Alcohol and Stress: The Role of Coping, Expectancies and Age

by

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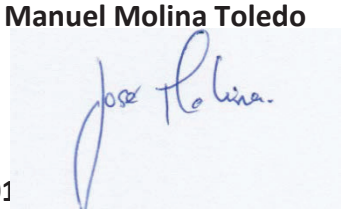
Signed: 

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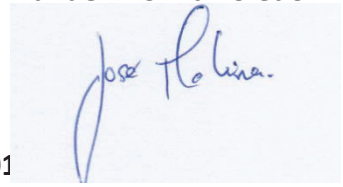
Signed: 

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ABSTRACT

Excessive alcohol consumption poses a serious health risk, affecting a significant portion of the adult population. It has been suggested that high levels of alcohol consumption are closely related to the experience of stress and that people drink in response to stressors. To test these hypotheses, several studies have examined the relationship between stress and alcohol use, showing inconsistent results. In order to better examine the evidence for these associations, a review of studies examining the relationship between acute (e.g., life events) and chronic stressors (e.g., home, work, partner, friend and financial stressors) and alcohol use was conducted. The findings of this review showed that the direction and strength of the reported effects were not consistent, and suggest the need to consider moderating factors. These included avoidance coping, alcohol expectancies, age and gender. Regarding the moderating role of avoidance coping, studies have shown that life events predicted increased drinking problems in adults who relied heavily on avoidance coping, and predicted less drinking problems in adults who reported less reliance on avoidance coping strategies. As to alcohol expectancies, studies have revealed that positive expectancies moderated the association between life events and both alcohol consumption and drinking problems, showing that life-stressing events was a significant predictor of alcohol use in men who held strong positive alcohol expectancies. In contrast, life events were negatively associated with alcohol use among men who reported low positive alcohol expectancies. Although the moderating role of age has yet to be examined, studies indicate that older adults experience more stressors than younger adults, and may be more susceptible to resorting to alcohol consumption to alleviate stress. Therefore, age may be a moderator of the association

between stress and alcohol use, with older adults drinking more as a response to stress than younger adults. Lastly, some studies suggest that gender moderates the association between stress and alcohol use. However, findings have been inconsistent as some studies show that this association is stronger in men, while others suggest that it is stronger in women. Despite research highlighting the individual effect of these variables, to this date no study has examined the association between stress and alcohol use, and tested the effects all aforementioned moderators.

Two studies were conducted for this thesis. The first study was a cross-sectional examination of a sample of 123 men and 292 women aged 18 to 87 years recruited from community organisations and social networking websites. This study tested the regression of alcohol measures (e.g., weekly consumption, harmful alcohol use and drinking problems) on stressors (e.g., life events, home, partner and spouse, friend, financial and work stressors), age, gender, avoidance coping and both positive and negative (e.g., aggression and cognitive impairment) alcohol expectancies. Furthermore, this study tested the two-way interactions between stressors and age, stressors and gender, stressors and avoidance coping, and stressors and both positive and negative alcohol expectancies. Lastly, the interactions terms between avoidance coping and gender, avoidance coping and age, positive expectancies and gender, positive alcohol expectancies and age, negative expectancies (e.g., aggression and cognitive impairment) and gender, and negative expectancies and age. Using multiple regressions, the unique effects and interaction effects showed only partial support for the examined relationships. Measures of stress were unrelated to weekly alcohol use and harmful drinking (e.g., a pattern of drinking resulting in

negative consequences to the user's mental and physical health). Avoidance coping and positive alcohol expectancies were significantly and positively associated with weekly alcohol consumption. Negative expectancies of cognitive impairment were associated with less harmful alcohol use and weekly alcohol consumption. Gender was shown to moderate the association between cognitive impairment and weekly alcohol use, revealing that men who endorsed more negative expectancies of cognitive impairment consumed less alcohol than women. In addition, men who reported greater use of avoidance coping in relation to home stressors consumed more alcohol than women, while women who reported greater levels of avoidance coping in relation to financial stressors consumed more alcohol than men.

The second study involved a 12-month follow-up of a subgroup of the participants from Study 1 (22 men and 60 women). Multiple regressions were used to test the same relationships as in Study 1 over a 12-month period. As in Study 1, the findings showed no support for the relationship between stress and alcohol use, as the baseline measures of stress were unrelated to weekly alcohol use and harmful drinking at 12 month follow-up. The associations between positive expectancies and alcohol use, and negative alcohol expectancies of cognitive impairment and alcohol use, were moderated by age. The analysis revealed that the association between positive expectancies and weekly alcohol use was stronger in younger participants, while the association between negative expectancies of cognitive impairment and alcohol consumption was stronger in older participants.

The findings of this thesis did not support the hypothesis that stress is significantly associated with alcohol measures. The findings suggest that alcohol use is more strongly

associated with avoidance coping and positive and negative alcohol expectancies. In addition, the findings show some support for the hypotheses that age and gender moderate avoidance coping and alcohol expectancies in their association with alcohol use. These findings are discussed in relation to past research and implications for future research.

CHAPTER 1: INTRODUCTION

It is a widely held view that high levels of alcohol consumption are closely related to the experience of stress and that people drink in response to stressors (Conger, 1956; Critchlow, 1986; Dawson, Grant & Ruan, 2005; Lloyd & Turner, 2008). This is known as the tension-reduction hypothesis of alcohol consumption which proposes that people resort to drinking to reduce the tension associated with the experience of stress, given the sedative properties of alcohol (Conger, 1956). In line with this hypothesis, it is expected that the exposure to stressful events and other stressors will be associated with increased alcohol consumption. However, the evidence suggests that this association is not as straightforward as first described, as studies have shown that variables such as alcohol expectancies and coping moderate the relationship between stress and alcohol use (e.g., Armeli, Carney, Tennen, et al., 2000; Brown, Vik, Patterson, et al., 1995; Cooper, Russell, Skinner et al., 1992).

In order to more fully understand the relationship between stress and alcohol use, this thesis examined the hypotheses that alcohol consumption is significantly correlated with the experience of stress, and that individuals who hold positive alcohol expectancies are more likely to drink to moderate the negative consequences of stressors when coping strategies, particularly avoidance-based strategies are insufficient to manage tension. In addition, the effect of age was examined, as studies have shown that this variable moderates alcohol use (e.g., Aseltine & Gore, 2000; Chan, Neighbors, Gilson et al., 2007), and alcohol expectancies (e.g., Pabst, Baumeister, & Kraus, 2010). In order to more fully understand the relationship between stress and alcohol use, and the moderating effects of avoidance coping and alcohol expectancies, the second chapter of this thesis provides a

review of this literature. Several studies that support the tension-reduction model of alcohol consumption are examined, as well as studies showing evidence that contradicts the basic hypothesis that stress is positively correlated with alcohol use. Relevant points are drawn from this review, discussing how these inconsistencies lead to the examination of avoidance coping and positive alcohol expectancies as moderators of this relationship. The findings of studies examining these variables in relation to stress and alcohol use are also discussed.

To further explore age-related differences in the relationship between stress and alcohol use a second review was conducted, this time focusing on the relationship between stress and alcohol consumption, specifically in older adults. This review constitutes the third chapter of this thesis, further highlighting the presence of variables moderating the relationship between stress and alcohol use, and discussing the implications of these findings. The review focused exclusively on studies with participants aged 51 years or older. The structure and method of the review are followed by a description of the stressors and alcohol measures included in the studies. The findings of this review are presented in a systematic manner, categorising cross-sectional and longitudinal findings. In addition, these findings are divided following the stressors domains described in the method section. Two tables are included to summarise these findings and facilitate the analysis. Lastly, the findings of the reviewed studies are integrated in the discussion section, followed by the conclusions of this review.

Drawing from the conclusions of the previous chapters two studies were conducted. The first study tested the association between stress and alcohol use, as well as the moderating role of avoidance coping and alcohol expectancies using hierarchical regressions in a cross-

sectional design. The second study examined these associations following a longitudinal design, which allowed for the analysis of increments in alcohol measures. These studies are presented in Chapters 4 and 5 of this thesis.

Chapter 4 provides a report of the cross-sectional study examining the effect of stress on alcohol consumption, and the moderating role of age, gender, avoidance coping, and alcohol expectancies. This study tested whether the experience of acute and chronic stressors correlated with alcohol consumption and harmful drinking. Furthermore, it tested whether age, gender, avoidance coping and alcohol expectancies moderated this relationship. It was hypothesised that stress would be associated with alcohol use in participants who used more avoidance coping strategies, and who reported more positive alcohol expectancies. In addition, the moderating role of age on the association between alcohol expectancies and alcohol use was examined to test the hypothesis that negative expectancies would be more strongly associated with lower alcohol consumption older adults, while positive expectancies would be more strongly associated to greater alcohol use in younger participants.

Chapter 5 provides a report of the longitudinal study that expands on the findings of the cross-sectional study and focuses on the association between baseline measures of alcohol use, stress, avoidance coping and positive and negative alcohol expectancies, and measures of alcohol use at a 12-month follow up. In line with Study 1, this study also examined the moderating role of age, gender, avoidance coping, and alcohol expectancies.

Lastly, Chapter 6 provides a general discussion of the findings of the two studies, and an examination of these in relation to studies reviewed in Chapters 2 and 3. More specifically,

the limitations of the tension-reduction model are discussed, and the role of other variables moderating the relationship stress and alcohol measures. Inconsistencies in the findings of studies examining avoidance coping and positive and negative expectancies are discussed in this chapter, and hypotheses to explain these consistencies are presented. Furthermore, the interactions between gender and age, and their moderating role on the relationships between stress, avoidance coping, positive and negative expectancies and alcohol measures are examined. Lastly, methodological limitations of the current studies and previous studies are discussed, particularly in reference to how these may account for the largely inconsistent findings reported in the literature on stress and alcohol use.

CHAPTER 2: STRESS, COPING, AND ALCOHOL EXPECTANCIES

The consumption of alcohol at levels that increase the risk of acute and chronic alcohol-related harm is considered to be a multifactorial health problem, determined by psychological, biological, genetic, social, cultural and environmental factors (Saitz, 2012; Wills & Shiffman, 1985). Among the psychological and environmental risk factors for alcohol consumption, stress is considered to be one of the more important (Armeli et al., 2000; Barnes, 2013; Hunter & Gillen, 2009; Uhart & Wand, 2009).

Stress is defined as a contextual and variable process of transactions between the person and the environment (Folkman, 2010), resulting from a demanding situation that is subjectively significant for the individual, and perceived as exceeding the individual's coping resources (Folkman, 2010). Stressors are the experiential circumstances that produce stress, prompting the individual to respond in order to avoid negative stress symptoms (Hunter & Guillen, 2006). Researchers frequently distinguish between two distinct but interrelated types of circumstances that can cause stress and tax an individual's ability to respond: (1) life events defined as acute stressors; and (2) enduring, recurring problems defined as chronic stressors (Aneshensel & Pearlin, 1987; Keyes, Hatzenbuehler, & Hasin, 2011; Pearlin, 1989).

Acute stressors are discrete life events perceived by the individual as entailing some significant degree of hazard. While these events can be normative (the birth of a child, marriage, retirement) or non-normative (divorce, widowhood) (Lieberman & Peskin, 1992; Keyes et al., 2011), research suggests that it is the undesired, unscheduled, non-normative,

and uncontrolled changes that are the most stressful ones (Pearlin, 1989). Chronic stressors, on the other hand, are described as adverse circumstances that are recurrent over time. Although these circumstances tend to be less emotionally intense than acute stressors, it has been suggested that their effects are more cumulative and enduring, having an equal or greater impact than life events (Moisan & Le Moal, 2012; Palgi, 2013; Rutter, 1986; Wills & Shiffman, 1985). Researchers have identified several distinct sources of chronic stress, including: excessive work demands, enduring interpersonal difficulties with partner, friends and family, and financial and economic hardships (Avison & Turner, 1988; Bromberger & Matthews, 1996; Moos & Moos, 1994; Palgi, 2013; Pearlin & Lieberman, 1979).

Stress and Alcohol Use

To explain the relationship between stress and increased alcohol use, Conger (1956) first proposed the tension-reduction hypothesis which maintains that people drink in order to experience relief from tension. More specifically, given that alcohol has a tranquilizing or sedative effect on the nervous system, alcohol consumption may be used as a coping behaviour to reduce stress (Conger, 1956). The tension-reduction hypothesis suggests that exposure to stressors elicits negative emotions such as fear, anxiety, distress and depression that in turn serve as aversive sources of motivation that increase drinking behaviour (Cappell & Greeley, 1987). In short, the tension-reduction theory posits a model in which negative emotions connect the experience of stressors to drinking behaviour (Cooper, Russell, & Frone, 1990; Hellmuth, Jaquier, Young-Wolff et al., 2013; Violanti, Marshall, & Howe, 1983).

Several cross-sectional studies have demonstrated an association between acute stressors and higher levels of alcohol use in a range of samples, including problem drinkers, and community samples. In one cross-sectional study that categorised adult males (ages not specified) into three groups based on their drinking behaviour the findings showed that problem drinkers reported experiencing more life events than non-problem drinkers and abstainers (Cole, Tucker, & Friedman, 1990). Although the associations between stress and alcohol use may be more pronounced among problem drinkers, the relationship has also been found among community samples. For example, one cross-sectional study conducted with transport workers aged 25 to 65 years, showed a significant association between life events and heavy drinking (Ragland, Greiner, Krause, et al., 1995). Moreover, in a large epidemiological survey, adults 18 or older who had experienced six or more acute stressors were more likely to report larger amounts of alcohol consumption (Dawson et al., 2005).

Longitudinal studies have further supported the association between acute stressors and alcohol use. In one 9-year longitudinal study with adolescents in grades 9th to 11th, the cumulative effect of life stressing events was significantly associated with increases in alcohol consumption (Aseltine & Gore, 2000). Another longitudinal study with young adults aged 18 to 24 years examined the association between the total number of life events and alcohol use over a 7-year period (Rutledge & Sher, 2001). This study showed that acute stressors were significantly associated with heavy drinking, but only in male young adults (age 21) (Rutledge & Sher, 2001). Lastly, a 1-year longitudinal study conducted with a clinical sample of adults aged 18 to 65 years showed that problem drinkers who relapsed were

exposed to a higher number of life events than those who remained abstinent (Mattoo, Chakrabarti, & Anjaiah, 2009).

In order to more fully examine the association between acute stress and alcohol use, researchers have also measured specific life stressing events. Some of the events commonly examined are divorce, bereavement events, retirement, and health-related events (e.g., Byrne, Raphael, & Arnold, 1999; Glass, Prigerson, Kasl, et al., 1995; Jose, Van Oers, Van de Mheen, et al., 2000; Perreira & Sloan, 2001). For example, one cross-sectional study conducted with adults aged 15 to 74 years showed that getting divorced was associated with greater alcohol consumption in women (Jose et al., 2000). Another cross-sectional study examining the differences between types of drinkers measured acute stressors by grouping them into subscales such as health, work, legal, and family stressors. This study conducted in adults aged 18 to 51 years showed that health events (e.g., being diagnosed with a chronic illness) and family events (e.g., increased arguments with partner) were more frequent in participants with alcohol dependence than in social drinkers (King, Bernardy, & Hauner, 2003).

Longitudinal studies have also provided evidence for the association between specific life stressing events and increased alcohol use. In the case of bereavement events, two longitudinal studies conducted with adults aged 65 years or older showed that the loss of a spouse predicted increased alcohol consumption in men (Byrne et al., 1999; Glass et al., 1995), while a third study conducted with adults aged 51 years or older showed a similar association in both men and women (Perreira & Sloan, 2001). One of these studies also showed that alcohol consumption was significantly associated with the death of a friend

(Glass et al., 1995), while a second longitudinal study conducted in adults aged 51 years or older showed that experiencing the death of a child predicted increased alcohol consumption (Platt et al., 2010).

Similarly to acute stressors, chronic stressors have been examined and shown to be associated with higher levels of alcohol use. One cross-sectional study conducted with adults aged 55 years or older showed that chronic interpersonal problems with friends were associated with more drinking problems (Brennan & Moos, 1990). Cross-sectional data included in Brennan, Moos, and Mertens (1994) longitudinal study with adults aged 55 years or older showed that chronic interpersonal problems with friends were associated with greater alcohol consumption. Another cross-sectional study conducted with adult workers (ages not provided), showed that chronic work stressors, such as problems with supervisors and co-workers, or unpleasant physical conditions at work were associated with greater alcohol use (Liu, Wang, Zhan, et al., 2009).

Two longitudinal studies conducted with adults aged 55 years or older also showed that chronic health, financial and spouse stressors predicted drinking problems after a 1-year (Brennan et al., 1994) and a 4-year period (Brennan, Schutte, & Moos, 1999). Another 1-year longitudinal study with adults (ages not provided) showed that chronic friend-related stressors predicted increased alcohol consumption (Skaff, Finney, & Moos, 1999).

Although the aforementioned studies have demonstrated support for the direct relationship between acute and/or chronic stress and alcohol use, other studies have not supported this relationship (e.g., Cooke & Allan, 1984; Castillo, Marziale, Castillo, et al., 2008; Graham & Schmidt, 1999; Krause, 1995). The findings of these studies suggest that the tension-

reduction hypothesis cannot fully account for the relationship between stress and alcohol use and that other factors need to be addressed. Two such factors, highlighted by researchers as moderators, are avoidance coping and alcohol expectancies (e.g., Armeli et al., 2000; Brennan & Moos, 1996; Cooper et al., 1990; Cooper et al., 1992, Krause, 1995; Veenstra, Lemmens, Friesema, et al., 2007).

A model based on the social cognitive theory has been proposed to integrate coping and alcohol expectancies and explain excessive alcohol consumption (Abrams & Niaura, 1987). This model assumes that people are motivated to minimise feelings of distress, and that individuals learn to utilise drinking as coping response when other coping strategies are unavailable (Abrams & Niaura, 1987). In conclusion, the model suggests that expectancies about the effects of alcohol interact with individual variables such as coping strategies and stress to predict alcohol consumption (Catanzaro & Laurent, 2004).

Coping as a Moderator of Stress

It has been frequently argued that that individuals drink because of specific motivations that they have in this regard, including drinking to experience a positive affect state, and drinking to cope as a reaction to negative emotional states (Cooper et al., 1988; Copper et al., 1992; Copper et al., 2008; Wills & Shiffman, 1985).

In relation to stress-coping skills, coping is defined as a set of cognitions or behaviours used to attempt to maintain a balance between environmental demands and available personal resources (Wills & Shiffman, 1985). Coping entails a set of behaviours used to manage

external and internal demands that are appraised as exceeding the resources of the individual (Johnson, 2013; Lazarus & Folkman, 1984).

It has been suggested that alcohol use is a behavioural reaction to stress strongly determined by the interaction of cognitive and physiological factors. More specifically, alcohol consumption depends on both the individual's appraisal of the stressors and reactivity to the stimulation resulting from the appraisal (Wills & Shiffman, 1985; Roseman, 2013). Cognitive appraisal includes the perceived threat of stressors and the perceived abilities and resources available for the individual to cope with those stressors (Lazarus & Folkman, 1984). This appraisal results in the use of two main types of coping strategies: 1) approach coping, defined as active attempts to resolve the stressor either directly or indirectly; and 2) avoidance coping, described as behaviours entailing withdrawal from or denial of the stressor (Carver & Vargas, 2011; Holahan, Moos, & Schaefer, 1996; Johnson, 2013; McCabe, Roesch, & Aldridge-Gerry, 2013). Avoidance coping strategies include efforts to evade feelings of distress through emotional discharge, denial of the stressor, and wishful thinking or fantasy (Carver & Vargas, 2011; Johnson, 2013).

The aforementioned behavioural definition of coping holds that the presence or absence of specific sets of behaviours results in different levels of adaptation (Moos, 1979). Adaptation can be defined as the outcome of the psychosocial stress process (Stanford & Du Bois, 1992) which can be positive, negative, effective or ineffective. In general, avoidance coping is perceived to be less adaptive and less effective in managing stress than approach coping, as it fails to address the existence of the stressors and minimise its eventual impact (Carver & Vargas, 2011; Lyvers, Haskings, Hani et al., 2010; Johnson, 2013). Poor adaptation tends to

correlate with higher morbidity and poor mental health while successful adaptation has been associated with a learning process that may promote better responses to similar situations in the future (Johnson, 2013; Stanford & Du Bois, 1992).

The majority of the studies examining the association between coping and alcohol use have focused on the use of avoidance coping (e.g., Moos, Brennan, Fondacaro, et al., 1990; Timko, Finney, & Moos, 2005) and, despite the theoretical association between stress, coping, and alcohol consumption, the evidence for a relationship between stress-related coping motives and alcohol use remains weak (Armeli, Carney, Tennen et al., 2000; Armeli, Todd, & Mohr, 2005; Park, Armeli, & Tennnen, 2004). Interestingly, very few studies have specifically examined how ineffective coping strategies moderate the relationship between stress and alcohol (e.g., Brennan & Moos, 1996; Veenstra et al., 2007). In addition, a review of these studies revealed that there were considerable differences in the methodology of these studies. The measures of stress used in these studies differed significantly, including variables such as avoidance and approach coping (Brennan & Moos, 1996), emotion, action and cognitive coping (Veenstra et al., 2007) and effective and ineffective coping strategies (Stanford & Du Bois, 1992).

One 4-year longitudinal study supported the moderating role of avoidance coping in the association between life stressing events and alcohol use in adults aged 55 to 60 years at baseline (Brennan & Moos, 1996). In this study, the researchers measured stress using a scale that assessed the experience of life events, such as loss of job or divorce, which occurred in the last 12 months. The findings of this study showed that life stressing events predicted increased drinking problems in the adults who relied heavily on avoidance coping,

while life events predicted less drinking problems in adults who reported less reliance on avoidance coping strategies.

In another longitudinal study, researchers measured coping strategies in relation to the sum of all acute stressors experienced in the past 12 months in a group of adults aged 40 to 70 years (Veenstra et al., 2007). Coping was measured by grouping reported responses to stress into three categories: action coping, cognitive coping and emotion coping. The findings of this study showed that participants who scored high on emotion coping increased their alcohol consumption after experiencing acute stressors, while the opposite was true for participants scoring low on this coping measure. In contrast, action and cognitive coping did not moderate the relationship between stress and alcohol use (Veenstra et al., 2007). Although these researchers did not directly examine avoidance coping, emotion coping is also viewed as an ineffective coping strategy (Carver & Vargas, 2011). Moreover, it has been argued that avoidance coping is often emotion focused, as it entails attempts to evade or escape feelings of distress (Carver & Vargas, 2011).

Coping and Alcohol Expectancies

In addition to avoidance coping, other factors have been found to moderate the effects of stress (Abrams & Niaura, 1987). One of these is alcohol expectancies, which have been defined as the beliefs about the cognitive, affective and behavioural effects and outcomes of alcohol consumption (Nicolai, Demmel, & Moshagen, 2010; Reich, Below, & Goldman, 2010; Monk & Heim, 2013a; Young, Connor, & Feeney, 2011). These anticipations,

describing the nature of the expected alcohol outcome, can be positive or negative (Patrick, Wray-Lake, Finlay, et al., 2010). Positive expectancies such as sexual enhancement, social assertiveness and tension reduction are frequently associated with higher levels of alcohol consumption (e.g., Anderson, Grunwald, Bekman, et al., 2011; Ham, Zamboanga, Olthuis et al., 2010; Larsen, Engels, Wiers, et al., 2012; Patrick et al., 2010; Satre & Knight, 2001, Young, Connor, Ricciardelli, et al., 2006), and negative expectancies such as cognitive impairment and aggression are usually associated with lower levels of alcohol consumption (e.g., Nicolai, Moshagen, & Demmel, 2012; Pabst et al., 2010; Satre & Knight, 2001).

Cooper et al. (1990) were among the first researchers to test avoidance coping and positive alcohol expectancies as moderators of the relationship between stress and alcohol measures. In their cross-sectional study with employed adults aged 19 to 69 years, the researchers examined levels of work stress, measured as "work pressure" and "lack of job control" in relation to alcohol use, drinking problems, and frequency of use of alcohol to cope, defined as the self-reported tendency to rely on alcohol in order to cope with stressors. The findings showed that work stress interacted with avoidance coping to predict drinking problems, and with alcohol expectancies to predict frequency of drinking to cope[1] (Cooper et al., 1990).

A second cross-sectional study by Cooper et al. (1992) expanded on their first study by using a broader examination of stress. In a community sample of adults aged between 19 to 87 years, the researchers examined two separate measures of stress, one comprising a sum of events experienced in the past 12 months, and a second one including recent life problems

[1] Gender differences were not examined

in the domains of work, marriage, children, finances, health, legal, household and school. Alcohol measures included a) average alcohol consumption over the past 12 months, b) average alcohol consumption over the past month, c) number of drinking problems in the past 12 months, and d) frequency of use of alcohol to cope. However, only in the case of men was support found for the moderating effect of avoidance coping and positive alcohol expectancies. Specifically, avoidance coping was found to moderate the relationship between recent life problems and both drinking to cope and alcohol consumption, and also the association between life stressing events and alcohol problems. Positive alcohol expectancies were also found to moderate the association between life-stressing events and both alcohol consumption and alcohol problems, as well as the relationship between recent life problems and alcohol consumption. An additional analysis further showed that life stressing events were a significant predictor of alcohol use in men who both relied on avoidance coping and held strong positive alcohol expectancies, thus highlighting that these participants were particularly vulnerable to the impact of stressors. In contrast, life-stressing events were negatively associated with alcohol use among men who reported low avoidance coping and low positive alcohol expectancies. Lastly, the association between life stressing events and alcohol use was not significant among women, irrespective of their expectancies or coping style.

Another cross-sectional study that has tested the interaction between avoidance coping and alcohol expectancies in relation to stress was conducted by Laurent, Callan and Catanzaro (1997). However, the participants in this study were adolescents aged 12 to 18 years who were asked to report on the number of life stressing events experienced in the last 6

months. As in Cooper et al. (1992), the researchers examined three alcohol measures: alcohol use, drinking problems, and drinking to cope, and this study showed support for the moderating effect of avoidance coping. Avoidance coping was shown to moderate the association between stress, and both drinking problems and drinking to cope. In contrast, alcohol expectancies were not significant moderators of the association between stress and any of the alcohol measures. However, irrespective of adolescents' life stressing events, the interaction between avoidance coping and alcohol expectancies was a significant predictor of drinking to cope. Specifically, the findings showed that adolescents with strong alcohol expectancies who relied on avoidance coping were more likely to report drinking to cope, and this was the case for both the adolescent men and women. In addition, there was a stress by gender interaction, which showed that men who experienced more stress were the ones to consume more alcohol.

In another study, the moderating role of avoidance coping and alcohol expectancies in the relationship between stress and alcohol consumption was examined using a 60-day diary method with adults aged 25 to 50 years (Armeli et al., 2000). At the commencement of the study, both positive and negative alcohol expectancies and avoidance coping were assessed; and each day participants were instructed to record their most negative event of the day and rate its overall stressfulness, their daily alcohol consumption, and their desire to drink, which referred to the intensity of urge to consume alcohol. This study supported the moderating role of positive alcohol expectancies, showing that men who held more positive expectancies drank more on stressful days, while men with less positive expectancies, drank less on stressful days. In the case of women, positive expectancies were not found to

moderate this relationship. This study also demonstrated the moderating role of negative alcohol expectancies, showing that for men with higher expectancies of unconcern there were stronger positive associations between stress and both alcohol measures. In contrast, there were negative associations between stress and the alcohol measures among men with weaker negative alcohol expectancies. In addition, men with strong expectations of impairment reported less alcohol consumption and desire to drink after experiencing stress. In the case of women, the stress-drinking associations were much weaker and these were not moderated by unconcern.

Armeli et al. (2000) further found that the negative expectancies, unconcern and impairment, moderated avoidant coping in the prediction of stress-drinking association, and this was irrespective of gender. However, these findings were unexpected and showed that the stress-drinking association was more positive for individuals low in avoidant coping and expectations of careless unconcern; and for individuals low in avoidant coping and with weak impairment expectancies. These findings showed that, contrary to expectations, men and women who relied less on avoidance coping and held stronger negative beliefs were more likely to consume alcohol after experiencing stress.

In addition to studies examining the moderating role of avoidance coping and alcohol expectancies in relation to stress and alcohol use, other studies have examined the interaction between avoidance coping and alcohol expectancies in relation to alcohol use, without any assessment of individuals' experience of stress (e.g., Cooper, Russell, & George, 1988; Evans & Dunn, 1995; Hasking, Lyvers, & Carlopio, 2011). One of the earliest cross-sectional studies was conducted by Cooper et al. (1988) with a group of adults aged 19 to 91

years. This study focused on the interaction between avoidance coping and alcohol expectancies in relation to the alcohol measures: drinking problems, alcohol consumption and drinking to cope. The findings of this study showed that avoidance coping and positive expectancies were positively associated with problem drinking and alcohol consumption. In addition, the interaction between positive expectancies and coping was associated with the use of alcohol to cope in both men and women. However, this interaction did not predict alcohol use or drinking problems (Cooper et al., 1988).

Another cross-sectional study designed to replicate the findings of Cooper et al. (1988) was conducted by Evans and Dunns (1995) with a small sample (*N*=157) of college students aged 17 to 26 years. The findings of this study showed that alcohol expectancies were significantly associated with alcohol consumption and drinking problems. In addition, avoidance coping was associated with more drinking problems. However, the interaction between expectancies and coping was not significant for either alcohol measure, and the moderating effect of gender was not tested.

A longitudinal study was conducted by Butler, Dodge and Faurote (2010) to examine the relationship between work stress and alcohol consumption over 14 days in a small sample (*N*= 106) of college students (ages not specified). The findings of this study showed a significant relationship in the positive direction between hours of work and alcohol consumption. However, work stress was unrelated to this alcohol measure. In contrast, work-study conflict was associated with alcohol measures in the negative direction, and positive expectancies of tension reduction significantly moderated this relationship. Interestingly, the relationship between work-school conflict and alcohol use was more

strongly negative for participants with greater expectations that consuming alcohol would reduce tension. This study also tested the moderating effects of gender but these were not significant.

A more recent study conducted by Hasking et al. (2011) with adults aged between 18 and 64 years also examined whether alcohol expectancies moderated the relationship between avoidance coping and alcohol consumption. The moderating effect of gender was not examined. This study showed that expectancies of tension reduction moderated the relationship between avoidance coping and alcohol consumption, and this was for the combined sample of men and women.

General Discussion

Overall, a review of the literature has shown that there is some support for the relationship between stress and alcohol use among adults across a wide range of ages. However, this finding is not consistent across all studies. One of the possible reasons for these inconsistencies is the use of different measures of stress by researchers, limiting the comparisons that can be drawn. Further adding to this limitation is the fact that in some of the reviewed studies the experience of stress was not even assessed (e.g., Cooper et al., 1988; Evans & Dunn, 1995; Hasking et al., 2011). In addition, in two of the studies (Armeli et al., 2000; Evans & Dunns, 1995) these inconsistencies could be attributed to their low predictive power due to small sample size (less than 200), since low power limits the ability to detect interaction effects.

Although some studies did not test for gender differences (e.g., Cooper et al., 1990; Hasking et al., 2011), some of those that did showed that this variable moderated the relationships between stress, alcohol use, avoidance coping and alcohol expectancies (e.g., Armeli et al., 2000; Cooper et al., 1992; Laurent et al., 1997). For example, in some of the studies the moderating effect of alcohol expectancies and/or avoidance coping was only significant in men (e.g., Armeli et al., 2000; Cooper et al., 1992) while another study showed that this relationship was significant in both men and women (Laurent et al., 1997). In general, findings suggest that men are more prone than women to externalize their response to stress by increasing their drinking behaviour (Lemke, Schutte, Brennan et al., 2008). Furthermore, studies have shown that although women tend to report more stressful live events than men (Kendler, Thornton, & Prescott, 2001) life events are more strongly associated with alcohol consumption in men than in women (Dawson et al., 2005; Jose et al., 2000). Although not enough studies were located to establish a clear trend, it is interesting to note that both older (e.g., Cooper et al., 1992; Laurent et al., 1997) and more recent studies (e.g., Brennan, Schutte, Moos et al., 2011; Shaw, Agahi, & Krause; 2011) tended to show a stronger association between stress and alcohol measures in men.

