, and Alcohol: An Overview and Preliminary Data." *Alcoholism: Clinical and Experimental Research* 16:149-158.

Roman, Paul M., and Terry C. Blum. 1999. "Externalization and Internalization as Frames for Understanding Workplace Deviance: The Management of Alcohol and Drug Abuse." *Research in the Sociology of Work* 8:139-164.

Room, Robin. 1991. "Measuring Alcohol Consumption in the US: Methods and Rationale." Pp. 26-50 in *Alcohol in America: Practices and Problems*, edited by Walter B. Clark and Michael E. Hilton. Albany, NY: State University of New York Press.

Room, Robin. 1996. "Drinking Patterns and Drinking Problems: From Specifying the Relationship to Advising the Public." *Addiction* 91:1441-1444.

Rorabaugh, W. J. 1979. *The Alcoholic Republic: An American Tradition*. New York: Oxford University Press.

Rosenfeld, Rachel A., Mark E. Van Buren, and Arne L. Kalleberg. 1998. "Gender Differences in Supervisory Authority: Variation Among Advanced Industrialized Democracies." *Social Science Research* 27:23-49.

Rospenda, Kathleen M., Judith A. Richman, Joseph S. Wilar, and Joseph A. Flaherty. 2000. "Chronicity of Sexual Harassment and Generalized Workplace Abuse: Effects on Drinking Outcomes." *Addiction* 95(12): 1805-20.

Sadava, S. W. 1995. "Introduction to the Special Issue: Developmental Perspectives on Addictive Behaviors." *Psychology of Addictive Behaviors* 9:3-7.

Sadava, S. W., and A. W. Pak. 1994. "Problem Drinking and Close Relationships in the Third Decade of Life." *Psychology of Addictive Behaviors* 8:251-258.

Salmon, Charles T., and John S. Nichols. 1983. "The Next Birthday Method for Respondent Selection." *Public Opinion Quarterly* 47:270-276.

Sapiro, Virginia. 1994. *Women in American Society: An Introduction to Women's Studies.* 3rd Edition. Mountain View, CA: Mayfield Publishing.

Schieman, Scott, and John Taylor. 2001. "Statuses, Roles, and the Sense of Mattering." *Sociological Perspectives* 44:469-484.

Schulenberg, John E., and Jennifer E. Maggs. 2002. "A Developmental Perspective on Alcohol Use and Heavy Drinking during Adolescence and the Transition to Young Adulthood." *Journal of Studies on Alcohol* Supplement No. 14:54-70.

Schulenberg, John, Patrick M. O'Malley, Jerald G. Bachman, Katherine N. Wadsworth, and Lloyd D. Johnston. 1996. "Getting Drunk and Growing Up: Trajectories of

Frequent Binge Drinking during the Transition to Young Adulthood. *Journal of Studies on Alcohol* 57:289-304.

Schuster, Mark A., Bradley D. Stein, Lisa H. Jaycox, Rebecca L. Collins, Grant N. Marshall, Marc N. Elliott, Annie J. Zhou, David E. Kanouse, Janina L. Morrison, and Sandra H. Berry. 2001. "A National Survey of Stress Reactions after the September 11, 2001, Terrorist Attacks." *The New England Journal of Medicine* 345:1507-1512.

Schuster, Michael and Christopher S. Miller. 1984. "An Empirical Assessment of the Age Discrimination in Employment Act." *Industrial and Labor Relations Review* 38:64-74.

Seeman, Melvin, and Carolyn Anderson. 1983. "Alienation and Alcohol: The Role of Work, Mastery, ad Community in Drinking Behavior." *American Sociological Review* 48:60-77.

Seeman, Melvin, Alice Z. Seeman, and Art Budros. 1988. "Powerlessness, Work, and Community: A Longitudinal Study of Alienation and Alcohol Use." *Journal of Health and Social Behavior* 29:185-198.

Shore, Elsie R. 1990. "Business and Professional Women: Primary Prevention for New Role Incumbents." Pp. 113-124 in *Alcohol Problem Intervention in the Workplace: Employee Assistance Programs and Strategic Alternatives*, edited by Paul M. Roman. New York: Quorum Books.