As previously mentioned, four of the reviewed studies showed a significant moderating effect of avoidance coping and/or alcohol expectancies (e.g., Armeli et al., 2000; Cooper et al. 1990; Cooper et al., 1992; Laurent et al., 1997). Of particular interest is the role of alcohol expectancies, which were shown to moderate the relationship between stress and alcohol measures such as drinking to cope (Cooper et al., 1990), alcohol consumption (Cooper et al., 1992), drinking problems (Armeli et al., 2000; Cooper et al., 1992; Laurent et al., 1997), and

desire to drink (Armeli et al., 2000). It is important to mention that the domains of alcohol expectancies measured by these studies differed, as some studies assessed positive expectancies (Cooper et al., 1990; Cooper et al., 1992; Laurent, 1997), while other examined specific domains of positive (e.g., tension reduction) and negative expectancies (e.g., impairment, unconcern) (Armeli et al., 2000; Brown et al., 1995) which limits the extent to which comparisons between studies can be drawn.

Two of the studies included in this review examined the associations between stress, alcohol measures, expectancies and avoidance coping in adolescents and college students (e.g., Laurent et al., 1997; Evans & Dunns, 1995), and four other studies included participants with a wide range of ages (18 to over 80) (e.g., Armeli et al., 2000; Cooper et al., 1988; Cooper et al., 1990; Cooper et al., 1992). Yet, none of these studies tested for age-related differences in the examined variables. However, an examination of previous studies shows that although the majority of studies on alcohol consumption have been conducted with student samples, those studies that examined a wider age range showed significant age-related variation in the association between alcohol use and expectancies (e.g., Dunn & Goldman, 1998; Leigh & Stacy, 2004; Pabst et al., 2010; Nicolai et al., 2012). For example, some alcohol expectancies, such as sexual enhancement, have been found to be more strongly associated with alcohol use among younger adults (e.g., Leigh & Stacy, 2004; Nicolai et al., 2012). One study examining age-related changes in alcohol expectancies by categorising participants according to age (18-29, 30-44 and 45-59 years) showed that the association between alcohol use and positive expectancies such as social assertiveness and sexual enhancement was stronger in younger participants (18-29 years) than in older participants (30-44 and 45-59 years) (Pabst et al., 2010). Furthermore, a study comparing

the alcohol expectancies reported by younger (17 to 32 years) and older adults (55 to 89 years) showed that the older group reported lower levels of both positive and negative expectancies than their younger counterparts (Satre & Knight, 2001). Lastly, a study conducted by Nicolai et al. (2012) grouping participants into five age categories (18-23, 24-49, 30-39, 40-49, and 50-59 years) showed that expectancies of cognitive impairment predicted lower alcohol consumption in all groups of participants older than 23 years. In contrast, expectancies of social assertiveness predicted greater alcohol use in participants younger than 30 years. In addition, expectancies of tension reduction predicted increased alcohol use in participants older than 30 years. Interestingly, expectancies of sexual enhancement were only significantly associated with increased consumption in the youngest (18 to 23 years) and oldest groups (50 to 59 years) (Nicolai et al., 2012). The findings of these studies indicated that evidence for the associations between stress, alcohol measures, expectancies and avoidance coping remain inconsistent, and age seems to be a particularly important moderator of these associations, in particular through its effect on alcohol consumption (Breslow & Smothers, 2004; Temple & Leino, 1989; Merrick, Morgan, Hodgkin et al., 2008), stress (Heuberger, 2009; Lin, Karno, Barry et al., 2010; Rodriguez, Schonfeld, King-Kallimanis et al., 2010), and alcohol expectancies (Armeli et al., 2000; Cooper et al., 1988; Cooper et al., 1990; Cooper et al., 1992).

Conclusions

This review suggests a significant association between age, stress, and alcohol use and alcohol expectancies. However, more research is needed to understand why some of the findings are not consistent across studies, particularly in older adults, as several studies have examined these associations focusing on younger age groups.

CHAPTER 3: STRESS AND ALCOHOL USE IN OLDER ADULTS

As concluded in Chapter 2, age is an important variable to consider in understanding the relationship between stress and alcohol use. Studies have shown a significant association between age and alcohol consumption, with older people drinking less than their younger counterparts (Breslow & Smothers, 2004; Temple & Leino, 1989; Merrick et al., 2008) and studies have lent support to the hypothesis that this decrease in consumption becomes more intense after age 65 (Gurnak, 1997). More recent studies have shown support for the hypothesis of a gradual decrease in alcohol use associated with aging (Bobo, Greek, Klepinger, et al., 2013; Platt et al., 2010).

Although older adults on the whole drink less than younger adults, it has been argued that life events, health problems, bereavement and chronic stressors have a greater impact on older adult's alcohol consumption (Heuberger, 2009; Lin et al., 2010; Rodriguez et al., 2010). Interestingly, as older adults have been shown to be more vulnerable to stress, and more exposed to sudden changes in social and economic resources, health, social roles and independence (Aldwin & Gilmer, 2013; Charles, 2010; Epstein, Fischer-Elber, & Al-Otaiba, 2007). They are also more likely to report more bereavement events and more health-related stressors (Aldwin, Sutton, Chiara et al., 1996; Martin, Grunendahl, & Martin, 2001) such as vascular disease, hypertension, diabetes, gastrointestinal diseases, hepatic disorders, cancer, dental disorders, bone disorders, accidents and cognitive disorders (Heuberger, 2009).

An examination of the studies that have explored associations between stress, alcohol consumption, coping and alcohol expectancies reveals that the majority of studies have

been conducted with student samples, or young adults. These studies show that age is a significant moderator for the associations between stress, alcohol measures, expectancies and avoidance coping, in particular through its effect on alcohol consumption (Breslow & Smothers, 2004; Temple & Leino, 1989; Merrick et al., 2008), stress (Heuberger, 2009; Lin et al., 2010; Rodriguez et al., 2010), and alcohol expectancies (Armeli et al., 2000; Cooper et al., 1988; Cooper et al., 1990; Cooper et al., 1992). Although there are a growing number of studies that have specifically examined the relationship between stress and alcohol use in older adults, no systematic review of these studies has been conducted.

To address this gap, a review of the literature was conducted, systematically examining studies published between 1990 and 2012 that had assessed acute and/or chronic stressors in relation to alcohol use among adults aged 50 years and older. Specifically examined were acute and chronic stressors pertaining to health, family, friends, and work. In addition, these were examined separately for both cross-sectional and longitudinal studies.

Method

The review includes published studies located by searching the following databases using a Boolean search strategy: Medline, E-Journals, Academic OneFile, Academic Search Complete , APA-FT, Business Source Complete, Expanded Academic, ASAP, Factiva, Google scholar, Applied Science and Technology, CINAHL FT, Health Business FT Elite, Health Reference Center Academic, Health Source, PsycArticles, Psychology & Behavioural Sciences, Academic One File, Expanded academic ASAP, Academic Search Complete, ERIC,

ScienceDirect, CINAHL. The search was conducted between February, 2012 and July, 2013, and included the following keywords, or combination of keywords: “stress”, “alcohol”, “use”, “consumption”, “elderly”, “geriatric”, “aged”, “older adults”, “ageing” and “life stressors”. The reference sections of the resulting studies were also scanned for additional studies not detected in the databases search. Only studies that met the following criteria were included in the review: a) either acute and/or chronic stressors were examined in relation to alcohol use; b) quantity or frequency of alcohol consumed and/or drinking problems were assessed; c) participants were aged 50 years or older; d) written in English; e) published in a peer-reviewed journal; and f) published between 1990 and 2012. Twenty-two studies that met these criteria were located.

Measures

Acute stressors

Summarized in this section are the types of acute stressors examined in the reviewed studies. These included life stressing events, health stressors, friend and family stressors, and work stressors.

Life stressing events reflect the cumulative impact of multiple stressors experienced over a period of time. These were measured using checklists specifically designed for each study (Glass et al., 1995; Jennison, 1992; Perreira & Sloan, 2001; Platt et al., 2010) and psychometrically validated scales, such as the Life Stressors and Resources Inventory (Moos & Moos, 1994), the Ageing and Independence Survey (Statistics Canada, 1991); the Elders

Life Stress Inventory (Aldwin, Levenson, Spiro et al., 1989), and the Bereavement Phenomenology Questionnaire (Byrne & Raphael, 1994).

The acute health stressors examined by this review included medical conditions and health-related events. *Medical conditions* encompassed the recent diagnosis of health conditions as well as the experience of physical symptoms and ailments. These variables were assessed using the Life Stressors and Resources Inventory (Moos & Moos, 1994). Also included in this review were studies examining the experience of health-related events such as*, hospitalization* and *admission to a nursing home,* which were assessed using non-standardized measures (Glass, et al., 1995; Jennison, 1992; Perreira & Sloan, 2001; Platt et al., 2010).

Family and friends-related events were assessed using non-standardized measures, and included *divorce* or *marriage* (Jennison, 1992; Perreira & Sloan, 2001; Platt et al., 2010)*;* events affecting the spouse such as *illness or injury of spouse, hospitalization of spouse* or *nursing home admission of spouse* (Glass et al., 1995)*;* and events occurring to friends, such as *Illness or injury of a friend*, *loss of friend to a move* or *illness, or injury of relative* (Glass et al., 1995). *Bereavement events*, comprising the recent loss of a loved one, be it a spouse, sibling, relative or friend, were also included in this review. One of the studies examined this variable using the Bereavement Phenomenology Questionnaire (Byrne & Raphael, 1994) while the rest used non-standardized instruments (Glass et al., 1995; Jennison, 1992; Perreira & Sloan, 2001).

Acute *work stressors* included a number of work-related events such as *retirement, becoming unemployed*, *starting* a *new job*, *becoming disabled*, *becoming a homemaker* and

going on leave, which were assessed using non-standardized measures (Jennison, 1992; Perreira & Sloan, 2001; Platt et al., 2010). Finally, one of the studies in this review assessed the impact of *being the victim of a crime,* an acute stressor that is not represented in any of the previous categories and was evaluated using non-standardized measures (Glass et al., 1995).

Chronic stressors

This section examines the types of chronic stressors assessed by the reviewed studies. As with acute stressors, these were divided in categories which included a chronic stressors scale, health stressors, friend and family stressors, and work stressors.

One study (Welte & Mirand, 1995) used a *chronic stressor scale* to assess the cumulative impact of chronic stressors over a period of time without distinguishing specific types of stressors. This measure was the Daily Hassles Scale (Kanner, Coyne, Schaefer et al., 1981).

Most of the studies included in this review used the Life Stressors and Resources Inventory (Moos & Moos, 1994) to assess the impact of different types of chronic stressors. These included *health stressors,* defined as the cumulative impact of multiple health-related stressors over a period of time; *family and friends stressors,* which encompassed the cumulative effect of ongoing interpersonal problems with spouse or partner, close relatives and friends; *work stressors,* reflecting the cumulative effect of a number of negative work-related conditions, including problems with supervisor or co-workers; pressure at work; unpleasant physical conditions at work; *home and neighbourhood* stressors, assessing the cumulative impact of problems with the physical condition of the individual's home and

neighbourhood; and *financial stressors* reflecting the cumulative effect of financial difficulties and the inability to afford basic necessities. Finally, one of the studies included in the review assessed chronic *financial stressors* using a non-standardized survey (Shaw et al., 2011).

Alcohol measures

Two main dependent variables were evaluated in the reviewed studies: alcohol consumption and drinking problems. Alcohol consumption was assessed by measuring either the *frequency of alcohol consumption*, defined as the number of occasions the individual consumed alcohol over a period of time, the *quantity of alcohol consumption*, defined as the amount of alcohol an individual consumed on one occasion over a set period of time, or by calculating a *drinking index*, consisting on the average alcohol consumption derived from self-reported measures of quantity and frequency. These measures of *drinking frequency* and *quantity* were drawn from validated scales such as the Health and Daily Living Form (Moos, Cronkite, Billings et al., 1984), the Risk Prevalence Survey (Risk Factor Prevalence Study Management Committee, 1990) and the Quantity-Frequency Index (Straus & Bacon, 1953), or were part of larger surveys such as the Health and Retirement Study or part of specific drinking questionnaires designed for the study. The second main variable, *problem drinking*, was defined as a self-reported history of negative consequences of alcohol consumption and was measured through validated scales such as the Drinking Problems Index (Finney, Moos, & Brennan, 1991) and the CAGE questionnaire (Ewing, 1984). Another outcome variable used in one study was *abstinence*, defined as the absence of drinking behaviour (Moos, Brennan, Schutte et al., 2010).

Results

A summary of the studies that have examined acute and chronic stressors are provided in the Tables 1 and 2 respectively. Each of these tables first provides a summary of all the cross-sectional findings and this is followed by a summary of the longitudinal findings. Unless specified otherwise the findings pertain to the total sample, and where findings were specific to problem drinkers or were moderated by gender these are noted.

Acute stressors

Life stressing events

Ten of the studies in Table 1 examined the cross-sectional relationship between life stressing events and alcohol measures, and seven of these provided support for this relationship (Brennan & Moos, 1990; Brennan & Moos, 1991; Brennan, Moos, & Mertens, 1994; Brennan, Schutte, & Moos, 1999; Jennison, 1992; Moos, Brennan, Fondacaro et al., 1990; Welte & Mirand, 1995). The studies showed that life-stressing events were associated with higher alcohol consumption (Jennison, 1992; Welte & Mirand, 1995); more drinking problems among both problem drinkers (Brennan et al., 1994; Brennan & Moos, 1990; Moos et al., 1990) and the total sample (Brennan et al., 1999); and late onset problem drinking (Brennan & Moos, 1991). However, one of these studies only found the relationship among men (Welte & Mirand, 1995), and one showed that life stressing events were also associated with decreased frequency of alcohol consumption (Brennan et al., 1999). It is important to note that five of these studies were from the same parent sample *(*Brennan & Moos, 1990; Brennan & Moos, 1991; Brennan et al., 1994; Brennan et al., 1999; Moos et al.,

1990). These studies are based on data from a 20-year, multi-wave longitudinal study that followed up the same baseline sample and examined, one-by-one, correlations between individual stressor variables and individual drinking.

The longitudinal relationship between life stressing events and alcohol measures was examined by five of the studies in Table 1, and all of these reported significant associations (Brennan et al., 1994; Brennan et al., 1999; Brennan & Moos, 1996; Moos, Schutte, Brennan et al., 2004; Schutte, Brennan, & Moos, 1998). Life stressing events were shown to predict increased drinking problems in women (Brennan et al., 1999; Brennan & Moos, 1996) and men (Brennan & Moos, 1996); a self-reported tendency to respond to life stressing events by consuming alcohol predicted increased drinking problems in the total sample (Moos et al., 2004); and in late onset problem drinkers (Schutte et al., 1998). In addition, one study showed that avoidance coping strategies moderated the relationship between life stressing events and alcohol measures (Brennan & Moos, 1996). More specifically, this study showed that life events predicted increased drinking problems in participants who relied more heavily on avoidance coping, but lower drinking problems for those participants who reported less frequent use of such coping strategies (Brennan & Moos, 1996). Another study showed that drinking history also acted as a moderator, as this variable was shown to predict decreased alcohol consumption in participants with a history of light drinking and increased consumption in those with a history of heavy drinking (Brennan et al., 1994).

Acute health stressors

Four studies in Table 1 examined the cross-sectional association between health events and drinking measures, and all reported significant results (Brennan et al., 1994; Brennan,

Schutte, Moos et al., 2011; Moos et al., 2010; Moos et al., 2004). These findings suggested that health events were associated with less alcohol consumption in both problem drinkers (Brennan et al., 1994) and the total sample (Brennan et al., 2011; Moos et al., 2010). However, two of these studies also showed that health events were associated with more drinking problems among problem drinkers (Brennan et al., 1994; Moos et al., 2004).

Six studies in Table 1 examined the longitudinal relationship between health events and alcohol measures, and four of these studies reported results supporting this relationship (Brennan et al., 1994; Brennan et al., 2011; Brennan & Moos, 1996; Moos et al., 2010). Health events were found to predict decreased alcohol consumption (Moos et al., 2010); and decreased drinking problems over time (Brennan et al., 2011). However, two longitudinal studies showed that drinking history moderated the relationship between life stressing events and alcohol measures. One study found that health events predicted reduced consumption only in "light" and "moderate" drinkers (Brennan et al., 1994). On the other hand, in another study health events predicted increased drinking problems among participants who reported fewer drinking problems at baseline, but decreased drinking problems among those individuals who reported a higher number of drinking problems (Brennan & Moos, 1996). However, it is noteworthy that the difference in dependent variables is a possible reason for this apparent contradiction.

Only one of the studies in Table 1 examined the relationship between the cumulative impact of medical conditions and alcohol measures (Moos et al., 2010). This study showed that medical conditions predicted abstinence across time, but they were not significantly related to any changes in alcohol consumption.

Three of the studies in Table 1 examined the longitudinal relationship between hospitalization and drinking measures, and two of these showed significant results, suggesting that individuals who had been recently hospitalized were more likely to reduce their alcohol consumption (Glass et al., 1995; Perreira & Sloan, 2001). However, one of these studies showed that after an initial decrease in consumption, individuals tended to return to previous drinking levels (Perreira & Sloan, 2001), suggesting that hospitalization may have only a temporary impact on drinking behaviour. This is likely to be due to having limited or no access to alcohol, as one study that examined the longitudinal impact that admission to a nursing home has on alcohol measures, showed that individuals who had recently entered a care facility were more likely to reduce their consumption over time (Glass et al., 1995).

Two of the studies in Table 1 specifically examined the longitudinal impact of the acute event of receiving the diagnosis of a chronic illness, but the findings were inconsistent (Perreira & Sloan, 2001; Platt et al., 2010). One study showed that after being diagnosed, participants were more likely to report an increase in alcohol consumption followed by decreased consumption (Perreira & Sloan, 2001). A second study showed that being recently diagnosed with diabetes was associated with reduced drinking (Platt et al., 2010).

Acute family and friends stressors

One study in Table 1 examined the cross-sectional relationship between family and friend stressful events and alcohol measures (Jennison, 1992). The results supported the existence of this relationship, showing that participants who became divorced, had a relative becoming unemployed, disabled or hospitalized were more likely to report higher levels of

alcohol consumption (Jennison, 1992). Two of the studies in Table 1 examined the longitudinal effect of divorce on alcohol measures and both showed that this event was associated with decreased alcohol consumption (Perreira & Sloan, 2001; Platt et al., 2010). However, one of the studies found that divorce was also associated with increased alcohol consumption (Perreira & Sloan, 2001).

Two studies in Table 1 assessed the cross-sectional relationship between bereavement events and alcohol measures, with one study showing no significant association (Jennison, 1992) and the other study showing that bereavement was associated with drinking problems among problem drinkers (Lemke et al., 2008).

Four of the studies in Table 1 examined the longitudinal relationship between bereavement events and drinking measures, and all these studies reported an association between bereavement and higher levels of alcohol consumption (Byrne et al., 1999; Glass et al., 1995; Perreira & Sloan, 2001; Platt et al., 2010). One of these studies found increased alcohol consumption in both men and women who experienced the recent loss of a spouse (Perreira & Sloan, 2001) and two studies indicated a similar association but only for men (Byrne et al., 1999; Glass et al., 1995). For women, it was the death of a friend that predicted increased alcohol consumption (Glass et al., 1995). Finally, one study also showed that the loss of a sibling predicted increased drinking (Platt et al., 2010).

Two studies in Table 1 examined the longitudinal relationship between marriage and alcohol measures and one reported results supporting this association (Perreira & Sloan, 2001). This study suggested that marriage predicted both an increase and a decrease in alcohol consumption in the total sample; while in males, marriage predicted a decrease in alcohol

consumption (Perreira & Sloan, 2001). Finally, one study in Table 1 examined other family and friends events, showing that the loss of a friend due to a move, and the illness or injury of a relative predicted an increase in alcohol consumption (Glass et al., 1995).

Acute work stressors

One study in Table 1 examined the cross-sectional association between loss of job and alcohol measures. This study showed support for this relationship, suggesting that loss of job was associated with higher levels of drinking (Jennison, 1992). This relationship was also examined by two longitudinal studies in Table 1, but only one provided support for this relationship. This study showed that losing a job predicted drinking onset in the years following the event (Gallo, Bradley, Siegel et al., 2001).

Two of the studies in Table 1 examined the longitudinal relationship between retirement and alcohol measures and both studies reported significant findings (Perreira & Sloan, 2001; Platt et al., 2010). In one study, individuals who had recently retired were more likely to report no changes in their drinking behaviour, thus being considered “steady drinkers” (Platt et al., 2010). The second study found that retirement predicted increased alcohol consumption (Perreira & Sloan, 2001).

Other acute stressors

One study in Table 1 examined the longitudinal impact of being the victim of a crime on alcohol measures (Glass et al., 1995). The findings suggested that being the victim of a crime predicted increased alcohol consumption in women, but decreased consumption in men (Glass et al., 1995).

Chronic stressors

Chronic stressors scales

One cross-sectional study, in Table 2, examined the relationship between a chronic stressors scale and alcohol measures. The findings indicated that chronic stress was associated with drinking problems (Welte & Mirand, 1995).

Chronic health stressors

Six studies in Table 2 examined the cross-sectional relationship between chronic health stressors and alcohol measures. Only two of these studies provided support for this relationship. Lemke et al. (2008) found that chronic health stress was associated with more drinking problems among problem drinkers. The findings from the other study were more complex. Chronic health stressors were associated with decreased quantity and frequency of alcohol consumption in the total sample of both men and women (Brennan et al., 1999). However, this study also showed that in men, health stressors correlated with increased quantity of alcohol consumption and more drinking problems (Brennan et al., 1999).

Four studies in Table 2 examined the longitudinal relationship between chronic health stressors and alcohol measures and two of these studies reported significant findings. Brennan et al. (1994) found that chronic health stressors predicted decreased alcohol consumption in baseline "light drinkers" but increased alcohol consumption in baseline "heavy drinkers". Another study found that chronic health stressors predicted reduced alcohol consumption but only in women (Brennan et al., 1999)

Chronic family and friend Stressors

Three of the studies in Table 2 assessed the cross-sectional relationship between chronic family stressors and alcohol measures. Two of these studies provided support for this relationship indicating that chronic family stressors were associated with drinking problems in female problem drinkers (Brennan & Moos, 1990) and in both men and women problem drinkers (Lemke et al., 2008).

Four studies in Table 2 examined the cross-sectional relationship between chronic spouse stressors and drinking. Three of these studies reported significant findings suggesting that spouse stressors were associated with higher alcohol consumption and drinking problems among problem drinkers (Brennan & Moos, 1990; Brennan et al., 1994) and women (Brennan et al., 1999). Two of these studies also examined the cross-sectional relationship between child-related stress and alcohol measures, with one (Brennan & Moos, 1990) finding that male problem drinkers were more likely to have experienced child-related stress while the other (Brennan & Moos, 1991) showed no significant findings. Four of the studies in Table 2 evaluated the longitudinal impact of chronic spouse stressors on alcohol measures. The relationship was supported in two of the studies, with findings suggesting that spouse stressors predicted increased drinking problems (Brennan et al., 1999; Brennan & Moos, 1996). However, in one study this was only significant for men (Brennan et al., 1999).

Three studies in Table 2 examined the cross-sectional relationship between friend stressors and alcohol measures, and all showed significant findings (Brennan et al., 1994; Brennan & Moos, 1990; Brennan & Moos, 1991). These studies showed that friend stressors were

associated with drinking problems among problem drinkers (Brennan & Moos, 1990; Brennan et al., 1994; Brennan & Moos, 1991), and with less alcohol consumption in non-problem drinkers (Brennan & Moos, 1990). Furthermore, two studies in Table 2 assessed the impact over time of friend stressors on alcohol measures, and both reported significant findings (Brennan et al., 1994; Brennan & Moos, 1996). The findings of the first study indicated that friend stressors predicted increased drinking problems in participants with fewer drinking problems at baseline, and decreased drinking problems in participants with more baseline drinking problems (Brennan & Moos, 1996). The second study found that friend stressors predicted increased alcohol consumption in married participants, while predicting decreased consumption in unmarried participants (Brennan et al., 1994). These findings suggest that the relationship between friend stressors and alcohol measures is moderated by marriage and history of problem drinking.

Chronic work stressors

Three cross-sectional studies in Table 2 examined the relationship between chronic work stressors and alcohol measures. Only one of these studies provided support for this relationship with the results suggesting that work stressors were associated with drinking problems in problem drinkers (Lemke et al., 2008).

Other chronic stressors

Two of the studies in Table 2 assessed the cross-sectional relationship between chronic home and neighbourhood stressors and alcohol measures, and they both provided support for the association (Brennan & Moos, 1990; Brennan & Moos, 1991). These studies showed

that home and neighbourhood stressors were associated with late onset problem drinking (Brennan & Moos, 1991) and drinking problems in problem drinkers (Brennan & Moos, 1990). It is interesting to note that one of these studies also showed that for non-problem drinkers, home and neighbourhood stressors correlated negatively with alcohol consumption (Brennan & Moos, 1990).

Five studies in Table 2 examined the cross-sectional relationship between chronic financial stressors and alcohol measures and all these studies reported significant findings (Brennan et al., 1999; Brennan & Moos, 1990; Brennan & Moos, 1991; Lemke et al., 2008; Moos et al., 2004). These studies suggest that financial stressors were associated with late-onset drinking (Brennan & Moos, 1991) and drinking problems among both the total sample (Brennan et al., 1999; Moos et al., 2004), and problem drinkers (Brennan & Moos, 1990; Lemke et al., 2008). However, two of the studies also showed that financial stress was associated with less alcohol consumption among non-problem drinkers (Brennan & Moos, 1990) and in the total sample (Brennan et al., 1999).

Four of the studies in Table 2 examined the longitudinal association between chronic financial stressors and alcohol measures but the relationship was supported in only two of these studies (Brennan et al., 1999; Shaw et al., 2011). The findings of these studies were inconsistent. One showed that financial stressors predicted a reduction in alcohol consumption and an increase in drinking problems (Brennan et al., 1999). The second study found that financial stressors predicted increased alcohol consumption in men, and reduced consumption in women (Shaw et al., 2011). This study also showed that education moderated the association between financial stress and alcohol consumption. Specifically

individuals with higher education reduced their consumption after experiencing financial stressors, while individuals with lower education showed changes in consumption in the opposite direction (Shaw et al., 2011).

Table 1
Studies of acute stressors

Cross-sectional findings					
Authors	N	Age	Stressors measure	Alcohol measures	Results
Brennan & Moos (1990)	Problem drinkers: 387 men and 114 women Non-problem drinkers: 299 men and 310 women	55-65 years	Life stressing events: Life Stressors and Social Resources Inventory	Health and Daily Living Form Drinking Problems Index	*Men:* Problem drinkers reported more life stressing events than non-problem drinkers *Women:* Problem drinkers reported more life stressing events than non-problem drinkers Problem drinking women reported more life stressing events than problem drinking men *Problem drinkers:* Life stressing events associated with increased drinking problems
Brennan & Moos (1991)	Non problem drinkers: 305 women and 304 men Late-onset problem drinkers: 90 women and 139 men Early-onset problem drinkers: 106 women and 369 men	55 - 65 years old	Life stressing events: Life Stressors and Social Resources Inventory	Health and Daily Living Form Drinking Problems Index	*Late-onset problem drinkers:* Life stressing events associated with more drinking problems
Brennan, Moos & Mertens (1994)	Problem drinkers: 184 women and 475 men	55-65 at baseline	Life stressing events: Life Stressors and Social Resources Inventory Health events: Life Stressors and Social Resources Inventory	Health and Daily Living Form Drinking Problems Index	*Total sample:* Health events associated with less alcohol consumption and more drinking problems Life events associated with more drinking problems

Table 1 (Continued)
Studies of acute stressors

Cross-sectional findings

Authors	N	Age	Stressors measure	Alcohol measures	Results
Brennan, Schutte & Moos (1999)	621 women and 941 men	55-65 at baseline	Life stressing events: Life Stressors and Social Resources Inventory	Health and Daily Living Form Drinking Problems Index	*Women:* Life stressing events associated with less frequency of alcohol consumption and more drinking problems *Men:* Life stressing events associated with less frequency of alcohol consumption and more drinking problems
Brennan, Schutte, Moos & Moos (2011)	320 women and 399 men Excluded abstinent participants	55-65 at baseline	Health events: Life Stressors and Social Resources Inventory	Health and Daily Living Form Drinking Problems Index	*Men:* Health events associated with decreased alcohol consumption
Castillo, Marziale, Castillo, Facundo & Meza (2008)	67 women and 45 men	60 and older	Life stress: Elders Life Stress Inventory Perception of Life stressing events: Semi-structured interview	Michigan Alcoholism Screening Test Semi-structured interview	Associations were not significant
Graham & Schmidt (1999)	537 women and 289 men	65 and older	Life stressing events: Modified Ageing and Independence Survey	Alcohol use interview	Associations were not significant
Jennison (1992)	537 men and 877 women	60 and older	Life stressing events: Life stressing events questionnaire examining the following events: Divorce Job loss Family deaths Hospitalisation Disability	General Social Survey	*Total Sample:* Life stressing events associated with higher alcohol consumption Divorce and loss of job associated with higher alcohol consumption Relatives becoming unemployed, hospitalised or disabled associated with higher alcohol consumption

Table 1 (Continued)
Studies of acute stressors

Cross-sectional findings

Authors	N	Age	Stressors measure	Alcohol measures	Results
Krause (1995)	418 men and 626 women	65 and older	Life stressing events: Life stressing events checklist	Alcohol use survey	Associations were not significant
Lemke, Schutte, Brennan & Moos (2008)	Problem drinkers: 89 women and 262 men Non-problem drinkers: 258 women and 222 men	62 - 78 years	Bereavement Life-history questionnaire measuring *exposure* and *reactivity* to bereavement During three life periods: Early adulthood Early middle age Late middle age	Drinking Problems Index	*Men:* *Problem drinkers:* Reactivity to bereavement associated with drinking problems *Women:* *Problem drinkers:* Reactivity to bereavement associated with drinking problems
Moos, Brennan, Fondacaro & Moos (1990)	Problem drinkers: 387 men and 114 women Non-problem drinkers: 299 men and 310 women	55-65 years	Life stressing events: Life Stressors and Social Resources Inventory examining events classified into three categories: Personal illness or injury Family and friends Finances and work	Drinking Problems Index	*Men:* Male problem drinkers reported more life stressing events than male non-problem drinkers Men reported more work and financial events than women *Women:* Female problem drinkers reported more life stressing events than female non-problem drinkers Women reported more family and friend events than men
Moos, Brennan, Schutte & Moos (2010)	320 women and 399 men Excluded abstinent participants	55-65 at baseline	Medical conditions: Life Stressors and Social Resources Inventory 13 recently diagnosed conditions (i.e., arthritis, cancer, diabetes, high blood pressure, stroke) Health events: Life Stressors and Social Resources Inventory	Health and Daily Living Form Drinking problems Index Lifetime drinking questionnaire	Health events associated with abstinence, and decreased frequency and quantity of alcohol consumption

Table 1 (Continued)
Studies of acute stressors

Cross-sectional findings

Authors	N	Age	Stressors measure	Alcohol measures	Results
Moos, Schutte, Brennan & Moos (2004)	529 women and 762 men	55-65 at baseline	Life stressing events: Life Stressors and Social Resources Inventory Health events: Life Stressors and Social Resources Inventory Life periods in which Life stressing events elicited drinking: 16 Life stressing events experienced as a teen, early adult or during early middle age years leading to alcohol consumption	Health and Daily Living Form Drinking Problems Index Lifetime drinking questionnaire	*Men:* Health events associated with more drinking problems
Welte & Mirand (1995)	1535 women and 790 men	60 and older	Life stressing events: Elders Life Stress Inventory	Drinking questionnaire	*Men:* Life stressing events associated with higher alcohol consumption

Longitudinal findings

Authors	N	Age	Duration	Stressor measures	Alcohol measures	Results
Brennan, Moos & Mertens (1994)	Problem drinkers: 184 women and 475 men	55-65 at baseline	1 year T1: baseline T2: 1 year	Life stressing events: Life Stressors and Social Resources Inventory Health events: Life Stressors and Social Resources Inventory	Health and Daily Living Form Drinking Problems Index	T1 to T2: Life stressing events predicted decreased alcohol consumption in light drinkers, and increased alcohol consumption in heavy drinkers Health events predicted decreased alcohol consumption in light and moderate drinkers

Table 1 (Continued)
Studies of acute stressors

Longitudinal findings

Authors	N	Age	Duration	Stressor measures	Alcohol measures	Results
Brennan & Moos (1996)	174 women and 407 men	50-60 at baseline	4 Years T1: baseline T2: 4 years	Life stressing events: Life Stressors and Social Resources Inventory Health events: Life Stressors and Social Resources Inventory	Health and Daily Living Form Drinking Problems Index	*Total Sample* T1 to T4: Life stressing events in T1 predicted more drinking problems at T4 on participants who reported more avoidance coping at T1 Life stressing events in T1 predicted less drinking problems at T4 on participants who reported less avoidance coping at T1 Health events in T1 predicted increased drinking problems at T4 among participants with fewer drinking problems at T1 Health events in T1 predicted decreased drinking problems at T4 among participants with more drinking problems at T1
Brennan, Schutte & Moos (1999)	621 women and 941 men	55-65 at baseline	4 years. T1: baseline T2: 1 year T3: 4 years	Life stressing events: Life Stressors and Social Resources Inventory	Health and Daily Living Form Drinking Problems Index	*Women:* T2 to T3: Life stressing events in T2 predicted increased drinking problems at T3
Brennan, Schutte, Moos & Moos (2011)	320 women and 399 men	55-65 at baseline	20 years T1: baseline T2: 1 year T3: 4 years T4: 10 years T5: 20 years	Health events: Life Stressors and Social Resources Inventory	Health and Daily Living Form Drinking Problems Index	Men: T1 to T5: Health events at T1 predicted decreased drinking problems at T5
Byrne, Raphael & Arnold (1999)	57 recently widowed men 57 married men	65 years or older	Thirteen months after event. T1: 6 weeks T2: 6 months T3: 13 months	Bereavement: Bereavement Phenomenology Questionnaire	Risk Factor Prevalence Survey	*Widowers* Loss of spouse/partner predicted greater frequency and quantity of alcohol consumption T1, T2 and T3 No significant correlations between BPQ scores and alcohol consumption

Table 1 (Continued)
Studies of acute stressors

Longitudinal findings

Authors	N	Age	Duration	Stressor measures	Alcohol measures	Results
Gallo, Bradley, Siegel & Kasl (2001)	Involuntary job loss group: 101 men and 106 women Control group: 1513 men and 1353 women	51-61 at baseline	2 years T1: baseline T2: 2 years	Loss of job: Dichotomous variable	Drinking questionnaire CAGE	*Involuntary job loss group:* T1 to T2: Involuntary job loss in T1 predicted drinking onset at T2 among baseline non-drinkers
Glass, Prigerson, Kasl & Mendes de Leon (1995)	797 men and 1282 women	65 and older	3 years T1: baseline T2: Three years	Life stressing events: List of events occurring in the past year examining the following events: Loss of a friend to move Death of a friend Illness or injury of close relative Death of a close friend Victimisation in a crime Hospitalisation Admission to nursing home Death of spouse Serious illness/injury of spouse Hospitalisation of spouse Nursing home admission of spouse	Quantity and frequency index	*Men* T1 to T2: (Main effect) Hospitalisation in T1 predicted decreased alcohol consumption at T2 (Interaction with baseline heavy drinking): Loss of a friend to move in T1 predicted increased alcohol consumption at T2 Relative being sick or injured in T1 predicted increased alcohol consumption at T2 Being victim of a crime in T1 predicted decreased alcohol consumption at T2 Death, sickness or injury of spouse in T1 predicted increased consumption at T2 Hospitalisation in T1 predicted decreased alcohol consumption at T2 Nursing home admission in T1 predicted decreased alcohol consumption at T2 *Women:* T1 to T2: (Main effect) Death of a friend in T1 predicted increased alcohol consumption at T2 Loss of a friend to move in T1 predicted increased alcohol consumption at T2 Nursing home admission in T1 predicted decreased alcohol consumption at T2 (Interaction with baseline heavy drinking): Death of a friend in T1 predicted increased alcohol consumption in T2 Loss of a friend to move in T1 predicted increased alcohol consumption at T2 Being victim of a crime in T1 predicted increased alcohol consumption at T2 Relative being sick or injured in T1 predicted increased alcohol consumption at T2 Nursing home admission in T1 predicted decreased alcohol consumption at T2 Hospitalisation in T1 predicted decreased alcohol consumption at T2

Table 1 (Continued)
Studies of acute stressors

Longitudinal findings

Authors	N	Age	Duration	Stressor measures	Alcohol measures	Results
Moos, Brennan, Schutte & Moos (2010)	320 women and 399 men Excluded abstinent participants	55-65 at baseline	20 years T1: baseline T2: 10 years T3: 20 years	Health events: Life Stressors and Social Resources Inventory Medical conditions: Life Stressors and Social Resources Inventory 13 recently diagnosed conditions	Health and Daily Living Form Drinking Problems Index Lifetime drinking questionnaire	T1 to T2: Health events in T1 predicted decreased frequency and quantity of alcohol consumption, and abstinence at T2 T1 to T3: Health events in T1 predicted decreased frequency of alcohol consumption at T3 Medical conditions in T1 predicted abstinence at T3
Moos, Schutte, Brennan & Moos (2004)	529 women and 762 men	55-65 at baseline	10 years. T1: baseline T2: 1 year T3: 4 years T4: 7 years T5: 10 years	Life stressing events: Life Stressors and Social Resources Inventory Health events Life Stressors and Social Resources Inventory Life periods in which Life stressing events elicited drinking 16 Life stressing events experienced teen, early adult or early middle age years and subsequent alcohol consumption	Health and Daily Living Form Drinking Problems Index Lifetime drinking questionnaire	*Men:* Higher number of life periods before age 50 in which life stressing events elicited drinking predicted increased drinking problems *Women:* Higher number of life periods before age 50 in which life stressing events elicited drinking predicted increased drinking problems

Table 1 (Continued)
Studies of acute stressors

Longitudinal findings

Authors	N	Age	Duration	Stressor measures	Alcohol measures	Results
Perreira & Sloan (2001)	3907 men 3824 women	51-61 at baseline	6 years T1: baseline T2: 2 years T3: 4 years T4: 6 years	Life stressing events: List of events in three major areas: health, employment and family examining the following events: Hospitalisation Heart attack Stroke Newly diagnosed chronic condition Psychological disorder New Job Becoming unemployed Disabled Retiring Becoming a homemaker Going on leave or experiencing some change in employment status Getting married Divorced Experiencing death of spouse	Drinking questionnaire CAGE	*Total sample:* T1-T2 to T4: Diagnosed with a chronic illness in T1-T2 predicted increased alcohol consumption at T4 Divorce in T1-T2 predicted increased alcohol consumption at T4 Retirement in T1-T2 predicted increased alcohol consumption at T4 T2-T3 to T4: Hospitalised in T2-T3 predicted increased alcohol consumption at T4 Divorce in T2-T3 predicted both increased and decreased alcohol consumption at T4 Marriage in T2-T3 predicted both increased and decreased alcohol consumption at T4 Retirement in T2-T3 predicted increased alcohol consumption at T4 T1 to T4: Hospitalised in T1predicted decreased alcohol consumption at T4 Diagnosed with a chronic illness in T1predicted decreased alcohol consumption at T4 Divorce in T1 predicted increased alcohol consumption at T4 Retirement in T1 predicted increased alcohol consumption at T4 Widowed in T1 predicted increased alcohol consumption at T4 T3 to T4: Hospitalised in T3 predicted decreased alcohol consumption at T4 Diagnosed with a chronic illness in T3 predicted decreased drinking at T4 Retirement in T3 predicted increased alcohol consumption at T4 Widowed in T3 predicted increased alcohol consumption at T4 *Men:* T1 to T4 Widowed in T1 predicted greater alcohol consumption at T4 *Problem drinkers:* T1 to T4: Divorce in T1 predicted decreased alcohol consumption at T4 Marriage in T1 predicted decreased drinking at T4 in male problem drinkers *Non problem drinkers:* T1 to T4: Marriage in T1 predicted decreased drinking at T4 in male non-problem drinkers

Table 1 (Continued)

Studies of acute stressors

Longitudinal findings

Authors	N	Age	Duration	Stressor measures	Alcohol measures	Results
Platt, Sloan & Costanzo (2010)	3760 women and 3027 men	51-61 at baseline	14 years. Interviews conducted every 2 years Each participant responded to at least 5 interviews	Life stressing events: Indicators of changes in health, family, marital and labour status after baseline examining the following: Health status Retirement Becoming disabled Getting married Getting divorced Death of a spouse Death of a sibling Hospitalised New diabetes diagnosis New cancer diagnosis New stroke New psychiatric diagnosis	Health and Retirement Study CAGE	Across time: Poor health at baseline associated with being an abstainer. Diagnosis of diabetes reduced the likelihood of being an increasing drinker Divorce associated with being a decreasing drinker or sporadic drinker Retirement associated with being a steady drinker The death of a sibling reduced the likelihood of being a steady drinker, an increasing drinker and a sporadic drinker
Schutte, Brennan & Moos (1998)	Stable non problem drinkers: 100 women and 97 men Late-onset problem drinkers: 32 women and 35 men	55-65 at baseline	7 years. T1: baseline T2: 1 year T3: 4 years T4: 7 years.	Life stressing events: Life Stressors and Social Resources Inventory Health events: Life Stressors and Social Resources Inventory	Health and Daily Living Form Drinking Problems Index	*Late-onset Problem drinkers* Alcohol consumption in response to stressors before age 50 predicted drinking problems at T2, T3 and T4 Acute medical conditions predicted reduced drinking problems at T2, T3 and T4

Table 2 (Continued)

Studies of chronic stressors

Cross-sectional findings

Authors	N	Age	Stressors measure	Alcohol measures	Results
Brennan & Moos (1990)	Problem drinkers: 387 men and 114 women Non-problem drinkers: 299 men and 310 women	55-65 years	Chronic stressors: Life Stressors and Social Resources Inventory examining the following types of stress: Health Home Finances Work Spouse Children Family Friends	Health and Daily Living Form Problem Drinking Index	*Men:* Problem drinkers: Home and neighbourhood, financial, spouse, friend and children stressors associated with more drinking problems Male problem drinkers reported more financial and friend stressors than female problem drinkers *Women:* Problem drinkers: Home and neighbourhood, financial, spouse, friends and family stressors associated with more drinking problems Female problem drinkers reported more spouse and family stressors than male problem drinkers *Total Sample:* *Problem drinkers:* Spouse stressors associated with more alcohol consumption Spouse, financial and friend stressors associated with more drinking problems *Non-problem drinkers:* Home and neighbourhood stressors, and financial stressors associated with less alcohol consumption Friend stressors associated with less alcohol consumption
Brennan & Moos (1991)	Non problem drinkers: 305 women and 304 men Late-onset problem drinkers: 90 women and 139 men Early-onset problem drinkers: 106 women and 369 men	55 - 65 years	Chronic stressors: Life Stressors and Social Resources Inventory examining the following types of stress: Health Home Finances Work Spouse Children Family Friends	Health and Daily Living Form Drinking Problems Index	*Early-onset drinkers:* Early-onset drinkers reported more friend stressors than late-onset drinkers *Late-onset drinkers:* Late-onset drinkers reported more home and neighbourhood, friend and financial stressors than non-problem drinkers

Table 2 (Continued)
Studies of chronic stressors

Cross-sectional findings

Authors	N	Age	Stressors measure	Alcohol measures	Results
Brennan, Moos & Mertens (1994)	Problem drinkers : 184 women and 475 men	55-65 at baseline	Chronic stressors: Life Stressors and Social Resources Inventory examining the following types of stress: Health Spouse Friends	Health and Daily Living Form Drinking Problems Index	*Total Sample:* Spouse stressors associated with more drinking problems Friends stressors associated with more drinking problems
Brennan, Schutte & Moos (1999)	621 women and 941 men	55-65 at baseline	Chronic stressors: Life Stressors and Social Resources Inventory examining the following types of stress: Health Financial Spouse	Health and Daily Living Form Drinking Problems Index	*Women:* Health and financial stressors associated with less quantity and frequency of alcohol consumption Spouse stressors associated with higher and lower number of drinking problems *Men:* Health stressors associated with less quantity and frequency of alcohol consumption, but also higher quantity of alcohol consumption and drinking problems Financial stressors associated with less quantity and frequency of alcohol consumption, and more drinking problems Spouse stressors associated with more drinking problems
Lemke, Schutte, Brennan & Moos (2008)	Problem drinkers: 89 women and 262 men Non-problem drinkers: 258 women and 222 men	62 - 78 years	Chronic Stressors: Life-history questionnaire measuring *exposure* and *reactivity* to stress in: Family Financial/legal Workplace Health	Drinking Problems Index	*Men:* *Problem drinkers:* Exposure to family, financial/legal, and work stressors associated with more drinking problems Reactivity to family, financial/legal, work and health stressors associated with more drinking problems *Women:* *Problem drinkers:* Exposure to family, financial/legal, and work stressors associated with more drinking problems Reactivity to family, financial/legal, work and health stressors associated with more drinking problems

Table 2 (Continued)
Studies of chronic stressors

Cross-sectional findings

Authors	N	Age	Stressors measure	Alcohol measures	Results
Moos, Schutte, Brennan & Moos (2004)	529 women and 762 men	55-65 at baseline	Financial stressors: Life Stressors and Social Resources Inventory	Health and Daily Living Form Drinking Problems Index Lifetime drinking questionnaire	*Women:* Financial stressors associated with more drinking problems
Welte & Mirand (1995)	1535 women and 790 men	60 and older	Chronic stressors: Daily Hassles Scale	Drinking questionnaire	Chronic stress associated with more drinking problems

Longitudinal findings

Authors	N	Age	Duration	Stressor measures	Alcohol measures	Results
Brennan & Moos (1996)	174 women and 407 men	50-60 at baseline	4 Years T1: baseline T2: 4 years	Chronic stressors: Life Stressors and Social Resources Inventory examining the following types of stress: Health Spouse Friend	Health and Daily Living Form Drinking Problems Index	*Total Sample:* T1 to T4: Spouse stressors in T1 predicted increased drinking problems at T4 Friend stressors in T1 predicted increased drinking problems at T4 Friend stressors in T1 predicted increased drinking problems at T4 among participants with fewer drinking problems at T1 Friend stressors in T1 predicted decreased drinking problems at T4 among participants with more drinking problems at T1
Brennan, Moos & Mertens (1994)	Problem drinkers : 184 women and 475 men.	55-65 at baseline	1 year. T1: baseline T2: 1 year	Chronic stressors: Life Stressors and Social Resources Inventory Health Spouse Friends	Health and Daily Living Form Drinking Problems Index	Health stressors predicted decreased alcohol consumption in light drinkers and increased alcohol consumption in heavy drinkers Friend stressors predicted increased alcohol consumption in married participants and decreased alcohol consumption in unmarried participants

Table 2 (Continued)
Studies of chronic stressors

Longitudinal findings

Authors	N	Age	Duration	Stressor measures	Alcohol measures	Results
Brennan, Schutte & Moos (1999)	621 women and 941 men	55-65 at baseline	4 years T1: Baseline T2: 1 year T3: 4 years	Chronic stressors: Life Stressors and Social Resources Inventory examining the following types of stress: Health Financial Spouse	Health and Daily Living Form Drinking Problems Index	*Women:* T1 to T2: Health stressors in T1 predicted reduced quantity of alcohol consumption at T2 Financial stressors in T1 predicted reduced frequency of alcohol consumption at T2 T2 to T3: Health stressors in T2 predicted reduced quantity and frequency of alcohol consumption at T3 Financial stressors in T2 predicted reduced frequency of alcohol consumption and increased drinking problems at T3 *Men:* T1 to T2: Financial stressors in T1 predicted reduced quantity of alcohol consumption at T2 Spouse stressors in T1 predicted increased drinking problems at T2 T2 to T3: Financial stressors in T2 predicted reduced quantity and frequency of alcohol consumption at T3
Moos, Schutte, Brennan & Moos (2004)	529 women and 762 men	55-65 at baseline	10 years T1: Baseline T2: 1 year T3: 4 years T4: 7 years T5: 10 years	Financial stressors: Life Stressors and Social Resources Inventory	Health and Daily Living Form Drinking Problems Index Lifetime drinking questionnaire	Associations were not significant
Schutte, Brennan & Moos (1998)	Stable non problem drinkers: 100 women and 97 men Late-onset problem drinkers: 32 women and 35 men	55-65 at baseline	7 years T1: Baseline T2: 1 year T3: 4 years T4: 7 years	Chronic stressors: Life Stressors and Social Resources Inventory examining the following types of stress: Health Spouse Financial Medical conditions: Life Stressors and Social	Health and Daily Living Form Drinking Problems Index	Associations were not significant

Resources Inventory
13 recently diagnosed conditions

Table 2 (Continued)
Studies of chronic stressors

Longitudinal findings

Authors	N	Age	Duration	Stressor measures	Alcohol measures	Results
Shaw, Agahi & Krause (2011)	1411 women and 941 men	65 and older	14 year Six waves – multiple periods 2.54 observations per respondent	Financial stress: Financial survey	Drinking questionnaire	*Men:* Changes in financial stress over the assessed time period predicted higher alcohol consumption *Women:* Changes in financial stress over the assessed time period associated with reduced likelihood of heavy drinking *Total sample:* Changes in financial stress over the assessed time period associated with reduced likelihood of heavy drinking in participants with high education Changes in financial stress over the assessed time period predicted higher alcohol consumption in participants with low education

Discussion

Acute stressors

This review showed that the majority of the cross-sectional studies indicated a positive association between life stressing events and alcohol consumption and drinking problems. Longitudinal findings provided further support for this relationship, as the majority of these studies showed that life-stressing events predicted increased drinking problems over time.

It is interesting to note that the majority of the studies that showed significant findings for this relationship used the Life Stressors and Social Resources Inventory (Moos & Moos, 1994) to assess life stressing events, while studies that showed no significant findings used non-standardized surveys or modified versions of standardized questionnaires. It has been suggested that different life events may have a differential impact on drinking behaviour which may influence the score reflected in global life events measures, creating a methodological problem to address when using non-standardized measures that do not account for this effect (Brennan et al., 1994; Brennan et al., 1999). One of the studies examined in this review addressed this problem by designing a checklist dividing stressors into categories reflecting the associated social roles (e.g., spouse, parent, friend, among others) and participants were asked to rank-order the selected roles according to their subjective importance (Krause, 1995). Furthermore, participants were asked whether the events were desired or undesired, providing additional information on the subjective experience of these events. Despite these provisions, this study demonstrated no significant

findings, suggesting that alcohol consumption was not significantly affected by the experience of life stressing events.

Another study in this review highlighted the importance of separately assessing the influence of health and non-health stressors, as stressors in these categories showed different correlations with alcohol measures (Brennan et al., 1994). When health events were considered separately, the majority of the cross-sectional studies indicated that they were associated with less alcohol consumption. However, the results of longitudinal studies were not as consistent, with health events predicting changes in alcohol consumption in both directions.

Interestingly, hospitalization was associated with a short-term decrease in consumption after the event, followed by increased drinking (Perreira & Sloan, 2001). This initial change in drinking behaviour could be a response to a new environment that restricts or controls access to alcohol, a response to health problems disrupting normal patterns of socializing, a consequence of negative interactions with medications, or a behavioural response to the physician's instructions. However, over time, the effect of these health stressors decrease and individuals tend to return to their previous levels of alcohol consumption.

Studies examining bereavement showed that events such as the loss of a spouse, friend or child were consistently associated with higher levels of alcohol consumption. An interesting finding from one of the studies was that the loss of a spouse, while associated with alcohol consumption, was unrelated to self-reported measures of grief and anxiety (Byrne et al., 1999). This suggests that the emotional distress experienced by participants was not the underlying cause of changes in alcohol consumption, and a more complex relationship exists

between these two variables (Byrne et al., 1999). Changes in alcohol measures following the death of a spouse or partner may then be a response to isolation and changes in the immediate social environment (Glass et al., 1995).

In the case of marriage and divorce, too few studies examined the impact of these events on alcohol measures. Only two studies examined the relationship between divorce and drinking measures, and the results were inconsistent, showing that this event was associated with decreased and increased alcohol consumption. Of course, while divorce is considered here to be an acute life event stressor, it is likely that in many cases the process of divorce reflects a chronic stressor, with unhappiness and tension often being present for an extended period, and often continuing for years afterwards as issues such as child custody need to be resolved. Similarly, only two studies examined the impact of marriage on alcohol measures, with mixed results associating alcohol consumption to increased and decreased alcohol consumption. Like divorce, marriage may represent significant ongoing changes in the social environment, rather than a single event. In addition, the partner may hold similar views of alcohol consumption and this may have an impact on the individual's drinking behaviour, as marriage may represent the gain of a drinking partner or a person who restricts access to alcohol consumption (Byrne et al., 1999). Support for this hypothesis was found in studies showing that alcohol consumption was associated with the partner's drinking behaviour and attitudes towards alcohol (Akers, La Greca, Cochran et al., 1989; Moos, Schutte, Brennan et al., 2009).

Regarding work-related events, two broad hypotheses have been proposed to explain the relationship between job loss and changes in alcohol use. The first one suggests that alcohol

consumption increases following the loss of a job due to the use of alcohol to reduce the associated stress. The second hypothesis suggests that job loss reduces available income and causes changes in the individual's social environment, which in turn reduces the opportunities for alcohol consumption and results in a reduction in alcohol measures (Gallo et al., 2001). However, too few studies have examined this relationship, and those that have, showed inconsistent findings. Job loss and retirement were shown to predict both steady drinking and increased alcohol consumption. In addition, only one cross-sectional study that met the review inclusion criteria was identified, and it supported the association between loss of job and high alcohol consumption.

Chronic stressors

When compared to acute stressors, there were both fewer studies and less support for the relationship between chronic stressors and alcohol measures. The majority of studies examining chronic stressors focused on ongoing spouse, financial and health stressors.

Three of the four cross-sectional studies that examined spouse stressors showed that this stressor was associated with more drinking problems but the findings from the longitudinal studies were inconsistent. Two of the studies showed that spouse stressors were associated with more alcohol consumption and drinking problems while two studies showed no significant findings. Although all the studies used the Life Stressors and Social Resources Inventory to assess spouse related stressors, the inconsistent findings suggest that other factors may moderate this relationship.

Cross-sectional studies examining the relationship between financial stressors and alcohol measures showed consistent findings suggesting that this measure was associated with drinking problems and late-onset drinking. However, the findings of longitudinal studies showed inconsistencies, with only two of the studies indicating significant findings, and these showed mixed results. A number of hypotheses have been proposed to explain this relationship, suggesting that finances and income may be associated to other constructs such as time available for drinking, social demands for alcohol consumption, educational attainment, or cultural use of alcohol for career advancement (Platt et al., 2010). These associations remain to be examined in order to more fully understand the relationship between financial stress and alcohol measures.

The majority of the studies that examined chronic health events showed no significant findings, and those that did, showed inconsistent results. Chronic health stressors were found to be associated with both increased and decreased alcohol consumption. These contradictory findings may be partially explained by the results of one of the longitudinal studies, which showed that the relationship between chronic health stressors and alcohol measures was moderated by drinking history. In addition, as discussed in the previous section, factors such as reduced social interactions, negative side effects from medication and other environmental factors may account for the inconsistencies (Perreira & Sloan, 2001). In addition, future studies need to examine the recency and chronicity of health problems, as well as examining this relationship among lighter and heavier drinkers (Brennan et al., 1994).

In the case of work stressors there were only three studies, and one showed that work stressors were related to the degree of problem drinking in problem drinkers (Lemke et al., 2008). Given this limited number of studies it is not possible to draw any clear conclusions. However, given that many older adults would be retired, work stress is less likely to be an important domain than the other domains examined in this review.

All three cross-sectional studies that examined friend stressors and two of the three studies that examined family stressors showed that these stressors were associated with drinking problems in problem drinkers. Home and neighbourhood stressors were only examined in two studies but were significantly correlated with alcohol consumption, late-onset drinking and drinking problems. Overall, family, friends, home and neighbourhood are known to provide social support and have a stress-buffering effect, but these effects appear to be reversed if family, friends and/or home and neighbourhood become the source of the stress (Boardman, Finch, Ellison et al., 2001; Stockdale, Wells, Tang et al., 2007). However, given the small number of studies that have examined friend, family and home stressors, further studies are needed.

Conclusions

This review evaluated 22 studies that examined acute and/or chronic stressors in relation to alcohol. Overall, there was some support for the relationship between acute stressors and alcohol use. Support for the association between stress and alcohol use in older adults, across both cross sectional and longitudinal studies, was found in the case of life stressing

events and bereavement. However, this was not always in the direction of increased alcohol use or drinking problems. It is noteworthy that several of the studies included in this review examined the same parent sample (Brennan & Moos, 1990; Brennan & Moos, 1991; Brennan et al., 1994; Brennan et al., 1999; Moos et al., 1990). Therefore, the extent to which their findings can be considered as independent evidence for these relationships is limited. It is possible that the apparent absences of effect, or conflicting findings may have occurred because the authors did not always examine the same stressors in each study.

It is also important to consider the significant research design and data analytic issues that challenge our ability to discern from existing research the true relationship between individual stressor types and drinking behavior outcomes. Several of these studies utilised a multivariate model to predict drinking behaviour and it is noteworthy that, in multiple regressions, shared variance among predictive stressor variables may suggest that certain stressors have a stronger influence than others, or even overshadow the effect of other stressors. Furthermore, the great variance in the timeframe of studies suggests that it is difficult to compare these findings, as the effects of stressors over drinking behaviour may be affected by the time elapsed between measurements. It is also possible that some types of stressors have a more proximal influence over alcohol consumption than others. Furthermore, the majority of studies included in this review relied on different measures of stress, limiting the comparisons that can be drawn. In the case of chronic stressors, this limitation is further accentuated by the assessment of several categories of stress (e.g., family, work, and partner). In addition, for some domains, too few studies have been conducted so no clear conclusions could be drawn.

Despite these limitations presenting significant challenges to interpret the body of research that has examined the relationship between stress and alcohol use, this review revealed seven moderating factors, including gender and avoidance coping[2]. Taken as a whole, the evidence suggests that gender moderated the relationship between stressors and alcohol measures. However, this moderating effect varied from study to study. One study showed that financial stressors predicted increased alcohol consumption in women, but decreased consumption in men (Shaw et al., 2011). Health events were also shown to predict decreased alcohol consumption and drinking problems in men but this association was not significant for women (Brennan et al., 2011; Moos et al., 2004). Another study showed that spouse stressors predicted increased alcohol consumption only in men, while chronic health stressors predicted reduced alcohol consumption only in women (Brennan et al., 1999). Inconsistent associations were reported for life stressing events in different studies, with some showing that this variable predicted increased alcohol consumption and drinking problems only in men (Welte & Mirand, 1995), and others showing that it predicted increased drinking problem only in women (Brennan et al., 1999). Furthermore, widowhood predicted greater alcohol consumption only in men (Glass et al., 1995; Perreira & Sloan, 2011), while being the victim of a crime predicted increased consumption in men but decreased consumption in women (Glass et al., 1995). Finally, child-related stress was associated with increased drinking problems only in men (Brennan & Moos, 1990). Thus further studies are needed.

[2] Other moderators such as problem drinking, drinking history, marital status, and education are discussed in the final chapter.

Limited support was found for the moderating role of avoidance coping, as only one study showed that this variable was a significant moderator of the relationship between stress and alcohol measures (Brennan & Moos, 1996). The findings of this study showed that individuals who relied heavily on avoidance coping were more likely to consume alcohol when faced with stressful events and circumstances. Surprisingly, none of the reviewed studies that focused exclusively on older adults tested the possible moderating effect of alcohol expectancies, despite other studies with participants ranging from 17 to 91 revealing that alcohol expectancies moderated the relationship between stress and alcohol use (e.g., Cooper et al., 1990; Cooper et al., 1992).

Support for the view that older persons may use alcohol to alleviate their stress, across both cross sectional and longitudinal studies, was found in the case of life stressing events and bereavement. For the other examined domains, the findings were either inconsistent or there were too few studies to draw clear conclusions. These findings warrant further examination of the association between acute and chronic stressors and alcohol use. In addition, the findings of this review showed that gender and avoidance coping moderated the relationship between stressors and alcohol measures. A study integrating these variables and examining their relationship with stress and alcohol use would improve upon prior research by more fully describing these associations.

CHAPTER 4

STUDY 1: STRESS AND ALCOHOL USE; THE MODERATING ROLE OF AGE, GENDER, AVOIDANCE COPING AND ALCOHOL EXPECTANCIES

The review of the literature has shown some support for the relationship between acute and chronic stress and alcohol measures (e.g., alcohol consumption, drinking problems). This chapter provides a report of a cross-sectional study examining the association between acute and chronic stressors and alcohol measures (i.e., weekly alcohol use, drinking problems, and harmful drinking), and the moderating role of age, gender, avoidance coping, and alcohol expectancies. As concluded in Chapter 3, although there is some evidence showing a significant association between stress and alcohol consumption in older adults, the evidence is still inconsistent and therefore further research is needed to more fully understand this relationship. The focus of this study was on the role of four moderators: age, gender, avoidance coping, and positive and negative expectancies.

The association between age and alcohol consumption has been extensively researched, and a review of the literature on alcohol use showed that, although older adults on the whole drink less than their younger counterparts, they may be more susceptible to negative consequences of using alcohol to alleviate stress, including greater mental health issues and medication use (Heuberger, 2009).

In addition to age, some studies have shown that gender moderates the relationship between stress and alcohol use (Armeli et al., 2000; Brennan & Moos, 1990; Cooper et al., 1992; Laurent et al., 1997; Moos et al., 1990; Moos et al., 2004). However, the direction of

this moderating effect is not consistent. One study showed that men reported stronger associations between alcohol use and stress (Laurent et al., 1997), while two other studies revealed that the association between stress and drinking problems was stronger in women (Brennan & Moos, 1990; Moos et al., 2004).

A third moderator of the association between stress and alcohol use suggested by some studies is avoidance coping. Some studies have shown that avoidant coping moderates this relationship, as individuals who rely heavily on avoidant coping strategies are more likely to consume alcohol (Brennan & Moos, 1996; Cooper et al., 1992; Veenstra et al., 2007) and report drinking problems (Cooper et al., 1990; Cooper et al., 1992; Laurent et al., 1997) when experiencing greater levels of stress.

In addition to avoidance coping, alcohol expectancies have also been shown to moderate the association between stress and alcohol use (e.g., Armeli et al., 2000; Cooper et al., 1990; Cooper et al., 1992). One study showed that positive alcohol expectancies moderated the relationship between work stress and drinking to cope (Cooper et al., 1990). Another study showed that positive alcohol expectancies moderated the relationship between life stressing events and both alcohol consumption and alcohol problems (Cooper et al., 1992). A third study showed that positive expectancies moderated the association between stress and alcohol consumption (Armeli et al., 2000). In addition, this study showed unexpected results suggesting that, in some cases, negative expectancies moderated avoidant coping in relation to the stress-drinking association (Armeli et al., 2000). Given these findings, both positive and negative expectancies were examined in this study.

Acute stressors were measured using the Social Readjustment Rating Scale (Holmes & Rahe, 1967), a well-validated measure of significant life events occurring in the previous 12 months. Chronic stressors (e.g., home and neighbourhood, friend, spouse and partner, financial, and work stressors) were measured using the Life Stressors and Social Resources Inventory (Moos & Moos, 1994), a well-validated questionnaire providing a representation of ongoing life stressors.

In order to obtain a comprehensive assessment of alcohol use, three measures were employed: weekly alcohol consumption, drinking problems and harmful drinking. Based on past research, it was hypothesised that overall, older participants would report less alcohol consumption drinking problems and harmful drinking (Breslow & Smothers, 2004; Temple & Leino, 1989; Merrick et al., 2008). Secondly, it was expected that men would report greater alcohol consumption, drinking problems and harmful drinking than women (Lemke et al., 2008). Lastly, it was hypothesised that participants who experienced greater levels of stress would report higher levels of alcohol consumption, drinking problems and harmful drinking (Aseltine & Gore, 2000; Brennan & Moos, 1990; Brennan et al., 1994; Brennan et al., 1999; Cole et al., 1990; Liu et al., 2009; Mattoo et al., 2009; Ragland et al., 1995; Rutledge & Sher, 2001; Skaff et al., 1999).