Shore, Elsie R. 1997. "The Relationships between Gender Balance at Work, Family Responsibilities, and Workplace Characteristics to Drinking among Male and Female Attorneys." *Journal of Studies on Alcohol* 58:297-302.

Shore, Elsie R. 2001. "Relationships Between Drinking and Type of Practice Among U.S. Female and Male Attorneys." *The Journal of Social Psychology* 141:650-659.

Sindelar, Jody. 1998. "Social Costs of Alcohol." *Journal of Drug Issues* 28:763-780.

Smart, Reginald G., Edward M. Adlaf, and Della Knoke. 1991. "Use of the CAGE Scale in a Population Survey of Drinking." *Journal of Studies on Alcohol* 52:593-596.

Smith, Mary Jo, Antonia Abbey, and Richard O. Scott. 1993. "Reasons for Drinking: Their Relationship with Psychosocial Variables and Alcohol Consumption." *International Journal of the Addictions* 28:881-908.

Stevenson, G. D., and M. R. Lee. 2001. "The Negative Consequences of Heavy Drinking and Associated Disruptive Behaviors for Sibling Relationship Performance." *Sociological Spectrum* 21:507-532.

Stewart, Sherry, H., Robert O. Pihl, Patricia J. Conrod, and Maurice Dongier. 1998. "Functional Associations Among Trauma, PTSD, and Substance-Related Disorders." *Addictive Behaviors* 23:797-812.

Strobino, Donna M., Holly Grason, and Cynthia Minkovitz. 2002. "Charting a Course for the Future of Women's Health in the United States: Concepts, Findings, and Recommendations." *Social Science & Medicine* 54:839-848.

Tomaskovic-Devey, Donald. 1993. *Gender and Racial Inequality at Work: The Sources and Consequences of Job Segregation.* Ithaca, NY: ILR Press.

Trice, Harrison. 1992. "Work-Related Risk Factors Associated with Alcohol Abuse." *Alcohol Health & Research World* 16:106-111.

Trice, Harrison, and William J. Sonnenstuhl. 1990. "On the Construction of Drinking Norms in Work Organizations." *Journal of Studies on Alcohol* 51:201-220.

US Bureau of the Census. 2002. *Statistical Abstract of the US: 2001.* Washington, DC: Author.

US Bureau of the Census. 2000a. *Educational Attainment in the US: March 2000*. Internet website. Posted December. Accessed on September 18. http://web.lexis-nexis.com/statuniv/document?_m=21e1832821c0ee4a8bd72568ea4f7a6c&wchp=dGLbVlb-lSBAt&_md5=a157c8d6d7b3cd88a654d57d4ac66949

US Bureau of the Census. 2000b. "Historical National Population Estimates: July 1, 1900 to July 1, 1999." Internet website. Posted on June 28. Accessed on September 2. http://www.census.gov/population/estimates/nation/popclockest.txt.

Valois, Robert F., Ashley C. A. Dunham, Kirby L. Jackson, and Jennifer Waller. 1999. "Association between Employment and Substance Abuse Behaviors Among Public High School Adolescents." *Journal of Adolescent Health* 25:256-263.

Wagenaar, Alexander C., and Traci L. Toomey. 2002. "Effects of Minimum Drinking Age Laws: Review and Analyses of the Literature from 1960 to 2000." *Journal of Studies on Alcohol* Supplement No. 14:206-225.

Walker, Alan. 1999. "Combating Age Discrimination at the Workplace." *Experimental Aging Research* 25:367-378.

Walters, Scott T. 2000. "In Praise of Feedback: An Effective Intervention for College Students Who Are Heavy Drinkers." *Journal of American College Health* 48:235-238.

Walters, Scott T., Melanie E. Bennett, and James V. Noto. 2000. "Drinking on Campus: What Do We Know About Reducing Alcohol Use Among College Students?" *Journal of Substance Abuse Treatment* 19:223-228.