The second aim of Study 1 was to examine whether gender and age moderated the relationship between stress and alcohol use. In the case of gender, no specific hypothesis was made as previous findings have been inconsistent. In the case of age, it was hypothesised that older participants would report greater alcohol use in relation to stress

than their younger counterparts, in line with studies suggesting a greater susceptibility to life stressors in older adults (Heuberger, 2009; Lin et al., 2010; Rodriguez et al., 2010).

The third aim of Study 1 was to examine whether avoidance coping and alcohol expectancies were associated to alcohol consumption. Based on previous research, it was expected that greater reliance on avoidance coping would be associated with greater alcohol use, drinking problems and harmful drinking (Moos et al., 1990; Timko et al., 2005). In addition, it was hypothesised that positive expectancies would be associated to greater alcohol use, drinking problems and harmful use (Anderson et al., 2011; Ham et al., 2010; Larsen et al., 2012; Patrick et al., 2010; Satre & Knight, 2001, Young et al., 2006), while the opposite association would be found for negative expectancies of aggression and cognitive impairment (Nicolai et al., 2012; Pabst et al., 2010; Satre & Knight, 2001).

The fourth aim of Study 1 was to test the moderating role of avoidance coping and alcohol expectancies in the relationship between stress and alcohol use. Based on previous studies it was expected that both positive expectancies (Armeli et al., 2000; Cooper et al., 1990; Cooper et al., 1992) and avoidance coping (Brennan & Moos, 1996; Cooper et al., 1990; Cooper et al., 1992; Laurent et al., 1997; Veenstra et al., 2007) would moderate this relationship. Specifically, it was hypothesised that participants with a greater tendency to rely on avoidance coping and/or who held more positive beliefs regarding drinking outcomes would report greater alcohol use in relation to stress. Given that only one study has examined the moderating role of negative expectancies, the interaction between this variable and stress in relation to alcohol measures was also tested.

In addition, the interaction of alcohol expectancies with age and gender were examined. The decision to test this interaction was based on previous studies showing age as a moderator of the association between alcohol use and expectancies (e.g., Dunn & Goldman, 1998; Leigh & Stacy, 2004; Pabst et al., 2010; Nicolai et al., 2012), and gender as a moderator of the association between positive alcohol expectancies and alcohol use (e.g., Armeli et al., 2000; Cooper et al., 1992).

Method

Sample

Four hundred and fifteen adults participated in this study. The sample included 123 men (mean age 44.21, *SD*= 18.06) and 292 women (mean age 42.76, *SD*= 17.03). The participants were aged between 18 and 87 years. Thirty-one per cent of participants were recruited from social clubs, organisations around the University, and interest groups for older adults, all located in the metropolitan suburbs of Melbourne, Victoria, while the remaining sixty-nine per cent were recruited online through advertisements placed in social networking websites (e.g., facebook).

Participants were asked to provide demographic information, which included date of birth gender, country of birth, first language, education level, and work and relationship status. The large majority of participants were born in Australia (76% of men and 80% of women) and spoke English as a first language (90% of men and 96% of women). Close to half the participants had tertiary studies (44% of men and 52% of women), and the majority were

employed (68% of men and 75% of women), and were in a relationship with a partner or a spouse (71% of men and 65% of women). This information is summarised in the Table 3.

Table 3
Demographic Characteristics of the Sample

Variables	**Men** ***N*= 123**	**Women** ***N*= 292**
Country of birth (frequencies)		
Argentina	2	-
Australia	94	234
Austria	-	2
Bosnia	-	1
Brazil	-	1
Canada	1	2
Chile	1	-
Colombia	1	-
Czechoslovakia	-	1
Denmark	2	-
Fiji	1	-
Germany	1	2
Hong Kong	1	-
Hungary	1	-
India	1	1
Iraq	-	1
Malaysia	-	2
Netherlands	1	1
New Zealand	3	6
Philippines	-	2
Serbia	-	1
Singapore	-	1
South Korea	-	1
UK	9	25
USA	-	2
Venezuela	4	6
First language (frequencies)		
Arabic	-	.34%
Bengali	.80%	-
Cantonese	.80%	-
English	90.24%	95.54%
Farsi	.80%	-
Filipino	-	.34%
German	-	.34%
Hindi	.80%	.34%
Serbian	-	.68%
Spanish	6.50%	2.39%
Education level		
N/A	.81%	-
Primary	2.43%	.34%
Secondary	30.89%	28.08%
Tertiary	43.90%	52.39%
Post-graduate	21.95%	19.17%
Work status		
Employed	68%	75%
Unemployed or retired	32%	25%
Relationship status		
In a relationship	71%	65%
Single	29%	35%

Materials

Acute stress - Social Readjustment Rating Scale (SRRS)

The Social Readjustment Rating Scale (SRRS) (Holmes & Rahe, 1967) is one of the most widely used and researched stress assessment instruments (Hobson, Kamen, Szostek et al., 1998). The SRRS was used to assess acute stressors through 43 items reflecting significant life events occurring in the previous 12 months, and measuring the required social readjustment or level of stress associated with these events. Each of these events was selected based on the degree of change required, not on psychological, emotional, or social desirability.

Studies have provided evidence for the validity of the SRRS by showing significant correlations between this scale and other measures of stress (Horowitz, Schaefer, Hiroto et al., 1977; Paykel, Prussoff, & Ulenhuth, 1971). In addition, greater levels of stress as reflected in the SSRS have been correlated with several physical illnesses and life difficulties such as heart attacks, renal complications diabetes, multiple sclerosis, tuberculosis, complications of pregnancy and birth, decline in academic performance, employee absenteeism, and other difficulties (Dinis, Schor, & Blay, 2006; Masuda & Holmes, 1967; Holmes & Rahe, 1967; Rahe & Arthur, 1978; Rahe, Biersner, Ryman et al., 1972; Scully, Tosi, & Banning, 2000). Internal consistency is not appropriate for this scale as the items reflect a range of different and unrelated events (Holmes & Rahe, 1967).

Chronic stress - Life Stressors and Social Resources Inventory Adult Form (LISRES-A)

The Life Stressors and Social Resources Inventory (LISRES-A) (Moos & Moos, 1994) presents an integrated representation of ongoing life stressors, designed as a questionnaire to evaluate life stressors in healthy adults aged 18 years and older. In this study, the LISRES-A was used to measure chronic stressors, including home, spouse and partner, work, friend and financial stressors. Table 4 provides a description of the aspects examined by each selected stressor domain.

Table 4
LISRES-A Life Stressors Scales and Descriptions

Home/Neighbourhood	Problems with physical condition of home and neighbourhood.
Financial	Financial difficulties or inability to afford basic necessities.
Work	Problems with supervisor or co-workers; pressure at work; unpleasant physical conditions at work.
Spouse/Partner	Interpersonal problems with spouse or partner
Friends	Interpersonal problems with friends

The items are answered using a 5-point response scale, according to how well the item reflects a current stressful circumstance. The items included in the stressors scales were selected based on their conceptual and empirical relation to each dimension. Overlap was avoided by associating each item with only one dimension.

These scales have shown to have moderate to high internal consistency, with Cronbach's alphas ranging from .63 (Work stressors) to .93 (Financial stressors) (Moos & Moos, 1994); and the results obtained through their use have been stable over time. Studies have validated this instrument showing that greater levels of chronic stress as reflected in the

LISRES – A were correlated with measures of stress (Moos, Fenn, & Billings, 1988) and measures of health and well-being, such as alcohol consumption, coping, problem drinking, depression, reduced self-confidence, help-seeking behaviour (Brennan & Moos, 1990; Brennan & Moos, 1991; Humphreys, Finney, & Moos, 1994; Louw, Mokhosi, & Van den Berg, 2012; Moos, Fenn, Billings et al., 1989; Moos, Schutte, Brennan et al., 2011).

Harmful alcohol use - Alcohol Use Disorders Identification Test (AUDIT)

The AUDIT is a screening instrument designed to identify people who engage in excessive drinking. It is a well-validated screening instrument, consisting of 10 questions about recent alcohol use, alcohol dependence symptoms and alcohol-related problems. It has been widely used in the research and clinical fields, and internationally standardised (Babor, Higgins-Biddle, Saunders et al., 2001). The instrument identifies levels of harmful drinking, defined as a pattern of alcohol consumption resulting in negative consequences to the user's mental and physical health. Social consequences are also considered to be relevant for this category. Some of the symptoms assessed by the AUDIT are a strong desire to consume alcohol, impaired control over its use, persistent drinking despite harmful consequences, a higher priority given to drinking than to other activities and obligations, increased alcohol tolerance, and a physical withdrawal reaction when alcohol use is discontinued.

Strong correlations have been found between the AUDIT and the Michigan Alcohol Screening Test (.88) and the CAGE questionnaire (.78) (Babor et al., 2001). Furthermore, studies show that the AUDIT has high levels of internal consistency and test-retest reliability even when modifying the order and wording of the items, which makes this instrument

particularly useful for researchers integrating its items to other questionnaires (Babor et al., 2001).

Weekly alcohol consumption - Adult Health and Daily Living Form (HDLF-A)

The HDLF-A (Moos, 1990) is a structured assessment procedure that can be used in healthy adults to evaluate alcohol consumption and drinking problems. The items included in this study consisted of a composite index of six items measuring quantity and frequency of alcohol consumption, defined as the number of milligrams of ethanol consumed in the previous week. The second scale consisted of a list of 8 items describing the areas in which drinking problems have been experienced in the past. The total score of this scale reflects the number of areas that have been affected by behavioural problem associated to drinking. Internal consistency of this scale was not calculated as the items address different dimensions of drinking behaviour.

Avoidance coping - Coping Responses Inventory-Adults (CRI-A)

The CRI-A (Moos, 1993) is a standardised and psychometrically sound instrument designed to measure different types of coping responses to stressful life circumstances in adults. The items included in this study consisted of two 6-item scales to measure avoidance coping, using a four-point scale varying from “not at all” to “fairly often” according to their reliance on different strategies to cope with a specific and recent stressor. The first scale measured cognitive avoidance strategies (cognitive avoidance) while the second scale measured behavioural avoidance strategies (emotional discharge). The first scale reflects the tendency of individuals to avoid thinking about a problem, and the second scale reflects the tendency to reduce tension by expressing negative feelings.

These scales have shown to have moderate to high internal consistency, with Cronbach's alphas ranging of .58 (emotional discharge) to .70 (cognitive avoidance) (Moos, 1993); and longitudinal studies have shown high levels of stability (Swindle, Cronkite, & Moos, 1989; Moos, 1993). This instrument has been validated by studies revealing avoidance coping as measured by the CRI are significantly correlated with measures of alcohol consumption (Schutte et al., 1998), depression (Billings, Cronkite, & Moos, 1983; Foster & Gallagher, 1986), and stress (Moos et al., 1990). Following the methodology of previous studies, the two selected scales were combined into a single avoidance coping scale (Moos, 1993, Moos et al., 2010; Moos & Holahan, 2003).

Positive and negative alcohol expectancies - Comprehensive Alcohol Expectancy Questionnaire (CAEQ)

The Comprehensive Alcohol Expectancies Questionnaire (CAEQ) is a structured psychometric instrument describing the positive and negative expectancies an individual may have towards alcohol consumption. Using this scale, participants indicate their level of agreement using a five-point Likert-scale ranging from "not at all" to "definitely" (Nicolai et al., 2010). Studies have revealed that these subscales have a high internal consistency: positive expectancies of social assertiveness (α=. 92), tension reduction (α=. 79) and sexual enhancement (α=. 75); and negative expectancies of cognitive impairment (α=. 83); and aggression (α=. 84); (Nicolai et al., 2010).

The CAEQ has been validated in community and clinical samples, with ages ranging from 18 to 65 years old. Through the use of regression models, the CAEQ has been found to predict

alcohol use over and beyond age and gender with adequate temporal stability over a test retest interval of 7 and 14 days (Nicolai et al., 2010).

Following the procedure of Armeli et al. (2000) the positive expectancies scales were combined. Studies have shown that positive expectancies scales are highly intercorrelated and represent a single common variable (Cooper et al., 1988; Cooper et al., 1992). Furthermore, evidence suggests that this combined measure is a moderator of the relationship between stress and alcohol consumption (Cooper et al., 1992). Negative expectancies were examined separately, as there were only two scales, and previous researchers have advised to examine their effects separately (Armeli et al., 2000; Brown et al., 1995)

Procedure

Ethics approval to conduct this study was granted by the Deakin University Ethics Committee. Following approval, letters outlining the study were sent to the directive and management committees of 34 organisations, including cultural and linguistically diverse community groups, universities of the third age, senior citizens groups and local meet-up groups. Attached to these letters was evidence of the ethics approval and a poster calling for participants to be posted on each group's notice board. In addition, four groups agreed to have the researchers speak directly to the members and invite them to participate. Those group members who agreed to participate by signing a written consent form were given evidence of the ethics approval and a plain language statement, and received a copy of the questionnaires and participated in this study. The questionnaire was available in both hard copy and online. The hard copy version consisted of a package including the questionnaire

(Appendix A), a plain language statement (Appendix B), a consent form (Appendix C) and a paid envelope. The online version was available on a website hosting the questionnaire, a plain language statement and a consent form.

Participants were also recruited online by posting paid advertisements in a social networking website (e.g., facebook). These advertisements invited users to participate in an Australian study on alcohol consumption. Those participants that accessed the website were provided with a digital copy of the ethics approval and a plain language statement. Only those who agreed to participate by signing a digital consent form were granted access to the online questionnaires and participated in this study.

The plain language statement included the contact information of DirectLine, a Victorian mental health initiative where participants could seek help from if they had any concerns about their alcohol consumption as a result of the study. All personal data and details of the participants were coded and only the researchers were able to identify the participants. Once the study was completed, all personal information identifying the participants was deleted.

Data Analysis

In line with previous research, it was expected that older participants and men would report less alcohol consumption and harmful drinking. Furthermore, it was expected that participants with greater levels of stress would report more alcohol use. As to the moderating effect of age and gender, previous research has shown that the direction of this

moderating effects were not consistent. Therefore, it was expected that significant moderating effects would be found for age and gender, but no clear expectations as to the direction of these effects was articulated.

Furthermore, it was expected that greater reliance on avoidance coping would be associated with greater alcohol use, drinking problems and harmful drinking. In addition, it was hypothesised that positive expectancies would be associated with greater alcohol use, while the opposite association would be true for negative expectancies of aggression and cognitive impairment. Lastly, it was hypothesised that participants with a greater tendency to rely on avoidance coping and/or who held more positive beliefs regarding drinking outcomes would report greater alcohol use in relation to stress.

To test these hypotheses, a regression was run for each of the six measures of stress in relation to each alcohol measure. The main effects of age and gender were entered at Step 1. The main effect of stress (life events, home, partner, friends, financial and work stressors) was entered at Step 2 of the corresponding regression. At Step 3, the two-way interactions between each category of stress and age; and between each category of stress and gender were entered. The main effect of avoidance coping, positive expectancies and negative expectancies of cognitive impairment and aggression were entered at Step 4. At Step 5, the interactions terms between each measure of stress, and avoidance coping, the interaction between each measure of stress and age and gender, as well as the interactions between each measure of stress, and both positive and negative alcohol expectancies (e.g., aggression and cognitive impairment) were entered at Step 5. Similarly the interactions between avoidance coping and both age and gender were entered at this step. Also at Step

5, the interaction terms between positive expectancies and age, as well as positive expectancies and gender were entered. Lastly, the interaction terms between both measures of negative expectancies (e.g., aggression and cognitive impairment) and both age and gender were entered at Step 5. In order to control for the larger number of analyses and reduce the probability of a Type 1 error, the significance level for all analyses was set at $p<.01$.

In addition, although an examination of the higher order interactions would have been interesting and would provide a more complete picture of the possible moderating effects, these were not examined given the current sample size. Moreover, these have been found to be significant in only one of the early studies (Cooper et al., 1992). The findings of this study suggested that the positive expectancies moderated the interaction between life events and gender in relation to alcohol use. Furthermore, active coping moderated the interaction between chronic stress and gender in relation to alcohol use and alcohol problems (Cooper et al., 1992).

To determine the presence of moderating effects, two conditions were required. Firstly, the prediction of the dependent variable had to significantly improve due to the amount of variance explained by the two-way interactions. Secondly, these interactions had to reach statistical significance, set at $p<.01$. In order to reduce multicollinearity among the interaction terms and variables, all variables were centred (Aiken & West, 1991).

Results

Preliminary Analyses

The initial data set consisted of 452 cases. However, in 37 cases, more than 50% of the data were missing so these were removed from the sample. Upon examination, it was shown that these cases corresponded to individuals who had accessed the online questionnaire and provided some demographic information but did not proceed to complete the survey. Therefore, only a total of 415 cases were subject to data screening. The data were screened for accuracy of data entry, missing data and to assess assumptions of multiple regressions. These variables were examined separately for the 123 men and 292 women (Tabachnick & Fidell, 2001).

Missing data were randomly spread across all items and variables, except the avoidance coping and alcohol expectancies scales, which had more than 5% of missing data. These scales were retained, as data still appeared randomly spread across participants. Missing data were replaced using the expectation maximisation method, in order to estimate a probable distribution of missing data given the current model, and then re-estimating the model based on these completions (Tabachnick & Fidell, 2001).

Violations of the assumption of normality were examined for all variables, separately for men and women. The Shapiro-Wilk test showed that the majority of variables were not detected in some scales for both men and women, and these values were included in Table 5.

Table 5

Skewness and Kurtosis for All Scales in Men and Women

	Men					
	Skewness	**SE**	**Sig.**	**Kurtosis**	**SE**	**Sig.**
Age	.016	.218	.07	-1.447	.433	-3.34
Harmful drinking	.903	.218	4.14	-.058	.433	-.13
Weekly alcohol consumption	4.501	.218	20.646	24.111	.433	55.683
Drinking problems	2.336	.218	10.71	4.465	.433	10.31
Life events	.993	.218	4.56	.460	.433	1.06
Home stressors	.471	.218	2.16	-.733	.433	-1.69
Spouse and partner stressors	.596	.258	2.31	-.140	.511	-.27
Friends stressors	.007	.218	.03	-.608	.433	-1.40
Work stressors	.573	.263	2.18	.421	.520	.81
Financial stressors	.721	.218	3.31	-.295	.433	-.68
Sexual enhancement	-.094	.218	-.43	.392	.433	.91
Aggression	.996	.218	4.57	.548	.433	1.27
Cognitive impairment	-.075	.218	-.34	.098	.433	.23
Tension reduction	.635	.218	2.91	.585	.433	1.35
Social assertiveness	-.006	.218	-.03	.451	.433	1.04
Cognitive avoidance	-.029	.218	-.13	-.138	.433	-.32
Emotional discharge	.232	.218	1.06	-.038	.433	-.09
	Women					
	Skewness	**SE**	**Sig.**	**Kurtosis**	**SE**	**Sig.**
Age	.081	.143	.57	-1.322	.284	-4.65
Harmful drinking	1.385	.143	9.69	1.567	.284	5.52
Weekly alcohol consumption	2.907	.143	20.328	10.133	.284	35.679
Drinking problems	2.696	.143	18.85	6.359	.284	22.39
Life events	.822	.143	5.75	.290	.284	1.02
Home	.523	.143	3.66	-.447	.284	-1.57
Spouse and partner	.805	.177	4.55	.309	.352	.88
Friends and social activities	.592	.143	4.14	.286	.284	1.01
Work	.484	.164	2.95	.151	.327	.46
Finances	.598	.143	4.18	-.210	.284	-.74
Sexual enhancement	-.461	.143	-3.22	.029	.284	.10
Aggression	1.006	.143	7.03	.204	.284	.72
Cognitive impairment	-.202	.143	-1.41	.127	.284	.45
Tension reduction	-.294	.143	-2.06	.359	.284	1.26
Social assertiveness	-.343	.143	-2.40	.149	.284	.52
Cognitive avoidance	-.186	.143	-1.30	-.294	.284	-1.04
Emotional discharge	.024	.143	.17	-.068	.284	-.24

Due to the presence of significant skewness, it was decided that the dependent variables (harmful alcohol consumption, weekly alcohol consumption and drinking problems) required transformation, and the new values are included in Table 6. Despite this transformation, the Drinking Problems scale showed elevated values of skewness and kurtosis. This was the result of very few participants reporting any drinking problems, suggesting this variable was not meaningful and should not be included in the hierarchical regressions. However, descriptive data on this variable is provided below in Table 6. Examination of residual scatterplots showed no violation of linearity and homoscedasticity.

Table 6
Skewness and Kurtosis for Transformed Scales in Men and Women

	Men					
	Skewness	**SE**	**Sig.**	**Kurtosis**	**SE**	**Sig.**
Harmful drinking	-.271	.218	-1.243	-.556	.433	-1.284
Weekly alcohol consumption	.576	.218	2.642	.263	.433	0.607
Drinking problems	1.849	.218	8.481	1.886	.433	4.355
	Women					
	Skewness	**SE**	**Sig.**	**Kurtosis**	**SE**	**Sig.**
Harmful drinking	.021	.143	.146	-.640	.284	2.253
Weekly alcohol consumption	.714	.143	4.993	.225	.284	0.792
Drinking problems	2.165	.143	15.13	3.345	.284	11.778

Outliers were identified separately for men and women, and transformed to the next lowest or highest non-outlier value. Using a cut-off point of 3.29 standard deviations, 24 scores in the variables of harmful drinking, weekly alcohol consumption, life events, home stressors, friend stressors, work stressors, and negative expectancies of aggression were identified as outliers and corrected accordingly.

Internal consistency

Cronbach's alpha values were calculated for all scales, and analyses were conducted separately for men and women. Cronbach's alpha is not an adequate statistic to measure the items of the weekly alcohol consumption scale (e.g., amount of alcohol consumed during a certain period of time), so it was not estimated for this measure. All Cronbach's alpha values were within the acceptable to very good range (> .70), as summarised in Table 7.

Table 7
Internal Consistency for All Measures

Measures	Cronbach's Alpha	
	Men (N= 123)	Women (N= 292)
Alcohol measures		
Harmful drinking	.82	.81
Stressors		
Life events	.78	.76
Home and Neighbourhood	.84	.84
Spouse and Partner	.87	.89
Friends and Social Activities	.77	.77
Work	.75	.80
Financial	.93	.92
Positive alcohol expectancies	.97	.97
Negative alcohol expectancies		
Cognitive impairment	.93	.95
Aggression	.91	.96
Avoidance coping	.87	.82

Descriptive Statistics

T-tests were conducted to compare the means of men and women on all variables. Table 8 provides a summary of the means and standard deviations of all variables according to gender, highlighting those that reached statistical significance, set at $p<.01$ (using Levene's test to assess equality of variance across the two groups). These analyses indicate that the differences in alcohol measures between men and women were not statistically significant.

Women reported more life events than men. Similarly, women reported more home, friend, work and financial stressors than men. As to alcohol expectancies, men reported more positive alcohol expectancies, and more negative expectancies of cognitive impairment and aggression than women. Lastly, women reported more reliance of avoidance coping strategies than men.

Table 8

Means and Standard Deviations by Measures and Test for Significance Using Student's t-test

Measures	**Men (N= 123)**		**Women (N= 292)**		***P-value***
	Mean	**SD**	**Mean**	**SD**	
Alcohol measures					
Harmful drinking	8.24	(6.19)	5.83	(4.92)	.00
Weekly alcohol consumption	4.97	(8.69)	2.06	(2.74)	.00
Stressors					
Life events	4.90	(3.86)	6.27	(4.18)	.19
Chronic home stressors	5.52	(4.04)	6.09	(4.29)	.57
Chronic spouse and partner stressors	6.39[a]	(4.45)	6.38[b]	(4.32)	.70
Chronic friends stressors	5.04	(2.76)	5.17	(2.74)	.63
Chronic work stressors	7.27[c]	(4.20c)	7.48[d]	(4.48)	.35
Chronic financial stressors	4.66	(4.38)	5.43	(4.38)	.89
Alcohol expectancies					
Positive Expectancies	106.62	(22.30)	102.21	(25.63)	.13
Cognitive impairment	35.88	(8.01)	35.01	(10.42)	.01*
Aggression	6.83	(2.85)	6.63	(3.06)	.13
Avoidance coping	21.80	(7.93)	24.42	(7.14)	.06

*Note: * p<.01*

a: *N*= 86; b: *N*=188; c: *N*=84; d: *N*=223

A frequencies analysis showed that 13% of men and 17.1% of women did not consume any alcohol in the previous week. These findings are similar to those reported in studies examining the drinking patterns of Australians, where 14.0% of men and 20.1% of women reported no recent alcohol consumption (Australian Institute of Health and Welfare, 2011). Weekly alcohol consumption was compared to the drinking guidelines (14 weekly standard drinks) suggested by the Australian National Health and Medical Research Council (2009). None of the men in the study reported alcohol consumption at levels considered "risky" (more than 28 drinks per week) while only 2.1% of females consumed alcohol at levels considered of risk for alcohol related harm (more than 14 drinks per week). These findings show that although 5.7% of men and 2.1% of women in the sample reported consuming alcohol at greater levels than recommended by the Australian guidelines, the drinking patterns of participants in this study were largely below those considered "risky" by the

Australian Institute of Health and Welfare (2011). The majority of participants (79.7% of men and 82.2% of women) reported experiencing no drinking problems in the past, indicating that alcohol consumption has not resulted in behavioural problems or affected an aspect of their social life (e.g., health, work, finances, family, neighbourhood, friends, and legal difficulties). A smaller group of participants (9.7% of men and 11.3% of women) reported that alcohol had affected at least one or two areas of their life, and only 10.6% of men and 6.5% of women reported that alcohol had impacted negatively on more than 2 areas of their life. Table 9 provides a description of the levels of the different alcohol measures as reported by male and female participants.

Table 9
Levels of Weekly Alcohol Use, Harmful Drinking and Drinking Problems

Variables	Men	Women
Harmful drinking		
No drinking problems	56.9%	71.9%
Medium levels of alcohol problems 8-15	29.3%	20.9%
High levels of alcohol problems 16+	13.8%	7.2%
Weekly alcohol consumption		
0	13%	17.1%
Less than 1 drink	12.2%	27%
1-2 drinks	30.1%	25.2%
3-6 drinks	25.2%	24.4
7-10 drinks	8.9%	4.1%
11-14 drinks	4.9%	2.1%
More than 14 drinks	5.7%	2.1%
Drinking problems		
0	79.7%	82.2%
1-2	9.7%	11.3%
3-4	7.3%	6.5%
5-6	3.3%	0%
7-8	0%	0%

Zero-order Correlations

Zero-order correlations were calculated among all variables. These results are presented in Table 10. The analysis showed that harmful drinking was correlated positively with weekly

alcohol consumption (.68). Of all stress variables, only life events and financial stressors had a significant, yet small association with harmful alcohol use (.13 and .14 respectively). No other stress variable (e.g., home, spouse, friend and work stress) was significantly associated with any alcohol measure.

This analysis also indicated a small but significant association between avoidance coping and both weekly alcohol consumption (.19) and harmful alcohol use (.21). Similarly, positive expectancies were significantly associated with harmful alcohol use (.47) and weekly alcohol consumption (.33). Negative expectancies of aggression and negative expectancies of cognitive impairment were not significantly associated to any alcohol measure.

Age was negatively correlated with harmful alcohol use (-.32) and weekly alcohol use (-.26), suggesting that older individuals consume less alcohol and do so in a less harmful way. In addition, age was negatively associated with life events (-.31), home stressors (-.17), friend stressors (-.19) and work stressors (-.28) revealing that younger participants experienced more acute stressors, and chronic home, friend and work stressors than older participants. Gender was negatively correlated with harmful alcohol use (-.19) and weekly alcohol use (-.26) indicating that men consume less alcohol and do so in a less harmful way. Furthermore, gender was significantly correlated with avoidance coping, revealing that women relied more heavily on avoidance coping strategies.

Regarding alcohol expectancies, age was inversely associated with positive expectancies (-.39) and negative expectancies of cognitive impairment (-.17). Lastly, age was associated with avoidance coping (-.37) in the negative direction. These results show that older adults

tended to report less positive and negative alcohol expectancies, and relied less frequently on avoidance coping.

Table 10

Zero Order Correlations Among All Measures

	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14
1. Age	**-.04**	**-.31***	**-.26***	**-.31***	**-.17***	**.07**	**-.19***	**-.03**	**-.28***	**-.39***	**-.04**	**-.17***	**-.37***
2. Gender	**-**	**-.19***	**-.26***	**.15***	**.06**	**.01**	**.04**	**.03**	**.08**	**-.08**	**-.02**	**-.04**	**.16***
3. Harmful drinking		-	**.68***	**.13***	**.06**	**.08**	**.07**	**.11**	**.14***	**.47***	**.12**	**.06**	**.21***
4. Weekly alcohol consumption			-	**.08**	**.07**	**.02**	**.01**	**.00**	**.08**	**.33***	**-.03**	**-.03**	**.19***
5. Life events				-	**.15***	**.16**	**.15***	**.05**	**.22***	**.19***	**-.07**	**.12**	**.22***
6. Chronic home stressors					-	**.24***	**.25***	**.26***	**.45***	**.14***	**.16***	**.20***	**.15***
7. Chronic spouse stressors						-	**.04**	**.21***	**.20***	**.02**	**.09**	**.11**	**.12**
8. Chronic friends stressors							-	**.29***	**.18***	**.21***	**.27***	**.23***	**.17***
9. Chronic work stressors								-	**.24***	**.09**	**.15**	**.22***	**.09**
10. Chronic financial stressors									-	**.22***	**.23***	**.21***	**.30***
11. Positive expectancies										-	**.27***	**.44***	**.30***
12. Aggression											-	**.38***	**.11**
13. Cognitive impairment												-	**.24***
14. Avoidance coping													-

*Note: * p<.01*

Predictors of harmful alcohol use

Acute stressors

As shown in Table 11.1 the hierarchical regression of life events predicting harmful alcohol use revealed R^2 to be significantly different from zero at the end of Step 1 (R^2 =.14, F(2, 412)= 32.34, p<.01) and Step 4 (R^2= .31, F(9, 405)= 20.35 p<.01). At Step 1, the effect of both age (β= -.32, p<.01) and gender (β= -.20, p<.01) significantly predicted harmful alcohol use. These results indicate that men reported more harmful alcohol use than women, and that older participants reported less harmful alcohol use than their younger counterparts. The addition of life events at Step 2 and the two-way interactions between life events and age and life events and gender at Step 3 did not significantly contribute to the prediction of harmful drinking. At Step 4, the addition of avoidance coping, and positive and negative alcohol expectancies improved the prediction of harmful drinking by 17% (*change in* R^2= .17, p<.01, F(9, 405)= 20.35 p<.01). At this step positive expectancies (β= .47, p<.01), and one of the negative expectancies variables, cognitive impairment (β= -.22, p<.01) significantly contributed to the prediction of harmful drinking indicating that participants who endorsed more positive expectancies reported more harmful drinking, and those who endorsed more expectancies of cognitive impairment reported less harmful drinking patterns. At Step 4, age ceased to be a significant predictor of harmful alcohol use, and gender remained a significant predictor of this alcohol measure. The addition at Step 5 of the two-way interactions between life events and avoidance coping, life events and positive expectancies, life events and negative expectancies of cognitive impairment, life events and negative expectancies of aggression, avoidance coping and age, avoidance coping and

gender, positive expectancies and age, positive expectancies and gender, negative expectancies of cognitive impairment and age, negative expectancies of cognitive impairment and gender, negative expectancies of aggression and age, and negative expectancies of aggression and gender did not improve the prediction of harmful alcohol use.

Table 11.1

Hierarchical Regression of Life Events, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Harmful Drinking

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.14***	**.14***			
Age			**-.01**	**-.32**	**.09***
Gender			**--.14**	**-.20**	**.04***
Step 2	.14	.00			
Step 3	.14	.00			
Step 4	**.31***	**.17***			
Age			.00	-.12	.01
Gender			**-.12**	**-.18**	**.03***
Life events			-.02	-.21	.00
Life events x Age			.00	.04	.00
Life events x Gender			.01	.27	.00
Avoidance coping			.00	.09	.01
Positive alcohol expectancies			**.01**	**.47**	**.14***
Negative expectancies (Cognitive impairment)			**-.01**	**-.22**	**.04***
Negative expectancies (Aggression)			.01	.01	.00
Step 5	.33	.02			

*Note: * p<.01*

***sr²*: Semi-partial correlation**

Home and neighbourhood stressors

Table 11.2 shows the hierarchical regression of home stressors predicting harmful drinking, indicating that at the end of Step 1, R^2 was significantly different from zero (R^2= .14, F(2, 412)=32.34, p<.01). At Step 1, age accounted for 10% of the variance in harmful alcohol use (β= -.32, p<.01) while gender accounted for 4% of the variance of the dependent variable (β= -.20, p<.01), indicating that men reported more harmful drinking than women, and that older participants reported less harmful alcohol use than their younger counterparts. The

addition of the home stressors at Step 2 and the two-way interactions between home stressors and age, and home stressors and gender at Step 3 did not significantly contribute to the prediction of harmful alcohol use. At Step 4, R^2 was significantly different from zero (R^2= .31, F(9, 405)=20.26, p<.01) as the addition of avoidance coping and alcohol expectancies improved the prediction of harmful drinking (*changes in* R^2= .17, p<.01, F(9, 405)=20.26 p<.01). At this step, positive alcohol expectancies (β= .45, p<.01) and negative expectancies of cognitive impairment (β= -.21, p<.01), significantly contributed to this prediction indicating that participants who endorsed more positive expectancies reported more harmful drinking, and those who endorsed more expectancies of cognitive impairment reported less harmful drinking patterns. Lastly, at this step the effect of age ceased to be significant, but gender (β= -.18, p<.01) remained a significant predictor of harmful alcohol use. The addition at Step 5 of the two-way interactions between home stressors and avoidance coping, home stressors and positive expectancies, home stressors and negative expectancies of cognitive impairment, home stressors and negative expectancies of aggression, avoidance coping and age, avoidance coping and gender, positive expectancies and age, positive expectancies and gender, negative expectancies of cognitive impairment and age, negative expectancies of cognitive impairment and gender, negative expectancies of aggression and age, and negative expectancies of aggression and gender did not improve the prediction of harmful alcohol use.

Table 11.2

Hierarchical Regression of Chronic Home and Neighbourhood Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Harmful Drinking

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.14**	**.14***			
Age			**-.01**	**-.32**	**.10***
Gender			**-.14**	**-.20**	**.04***
Step 2	.14	.00			
Step 3	.14	.00			
Step 4	**.31**	**.17***			
Age			.00	-.14	.01
Gender			**-1.21**	**-.18**	**.03***
Home stressors			-.02	-.28	.00
Home stressors x Age			.00	.02	.00
Home stressors x Gender			.01	.30	.01
Avoidance coping			.00	.10	.01
Positive alcohol expectancies			**.01**	**.45**	**.14***
Negative expectancies (Cognitive impairment)			**-.01**	**-.21**	**.03***
Negative expectancies (Aggression)			.01	.06	.00
Step 5	.33	.02			

*Note: * p<.01*

***sr²*: Semi-partial correlation**

Chronic spouse and partner stressors

Table 11.3 represents the hierarchical regression of partner stressors predicting harmful alcohol use, revealing that at the end of Step 1, R^2 was significantly different from zero (R^2 = .08, $F(2, 273)= 11.66$, $p<.01$). At this step, age accounted for the 5% of the variance in harmful alcohol use (β= -.22, $p<.01$) showing that older participants reported less harmful use. In addition, gender (β= -.21, $p<.01$) accounted for 4% of the variance of the dependent variable, indicating that men reported more harmful alcohol use than women. The addition of measures of partner stress at Step 2 and the two-way interaction terms between partner stressors and age, and partner stress and gender at Step 3 did not significantly contribute to the prediction of harmful alcohol use. The addition of avoidance coping and alcohol expectancies at Step 4 improved the prediction of harmful alcohol use by 23% (*changes in* R^2= .23, $F(9, 266)= 15.19$, $p<.01$). It is interesting to note that at this step, the effect of age

ceased to be significant, but gender remained a significant predictor of harmful use (β= -.17, *p*<.01). Furthermore, positive expectancies (β= .53 *p*<.01) and negative expectancies of cognitive impairment (β= -.27 *p*<.01) accounted for 25% of the variance of harmful alcohol use indicating that participants who endorsed more positive expectancies reported more harmful drinking, and that those who endorsed more expectancies of cognitive impairment reported less harmful drinking patterns. The addition at Step 5 of the two-way interactions between partner stressors and avoidance coping, partner stressors and positive expectancies, partner stressors and negative expectancies of cognitive impairment, partner stressors and negative expectancies of aggression, avoidance coping and age, avoidance coping and gender, positive expectancies and age, positive expectancies and gender, negative expectancies of cognitive impairment and age, negative expectancies of cognitive impairment and gender, negative expectancies of aggression and age, and negative expectancies of aggression and gender did not improve the prediction of harmful alcohol use.

Table 11.3

Hierarchical Regression of Chronic Spouse and Partner Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Harmful Drinking

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.08**	**.08***			
Age			**.00**	**-.22**	**.05***
Gender			**-.13**	**-.21**	**.04***
Step 2	.09	.01			
Step 3	.11	.02			
Step 4	**.34**	**.23***			
Age			.00	-.05	.00
Gender			**-.11**	**-.17**	**.02***
Spouse stressors			-.02	-.24	.00
Spouse stressors x Age			.00	.10	.01
Spouse stressors x Gender			.01	.33	.01
Avoidance coping			.00	.07	.00
Positive alcohol expectancies			**.00**	**.53**	**.20***
Negative expectancies (Cognitive impairment)			**-.01**	**-.27**	**.05***
Negative expectancies (Aggression)			.01	.09	.01
Step 5	.37	.03			

*Note: * p<.01*

***sr²*: Semi-partial correlation**

Chronic friend stressors

As shown in Table 11.4, the hierarchical regression of friend stressors predicting harmful alcohol use indicated that at the end of Step 1, R^2 was significantly different from zero (R^2= .14, F(2, 412)= 32.34, p<.01). At Step 1, age accounted for 10% of the variance in harmful alcohol use (β= -.32, p<.01) showing that older participants reported less harmful drinking than younger participants. Furthermore, gender (β= -.20, p<.01) predicted 4% of the variance of harmful alcohol use, indicating that men reported more harmful alcohol use than women. As in previous regressions, the addition of friend stressors at Step 2 and the two-way interactions between friend stressors and age, friend stressors and gender at Step 3 did not significantly contribute to the prediction of harmful alcohol use. At Step 4, the addition of avoidance coping and alcohol expectancies improved the prediction of harmful alcohol use by 17% (*changes in* R^2= .17, F(9, 405)= 19.84, p<.01), with positive alcohol expectancies (β= .45, p<.05) and negative expectancies of cognitive impairment (β= -.21, p<.01) significantly contributing to this prediction. These results indicated that participants who endorsed more positive expectancies reported more harmful drinking, and that those who endorsed more expectancies of cognitive impairment reported less harmful alcohol use. Lastly, both age (β= -.14, p<.01) and gender (β= -.18, p<.01) continued to contribute significantly to the variance of alcohol measures. The addition at Step 5 of the two-way interactions between friend stressors and avoidance coping, friend stressors and positive expectancies, friend stressors and negative expectancies of cognitive impairment, friend stressors and negative expectancies of aggression, avoidance coping and age, avoidance coping and gender, positive expectancies and age, positive expectancies and gender,

negative expectancies of cognitive impairment and age, negative expectancies of cognitive impairment and gender, negative expectancies of aggression and age, and negative expectancies of aggression and gender did not improve the prediction of harmful alcohol use.

Table 11.4
Hierarchical Regression of Chronic Friend Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Harmful Drinking

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.14**	**.14***			
Age			**-.01**	**-.32**	**.10***
Gender			**-.14**	**-.20**	**.04***
Step 2	.14	.00			
Step 3	.14	.00			
Step 4	**.31**	**.17***			
Age			**-.003**	**-14**	**.01***
Gender			**-.12**	**-18**	**.03***
Friend stressors			.01	.04	.00
Friend stressors x Age			.00	.00	.00
Friend stressors x Gender			.01	-.01	.00
Avoidance coping			.00	.10	.01
Positive alcohol expectancies			**.01**	**.45**	**.16***
Negative expectancies (Cognitive impairment)			**-.01**	**-.21**	**.03***
Negative expectancies (Aggression)			.01	.07	.00
Step 5	.33	.02			

*Note: * p<.01*
***sr^2*: Semi-partial correlation**

Financial stressors

As shown in Table 11.5 the hierarchical regression of financial stressors predicting harmful alcohol use suggests that R^2 was significantly different from zero at the end of Step 1 (R^2= .14, $F(2, 412)$= 32.34, p<.01) and Step 4 (R = .31, $F(9, 405)$= 19.84, p<.01). At Step 1, age accounted for the 10% of the variance in harmful alcohol use (β= -.32, p<.01) as younger participants reported more harmful use than older participants. In addition, gender accounted for 4% of the variance in harmful use (β= -.20, p<.01) indicating that men reported more harmful use than women. The addition of financial stressors at Step 2 and the two-way interactions between financial stressors and age, and financial stressors and

gender at Step 3 did not contribute significantly to the prediction of harmful alcohol use. Avoidance coping and alcohol expectancies were added at Step 4, and these improved the prediction of harmful alcohol use by 17% (*changes in* R^2= .17, F(9, 405)= 19.84, p<.01). At this step, positive alcohol expectancies (β= .45, p<.01) and negative expectancies of cognitive impairment (β= -.21, p<.01) significantly contributed to this prediction, indicating that participants who endorsed more positive expectancies reported more harmful drinking, and that those who endorsed more expectancies of cognitive impairment reported less harmful alcohol use. Lastly, at this step the effect of age ceased to be significant, but gender (β= -.18, p<.01) remained a significant predictor of harmful alcohol use. The addition at Step 5 of the two-way interactions between financial stressors and avoidance coping, financial stressors and positive expectancies, financial stressors and negative expectancies of cognitive impairment, financial stressors and negative expectancies of aggression, avoidance coping and age, avoidance coping and gender, positive expectancies and age, positive expectancies and gender, negative expectancies of cognitive impairment and age, negative expectancies of cognitive impairment and gender, and negative expectancies of aggression and age, negative expectancies of aggression and gender did not improve the prediction of harmful alcohol use.

Table 11.5
Hierarchical Regression of Chronic Financial Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Harmful Drinking

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.14**	**.14***			
Age			**-.01**	**-.32**	**.10***
Gender			**-.14**	**-.20**	**.04***
Step 2	.14	.00			
Step 3	.14	.00			
Step 4	**.31**	**.17***			
Age			.00	-.13	.01
Gender			**-.12**	**-.18**	**.01***
Financial stressors			.00	-.06	.00
Financial stressors x Age			.00	-.01	.00
Financial stressors x Gender			.00	.08	.00
Avoidance coping			.00	.09	.01
Positive alcohol expectancies			**.01**	**.45**	**.14***
Negative expectancies (Cognitive impairment)			**-.01**	**-.21**	**.03***
Negative expectancies (Aggression)			.01	.06	.00
Step 5	.33	.03			

*Note: * p<.01*
***sr²*: Semi-partial correlation**

Work stressors

Table 11.6 shows the hierarchical regression of work stressors predicting harmful alcohol use, revealing that at the end of Step 1, R^2 was significantly different from zero (R^2= .20, F(2, 301)= 36.45, p<.01). This was also true at the end of Step 2 (R^2= .20, F(3, 300)= 25.86, p<.05) and Step 4 (R^2= .36, F(9, 294)= 18.39, p<.01). At Step 1, age accounted for the 14% of the variance in harmful alcohol use (β= -.37, p<.01) while gender contributed to 5% of this variance (β= -.22, p<.01) indicating that men reported more harmful alcohol use than women, and that older participants reported less harmful alcohol use than their younger counterparts. The inclusion of work stressors at Step 2 did not improve the prediction of harmful drinking. The inclusion of the two-way interactions between work stress and age, and work stress and gender at Step 3 did not contribute significantly to the prediction of harmful alcohol use. At Step 4, alcohol expectancies were added and these improved the

prediction of harmful alcohol use by 16% (*changes in* R^2= .16, *F*(9, 294)= 18.39, *p*<.01) as positive alcohol expectancies (β= .46 *p*<.01) contributed by 14% to the variance, and negative expectancies of cognitive impairment (β= -.19 *p*<.01) contributed by 2%. These results indicate that participants who endorsed more positive expectancies reported more harmful drinking, and that those who endorsed more expectancies of cognitive impairment reported less harmful alcohol use. Furthermore, age (β= -.20 *p*<.01) and gender (β= -.20 *p*<.01) remained significant predictors of harmful alcohol use. The addition at Step 5 of the two-way interactions between work stressors and avoidance coping, work stressors and positive expectancies, work stressors and negative expectancies of cognitive impairment, work stressors and negative expectancies of aggression, avoidance coping and age, avoidance coping and gender, positive expectancies and age, positive expectancies and gender, negative expectancies of cognitive impairment and age, negative expectancies of cognitive impairment and gender, negative expectancies of aggression and age, and negative expectancies of aggression and gender did not improve the prediction of harmful alcohol use.

Table 11.6
Hierarchical Regression of Chronic Work stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Harmful Drinking

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.20**	**.20***			
Age			**-.01**	**-.37**	**.14***
Gender			**-.15**	**-.22**	**.05***
Step 2	**.21**	**.01**			
Step 3	.21	.00			
Step 4	**.36**	**.16***			
Age			**.00**	**-.20**	**.03***
Gender			**-.13**	**-.20**	**.03***
Work stressors			.005	.07	.00
Work stressors x Age			.00	.01	.00
Work stressors x Gender			.00	.03	.00
Avoidance coping			.00	.05	.00
Positive alcohol expectancies			**.01**	**.46**	**.14***
Negative expectancies (Cognitive impairment)			**-.01**	**-.19**	**.02***
Negative expectancies (Aggression)			.01	.06	.00
Step 5	.39	.03			

*Note: * p<.01*
***sr^2*: Semi-partial correlation**

Predictors of weekly alcohol consumption

Life events

Table 11.7 shows the hierarchical regression of life events predicting weekly alcohol use revealing that R^2 was significantly different from zero at Step 1, (R^2= .14, F(2, 412)= 33.42, p<.01) and Step 4 (R^2= .25, F(9, 405)= 15.14, p<.01). At Step 1, age (β= -.27, p<.01) and gender (β= -.27, p<.01) significantly predicted weekly alcohol use showing that younger participants reported greater alcohol use than their older counterparts, and men reported more weekly alcohol use than women. The addition of life events at Step 2 and the two-way interaction between life events, age and gender at Step 3 did not significantly contribute to the prediction of weekly alcohol consumption. At Step 4, avoidance coping and alcohol expectancies were added, and this significantly contributed to the prediction of weekly alcohol consumption by 11% (*changes in* R^2= .11, F(9, 405)= 15.14, p<.01). At this step, avoidance coping (β= .14, p<.01), positive alcohol expectancies (β= .34, p<.01), and negative

alcohol expectancies of cognitive impairment (β= -.23, p<.01) significantly contributed to the prediction of weekly alcohol consumption. These results indicate that participants who endorsed more positive expectancies reported more alcohol consumption, and that those who endorsed more expectancies of cognitive impairment reported less harmful alcohol use. Furthermore, the findings reveal that participants who relied more heavily on avoidance coping reported more weekly alcohol use. In addition, gender (β= -.27, p<.01) remained a significant predictor of weekly drinking, but age ceased to be significant. The addition at Step 5 of the two-way interactions between life events and avoidance coping, life events and positive expectancies, life events and negative expectancies of cognitive impairment, life events and negative expectancies of aggression, avoidance coping and age, avoidance coping and gender, positive expectancies and age, positive expectancies and gender, negative expectancies of cognitive impairment and age, negative expectancies of cognitive impairment and gender, negative expectancies of aggression and age, and negative expectancies of aggression and gender did not improve the prediction of weekly alcohol consumption.

Table 11.7
Hierarchical Regression of Life Stressing Events, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Weekly Alcohol Consumption

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.14**	**.14***			
Age			**-.01**	**-.27**	**.08***
Gender			**-.20**	**-.27**	**.07***
Step 2	.14	.00			
Step 3	.15	.01			
Step 4	**.25**	**.11***			
Age			-.002	-.12	.01
Gender			**-.20**	**-.27**	**.07***
Life events			.00	.00	.00
Life events x Age			.00	.08	.01
Life events x Gender			.00	.02	.00
Avoidance coping			**.01**	**.14**	**.01***
Positive alcohol expectancies			**.01**	**.34**	**.07***
Negative expectancies (Cognitive impairment)			**.01**	**-.23**	**.04***
Negative expectancies (Aggression)			.00	-.05	.00
Step 5	.29	.04			

*Note: * p<.01*
***sr^2*: Semi-partial correlation**

Home and neighbourhood stressors

Table 11.8 represents the hierarchical regression of home stressors predicting weekly alcohol use. An analysis of this regression revealed that R^2 was significantly different from zero at the end of Step 1, (R^2= .14, F(2, 412)= 33.42, p<.01), Step 4 (R^2= .25, F(9, 405)= 15.07, p<.01) and Step 5 (R^2= .30, F(21, 393)= 8.07, p<.01). At Step 1, age accounted for 7% of the variance in weekly alcohol consumption (β= -.27, p<.01) while gender also accounted for 7% of this variance (β= -.27, p<.01) showing that men consumed more alcohol than women, and younger adults reported more weekly drinking than their older counterparts. The addition of home stress at Step 2, and the two-way interactions between home stressors, age and gender at Step 3 did not significantly contribute to the prediction of weekly alcohol use. The addition of avoidance coping and alcohol expectancies at Step 4 significantly improved its predictive value (*changes in* R^2= .11 F(9, 405)= 15.07, p<.01). At this step, avoidance coping

(β= .14, *p*<.01), positive alcohol expectancies (β= .33, *p*<.01) and negative expectancies of cognitive impairment (β= -.23, *p*<.01) were significantly correlated with weekly alcohol consumption. These results indicate that participants who endorsed more positive expectancies reported more weekly drinking, and that those who endorsed more expectancies of cognitive impairment reported less alcohol consumption. Furthermore, the findings revealed that participants who relied more heavily on avoidance coping reported more weekly alcohol consumption. In addition, gender contributed by 7% to the variance of weekly alcohol use (β= -.27, *p*<.01), but age ceased to be a significant predictor at this step. The addition at Step 5 of the two-way interactions between home stressors and avoidance coping, home stressors and positive expectancies, home stressors and negative expectancies of cognitive impairment, home stressors and negative expectancies of aggression, avoidance coping and age, avoidance coping and gender, positive expectancies and age, positive expectancies and gender, negative expectancies of cognitive impairment and age, negative expectancies of cognitive impairment and gender, negative expectancies of aggression and age, and negative expectancies of aggression and gender significantly contributed to the prediction of weekly alcohol consumption by 5% (*changes in* R^2= .5, *F*(21, 393)= 7.60, *p*<.01). At this step, the two-way interactions between avoidance coping and gender (β= -.54, *p*<.01), and negative expectancies of cognitive impairment and gender (β= .60, *p*<.01) significantly contributed to the prediction of weekly alcohol consumption.

Table 11.8

Hierarchical Regressions of Chronic Home Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Weekly Alcohol Consumption

Variables	R^2	Change in R^2	B	B	sr^2
Step 1	**.14**	**.14***			
Age			**-.01**	**-.27**	**.07***
Gender			**-.20**	**-.27**	**.07***
Step 2	.14	.00			
Step 3	.14	.00			
Step 4	**.25**	**.11***			
Age			-.002	-.12	.01
Gender			**-.20**	**-.27**	**.07***
Home stressors			-.01	-.10	.00
Home stressors x Age			.00	.02	.00
Home stressors x Gender			.01	.16	.00
Avoidance coping			**.01**	**.14**	**.01***
Positive alcohol expectancies			**.004**	**.33**	**.07***
Negative expectancies (Cognitive impairment)			**-.01**	**-.23**	**.04***
Negative expectancies (Aggression)			-.01	-.06	.00
Step 5	**.30**	**.05***			
Age			-.002	-.12	.01
Gender			**-.21**	**-.29**	**.08***
Home stressors			-.01	-.16	.00
Home stressors x Age			.00	.09	.01
Home stressors x Gender			.01	.22	.00
Avoidance coping			**.03**	**.66**	**.03***
Positive alcohol expectancies			**.01**	**.57**	**.01***
Negative expectancies (Cognitive impairment)			**-.03**	**-.80**	**.02***
Negative expectancies (Aggression)			.00	.03	.00
Home stressors x avoidance coping			.00	.05	.00
Home stressors x Positive expectancies			.00	.13	.01
Home stressors x Negative expectancies (Cognitive impairment)			.00	-.04	.00
Home stressors x negative expectancies (Aggression)			.00	-.06	.00
Positive expectancies x age			.00	.05	.00
Positive expectancies x gender			.00	-.24	.00
Negative expectancies (Aggression) x age			.00	-.07	.00
Negative expectancies (Aggression) x gender			-.01	-.09	.00
Negative expectancies (Cognitive impairment) x age			.00	.01	.00
Negative expectancies (Cognitive impairment) x gender			**.01**	**.60**	**.01***
Avoidance coping x age			.00	-.02	.00
Avoidance coping x gender			**-.01**	**-.54**	**.02***

*Note: * p<.01*

***sr²*: Semi-partial correlation**

Post-hoc probing of the interaction between negative expectancies of cognitive impairment and gender showed that gender moderated the effect of expectancies of cognitive impairment on weekly alcohol consumption, as shown in Figure 1.1. An examination of the simple regression lines of this interaction revealed that the effect was more pronounced for women (B= -.02, $t(393)= -7.60$, $p<.01$) than men (B= -.03, $t(393)= -4.00$, $p<.01$). Men and women who endorsed fewer expectancies of cognitive impairment consumed similar

amounts of alcohol, while women who reported greater expectancies of cognitive impairment consumed more alcohol than men with similar levels of negative expectancies.

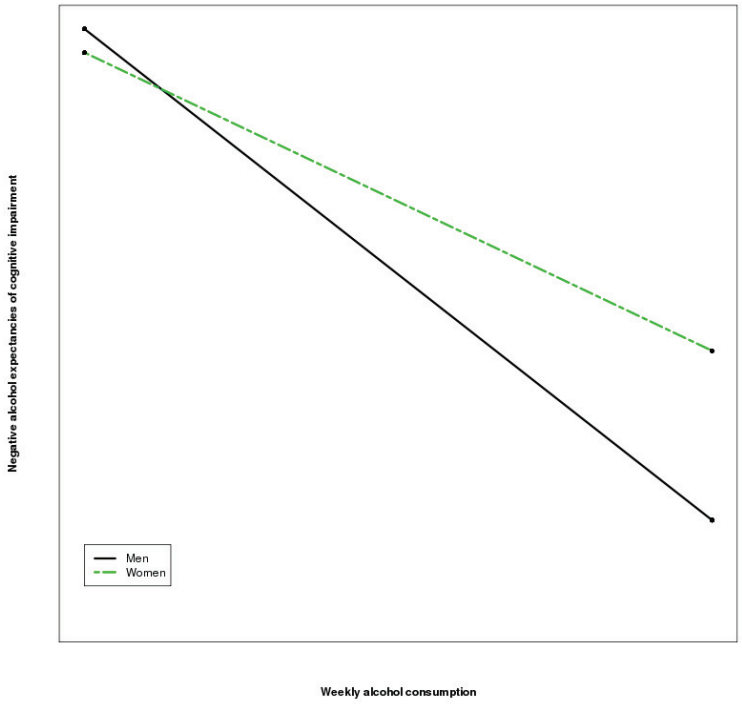

Figure 1.1 Simple intercepts, simple slopes of the two-way interaction between negative expectancies of cognitive impairment and gender on weekly alcohol consumption.

Post-hoc probing of the interaction between avoidance coping and gender as shown in Figure 1.2 indicates that gender moderated the association between avoidance coping and weekly alcohol consumption. An examination of the simple regression lines revealed the slopes headed in opposite directions for men (B= .03, $t(393)= 4.14$, $p<.01$) and women (B= .04, $t(393)= 19.23$, $p<.01$). At low levels of avoidance coping, men consumed more alcohol than women, while at high levels of avoidance coping women consumed more alcohol than men.

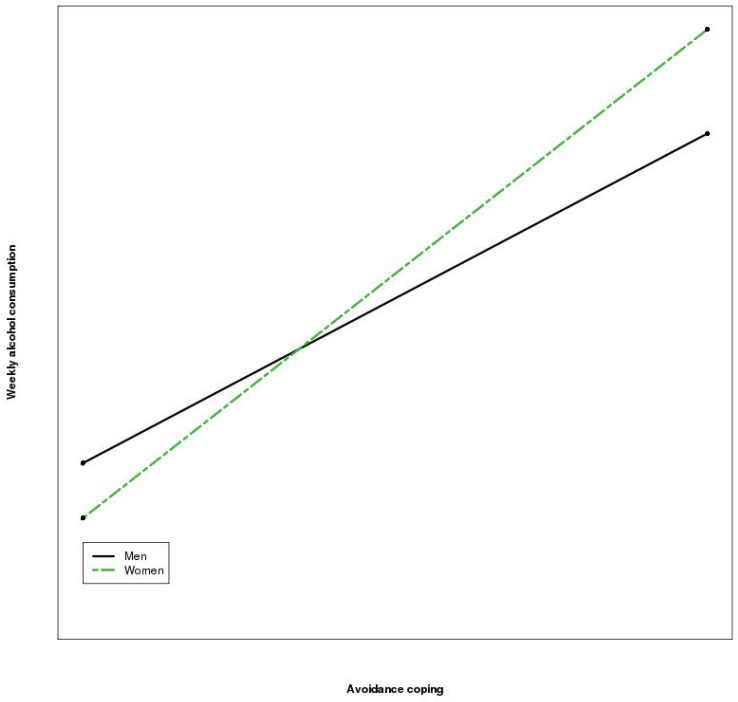

Figure 1.2 Simple intercepts, simple slopes of the two-way interaction between avoidance coping and gender on weekly alcohol consumption.

Chronic spouse and partner stressors

Table 11.9 represents the hierarchical regression of spouse stressors predicting weekly alcohol consumption. The results of this regression revealed that at the end of Step 1, R^2 was significantly different from zero (R^2= .10, F(2, 273)= 15.47, p<.01). At this step, age accounted for the 5% of the variance in weekly alcohol use (β= -.23, p<.01), while gender accounted for 6% of this variance (β= -.26, p<.01) showing that men and younger participants reported greater alcohol consumption. The addition of partner stress at Step 2 and the two-way interactions between partner stress, age and gender at Step 3 did not significantly contribute to the prediction of alcohol consumption. The addition of avoidance

coping and alcohol expectancies at Step 4 improved the prediction of weekly alcohol use by 11% (*changes in* R^2= .11, $F(9, 266)$= 8.31, p<.01). At this step, positive expectancies (β= .35 p<.01) accounted for 9% of the variance of alcohol use, and negative expectancies of cognitive impairment (β= -.23 p<.01) accounted for 4% of the variance of weekly alcohol use. These results revealed that participants who endorsed more positive expectancies reported more weekly alcohol consumption and that those who endorsed more expectancies of cognitive impairment reported less weekly drinking. It is interesting to note that at this step, the effect of age ceased to be significant, but gender remained a significant predictor of weekly consumption (β= -.25, p<.01). The addition at Step 5 of the two-way interactions between partner stressors and avoidance coping, partner stressors and positive expectancies, partner stressors and negative expectancies of cognitive impairment, partner stressors and negative expectancies of aggression, avoidance coping and age, avoidance coping and gender, positive expectancies and age, positive expectancies and gender, negative expectancies of cognitive impairment and age, negative expectancies of cognitive impairment and gender, negative expectancies of aggression and age, and negative expectancies of aggression and gender did not improve the prediction of weekly alcohol consumption.

Table 11.9

Hierarchical Regressions of Chronic Spouse Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Weekly Alcohol Consumption

Variables	R^2	Change in R^2	B	B	sr^2
Step 1	**.10**	**.10***			
Age			**-.004**	**-.23**	**.05***
Gender			**-.17**	**-.26**	**.06***
Step 2	.10	.00			
Step 3	.11	.01			
Step 4	**.22**	**.11***			
Age			.00	-.11	.01
Gender			**-.16**	**-.25**	**.06***
Spouse stressors			-.01	-.18	.00
Spouse stressors x Age			.00	.05	.00
Spouse stressors x Gender			.01	.23	.00
Avoidance coping			.00	.09	.01
Positive alcohol expectancies			**.004**	**.35**	**.09***
Negative expectancies (Cognitive impairment)			**-.01**	**-.23**	**.04***
Negative expectancies (Aggression)			-.01	-.06	.00
Step 5	.25	.03			

*Note: * p<.01*

***sr*²: Semi-partial correlation**

Chronic friend stressors

In Table 11.10, the hierarchical regression of friend stressors predicting weekly alcohol use shows that at the end of Step 1, R^2 was significantly different from zero (R^2= .14, F(2, 412)= 33.42, p<.01). At Step 1, age (β = -.27, p<.01) and gender (β= -.27, p<.01) accounted for the 7% of the variance in weekly alcohol use each, indicating that men and younger participants reported greater alcohol consumption. As in previous regressions, the addition of friend stress at Step 2 and the two-way interaction between friend stressors and age at Step 3 did not significantly contribute to the prediction of weekly alcohol use. However, the addition of avoidance coping and alcohol expectancies at Step 4 improved the prediction of weekly alcohol consumption by 11% (*changes in* R^2= .11, F(2, 405)= 15.16, p<.01). At this step, positive alcohol expectancies (β= .33, p<.01) and negative expectancies of cognitive impairment (β= -.22, p<.01) significantly contributed to this prediction, indicating that

participants who endorsed more positive expectancies reported more weekly drinking, and that those who endorsed more expectancies of cognitive impairment reported less alcohol use. It is interesting to note that at Step 4, age ceased to be a significant predictor of weekly alcohol consumption, but gender (β= -.27, *p*<.01) continued to contribute significantly to the variance of alcohol use. The addition at Step 5 of the two-way interactions between friend stressors and avoidance coping, friend stressors and positive expectancies, friend stressors and negative expectancies of cognitive impairment, friend stressors and negative expectancies of aggression, avoidance coping and age, avoidance coping and gender, positive expectancies and age, positive expectancies and gender, negative expectancies of cognitive impairment and age, negative expectancies of cognitive impairment and gender, negative expectancies of aggression and age, and negative expectancies of aggression and gender did not improve the prediction of weekly alcohol use.