Warr, Peter. 1992. "Age and Occupational Well-Being." *Psychology and Aging* 7:37-45.

Wechsler, Henry. 1998. "Getting Serious about Eradicating Binge Drinking." *Chronicle of Higher Education* 45(13):B4-B5.

Wechsler, Henry, and S. Bryn Austin. 1998. "Binge Drinking: The Five/Four Measure (letter)." *Journal of Studies on Alcohol* 59:122-123.

Wechsler, Henry, Andrea Davenport, George Dowdall, Barbara Moeykens, and Sonia Castillo. 1994. "Health and Behavioral Consequences of Binge Drinking in College: A National Survey of Students at 140 Campuses." *JAMA* 272:1672-1677.

Wechsler, Henry, George W. Dowdall, Andrea Davenport, and Sonia Castillo. 1995a. "Correlates of College Student Binge Drinking. *American Journal of Public Health* 85:921-926.

Wechsler, Henry, George W. Dowdall, Andrea Davenport, and Eric B. Rimm. 1995b. "A Gender-Specific Measure of Binge Drinking among College Students. *American Journal of Public Health* 85:982-985.

Wechsler, Henry, Kathleen Kelley, Elissa R. Weitzman, John Paul San Giovanni, and Mark Seibring. 2000. "What Colleges Are Doing About Student Binge Drinking: A Survey of College Administrators." *Journal of American College Health* 48:219-226.

Wilsnack, Sharon C., and Richard W. Wilsnack. 1991. "Epidemiology of Women's Drinking." *Journal of Substance Abuse* 3:133-157.

Wislar, Joseph S., Judith A. Richman, Michael Fendrich, and Joseph A. Flaherty. 2002. "Sexual Harassment, Generalized Workplace Abuse and Drinking Outcomes: The Role of Personality Vulnerability." *Journal of Drug Issues* 32:1071-1088.

Wright, James D., and Richard F. Hamilton. 1978. "Work Satisfaction and Age: Some Evidence for the 'Job Change' Hypothesis." *Social Forces* 56:1140-1158.

Wyllie, A., J. F. Zhang, and S. Casswell. 2000. "Risk Functions for Frequency of Alcohol-Related Negative Consequences: New Zealand Survey Data." *Addiction* 95:1821-1832.

APPENDIX A

THE WORDING OF ITEMS IN THE 2001 NES

Alcohol Measures

Frequency in Last Month

On how many days in the last month have you consumed an alcoholic beverage, that is beer, wine, or liquor?

Screening for Abstainers (if Frequency in Last Month = 0)

How about during the last year, on about how many days have you consumed an alcoholic beverage, that is beer, wine, or liquor?

Average Quantity

On those occasions that you drink alcoholic beverages, about how many drinks do you have each time?

Binge Drinking

Do you ever have (4 for women/5 for men) or more drinks on a single occasion?

If yes: In the last month, how many times have you had (4/5) or more drinks in a row on a single occasion?

CAGE

During the past year, have you felt you ought to cut down your drinking?

(1 = yes, 0 = no)

During the past year, have people annoyed you by criticizing your drinking?

(1 = yes, 0 = no)

During the past year, have you felt bad or guilty about your drinking?

(1 = yes, 0 = no)

During the past year, have you had a drink first thing in the morning to steady your nerves or get rid of a hangover?

(1 = yes, 0 = no)

Job-Escapist Reasons for Drinking

A drink relaxes me after work.

(4 = strongly agree, 3 = agree somewhat, 2 = disagree somewhat, 1 = strongly disagree)

A drink relieves some of the tension of my job.

(4 = strongly agree, 3 = agree somewhat, 2 = disagree somewhat, 1 = strongly disagree)

A drink helps me forget about problems at work.

(4 = strongly agree, 3 = agree somewhat, 2 = disagree somewhat, 1 = strongly disagree)

Work Variables (higher values indicate more of the construct)

Job Pressure

I am free from conflicting demands on my job.

(4 = not at all true, 3 = not very true, 2 = somewhat true, 1 = very true)

My job requires me to work at a fast pace.