Table 11.10

Hierarchical Regressions of Chronic Friend Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Weekly Alcohol Consumption

Variables	R^2	Change in R^2	B	B	sr^2
Step 1	**.14**	**.14***			
Age			**-.01**	**-.27**	**.07***
Gender			**-.20**	**-.27**	**.07***
Step 2	.14	.00			
Step 3	.15	.01			
Step 4	**.25**	**.11***			
Age			.00	-.14	.01
Gender			**-.20**	**-.27**	**.07***
Friend stressors			-.01	-.08	.00
Friend stressors x Age			.00	.07	.00
Friend stressors x Gender			.00	.05	.00
Avoidance coping			.01	.15	.02
Positive alcohol expectancies			**.004**	**.33**	**.07***
Negative expectancies (Cognitive impairment)			**-.01**	**-.22**	**.03***
Negative expectancies (Aggression)			-.01	-.04	.00
Step 5	.29	.04			

*Note: * p<.01*

***sr*²: Semi-partial correlation**

Financial stressors

As shown in Table 11.11 the hierarchical regression of financial stressors on weekly alcohol consumption shows that at the end of Step 1, R^2 was significantly different from zero (R^2= .14, F(2, 412)= 33.42, p<.01). This was also true at the end of Step 4 (R^2= .25, F(9, 405)= 14.86, p<.01) and Step 5 (R^2= .30, F(21, 393)= 8.05, p<.01). At Step 1, age (β= -.27, p<.01) and gender (β= -.27, p<.01) each accounted for the 7% of the variance in weekly alcohol use, revealing that men and younger participants reported greater alcohol consumption. As in previous regressions, the addition of financial stressors and age at Step 2, and the two-way interaction between financial stressors and age at Step 3 did not significantly contribute to the prediction of weekly alcohol consumption. At Step 4, alcohol expectancies and avoidance coping were added and these improved the prediction of weekly alcohol use by 11% (*changes in* R^2= .11 F(9, 405)= 14.86, p<.01). At this step, avoidance coping (β= .14, p<.01), positive alcohol expectancies (β= .33, p<.01) and negative expectancies of cognitive impairment (β= -.22, p<.01) were significantly correlated with weekly alcohol consumption. These results indicate that participants who endorsed more positive expectancies reported more weekly drinking, and those who endorsed more expectancies of cognitive impairment reported less alcohol consumption. Furthermore, the findings reveal that participants who relied more heavily on avoidance coping reported more weekly alcohol consumption. The addition at Step 5 of the two-way interactions between financial stressors and avoidance coping, financial stressors and positive expectancies, financial stressors and negative expectancies of cognitive impairment, financial stressors and negative expectancies of aggression, avoidance coping and age, avoidance coping and gender, positive expectancies

and age, positive expectancies and gender, negative expectancies of cognitive impairment and age, negative expectancies of cognitive impairment and gender, negative expectancies of aggression and age, and negative expectancies of aggression and gender improved the prediction of weekly alcohol use by 5% (*changes in* R^2 = .5, $F(21, 393)= 8.05$, $p<.01$). At this step, the two-way interactions between financial stressors and avoidance coping (β= .13 $p<.01$), negative expectancies of cognitive impairment and gender (β= .67 $p<.01$), and avoidance coping and gender (β= -.53 $p<.01$) were significantly associated with weekly alcohol use.

Table 11.11

Hierarchical Regression of Chronic Financial Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Weekly Alcohol Consumption

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.14**	**.14***			
Age			**-.01**	**-.27**	**.07***
Gender			**-.20**	**-.27**	**.07***
Step 2	.14	.00			
Step 3	.14	.00			
Step 4	**.25**	**.11***			
Age			**-.003**	**-.14**	**.01***
Gender			**-.20**	**-.27**	**.07***
Financial stressors			.01	.19	.00
Financial stressors x Age			.00	-.02	.00
Financial stressors x Gender			-.01	-.18	.00
Avoidance coping			**.01**	**.14**	**.01***
Positive alcohol expectancies			**.004**	**.33**	**.07***
Negative expectancies (Cognitive impairment)			**-.01**	**-.22**	**.03***
Negative expectancies (Aggression)			-.01	-.06	.00
Step 5	**.30**	**.05***			
Age			**-.002**	**-.13**	**.01***
Gender			**-.21**	**-.29**	**.07***
Financial stressors			.01	.12	.00
Financial stressors x Age			.00	.05	.00
Financial stressors x Gender			-.01	-.12	.00
Avoidance coping			**.03**	**.64**	**.02***
Positive alcohol expectancies			.01	.51	.01
Negative expectancies (Cognitive impairment)			**-.03**	**-.84**	**.03***
Negative expectancies (Aggression)			.00	.03	.00
Financial stressors x avoidance coping			**.00**	**.13**	**.01***
Financial stressors x Positive expectancies			.00	.07	.00
Financial stressors x Negative expectancies (Cognitive impairment)			.00	-.07	.00
Financial stressors x negative expectancies (Aggression)			.00	-.06	.00
Positive expectancies x age			.00	.04	.00
Positive expectancies x gender			.00	-.19	.00
Negative expectancies (Aggression) x age			.00	-.07	.00
Negative expectancies (Aggression) x gender			-.01	-.08	.00
Negative expectancies (Cognitive impairment) x age			.00	.01	.00
Negative expectancies (Cognitive impairment) x gender			**.01**	**.67**	**.02***
Avoidance coping x age			.00	.01	.00
Avoidance coping x gender			**-.01**	**-.53**	**.02***

*Note: * p<.01*

***sr²*: Semi-partial correlation**

Post-hoc probing of the interaction between negative expectancies of cognitive impairment and gender showed that gender moderated the effect of expectancies of cognitive impairment on weekly alcohol consumption, as shown in Figure 1.3. An examination of the simple regression lines of this interaction showed that this moderating effect was present in men (B= -.03, *t*(393)= -4.14, *p*<.01) and women (B= -.02, *t*(393)= -7.60, *p*<.01). This showed that at low levels of expectancies of cognitive impairment, men and women consumed

similar amounts of alcohol, while at high levels of expectancies of cognitive impairment men consumed less alcohol than women.

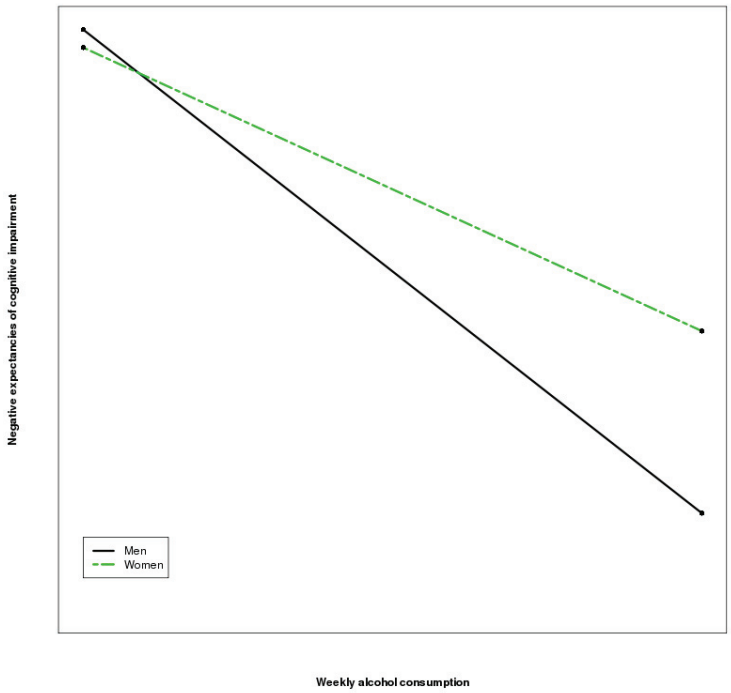

Figure 1.3 Simple intercepts, simple slopes of the two-way interaction between negative expectancies of cognitive impairment and gender on weekly alcohol consumption.

Post-hoc probing of the interaction between avoidance coping and gender as shown in Figure 1.4 indicates that gender moderated the association between avoidance coping and weekly alcohol consumption. An examination of the simple regression lines of this interaction showed that this moderating effect was present only in men (B= .03, $t(393)= 3.5$, $p<.01$) revealing that at low levels of avoidance coping, men and women consumed similar amounts of alcohol, while at low levels of avoidance coping men consumed less alcohol than women.

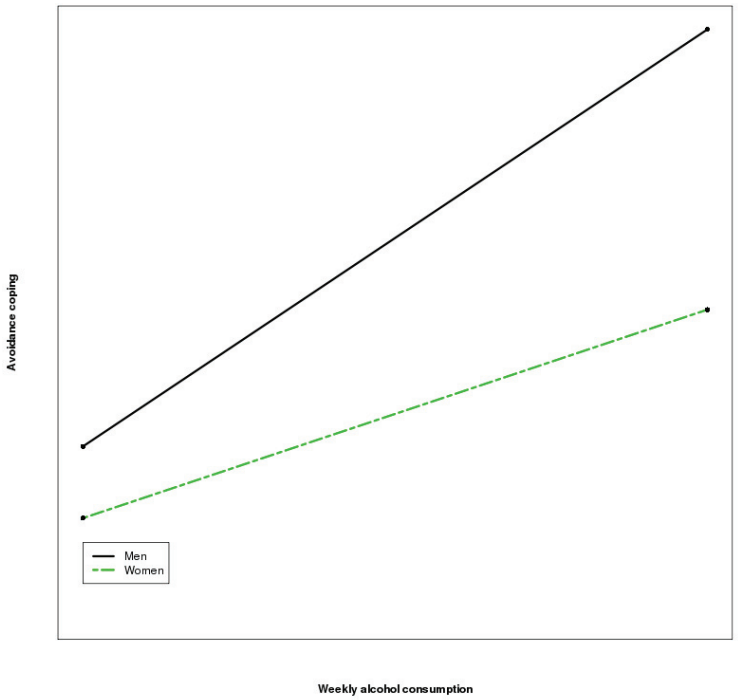

Figure 1.4 Simple intercepts, simple slopes of the two-way interaction between avoidance coping and gender on weekly alcohol consumption.

Although the analysis of the hierarchical regression of weekly alcohol use on financial stressors suggested that avoidance coping moderated the relationship between financial stressors and weekly alcohol consumption, post-hoc probing of this interaction (shown in Figure 1.5) revealed that none of the regression lines were significant[3].

[3] These findings were unexpected and replication is required for a more detailed examination of this association.

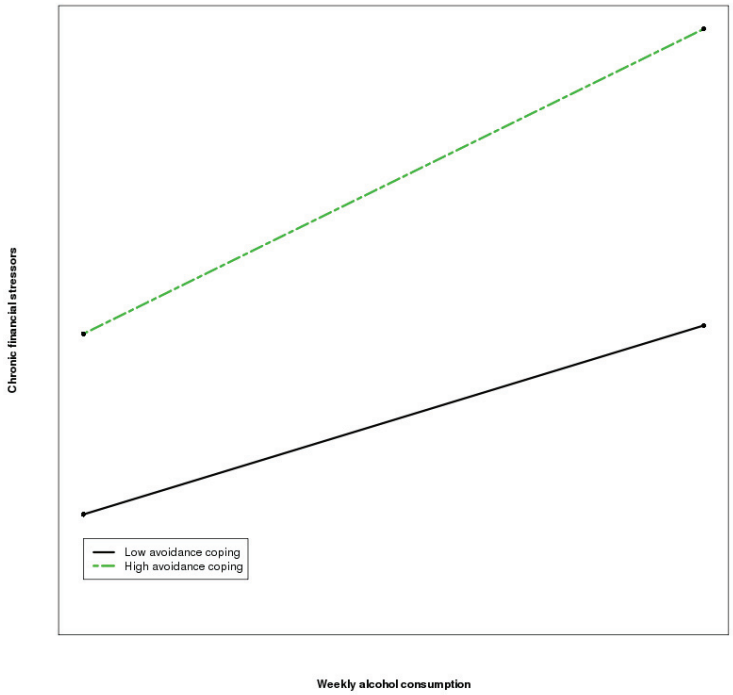

Figure 1.5 Simple intercepts, simple slopes of the two-way interaction between financial stress and avoidance coping on weekly alcohol consumption.

Work stressors

Table 11.12 shows the hierarchical regression of work stressors predicting weekly alcohol consumption, indicating that at the end of Step 1, R^2 was significantly different from zero (R^2= .19, F(2, 301)= 34.99, p<.01). This was also true at the end of Step 4 (R^2= .26, F(9, 294)= 11.16, p<.01) and Step 5 (R^2= .36, F(21, 282)= 7.31, p<.01). At Step 1, age (β= -.31, p<.01) and gender (β= -.29, p<.01) accounted for the 9% of the variance in weekly alcohol use each, indicating that men and younger participants reported greater alcohol consumption. The addition of work stressors at Step 2, and the two-way interactions between work stressors, and age and gender at Step 3 did not significantly contribute to the prediction of weekly alcohol consumption. At Step 4, the addition of alcohol expectancies contributed significantly to the prediction of weekly alcohol consumption by 7% (*changes in* R^2= .07, F(9, 294)= 11.16, p<.01). At this step, positive expectancies (β= .27, p<.01) and negative expectancies of cognitive impairment (β= -.18, p<.01) became predictors of weekly alcohol use. These results revealed that participants who endorsed more positive expectancies reported more weekly alcohol consumption, and those who endorsed more expectancies of cognitive impairment reported less weekly drinking. The addition at Step 5 of the two-way interactions between work stressors and avoidance coping, work stressors and positive expectancies, work stressors and negative expectancies of cognitive impairment, work stressors and negative expectancies of aggression, avoidance coping and age, avoidance coping and gender, positive expectancies and age, positive expectancies and gender, negative expectancies of cognitive impairment and age, negative expectancies of cognitive impairment and gender, negative expectancies of aggression and age, and negative

expectancies of aggression and gender improved the prediction of weekly alcohol use by 10% (*changes in* R^2= .10, F(21, 282)= 7.31, p<.01). At this step, the interactions between negative expectancies of cognitive impairment and gender (β= 1.02, p<.01), and avoidance coping and gender (β= -.81, p<.01) were significantly associated with alcohol use. In addition, avoidance coping became a significant predictor of weekly alcohol use at this step (β= .88, p<.01). Surprisingly, positive expectancies ceased to be significant at this step[4].

Table 11.12

Hierarchical Regression of Chronic Work Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Weekly Alcohol Consumption

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.19**	**.19***			
Age			**-.01**	**-.31**	**.09***
Gender			**-.21**	**-.29**	**.09***
Step 2	.19	.00			
Step 3	.19	.00			
Step 4	**.26**	**.07***			
Age			**-.004**	**-.20**	**.03***
Gender			**-.21**	**-.29**	**.08***
Work stressors			.00	-.05	.00
Work stressors x Age			.00	-.01	.00
Work stressors x Gender			.00	.07	.00
Avoidance coping			.01	.11	.01
Positive alcohol expectancies			**.004**	**.27**	**.05***
Negative expectancies (Cognitive impairment)			**-.01**	**-.18**	**.02***
Negative expectancies (Aggression)			.00	-.03	.00
Step 5	**.36**	**.10***			
Age			**-.004**	**-.20**	**.03***
Gender			**-.23**	**-.32**	**.09***
Work stressors			.00	.00	.00
Work stressors x Age			.00	.01	.00
Work stressors x Gender			.00	.03	.00
Avoidance coping			**.04**	**.88**	**.04***
Positive alcohol expectancies			.00	.14	.00
Negative expectancies (Cognitive impairment)			**-.04**	**-1.15**	**.05***
Negative expectancies (Aggression)			.03	.28	.00
Work stressors x avoidance coping			.00	.06	.00
Work stressors x Positive expectancies			.00	.00	.00
Work stressors x Negative expectancies (Cognitive impairment)			.00	-.14	.01
Work stressors x negative expectancies (Aggression)			.00	-.03	.00
Positive expectancies x age			.00	.04	.00
Positive expectancies x gender			.00	.14	.00
Negative expectancies (Aggression) x age			.00	-.11	.01
Negative expectancies (Aggression) x gender			-.02	-.33	.01
Negative expectancies (Cognitive impairment) x age			.00	.02	.00
Negative expectancies (Cognitive impairment) x gender			**.02**	**1.02**	**.04***
Avoidance coping x age			.00	.01	.00
Avoidance coping x gender			**-.02**	**-.81**	**.04***

*Note: * p<.01*

***sr*²: Semi-partial correlation**

[4] Replication studies are required to further examine these unusual findings.

Post-hoc probing of the interaction between avoidance coping and gender as shown in Figure 1.6 indicates that gender moderated the association between avoidance coping and weekly alcohol consumption. An examination of the simple regression lines of this interaction showed that this moderating effect was significant in men (B= .04, $t(282)= 4.11$, $p<.01$) revealing that at high levels of avoidance coping, men and women consumed similar amounts of alcohol, while at low levels of avoidance coping men consumed more alcohol than women.

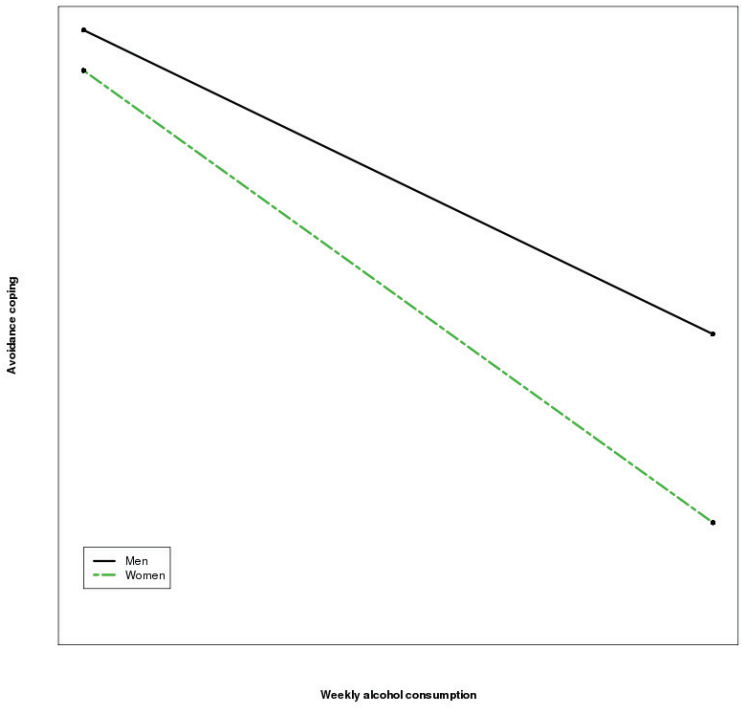

Figure 1.6 Simple intercepts, simple slopes of the two-way interaction between avoidance coping and gender on weekly alcohol consumption.

Post-hoc probing of the interaction between negative expectancies of cognitive impairment and gender as shown in Figure 1.7 indicates that gender moderated the association between cognitive impairment and weekly alcohol consumption. An examination of the simple regression lines of this interaction showed that this moderating effect was present in men (B= -.04, $t(282)= 2.60$, $p<.01$) showing that at low levels of expectancies of cognitive impairment, men and women consumed similar amounts of alcohol, while at high levels of expectancies of cognitive impairment, men consumed less alcohol than women.

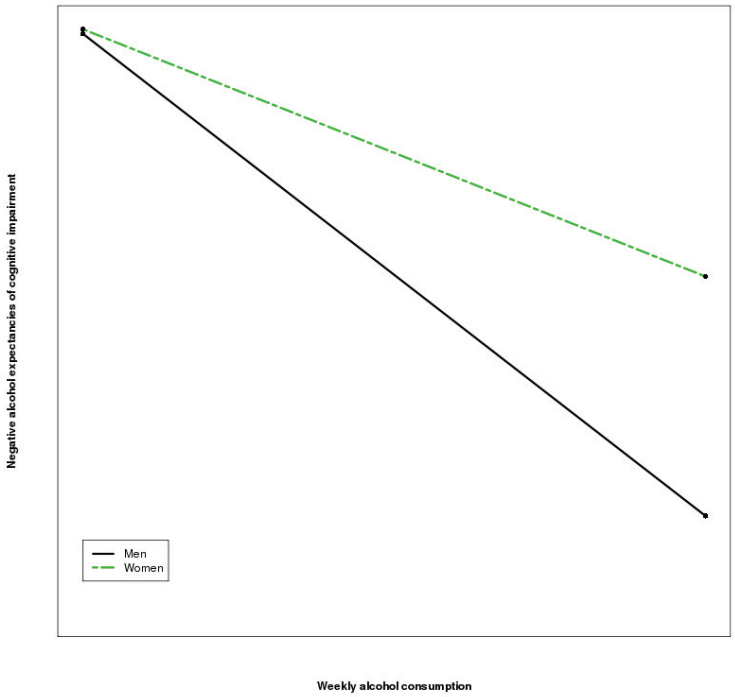

Figure 1.7 Simple intercepts, simple slopes of the two-way interaction between negative expectancies of cognitive impairment and gender on weekly alcohol consumption.

Summary

Study 1 examined the relationship between acute stressors and alcohol, and chronic stressors and alcohol use. Based on previous studies it was expected that participants who experienced greater levels of stress would drink more and do so in a more harmful way. However, only the bivariate correlations showed that life events and financial stressors had a significant, yet small association with harmful alcohol use. No other stress variable (e.g., home, spouse, friend and work stress) was significantly associated with any alcohol measure; and none of the relationships were significant in the regression analyses.

The association between age and alcohol use was also examined. In line with previous research, it was expected that younger participants would report more alcohol consumption and harmful drinking. In line with expectations, the cross-sectional data showed that younger participants consumed more alcohol and did so in a more harmful way than their older counterparts.

Study 1 also examined the relationship between gender and alcohol use, with the prediction that men would report more alcohol consumption and harmful drinking than women. In line with expectations, the findings showed that men consumed more alcohol and did so in a more harmful way than women. Study 1 further examined whether gender and age moderated the relationship between stress and alcohol use. However, there was no support for these relationships.

The associations between avoidance coping and alcohol measures were also examined in Study 1. It was expected that greater reliance on avoidance coping would be associated with

greater alcohol use and harmful drinking. In line with expectations, participants who reported more use of avoidance coping also reported greater levels of alcohol use. However, avoidance coping was not significantly associated to harmful drinking.

Study 1 tested whether gender moderated the association between avoidance coping and weekly alcohol use. An analysis of the regressions of weekly alcohol consumption on home stress revealed that women who relied more heavily on avoidance coping consumed less alcohol than men with similar levels of avoidance coping. On the other hand, an analysis of the regressions of weekly alcohol consumption on financial and work stressors revealed that men who relied more heavily on avoidance coping consumed more alcohol than women with similar levels of avoidance coping.

In line with extensive previous research it was hypothesised that positive expectancies would be associated with greater alcohol use and harmful drinking, while the opposite association was predicted for the negative expectancies of aggression and cognitive impairment. The relationships between positive alcohol expectancies and higher levels of drinking and harmful drinking were replicated. However, only expectancies of cognitive impairment were associated with alcohol measures, showing that participants who held more negative expectancies of cognitive impairment consumed less alcohol and reported less harmful drinking patterns. However, negative expectancies of aggression were not significantly associated with either alcohol measure.

Interestingly, gender was found to be a significant moderator of the association between negative expectancies of cognitive impairment and alcohol use. The analysis of the regressions of weekly alcohol consumption on measures of home, financial and work

stressors revealed that at low levels of expectancies of cognitive impairment, men and women consumed similar amounts of alcohol, while at high levels of expectancies of cognitive impairment, men consumed less alcohol than women.

Lastly, the study tested the moderating role of avoidance coping and alcohol expectancies in the relationship between stress and alcohol use. No significant two-way interactions between stressors and avoidance coping, stressors and positive expectancies, and stressors and negative expectancies (e.g., cognitive impairment and aggression) were found.

CHAPTER 5

STUDY 2: A LONGITUDINAL ANALYSIS OF STRESS AND ALCOHOL USE; THE MODERATING ROLE OF AGE, GENDER, AVOIDANCE COPING AND ALCOHOL EXPECTANCIES

One of the major limitations of Study 1 was that the data were cross-sectional, thus it was not possible to evaluate the directional nature of the relationships. Thus Study 2 was designed to enhance causal inferences drawn from the cross-sectional data by examining the effect of each stress variable on the same alcohol measures from Study 1 over a 12-month period. Furthermore, a follow-up study allowed for the evaluation of how much change versus stability there was in each of the measures. Each of the other direct effects (e.g., avoidance coping and alcohol expectancies) and moderating effects (e.g., age and gender) tested in Study 1 were also examined in this follow-up.

Method

Sample

This sample consisted of 88 adults of the original 415 adults that participated in Study 1. It included 22 of the original 123 male respondents (18%) and 60 of the 292 female respondents (21%). The age of participants of Study 2 ranged from 20 to 87 years (M= 51.04 SD= 15.98).

Initially, 210 participants of Study 1 agreed to participate in Study 2. However, 125 failed to respond to the invitation to complete the second survey issued after 12 months (N= 125).

These participants provided no information on the reasons for their refusal to participate on the second survey. To determine whether participants of who declined to participate in Study 2 (Group 1, *N*= 208) differed from those who initially agreed to participate but failed to respond (Group 2, *N***=** 125), and those who did participate in Study 2 (Group 3, *N*= 82), a multivariate analysis of variance was performed on all Study 1 variables. This analysis revealed that participants who agreed to be included in Study 2 (Group 2) and completed the survey again (Group 3) were older than those who did not want to participate (Group 1). Participants who completed the second survey consumed alcohol in a less harmful way than those who did not. Similarly, participants who declined to respond to a second survey endorsed more positive alcohol expectancies and relied more heavily on avoidance coping strategies. Table 12 provides a summary of these results.

Table 12

MANOVA on all Study 1 variables according to participant group[5]

	Group 1 ***N*= 208**		**Group 2** ***N*= 125**		**Group 3** ***N*= 82**		
	M	*SD*	*M*	*SD*	*M*	*SD*	*Mean differences*
Age	35.38	15.09	52.16	15.27	51.04	15.97	**(1-2) 16.78*** **(2-3) -15.65*** (1-3) 1.12
Harmful drinking	7.66	5.90	5.64	5.18	5.05	3.72	**(1-2) -2.01*** **(2-3) 2.60*** **(1-3) .59**
Weekly alcohol consumption	3.50	5.83	2.50	5.99	2.07	2.30	(1-2) -1.01 (2-3) 1.43 (1-3) .43
Life events	6.30	4.28	5.21	3.92	5.76	3.95	(1-2) -1.09 (2-3) .55 (1-3) -.55
Chronic home stressors	6.16	4.34	5.69	4.32	5.65	3.73	(1-2) -.48 (2-3) .52 (1-3) .04
Chronic spouse stressors	6.62[a]	4.61	6.40[b]	4.44	5.75[c]	3.47	(1-2) -.22 (2-3) .87 (1-3) .65
Chronic friends stressors	5.27	2.99	4.95	2.25	5.04	2.78	(1-2) -.32 (2-3) .24 (1-3) -.08
Chronic work stressors	7.68[d]	4.74	7.43[e]	3.99	6.75[f]	4.09	(1-2) -.26 (2-3) .93 (1-3) .67
Chronic financial stressors	5.93	4.54	4.08	4.09	4.08	4.09	**(1-2) -1.85*** (2-3) .85 (1-3) -.1.00
Positive expectancies	108.82	24.70	98.65	23.84	98.65	23.84	**(1-2) -10.17*** **(2-3) 11.38*** (1-3) 1.21
Aggression	6.75	3.02	6.89	2.87	6.89	2.87	(1-2) .13 (2-3) .51 (1-3) .65
Cognitive impairment	35.84	9.12	35.01	9.84	35.01	8.84	(1-2) -.83 (2-3) 1.60 (1-3) .77
Avoidance coping	25.26	7.49	22.19	7.18	22.19	7.18	**(1-2) -3.07*** **(2-3) 3.47*** (1-3) .40

*Note: * p<.01*

a) N=137 b) N=83 c) N=54 e) N=154 f) N=92 g) N=61

[5] Numbers differ for work stressors and partners stressors

Several regressions were designed to provide information about the effect of Time 1 stressors on the increment from Time 1 to Time 2 in participants' drinking behavior. A regression was run for each of the six Time 1 measures of stress in relation to each Time 2 alcohol measure. The main effects of each Time 1 alcohol measure were entered at Step 1 to control for the effect of previous levels of alcohol use. Furthermore, the main effects of age and gender were entered at Step 1. The main effect of Time 1 stress (life events, home, partner, friends, financial and work stressors) was entered at Step 2 of the corresponding regression. At Step 3, the two-way interactions between each category of Time 1 stress and age; and between each category of stress and gender were entered. The main effect of Time 1 avoidance coping, Time 1 positive expectancies and Time 1 negative expectancies of cognitive impairment and aggression were entered at Step 4. At Step 5, the interactions terms between each measure of Time 1 stress, and Time 1 avoidance coping, the interaction between each measure of Time 1 stress and age and gender, as well as the interactions between each measure of Time 1 stress, and both Time 1 positive and negative alcohol expectancies (e.g., aggression and cognitive impairment) were entered at Step 5. Similarly the interactions between Time 1 voidance coping and both age and gender were entered at this step. Also at Step 5, the interaction terms between Time 1 positive expectancies and age, as well as Time 1 positive expectancies and gender were entered. Lastly, the interaction terms between both measures of Time 1 negative expectancies (e.g., aggression and cognitive impairment) and both age and gender were entered at Step 5. In order to control for the larger number of analyses and reduce the probability of a Type 1 error, the significance level for all analyses was set at $p<.01$.

Materials

The same questionnaire was used in Study 2 was used for Study 1 (See Appendix A).

Results

Preliminary Analysis

A total of 98 participants were subjected to data screening. This sample consisted of 29 men and 69 women aged 18 to 81 years. The same procedure as utilised for Study 1 was implemented (refer to page 65). Sixteen cases were identified as having over 50% of missing data, and deleted from further analyses. Upon examination, it was shown that these cases reflected participants who only provided demographic information and did not proceed to complete the questionnaire. The remaining 82 cases (22 men and 60 women) were screened for accuracy of data entry, missing data and to assess assumptions of multiple regressions. (Tabachnick & Fidell, 2001). Missing data for the sample were randomly spread across all items and variables. Missing data were replaced using the expectation maximisation method, in order to estimate a probable distribution of missing data given the current model, and then re-estimate the model based on these completions (Tabachnick & Fidell, 2001).

Table 13

Skewness and Kurtosis for all scales in men and women

	Men					
	Skewness	**SE**	**Sig.**	**Kurtosis**	**SE**	**Sig.**
Age	-.687	.491	-1.40	-.703	.953	-0.74
Harmful drinking T1	.578	.491	1.18	.040	.953	0.04
Harmful drinking T2	1.226	.491	2.50	1.646	.953	1.73
Weekly Alcohol Consumption T1	1.143	.491	2.33	.717	.953	0.75
Weekly Alcohol Consumption T2	.881	.491	1.79	-.512	.953	-0.54
Drinking problems T1	1.764	.491	3.59	3.763	.953	3.95
Drinking problems T2	1.356	.491	2.76	.261	.953	0.27
Life events	1.02	.491	2.08	1.52	.953	1.59
Chronic home stressors	.408	.491	.83	-.302	.953	-0.32
Chronic spouse and partner stressors	-.498	.550	-.91	-1.01	1.06	-0.95
Chronic friends stressors	-.603	.491	-1.23	-.118	.953	-0.12
Chronic work stressors	.636	.597	.07	-.52	1.15	-0.45
Chronic financial stressors	.894	.491	.82	.225	.953	0.24
Positive expectancies	.094	.491	.19	-.264	.953	-0.28
Negative expectancies Aggression	.934	.491	1.90	-.312	.953	-0.33
Negative expectancies Cognitive impairment	.183	.491	.37	.247	.953	0.26
Avoidance Coping	.158	.491	.32	-1.62	.953	-1.70
	Women					
	Skewness	**SE**	**Sig.**	**Kurtosis**	**SE**	**Sig.**
Age	-.502	.309	-1.62	-.603	.608	-0.99
Harmful drinking T1	1.463	.309	4.73	.040	.608	0.07
Harmful drinking T2	1.125	.309	3.64	1.646	.608	2.71
Weekly Alcohol Consumption T1	2.651	.309	8.58	.717	.608	1.18
Weekly Alcohol Consumption T2	2.240	.309	7.25	-.512	.608	-0.84
Drinking problems T1	3.489	.309	11.29	3.763	.608	6.19
Drinking problems T2	3.323	.309	10.75	.261	.608	0.43
Life events	1.075	.309	3.48	.921	.608	1.51
Chronic home stressors	.198	.309	0.64	-1.039	.608	-1.71
Chronic spouse and partner stressors	.910	.388	2.35	.191	.759	0.25
Chronic friends stressors	.738	.309	2.39	.388	.608	0.64
Chronic work stressors	.788	.347	2.27	.199	.681	0.29
Chronic financial stressors	.351	.309	1.14	-.781	.608	-1.28
Positive expectancies	-.460	.309	-1.49	.629	.608	1.03
Negative expectancies Aggression	1.329	.309	4.30	.556	.608	0.91
Negative expectancies Cognitive impairment	.052	.309	0.17	-.121	.608	-0.20
Avoidance Coping	.527	.309	1.71	-.401	.608	-0.66

Significant skewness and kurtosis were detected in most scales for both men and women, and these values are included in Table 13. Following the procedure of Study 1, it was decided that]Time 1 and Time 2 harmful drinking, Time 1 and Time 2 weekly alcohol consumption and Time 1 and Time 2 drinking problems required transformation due to the presence of significant skewness, and the new values are included in Table 14. Despite this transformation, the Drinking Problems scale showed elevated values of skewness and kurtosis due to very few participants reporting any drinking problems. Based on these findings, a decision was made not to include this variable in the hierarchical regression, as

no meaningful interactions would be observed due to its low variance. Examination of residual scatterplots showed no violation of linearity and homoscedasticity. Outliers were identified separately for men and women, and transformed to the next lowest or highest non-outlier value. Using a cut-off point of 3.29 standard deviations, the scores of 9 participants were identified as outliers, and were modified accordingly.