(4 = very true, 3 = somewhat true, 2 = not very true, 1 = not at all true)

My job requires me to work very hard.

(4 = very true, 3 = somewhat true, 2 = not very true, 1 = not at all true)

I am asked to do excessive amounts of work.

(4 = very true, 3 = somewhat true, 2 = not very true, 1 = not at all true)

I have enough time to get the job done.

(4 = very true, 3 = somewhat true, 2 = not very true, 1 = not at all true)

Job Autonomy

I have a lot of say over what happens on my job.

(4 = very true, 3 = somewhat true, 2 = not very true, 1 = not at all true)

My job allows me freedom to decide how I do my own work.

(4 = very true, 3 = somewhat true, 2 = not very true, 1 = not at all true)

On my job I make a lot of decisions on my own.

(4 = very true, 3 = somewhat true, 2 = not very true, 1 = not at all true)

On my job I get to take part in making decisions that affect me.

(4 = very true, 3 = somewhat true, 2 = not very true, 1 = not at all true)

Job Complexity

My job requires me to be creative.

(4 = very true, 3 = somewhat true, 2 = not very true, 1 = not at all true)

My job requires that I keep learning new things.

(4 = very true, 3 = somewhat true, 2 = not very true, 1 = not at all true)

My job requires a high level of skill.

(4 = very true, 3 = somewhat true, 2 = not very true, 1 = not at all true)

Supervisor Abuse

In the past year, how often have you been sworn at by your employer or supervisor?

(4 = often, 3 = sometimes, 2 = rarely, 1 = never)

In the past year, how often have you been yelled at by your employer or supervisor?

(4 = often, 3 = sometimes, 2 = rarely, 1 = never)

In the past year, how often have you been humiliated in front of others by your employer or supervisor?

(4 = often, 3 = sometimes, 2 = rarely, 1 = never)

Demographic Variables

Age

What is your age?

Marital Status

What is your marital status?

(1 = married, 2 = divorced, 3 = separated, 4 = widowed, 5 = single, 6 = cohabiting)

Gender (Coded by interviewer)

Race/Ethnicity

What race do you consider yourself to be?

(1 = White, 2 = Black, 3 = Asian, 4 = Hispanic, 5 = Multi-Racial, 6 = Other)

Educational Attainment

What is the highest grade of school or year of college you have completed?

(1 = none; 2 = 1-8 years, 3 = 9-11 years, 4 = 12 years (high school degree or GED, 5 = 13-15 years, 6 = 16 years (college degree); 7 = some graduate work, no advance degree, 8 = advanced degree)

Earnings

Finally I'd like to ask you for your approximate gross yearly income from your main job. I don't need an exact figure, just an approximate category. So could you tell me what is your yearly gross income?

(1 = less than $10,000, 2 = $10,000-19,999, 3 = $20,000-29,999, 4 = $30,000-39,999, 5 = $40,000-49,999, 6 = $50,000-59,999, 7 = $60,000-69,999, 8 = $70,000-$79,000, 9 = $80,000-89,999, 10 = $90,000 or more)

APPENDIX B

COMPARING BINGE DRINKING IN THE NES WITH THE OVERALL ADULT POPULATION

In the inaugural issue of *JAMA* for 2003, an important study about binge drinking in the adult population was published by Naimi et al. (2003). They note that their work is the first nationally representative study of binge drinking to be published that uses randomly selected respondents from the entire non-institutionalized population of persons at least 18 years of age. Given that this study was considered to be quite important in the field of alcohol studies, it seemed important to compare and contrast the NES data on binge drinking with the results that they report.

One cautionary note is necessary before proceeding with these comparisons. The NES uses a measure of binge drinking that identifies a binge drinking episode as five drinks in an occasion for men and four for women; as discussed in Chapter 4, this has been considered a more appropriate measure in the existing literature (Wechsler and Austin, 1998). The data analyzed by Naimi et al., known as the Behavioral Risk Factor Surveillance System (BRFSS), was first collected in 1993 before there was a consensus on this measure of binge drinking, and thus their measure using a five drink cutoff for women and men. The most recent data, collected in 2001, has not changed the measure of binge drinking in order to allow for longitudinal comparisons. This wave of 2001 data is the data compared to the NES in this appendix.

As noted in Chapter 8, the overall prevalence of binge drinking in the past month among NES respondents was 18.1% compared to 14.3% in the 2001 BRFSS. A comparison of binge drinking prevalence by age appears in Table 30. For both datasets, these figures include both current drinkers and abstainers. Overall the rates of any binge drinking in the previous month by age groups are reasonably similar between the two datasets.

TABLE 30: BINGE DRINKING PREVALENCE, 2001 NES AND 2001 BRFSS

Age Group	2001 NES (Population of Full-Time Workers)	2001 BRFSS[1] (Entire US Adult Population)
18-20 years old	25.0%	26.1%
21-25 years old	34.5%	32.2%
26-34 years old	26.9%	21.0%
35-54 years old	15.2%	13.6%
55 years or greater	5.4%	4.3%

[1]Source: Naimi et al. (2003)

Naimi et al. (2003) also report a measure of the rate of binge-drinking episodes per person per year. Essentially, they constructed this measure by multiplying the number of binge drinking episodes in the previous month by twelve. Such a transformation was also possible in the 2001 NES dataset. Again, this analysis includes both current drinkers and abstainers. The overall mean number of binge drinking episodes in the past year for NES respondents was 11.7, compared to 7.4 for BRFSS respondents. Comparisons of binge drinking episodes by age groups are presented in Table 31. There are some notable differences between the NES and BRFSS with regard to the average number of binge drinking episodes per year reported by respondents. For

individuals between 21 and 25 years of age as well as in the next age group of 26 to 24 year olds, the differences are considerable. Thus, while both datasets show a trend of fewer binge drinking episodes as age increases, NES respondents who work full-time report a greater number of binge drinking episodes per year than the estimates for the entire adult population.

TABLE 31: ANNUAL BINGE DRINKING EPISODES BY AGE, 2001 NES AND 2001 BRFSS

Age Group	2001 NES (Population of Full-Time Workers)	2001 BRFSS[1] (Entire US Adult Population)
18-20 years old	19.4	15.3
21-25 years old	26.7	18.0
26-34 years old	16.7	9.2
35-54 years old	9.2	6.7
55 years or greater	3.9	2.7

[1]Source: Naimi et al. (2003)

An additional comparison made by Naimi et al. (2003) is to compare binge drinking by age for men and women who are current drinkers. They report sizable gender differences in the prevalence as well as frequency of binge drinking by gender. This analysis is replicated using the NES data and is shown in Table 32. The younger women in the NES show particularly more frequent episodes of binge drinking than women in the BRFSS sample. In part, this may be due to the different measure of binge drinking employed by the two studies. However, there are also differences among the men in the two datasets with greater binge drinking reported among NES men in the 21 to 25 year old bracket as well as the 26 to 34 year old bracket.

TABLE 32: ANNUAL BINGE DRINKING EPISODES BY AGE AND GENDER (CURRENT DRINKERS), 2001 NES AND 2001 BRFSS

Age Group	NES Women	BRFSS Women	NES Men	BRFSS Men
18-20 years old	22.9	17.6	36.5	39.0
21-25 years old	17.8	12.5	42.9	38.7
26-34 years old	7.8	6.5	33.2	20.8
35-54 years old	7.5	4.7	18.9	17.9
55 years or greater	1.6	1.8	11.6	10.4

These comparisons are offered because the Naimi et al. (2003) study will likely become a very important research report in the alcohol literature. Compared to the NES respondents, there seems to be a trend towards lower binge drinking being reported among BRFSS participants who represent the entire adult population. Naimi et al. argue quite persuasively for the identification of binge drinking as a public health problem, because of its linkages to mortality, injury, and other negative health consequences for the drinker as well as negative social consequences for those in the vicinity of the drinker. Given the similarities, and in fact, greater binge drinking reported in the NES, there is even more reason to argue that the findings of the NES are significant from a public health perspective.