Table 14
Skewness and Kurtosis for transformed scales in men and women

	Men					
	Skewness	**SE**	**Sig.**	**Kurtosis**	**SE**	**Sig.**
Harmful drinking T1	-.999	.491	-2.03	.504	.953	0.53
Harmful drinking T2	-.623	.491	-1.27	.971	.953	1.02
Weekly Alcohol Consumption T1	-.118	.491	-.24	-1.07	.953	-1.12
Weekly Alcohol Consumption T2	.145	.491	.30	-1.44	.953	-1.51
Drinking problems T1	.810	.491	1.65	-.736	.953	-0.77
Drinking problems T2	1.11	.491	2.26	-.551	.953	-0.58
	Women					
	Skewness	**SE**	**Sig.**	**Kurtosis**	**SE**	**Sig.**
Harmful drinking T1	-.196	.309	-0.63	.267	.608	0.44
Harmful drinking T2	-.049	.309	-0.16	-.760	.608	-1.25
Weekly Alcohol Consumption T1	.474	.309	1.53	.316	.608	0.52
Weekly Alcohol Consumption T2	.718	.309	2.32	.493	.608	0.81
Drinking problems T1	2.55	.309	8.25	6.025	.608	9.91
Drinking problems T2	2.434	.309	7.88	5.441	.608	8.95

Stability Coefficients

Stability coefficients were also computed for all measures, using correlations between Time 1 and Time 2. Stability coefficients varied among measures, and ranged between .42 and .88, as shown in Table 15. Weekly alcohol consumption and avoidance coping had the lowest stability. These low stability coefficients may reflect lower measurement reliability. Surprisingly, avoidance coping also revealed great variability, despite previous studies revealing that coping measures were stable over time (Compas, Forsythe, & Wagner, 1988; Holahan & Moos, 1987; Kirchner, Forns, Amador et al., 2010; McCrae, 1989; Terry, 1994).

Harmful alcohol use, home stressors and financial stressors were shown to have the highest stability.

Table 15
Stability Coefficients for Harmful Drinking, Weekly Alcohol Use, Drinking Problems, Measures of Stress, Avoidance Coping and Alcohol Expectancies

Scales	Stability coefficient
Alcohol measures	
Harmful drinking	.88
Weekly alcohol consumption	.42
Stressors	
Life events	.60
Chronic home stressors	.79
Chronic spouse stressors	.77
Chronic friend stressors	.72
Chronic work stressors	.53
Chronic financial stressors	.79
Positive expectancies	.76
Negative expectancies	
Cognitive impairment	.74
Aggression	.59
Avoidance coping	.88

Descriptive Statistics

T-tests were conducted to compare the means of men and women on all variables. Table 16 provides a summary of the means and standard deviations of all variables according to gender, and the significance levels of these differences set at $p<.01$ (using Levene's test to assess equality of variance across the two groups). These analyses indicate that only the differences in weekly alcohol consumption between men and women reached statistical significance, revealing that men consumed more alcohol than women with a mean of 2.35 (*SD*= 2.51) standard drinks for men, and 1.38 (*SD*= 1.48) standard drinks for women.

The mean age of participants was 51.91 (*SD*= 16.99) in the case of men, and 50.72 (*SD*= 15.71) in the case of women. Women reported more life events, work stressors and financial stressors than men. Men reported more home, spouse and partners, and friend

stressors. Furthermore, men reported more positive alcohol expectancies, more negative expectancies of cognitive impairment, and more negative expectancies of aggression. Lastly, men endorsed greater reliance on avoidance coping strategies than women.

Table 16

Means and Standard deviations by measures and test for significance using Student's t-test

Measures	**Men (N= 22)**		**Women (N= 60)**		***P-value***
	Mean	**SD**	**Mean**	**SD**	
Alcohol measures					
Harmful drinking T2	6.73	(5.02)	4.70	(3.66)	.09
Weekly alcohol consumption T2	**2.35**	**(2.51)**	**1.38**	**(1.48)**	**<.01***
Stressors					
Life events T1	4.36	(3.15)	6.27	(4.11)	.28
Chronic home stressors T1	5.68	(4.17)	5.63	(3.60)	.59
Chronic spouse and partner stressors T1	5.94a	(3.25a)	5.66b	(3.61b)	.53
Chronic friends stressors T1	5.09	(2.72)	5.02	(2.82)	.89
Chronic work stressors T1	6.14c	(4.77c)	6.94d	(3.90d)	.20
Chronic financial stressors T1	4.27	(4.05)	5.37	(4.13)	.78
Positive Alcohol expectancies T1	105.52	(24.42)	94.48	(22.79)	.69
Negative Alcohol expectancies					
Cognitive impairment T1	36.69	(10.28)	33.33	(11.45)	.44
Aggression T1	6.70	(3.28)	6.07	(3.10)	.70
Avoidance coping T1	7.88	(6.67)	10.49	(7.07)	.68

*Note: * p<.01*

a: N= 17; b: N= 37; c: N= 14; d: N= 47

Zero-order Correlations

Zero-order correlations were calculated among all variables and the results are presented in Table 17. These analyses revealed that harmful drinking was positively correlated with weekly alcohol consumption (.51). None of the stressor variables (e.g., life events, home, spouse and partner, friend, financial, and work stressors) was significantly associated with alcohol measures (e.g., harmful drinking and weekly alcohol consumption).

Study 2 also examined the association between avoidance coping and alcohol measures, positive expectancies and alcohol measures, and negative expectancies (e.g., cognitive impairment and aggression) and alcohol measures. These analyses revealed that avoidance coping was not significantly associated with any alcohol measure. Avoidance coping was only significantly associated with financial stressors (.39) and friend stressors (.35). Positive expectancies were associated with weekly alcohol consumption (.36). Positive alcohol expectancies were also associated with spouse stressors (.39) and negative expectancies of cognitive impairment (.34). Lastly, neither measure of negative alcohol expectancies (e.g., cognitive impairment and aggression) was correlated with any alcohol measures. Negative expectancies of cognitive impairment and aggression were only correlated to friend stressors (.44 and .36 respectively).

Age was not significantly associated with any alcohol measure. However, age was associated with life events (-.30) and friend stressors (-.30) showing that older participants experienced fewer life events and friend stressors. Age was also associated with positive expectancies (-.30) indicating that younger participants endorsed more positive alcohol expectancies. Lastly, age was associated with avoidance coping (-.35) indicating that younger participants relied more heavily on avoidance coping strategies. Interestingly, gender was not significantly associated to any other variable.

Table 17

Zero Order Correlations Among All Measures (Time 1 in bold)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14
1. Age	-	**-.04**	**-.31***	**-.26***	**-.31***	**-.17***	**.07**	**-.19***	**-.03**	**-.28***	**-.39***	**-.04**	**-.17***	**-.37***
2. Gender	-.03	**-**	**-.19***	**-.26***	**.15***	**.06**	**.01**	**.04**	**.03**	**.08**	**-.08**	**-.02**	**-.04**	**.16***
3. Harmful drinking	-.28	-.22	-	**.68***	**.13***	**.06**	**.08**	**.07**	**.11**	**.14***	**.47***	**.12**	**.06**	**.21***
4. Weekly Drinks	-.23	-.20	.51*	-	**.08**	**.07**	**.02**	**.01**	**.00**	**.08**	**.33***	**-.03**	**-.03**	**.19***
5. Life events	-.30*	.22	.15	-.06	-	**.15***	**.16**	**.15***	**.05**	**.22***	**.19***	**-.07**	**.12**	**.22***
6. Chronic home stressors	-.16	-.02	-.09	-.11	.12	-	**.24***	**.25***	**.26***	**.45***	**.14***	**.16***	**.20***	**.15***
7. Chronic spouse stressors	-.24	-.06	.15	.03	.11	.34*	-	**.04**	**.21***	**.20***	**.02**	**.09**	**.11**	**.12**
8. Chronic friends stressors	-.30*	.05	.17	.18	.25	.28*	.19	-	**.29***	**.18***	**.21***	**.27***	**.23***	**.17***
9. Chronic work stressors	-.06	.05	-.04	.09	.12	.33*	.25	.30	-	**.24***	**.09**	**.15**	**.22***	**.09**
10. Chronic financial stressors	-.28	.22	-.06	.04	.25	.47*	.13	.32*	.19	-	**.22***	**.23***	**.21***	**.30***
11. Positive expectancies	-.30*	-.14	.45	.36*	-.04	.07	.39*	.27	.05	-.02	-	**.27***	**.44***	**.30***
12. Aggression	-.16	.06	.21	.06	.04	.22	.20	.36*	.19	.20	.25	-	**.38***	**.11**
13. Cognitive impairment	-.27	.00	.10	-.14	.14	.31	.31	.44*	-.06	.20	.34*	.48	-	**.24***
14. Avoidance coping	-.35*	.20	.12	.09	.32	.14	.07	.35*	.17	.39*	.16	.16	.27	-

*Note: * p<.01*

Predictors of harmful alcohol use

Life events

As shown in Table 18.1, the hierarchical regression of life events at Time 1 predicting harmful alcohol use at Time 2 showed R^2 to be significantly different from zero at the end of Step 1 (R^2*=.80, F(3, 78)= 106.55, p<.01*). At Step 1, only the effect of harmful alcohol use at Time 1 (β= *.86, p<.01*) significantly predicted harmful alcohol use at Time 2. The addition of Time 1 life events at Step 2 did not significantly contribute to the prediction of harmful alcohol use at Time 2. The addition of the two-way interactions between Time 1 life events and age, and Time 1 life events and gender at Step 3 did not significantly contribute to the prediction of harmful alcohol use at Time 2. At Step 4 the addition of avoidance coping at Time 1, and positive and negative alcohol expectancies at Time 1 did not improve the prediction of harmful alcohol use at Time 2. The addition at Step 5 of the two-way interactions between Time 1 life events and avoidance coping, Time 1 life events and positive expectancies, Time 1 life events and negative expectancies of cognitive impairment, Time 1 life events and negative expectancies of aggression, Time 1 avoidance coping and age, Time 1 avoidance coping and gender, Time 1 positive expectancies and age, Time 1 positive expectancies and gender, Time 1 negative expectancies of cognitive impairment and age, Time 1 negative expectancies of cognitive impairment and gender, Time 1 negative expectancies of aggression and age, and Time 1 negative expectancies of aggression and gender did not improve the prediction of harmful alcohol use.

Table 18.1
Hierarchical Regression of Life Events, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Harmful Drinking

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.80**	**.80***			
Harmful drinking Time 1			**.90**	**.86**	**.68***
Age			.00	-.07	.00
Gender			-.05	-.08	.01
Step 2	.80	.00			
Step 3	.80	.00			
Step 4	.81	.004			
Step 5	.83	.02			

*Note: * p<.01*
***sr²*: Semi-partial correlation**

Home stressors

Table 18.2 shows the hierarchical regression of Time 1 home stressors predicting harmful alcohol use at Time 2, indicating that at the end of Step 1, R^2 was significantly different from zero (R^2= *.80, F(3, 78)= 106.55, p<.01*). At Step 1, Time 1 harmful alcohol use accounted for 68% of the variance in Time 2 harmful alcohol use (β= *.86, p<.01*). The addition of Time 1 home stressors at Step 2 did not improve the prediction of harmful alcohol use. The addition of the two-way interactions between Time 1 home stressors and age, and Time 1 home stressors and gender at Step 3 did not significantly contribute to the prediction of harmful alcohol use. At Step 4, the addition of Time 1 avoidance coping and alcohol expectancies did not improve the prediction of harmful alcohol use. The addition at Step 5 of the two-way interactions between Time 1 home stressors and avoidance coping, Time 1 home stressors and positive expectancies, Time 1 home stressors and negative expectancies of cognitive impairment, Time 1 home stressors and

negative expectancies of aggression, Time 1 avoidance coping and age, Time 1 avoidance coping and gender, Time 1 positive expectancies and age, Time 1 positive expectancies and gender, Time 1 negative expectancies of cognitive impairment and age, Time 1 negative expectancies of cognitive impairment and gender, Time 1 negative expectancies of aggression and age, and Time 1 negative expectancies of aggression and gender did not improve the prediction of harmful alcohol use.

Table 18.2
Hierarchical Regression of Chronic Home and Neighbourhood Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Harmful Drinking

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.80**	**.80***			
Harmful drinking Time 1			**.90**	**.86**	**.68***
Age			.00	-.07	.00
Gender			-.05	-.08	.01
Step 2	.80	.80			
Step 3	.80	.80			
Step 4	.81	.004			
Step 5	.83	.02			

*Note: * p<.01*
***sr²*: Semi-partial correlation**

Spouse and partner stressors

Table 18.3 represents the hierarchical regression of Time 1 spouse stressors predicting Time 2 harmful alcohol use, showing that at the end of Step 1, R^2 was significantly different from zero (R^2= .82, *F(3, 50)= 73.35, p<.01*). At this step, Time 1 harmful alcohol use accounted for the 72% of the variance in Time 2 harmful alcohol use (β= *.87, p<.01*). The addition of Time 1 spouse and partner stress at Step 2 and the two-way interaction terms between Time 1 partner stressors and age, and Time 1 partner stressors and gender

at Step 3 did not significantly contribute to the prediction of harmful alcohol use. The addition of Time 1 avoidance coping and alcohol expectancies at Step 4 did not improve the prediction of harmful alcohol use at Time 2. The addition at Step 5 of the two-way interactions between Time 1 partner stressors and avoidance coping, Time 1 partner stressors and positive expectancies, Time 1 partner stressors and negative expectancies of cognitive impairment, Time 1 partner stressors and negative expectancies of aggression, Time 1 avoidance coping and age, Time 1 avoidance coping and gender, Time 1 positive expectancies and age, Time 1 positive expectancies and gender, Time 1 negative expectancies of cognitive impairment and age, Time 1 negative expectancies of cognitive impairment and gender, Time 1 negative expectancies of aggression and age, and Time 1 negative expectancies of aggression and gender did not improve the prediction of harmful alcohol use.

Table 18.3

Hierarchical Regression of Chronic Spouse and Partner Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Harmful Drinking

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.82**	**.82***			
Harmful alcohol use Step 1			**.84**	**.87**	**.72***
Age			.00	-.06	.00
Gender			-.08	-.13	.02
Step 2	.82	.00			
Step 3	.84	.02			
Step 4	.85	.01			
Step 5	.89	.04			

*Note: * p<.01*

***sr²*: Semi-partial correlation**

Friend stressors

As shown in Table 18.4, the hierarchical regression of Time 1 friend stressors predicting Time 2 harmful alcohol use reveal that at the end of Step 1, R^2 was significantly different from zero (R^2= *.80, F(3, 78)= 106.55, p<.01).* At Step 1, Time 1 harmful drinking accounted for 68% of the variance in Time 2 harmful alcohol use (β = *.86, p<.01*) As in previous regressions, the addition of Time 1 friend stressors at Step 2 and the two-way interactions between Time 1 friend stressors and age, and Time 1 friend stressors and gender at Step 3 did not significantly contribute to the prediction of Time 2 harmful alcohol use. At Step 4, the addition of Time 1 avoidance coping and alcohol expectancies did not improve the prediction of Time 2 harmful alcohol use. The addition at Step 5 of the two-way interactions between Time 1 friend stressors and avoidance coping, Time 1 friend stressors and positive expectancies, Time 1 friend stressors and negative expectancies of cognitive impairment, Time 1 friend stressors and negative expectancies of aggression, Time 1 avoidance coping and age, Time 1 avoidance coping and gender, Time 1 positive expectancies and age, Time 1 positive expectancies and gender, Time 1 negative expectancies of cognitive impairment and age, Time 1 negative expectancies of cognitive impairment and gender, Time 1 negative expectancies of aggression and age, and Time 1 negative expectancies of aggression and gender did not improve the prediction of harmful alcohol use.

Table 18.4
Hierarchical Regression of Chronic Friend Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Harmful Drinking

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.80**	**.80***			
Harmful drinking Time 1			**.90**	**.86**	**.68***
Age			.00	-.07	.00
Gender			-.01	-.08	.01
Step 2	.80	.00			
Step 3	.80	.00			
Step 4	.81	.01			
Step 5	.83	.02			

*Note: * p<.01*
***sr^2*: Semi-partial correlation**

Financial stressors

As shown in Table 18.5 the hierarchical regression of Time 1 financial stressors predicting Time 2 harmful alcohol use suggests that R^2 was significantly different from zero at the end of Step 1 (R^2= *.80, F(3, 78)= 106.55, p<.01*). At Step 1, Time 1 harmful alcohol use accounted for the 68% of the variance in Time 2 harmful alcohol use (β= *.86, p<.01*). The addition of Time 1 financial stressors at Step 2 and the two-way interactions between Time 1 financial stressors and age, and Time 1 financial stressors and gender at Step 3 did not contribute significantly to the prediction of Time 2 harmful alcohol use. Time 1 avoidance coping and alcohol expectancies were added at Step 4, but these did not improve the prediction of Time 2 harmful alcohol use. The addition at Step 5 of the two-way interactions between Time 1 financial stressors and avoidance coping, Time 1 financial stressors and positive expectancies, Time 1 financial stressors and negative expectancies of cognitive impairment, Time 1 financial stressors and negative expectancies of aggression, Time 1 avoidance coping and age, Time 1 avoidance coping

and gender, Time 1 positive expectancies and age, Time 1 positive expectancies and gender, Time 1 negative expectancies of cognitive impairment and age, Time 1 negative expectancies of cognitive impairment and gender, Time 1 negative expectancies of aggression and age, and Time 1 negative expectancies of aggression and gender did not improve the prediction of harmful alcohol use.

Table 18.5
Hierarchical Regression of Chronic Financial Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Harmful Drinking

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.80**	**.80***			
Harmful drinking Time 1			**.90**	**.86**	**.68***
Age			.00	-.07	.00
Gender			-.05	-.08	.01
Step 2	.80	.00			
Step 3	.81	.01			
Step 4	.81	.00			
Step 5	.84	.03			

*Note: * p<.01*
***sr^2*: Semi-partial correlation**

Work stressors

Table 18.6 shows the hierarchical regression of Time 1 work stressors predicting Time 2 harmful alcohol use, indicating that at the end of Step 1, R^2 was significantly different from zero (R^2= .74, *F(3, 57)= 55.35, p<.01*). At Step 1, Time 1 harmful alcohol use accounted for the 53% of the variance in Time 2 harmful alcohol use (β= *.80, p<.01*). The inclusion of Time 1 work stressors at Step 2 did not improve the prediction of Time 2 harmful alcohol consumption. The inclusion of the two-way interactions between Time 1 work stress and age, and Time 1 work stress and gender at Step 3 did not contribute significantly to the

prediction of Time 2 harmful alcohol use. At Step 4, Time 1 alcohol expectancies and avoidance coping were added and these did not improve the prediction of Time 2 harmful alcohol use. The addition at Step 5 of the two-way interactions between Time 1 work stressors and avoidance coping, Time 1 work stressors and positive expectancies, Time 1 work stressors and negative expectancies of cognitive impairment, Time 1 work stressors and negative expectancies of aggression, Time 1 avoidance coping and age, Time 1 avoidance coping and gender, Time 1 positive expectancies and age, Time 1 positive expectancies and gender, Time 1 negative expectancies of cognitive impairment and age, Time 1 negative expectancies of cognitive impairment and gender, Time 1 negative expectancies of aggression and age, and Time 1 negative expectancies of aggression and gender did not improve the prediction of harmful alcohol use.

Table 18.6

Hierarchical Regression of Chronic Work Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Harmful Drinking

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.74**	**.74***			
Harmful drinking Time 1			**.86**	**.80**	**.53***
Age			.00	-.06	.00
Gender			-.09	-.13	.02
Step 2	.74	.00			
Step 3	.75	.01			
Step 4	.76	.01			
Step 5	.80	.04			

*Note: * p<.01*

***sr^2*: Semi-partial correlation**

Predictors of weekly alcohol consumption

Life events

Table 18.7 shows the hierarchical regression of Time 1 life events predicting weekly alcohol use at Time 2, revealing that R^2 is significantly different from zero at Step 1, (R^2 = *.45, F(3, 78)= 20.99, p<.01*) and Step 5 (R^2 = *.68, F(22, 59)= 5.78, p<.01*). At Step 1, Time 1 weekly alcohol use (β= *.66, p<.01*) significantly predicted weekly alcohol use at Time 2. The addition of Time 1 life events at Step 2 and the two-way interaction between Time 1 life events and age, and Time 1 life events and gender at Step 3 did not significantly contribute to the prediction of weekly alcohol consumption at Time 2. At Step 4, avoidance coping and alcohol expectancies were added, and these did not contribute to the prediction of weekly alcohol consumption at Time 2. The addition at Step 5 of the two-way interactions between Time 1 life events and avoidance coping, Time 1 life events and positive expectancies, Time 1 life events and negative expectancies of cognitive impairment, Time 1 life events and negative expectancies of aggression, Time 1 avoidance coping and age, Time 1 avoidance coping and gender, Time 1 positive expectancies and age, Time 1 positive expectancies and gender, Time 1 negative expectancies of cognitive impairment and age, Time 1 negative expectancies of cognitive impairment and gender, Time 1 negative expectancies of aggression and age, and Time 1 negative expectancies of aggression and gender improved the prediction of Time 2 weekly alcohol use by 19%

(*changes in R^2= .19, F(22, 59)= 5.78, p<.01*). At this step, the two-way interactions between Time 1 positive expectancies and age (β= *-.37, p<.01*), and negative expectancies of cognitive impairment and age (β= *.39, p<.01*) significantly contributed to the prediction of weekly alcohol consumption.

Table 18.7

Hierarchical Regression of Life Stressing Events, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Weekly Alcohol Consumption

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.45**	**.45***			
Weekly alcohol consumption Time 1			**.62**	**.66**	**.38***
Age			.00	-.01	.00
Gender			.00	.00	.00
Step 2	.46	.02			
Step 3	.46	.00			
Step 4	.49	.03			
Step 5	**.68**	**.19***			
Weekly alcohol consumption Time 1			**.57**	**.61**	**.15***
Age			.00	.15	.01
Gender			.06	.12	.01
Life events			.00	-.04	.00
Life events x Age			.00	-.08	.00
Life events x Gender			.02	.25	.01
Avoidance coping			-.01	-.14	.00
Positive alcohol expectancies			.00	.39	.02
Negative expectancies (Cognitive impairment)			-.01	-.31	.01
Negative expectancies (Aggression)			.00	-.08	.00
Life events x avoidance coping			.00	.08	.00
Life events x Positive expectancies			.00	-.06	.00
Life events x Negative expectancies (Cognitive impairment)			.00	-.26	.02
Life events x Negative expectancies (Aggression)			.00	.18	.01
Positive expectancies x age			**.00**	**-.37**	**.04***
Positive expectancies x gender			.00	-.33	.01
Negative expectancies (Aggression) x age			.01	-.28	.03
Negative expectancies (Aggression) x gender			.00	.13	.00
Negative expectancies (Cognitive impairment) x age			**.00**	**.39**	**.04***
Negative expectancies (Cognitive impairment) x gender			.01	.19	.00
Avoidance coping x age			.00	.08	.00
Avoidance coping x gender			.01	.28	.01

*Note: * p<.01*

***sr^2*: Semi-partial correlation**

Post-hoc probing of the interaction between positive expectancies and age as shown in Figure 2.1 indicates that age moderated the association between positive expectancies and weekly alcohol consumption. An examination of the simple regression lines of this interaction indicated that this moderating effect was significant in younger (β= -.012, $t(59)= 2.94$, $p<.01$) and older participants (β= -.019, $t(59)= 2.93$, $p<.01$). These findings revealed that at higher levels of positive expectancies, older participants consumed more alcohol than their younger counterparts.

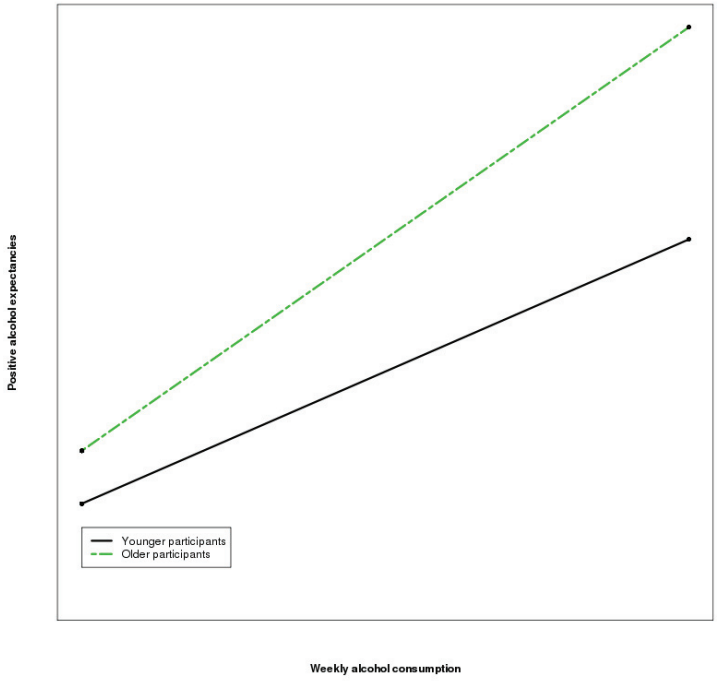

Figure 2.1 Simple intercepts, simple slopes of the two-way interaction between positive alcohol expectancies and age on weekly alcohol consumption.

Post-hoc probing of the interaction between negative expectancies of cognitive impairment and age showed that age moderated the effect of expectancies of cognitive impairment on weekly alcohol consumption, as shown in Figure 2.2. An examination of the simple regression lines of this interaction revealed that this moderating effect was present in younger (β= .023, $t(59)= 3.12$, $p<.01$) and older participants (β= .06, $t(59)= 4.08$, $p<.01$) showing that at low levels of expectancies of cognitive impairment, younger and older participants consumed similar amounts of alcohol, while at high levels of expectancies of cognitive impairment older participants consumed more alcohol than their younger counterparts.

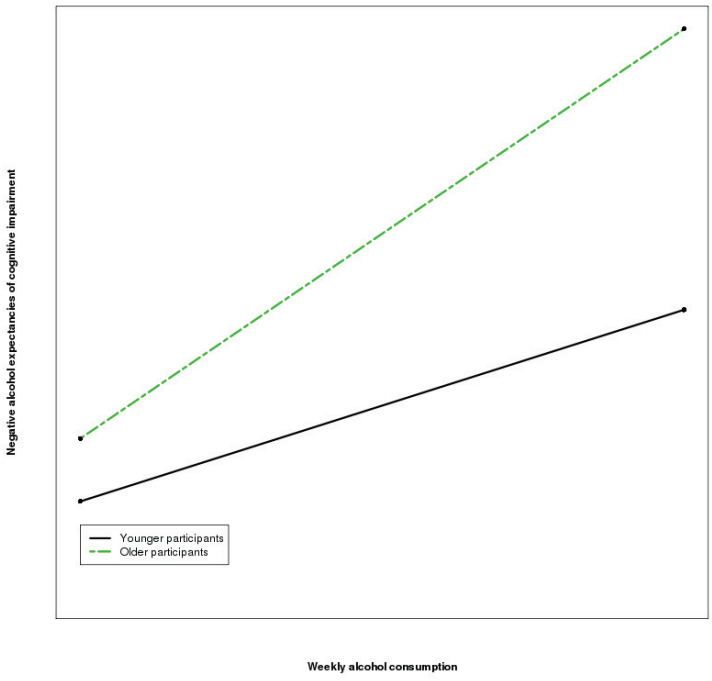

Figure 2.2 Simple intercepts, simple slopes of the two-way interaction between negative alcohol expectancies of cognitive impairment and age on weekly alcohol consumption.

Home and neighbourhood stressors

Table 18.8 represents the hierarchical regression of Time 1 home stressors predicting weekly alcohol use at Time 2, showing that R^2 was significantly different from zero at the end of Step 1, (R^2 = *.45, F(3, 78)= 20.99, p<.01*) and Step 5 (R^2 = *.64, F(22, 59)= 4.84, p<.01*). At Step 1, Time 1 weekly alcohol use accounted for 38% of the variance in Time 2 weekly alcohol consumption (β= *.67, p<.01*). The addition of Time 1 home stress at Step 2, and the two-way interactions between Time 1 home stressors and age, and Time 1 home stressors and gender at Step 3 did not significantly contribute to the prediction of Time 2 weekly alcohol use. The addition of Time 1 avoidance coping and alcohol expectancies at Step 4 did not improve the predictive value of the regression. The addition at Step 5 of the two-way interactions between Time 1 home stressors and avoidance coping, Time 1 home stressors and positive expectancies, Time 1 home stressors and negative expectancies of cognitive impairment, Time 1 home stressors and negative expectancies of aggression, Time 1 avoidance coping and age, Time 1 avoidance coping and gender, Time 1 positive expectancies and age, Time 1 positive expectancies and gender, Time 1 negative expectancies of cognitive impairment and age, Time 1 negative expectancies of cognitive impairment and gender, Time 1 negative expectancies of aggression and age, and Time 1 negative expectancies of aggression and gender significantly contributed to the prediction of Time 2 weekly alcohol consumption by 18% (*changes in* R^2= *.18, F(22, 59)= 4.84, p<.01*).

Interestingly, at this step only Time 1 weekly alcohol use (β= *.61, p<.01)* significantly contributed to the prediction of Time 2 weekly alcohol consumption.

Table 18.8

Hierarchical Regressions of Chronic Home Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Weekly Alcohol Consumption

Variables	R^2	Change in R^2	B	B	sr^2
Step 1	**.45**	**.45***			
Weekly alcohol consumption Time 1			**.62**	**.67**	**.38***
Age			.00	-.01	.00
Gender			.00	.00	.00
Step 2	.45	.00			
Step 3	.45	.00			
Step 4	.46	.00			
Step 5	**.64**	**.18***			
Weekly alcohol consumption Time 1			**.57**	**.61**	**.18***
Age			.00	.13	.01
Gender			.09	.15	.01
Home stressors			.00	-.03	.00
Home stressors x Age			.00	-.13	.01
Home stressors x Gender			.01	.07	.00
Avoidance coping			.00	-.11	.00
Positive alcohol expectancies			.01	.45	.02
Negative expectancies (Cognitive impairment)			.00	-.10	.00
Negative expectancies (Aggression)			.00	-.17	.00
Home stressors x avoidance coping			-.01	-.05	.00
Home stressors x Positive expectancies			.00	.20	.01
Home stressors x Negative expectancies (Cognitive impairment)			.00	-.12	.00
Home stressors x Negative expectancies (Aggression)			.00	-.02	.00
Positive expectancies x age			.00	-.26	.02
Positive expectancies x gender			-.01	-.40	.02
Negative expectancies (Aggression) x age			.00	-.24	.02
Negative expectancies (Aggression) x gender			.01	.14	.00
Negative expectancies (Cognitive impairment) x age			.00	.25	.01
Negative expectancies (Cognitive impairment) x gender			.00	.08	.00
Avoidance coping x age			.00	-.07	.00
Avoidance coping x gender			.01	.32	.02

*Note: * p<.01*

***sr²*: Semi-partial correlation**

Chronic spouse and partner stressors

Table 18.9 shows the hierarchical regression of Time 1 spouse stressors predicting weekly alcohol consumption at Time 2, showing that at the end of Step 1, R^2 was significantly different from zero (R^2= *.40, F(3, 50)= 11.13, p<.01*). At this step, Time 1 weekly alcohol use accounted for the 39% of the variance in weekly alcohol use (β = *.65, p<.01*). The addition of Time 1 partner stress at Step 2 did not significantly contribute to the prediction of alcohol consumption at Time 2. The addition of the two-way interactions between Time 1 partner stress and age, and Time 1 partner stress and gender at Step 3 did not improve the prediction of Time 2 weekly alcohol consumption. The addition of Time 1 avoidance coping and alcohol expectancies at Step 4 did not improve the predictive value of the regression. The addition at Step 5 of the two-way interactions between Time 1 partner stressors and avoidance coping, Time 1 partner stressors and positive expectancies, Time 1 partner stressors and negative expectancies of cognitive impairment, Time 1 partner stressors and negative expectancies of aggression, Time 1 avoidance coping and age, Time 1 avoidance coping and gender, Time 1 positive expectancies and age, Time 1 positive expectancies and gender, Time 1 negative expectancies of cognitive impairment and age, Time 1 negative expectancies of cognitive impairment and gender, Time 1 negative expectancies of aggression and age, and Time 1 negative expectancies of aggression and gender did not improve the prediction of Time 2 weekly alcohol consumption.

Table 18.9

Hierarchical Regressions of Chronic Spouse Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Weekly Alcohol Consumption

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.40**	**.40***			
Weekly alcohol consumption Time 1			**.57**	**.65**	**.39***
Age			.00	.10	.01
Gender			.03	.05	.00
Step 2	.40	.00			
Step 3	.49	.09			
Step 4	.50	.01			
Step 5	.71	.21			

*Note: * p<.01*

***sr*²: Semi-partial correlation**

Chronic friend stressors

As shown in Table 18.10, the hierarchical regression of Time 1 friend stressors predicting Time 2 weekly alcohol use shows that at the end of Step 1, R^2 was significantly different from zero (R^2= *.45, F(3, 78)= 20.99, p<.01*). At Step 1, Time 1 weekly alcohol use (β = *.66, p<.01*) accounted for the 38% of the variance in weekly alcohol use at Time 2. As in previous regressions, the addition of Time 1 friend stress at Step 2 and the two-way interaction between Time 1 friend stressors and age, and Time 1 friend stressors and gender at Step 3 did not significantly contribute to the prediction of weekly alcohol use at Time 2. The addition of Time 1 avoidance coping and alcohol expectancies at Step 4 did not improve the prediction of weekly alcohol consumption at Time 2. The addition at Step 5 of the two-way interactions between Time 1 friend stressors and avoidance coping, Time 1 friend stressors and positive expectancies, Time 1 friend stressors and negative expectancies of cognitive impairment, Time 1 friend stressors and negative expectancies of aggression, Time 1 avoidance coping and age, Time 1 avoidance coping and gender, Time 1 positive expectancies and age, Time 1 positive expectancies and gender, Time 1

negative expectancies of cognitive impairment and age, Time 1 negative expectancies of cognitive impairment and gender, Time 1 negative expectancies of aggression and age, and Time 1 negative expectancies of aggression and gender improved the prediction of weekly alcohol use by 16% (*changes in R^2= .16, F(22, 59)= 5.60, p<.01*). At this step, the two-way interactions between positive expectancies at Time 1 and age (β= *-.36 p<.01*), and negative expectancies of cognitive impairment at Time 1 and age (β= *.36 p<.01*) significantly predicted weekly alcohol consumption at Time 2.

Table 18.10

Hierarchical Regressions of Chronic Friend Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Weekly Alcohol Consumption

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.45**	**.45***			
Weekly alcohol consumption Time 1			**.62**	**.66**	**.38***
Age			.00	.01	.00
Gender			.00	.00	.00
Step 2	.46	.01			
Step 3	.49	.03			
Step 4	.51	.02			
Step 5	**.68**	**.16***			
Weekly alcohol consumption Time 1			**.58**	**.62**	**.17***
Age			.00	.14	.01
Gender			.07	.12	.01
Friend stressors			-.01	-.07	.00
Friend stressors x Age			.00	-.14	.01
Friend stressors x Gender			.02	.20	.00
Avoidance coping			-.01	-.21	.01
Positive alcohol expectancies			.01	.48	.02
Negative expectancies (Cognitive impairment)			.00	-.15	.00
Negative expectancies (Aggression)			-.01	-.13	.00
Friend stressors x avoidance coping			.00	.01	.00
Friend stressors x Positive expectancies			.00	-.18	.01
Friend stressors x Negative expectancies (Cognitive impairment)			.00	-.12	.00
Friend stressors x Negative expectancies (Aggression)			.00	.06	.00
Positive expectancies x age			**.00**	**-.36**	**.05***
Positive expectancies x gender			-.01	-.42	.02
Negative expectancies (Aggression) x age			.00	-.23	.02
Negative expectancies (Aggression) x gender			.01	.13	.00
Negative expectancies (Cognitive impairment) x age			**.00**	**.36**	**.04***
Negative expectancies (Cognitive impairment) x gender			.00	.01	.00
Avoidance coping x age			.00	.03	.00
Avoidance coping x gender			.01	.34	.02

*Note: * p<.01*

***sr^2*: Semi-partial correlation**

Post-hoc probing of the interaction between negative expectancies of cognitive impairment and age showed that age moderated the effect of expectancies of cognitive impairment on weekly alcohol consumption, as shown in Figure 2.3. An examination of the simple regression lines of this interaction revealed that this moderating effect was present in younger (β= .032, $t(59)= 3.77$, $p<.01$) and older participants (β= .064, $t(59)= 4.51$, $p<.01$) showing that at low levels of expectancies of cognitive impairment, younger and older participants consumed similar amounts of alcohol, while at high levels of expectancies of cognitive impairment older participants consumed more alcohol than their younger counterparts.

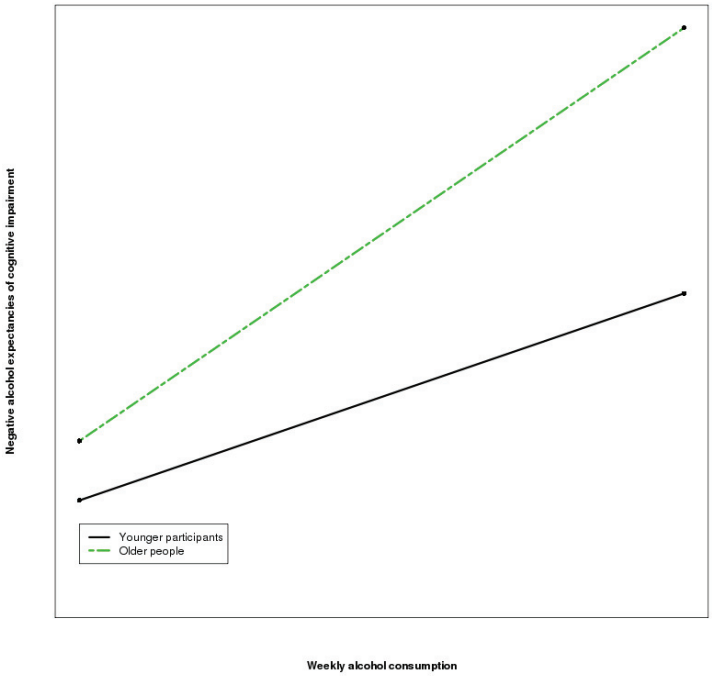

Figure 2.3 Simple intercepts, simple slopes of the two-way interaction between negative alcohol expectancies of cognitive impairment and age on weekly alcohol consumption.

Post-hoc probing of the interaction between positive expectancies and age as shown in Figure 2.4 indicates that age moderated the association between positive expectancies and weekly alcohol consumption. However, a more detailed examination of the simple regression lines of this interaction revealed that none of these were significant. Figure 10 indicates that younger participants consumed more alcohol than their older counterparts.

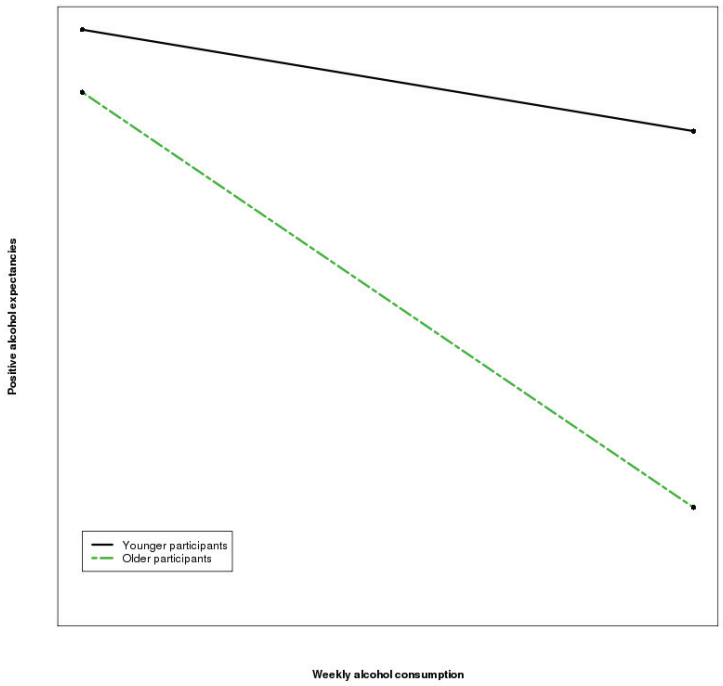

Figure 2.4 Simple intercepts, simple slopes of the two-way interaction between positive alcohol expectancies and age on weekly alcohol consumption.

Financial stressors

As shown in Table 18.11 the hierarchical regression of Time 1 financial stressors on weekly alcohol consumption at Time 2 shows that at the end of Step 1, R^2 was significantly different from zero (R^2= *.45, F(3, 78)= 20.99, p<.01*). This was also true at the end of Step 5 (R^2= *.64, F(22, 59)= 4.79, p<.01*). At Step 1, Time 1 weekly alcohol consumption (β= *.67, p<.01*) accounted for the 38% of the variance in weekly alcohol use at Time 2. The addition of Time 1 financial stressors at Step 2, and the two-way interactions between Time 1 financial stressors and age, and Time 1 financial stressors and gender at Step 3 did not significantly contribute to the prediction of weekly alcohol consumption at Time 2. At Step 4, Time 1 alcohol expectancies and avoidance coping were added and these did not improve the prediction of weekly alcohol use at Time 2. The addition at Step 5 of the two-way interactions between Time 1 financial stressors and avoidance coping, Time 1 financial stressors and positive expectancies, Time 1 financial stressors and negative expectancies of cognitive impairment, Time 1 financial stressors and negative expectancies of aggression, Time 1 avoidance coping and age, Time 1 avoidance coping and gender, Time 1 positive expectancies and age, Time 1 positive expectancies and gender, Time 1 negative expectancies of cognitive impairment and age, Time 1 negative expectancies of cognitive impairment and gender, Time 1 negative expectancies of aggression and age, and Time 1 negative expectancies of aggression and gender improved the prediction of weekly alcohol use at Time 2 by 18% (*changes in* R^2= *.18, F(22, 59)= 4.79, p<.01*). At this step, the two-way interactions between negative expectancies of

aggression at Time 1 and age (β= *-.32, p<.01*), and negative expectancies of cognitive impairment at Time 1 and age (β= *.40 p<.01*) significantly predicted weekly alcohol consumption at Time 2.

Table 18.11

Hierarchical Regression of Chronic Financial Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Weekly Alcohol Consumption

Variables	R^2	Change in R^2	B	B	sr^2
Step 1	**.45**	**.45***			
Weekly alcohol consumption T1			**.62**	**.67**	**.38***
Age			.00	-.01	.00
Gender			.00	.00	.00
Step 2	.45	.00			
Step 3	.45	.00			
Step 4	.46	.02			
Step 5	**.64**	**.18***			
Weekly alcohol consumption T1			**.60**	**.64**	**.20***
Age			.00	.14	.01
Gender			.07	.13	.01
Financial stressors			.00	.08	.00
Financial stressors x Age			.00	-.05	.00
Financial stressors x Gender			.00	.02	.00
Avoidance coping			-.01	-.17	.00
Positive alcohol expectancies			.00	.46	.02
Negative expectancies (Cognitive impairment)			.00	-.19	.00
Negative expectancies (Aggression)			-.01	-.18	.00
Financial stressors x avoidance coping			.00	.05	.00
Financial stressors x Positive expectancies			.00	.07	.00
Financial stressors x Negative expectancies (Cognitive impairment)			.00	-.08	.00
Financial stressors x negative expectancies (Aggression)			.00	.06	.00
Positive expectancies x age			.00	-.33	.03
Positive expectancies x gender			-.01	-.40	.02
Negative expectancies (Aggression) x age			**.00**	**-.32**	**.04***
Negative expectancies (Aggression) x gender			.01	.13	.00
Negative expectancies (Cognitive impairment) x age			**.00**	**.40**	**.05***
Negative expectancies (Cognitive impairment) x gender			.00	.12	.00
Avoidance coping x age			.00	-.03	.00
Avoidance coping x gender			.01	.33	.02

*Note: * p<.01*

***sr²*: Semi-partial correlation**

Post-hoc probing of the interaction between negative expectancies of cognitive impairment and age showed that age moderated the effect of expectancies of cognitive impairment on weekly alcohol consumption, as shown in Figure 2.5. An examination of the simple regression lines of this interaction revealed that this moderating effect was present in younger (β= .03, $t(59)= 3.25$, $p<.01$) and older participants (β= .06, $t(59)= 3.92$, $p<.01$) showing that at low levels of negative expectancies of cognitive impairment, younger and older participants consumed similar amounts of alcohol, while at high levels of negative expectancies of cognitive impairment older participants consumed more alcohol than their younger counterparts.

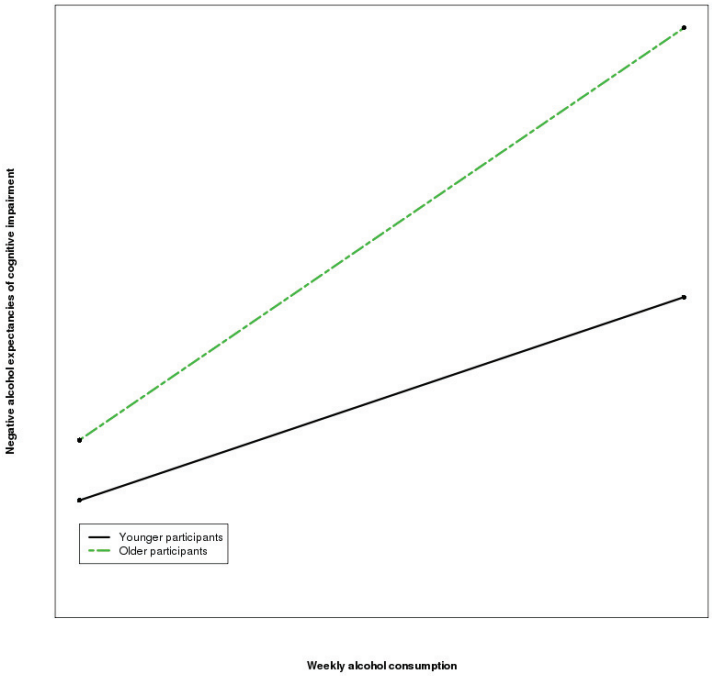

Figure 2.5 Simple intercepts, simple slopes of the two-way interaction between negative alcohol expectancies of cognitive impairment and age on weekly alcohol consumption.

Although the analysis of the hierarchical regression of weekly alcohol use on financial stressors suggested that age moderated the effect of expectancies of aggression on weekly alcohol consumption (shown in Figure 2.6) an examination of the simple regression lines of this interaction revealed that none of these were significant. However, Figure 12 shows that younger participants consumed more alcohol than their older counterparts.

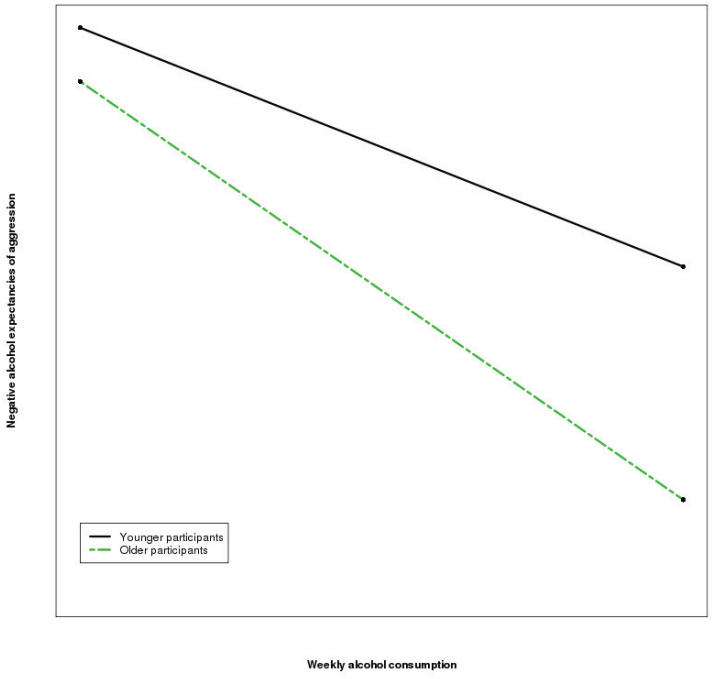

Figure 2.6 Simple intercepts, simple slopes of the two-way interaction between negative alcohol expectancies of aggression and age on weekly alcohol consumption.

Work stressors

Table 18.12 shows the hierarchical regression of Time 1 work stressors predicting weekly alcohol consumption at Time 2, indicating that at the end of Step 1, R^2 was significantly different from zero (R^2= *.39, F(3, 57)= 12.25, p<.01*). At Step 1, Time 1 weekly alcohol use (β= *.54, p<.01*) accounted for the 22% of the variance in weekly alcohol use at Time 2. The addition of Time 1 work stressors at Step 1, and the two-way interaction between Time 1 work stressors and age, and Time 1 work stressors and gender at Step 3 did not significantly contribute to the prediction of weekly alcohol consumption at Time 2. At Step 4, the addition of Time 1 avoidance coping and alcohol expectancies did not contribute significantly to the prediction of weekly alcohol consumption at Time 2. The addition at Step 5 of the two-way interactions between Time 1 work stressors and avoidance coping, Time 1 work stressors and positive expectancies, Time 1 work stressors and negative expectancies of cognitive impairment, Time 1 work stressors and negative expectancies of aggression, Time 1 avoidance coping and age, Time 1 avoidance coping and gender, Time 1 positive expectancies and age, Time 1 positive expectancies and gender, Time 1 negative expectancies of cognitive impairment and age, Time 1 negative expectancies of cognitive impairment and gender, Time 1 negative expectancies of aggression and age, and Time 1 negative expectancies of aggression and gender did not improve the prediction of weekly alcohol consumption.

Table 18.12
Hierarchical Regression of Chronic Work Stressors, Age, Gender, Avoidance Coping and Positive and Negative Alcohol Expectancies Predicting Weekly Alcohol Consumption

Variables	R^2	Change in R^2	B	β	sr^2
Step 1	**.39**	**.39***			
Weekly alcohol consumption Time 1			**.50**	**.54**	**.22***
Age			.00	-.16	.02
Gender			-.01	-.10	.00
Step 2	.40	.01			
Step 3	.43	.03			
Step 4	.45	.02			
Step 5	**.69**	**.24**			

*Note: * p<.01*
***sr^2*: Semi-partial correlation**

Summary

This longitudinal study was designed to examine the effects of stress on alcohol consumption over a 12-month period. In line with previous research it was hypothesised that participants who experienced greater levels of stress would drink more and do so in a more harmful way. However, the data did not reveal any significant association between acute (e.g., life events) and chronic (e.g., home, spouse, friend, financial and work) stressors. Study 2 also examined the direct associations between age and alcohol measures, and gender and alcohol measures. The longitudinal findings were not in line with the cross-sectional data, as this study revealed that neither age nor gender predicted either alcohol measure.

Furthermore, the longitudinal study examined the role of age and gender as moderators of the association between stress and alcohol use. It was expected that the association between stressors and alcohol use would be greater in older adults. However, age was not

a significant moderator of the associations between acute stressors and alcohol measures, or chronic stressors and alcohol measures. Furthermore, there was no evidence for gender as a moderator of the association between stress and alcohol measures.

Study 2 also examined the direct associations between baseline measures of avoidance coping and alcohol measures at follow up. It was expected that greater reliance on avoidance coping would be associated with more alcohol use and more harmful drinking. However, there was no support for this in the longitudinal data.

Furthermore, Study 2 tested that association between alcohol expectancies at baseline and alcohol measures at follow up. It was expected that greater endorsement of positive alcohol expectancies at baseline would predict more alcohol use and harmful drinking at the 12 month follow up. Longitudinal data did not reveal a significant association between the variables. However, age was a significant moderator of this association, as positive expectancies were more strongly correlated with weekly alcohol use in older participants.

Study 2 also tested the hypothesis that higher negative expectancies (i.e., cognitive impairment and aggression) at baseline would predict less alcohol consumption and harmful drinking at follow up. Longitudinal data did not support this expectation. However, Study 2 revealed that age moderated the association between negative expectancies of cognitive impairment and weekly alcohol use, as this association was stronger in older participants. These findings were not in line with expectations that the

association between negative expectancies would predict less alcohol consumption in older participants (Nicolai et al., 2012).

Lastly, Study 2 tested the moderating role of avoidance coping and alcohol expectancies on the relationship between stress and alcohol use. In line with the findings of Study 1, no significant two-way interactions between stressors and avoidance coping, stressors and positive expectancies, and stressors and negative expectancies (e.g., cognitive impairment and aggression) were found.

Overall, the findings of this study were not in line with the expectations that stress variables would predict alcohol measures, and that age, gender, avoidance coping and positive and negative alcohol expectancies would moderate this relationship. However, these findings need be interpreted with caution, as the modest sample size reduced the overall statistical power of the analysis, which may explain why some main findings from Study 1 were not observed in study 2.

CHAPTER 6: GENERAL DISCUSSION AND CONCLUSIONS

In this chapter, the results of Study 1 and Study 2 are discussed in relation to the findings of previous research. In addition, the limitations, directions for future research, and implications for interventions are discussed.

Acute and Chronic Stress and Alcohol Use

Studies examining the relationship between stress and alcohol use have revealed that acute (Aseltine & Gore, 2000; Cole et al., 1990; Mattoo et al., 2009; Ragland et al., 1995; Rutledge & Sher, 2001) and chronic stressors (Brennan & Moos, 1990; Brennan et al., 1994; Brennan et al., 1999; Liu et al., 2009; Skaff et al., 1999) are associated with greater alcohol consumption and drinking problems. However, not all research has been consistent as some studies examining acute stressors (e.g., Castillo et al., 2008; Graham & Schmidt, 1999; Krause, 1995; Moos et al., 2004) and chronic stressors (e.g., Moos et al., 2004; Schutte et al., 1998) showed that the associations between stressors and alcohol measures were not significant. It is noteworthy that several of the studies examining the association between stress and alcohol use were based on the same parent sample (Brennan & Moos, 1990; Brennan & Moos, 1991; Brennan et al., 1994; Brennan et al., 1999; Moos et al., 1990). Furthermore, contradictions might be an artifact of factors associated to longitudinal design and analysis, such as different lengths of time between stressors and alcohol measures,

multivariate predictive models where various stressors were omitted, or where stressors were in competition with one another to predict drinking outcomes.

The findings of the cross-sectional and longitudinal studies of this thesis showed little support for the associations between both kinds of stressors, and harmful drinking or weekly alcohol consumption. Only the bivariate analysis of cross-sectional data showed that life events and financial stressors were associated with harmful drinking.

Age and Alcohol Use

Cross-sectional data showed that younger participants consumed more alcohol and did so in a more harmful way than their older counterparts. However, longitudinal data showed no significant association between age and alcohol measures. The findings of the cross-sectional study are in line with prior research indicating that people tend to decrease alcohol consumption with age (Liberto, Oslin, & Ruskin, 1992) and that older people drink less than their younger counterparts (Breslow & Smothers, 2004; Pabst, Kraus, Piontek, et al., 2010; Merrick et al., 2008; Temple & Leino, 1989). This may be due to a generational bias in self-reported alcohol measures, with older adults being more reluctant to admit to excessive drinking and drinking problems (Bacharach, Bamberger, Cohen, et al., 2007), or the effect of other age-related untested variables, such as health problems, increased use of medication, and limited or restricted access to alcohol due to medical supervision.

This thesis also examined the moderating role of age on the association between positive expectancies and alcohol use. Interestingly, longitudinal data revealed that older participants who endorsed more positive expectancies reported more weekly alcohol consumption than younger participants with similar levels of positive expectancies. However, at low levels of expectancies of cognitive impairment, younger and older participants consumed similar amounts of alcohol. These findings may reflect cultural and generational attitudes, as previous studies have shown that “baby boomers”, now well into the over 65-age bracket, have been more exposed to substance abuse and report greater endorsement of beliefs that alcohol consumption offers health and social benefits (Heuberger, 2009; Patterson & Jeste, 1999; Phillips & Katz, 2001). Due to this generational bias related and a greater exposure to positive alcohol beliefs, positive expectancies may have a greater impact on alcohol consumption in older people.

Lastly, longitudinal data revealed that age moderated the association between negative expectancies of cognitive impairment and weekly alcohol use. Specifically, the findings indicated that the association between expectancies of cognitive impairment and alcohol use was stronger in older participants. These results are consistent with those reported by Pabst et al. (2010), and may reflect negative personal drinking experiences (Leigh & Stacy, 2004). These negative experiences are more likely to be present in older adults, who have a longer drinking history than their younger counterparts. Negative drinking experiences may then lead to stronger beliefs of negative drinking outcomes, although these do not necessarily result in a decrease in alcohol consumption (Leigh & Stacy, 2004)

Gender and Alcohol Use

Cross-sectional data revealed that gender was significantly associated with both alcohol measures indicating that men consume more alcohol and do so in a more harmful way than women. The findings are in line with those reported by previous studies (Byrne et al., 1999; Glass et al., 1995; Kim, Lee, Kiang, et al., 2013; Rutledge & Sher, 2001; Wilsnack & Wilsnack, 2013). These findings may reflect socio-culturally determined expectations of behaviour for men and women that are particularly strong in older adults. Studies have suggested that the differential effect of gender is closely associated to cultural factors that allow men's drinking behaviour to be more frequent and more intense than women's (Castillo et al., 2008; Ricciardelli, Connor, Williams, et al., 2000; Shaw et al., 2011; Wilsnack & Wilsnack, 2013). However, some studies suggest that the gender gap is closing, and the drinking patterns of men and women are converging (Keyes, Grant, & Hasin, 2008; Kuntsche, Kuntsche, Knibbe, et al., 2011). Nonetheless, cross-sectional data showed no support for this. Interestingly, the findings of Study 2 were more in line with those reported by Slopen, Williams, Fitzmaurice, and Gilman (2011), showing no significant gender differences in alcohol measures. However, the longitudinal findings of this thesis are likely biased by low statistical power due to small sample size.

Neither the cross-sectional data in Study 1 nor the longitudinal data in Study 2 showed that gender was a significant moderator of the relationship between stress and alcohol measures. These findings were unexpected as studies seem to suggest that the association

between stress and alcohol use may be moderated by gender (Brennan & Moos, 1990; Brennan et al., 1999; Brennan et al., 2011; Glass et al., 1995; Moos et al., 2004; Shaw et al., 2011; Perreira & Sloan, 2011; Welte & Mirand, 1995). However, the findings of these studies are mixed, and do not reveal a consistent association. A more recent study suggested that gender-related differences in the association between stress and alcohol use are likely the result of gender differences in the experience of stress (Sacco, Bucholz, & Harrington, 2013). This study showed that women drank less than men, but reported higher levels of stress and changes in mood. These findings lead the researchers to conclude that women respond to stressors with significant changes in mood, without associated changes in drinking. In the case of men, researchers concluded that stress was significantly associated to drinking problems, showing that drinking behaviour may be a more common response to stressors among men.

This thesis examined the hypothesis that gender was a significant moderator of the association between positive expectancies and alcohol measures. However, no significant gender-related differences in levels of positive expectancies were observed. Previous studies examining gender-related differences in positive expectancies have shown mixed findings. Some studies show that women report more positive expectancies than men (Edgar & Knight, 1994; Lundahl, Davis, Adesso, Berger, & Milligan, 1992; Lundahl, Davis, Adesso, & Lukas, 1997), and others indicate that men endorse more positive expectancies than women (Brown, Goldman, Inn, & Anderson, 1980). In addition, prior research has shown that the interaction between positive expectancies and gender moderates the

association between stress and alcohol use (Armeli et al., 2000; Cooper et al., 1992). Testing these higher-order interactions was not conducted given the limited sample size.

Cross-sectional data showed that gender moderated the relationship between negative expectancies of cognitive impairment and alcohol use, as women who endorsed more negative expectancies of cognitive impairment consumed more alcohol than men with similar levels of negative expectancies. The findings suggest that for women the belief that alcohol consumption will result in negative cognitive effects (e.g., confusion, hindered judgement) was not as strong a deterrent as it was for men. However, longitudinal data did not support this. Interestingly, prior studies have suggested that variables such as cultural expectations (Mahoney, Graham, Cottrell et al., 2012; Shih, Miles, Tucker, et al., 2012), gender-related differences in conceptualising notions of "aggression" and "clumsiness" (McCarthy, Pedersen, & D'Amico, 2009), and even an interaction between gender and age (Nicolai et al., 2012) may account for the moderating role of gender on the association between negative expectancies and alcohol consumption.

Avoidance Coping and Alcohol

The cross-sectional results in this thesis showed that greater reliance on avoidance coping was associated with more alcohol consumption. These findings are in line with studies showing that avoidance coping was associated with alcohol measures in the positive

direction (Aldridge-Gerry, Roesch, Villodas, et al., 2011; Moos et al., 1990; Timko et al., 2005; Wills & Shiffman, 1985). However, the cross-sectional and longitudinal results of this thesis did not support the hypothesis that avoidance coping moderated the relationship between stressors and alcohol measures. It is noteworthy that, although a group of participants in Studies 1 and 2 may have reported greater reliance on avoidance coping, it is unknown whether they relied primarily on these strategies to the exclusion of other types of coping. A more detailed assessment of the participant's coping strategies was required.

Positive Expectancies and Alcohol Use

The cross-sectional data of Study 1 revealed that the associations between positive alcohol expectancies and alcohol measures were in the expected direction, as positive expectancies were associated with greater alcohol use. These findings are in line with prior research showing a significant positive association between positive expectancies and alcohol use (e.g., Ham et al., 2010; Patrick et al., 2010; Satre & Knight, 2001).

However, this thesis showed no significant moderating effect of positive expectancies on the relationship between stress and alcohol measures. These findings are not in line with those of previous studies indicating that positive expectancies moderated the association between measures of stress and alcohol use (e.g., Armeli et al., 2000; Cooper et al., 1992). One hypothesis is that drinking context moderates the association between alcohol expectancies and drinking behaviour (Monk & Heim, 2013a). Studies indicate that alcohol

expectancies are strongly associated to drinking contexts (e.g., at a party or bar, after experiencing negative affect, with a romantic partner) (Ham, Zamboanga, Bridges et al., 2013; Monk & Heim, 2013b, 2013c). Such studies showed that people were more likely to report positive expectancies (e.g., social, fun and tension reduction) when these were assessed in a group context (Monk & Heim, 2013b), or in a bar (Monk & Heim, 2013c), and less positive expectancies when assessed in a lecture theatre (Monk & Heim, 2013c).

Other studies have suggested that, in addition to contextual variables, mood can moderate the association between alcohol expectancies and drinking behaviour (e.g., Demmel & Nicolai, 2011). One study showed that mood can determine drinking behaviour by altering the strength of alcohol expectancies, revealing that people who experienced certain mood states (e.g. sleepy/awake) were more likely to report alcohol expectancies of sedation (Demmel, Nicolai, & Gregorzik, 2006). These findings suggest that further research is required to more fully explain the interactions between internal cues (mood), external cues (drinking context), alcohol expectancies, and drinking behaviour.

Negative Expectancies and Alcohol Use

The cross-sectional data of this thesis showed that participants who endorsed more negative alcohol expectancies of cognitive impairment reported less weekly alcohol consumption and less harmful drinking. However, no significant association between negative expectancies of aggression and either alcohol measure was revealed. These

findings partially support studies showing that negative expectancies of cognitive impairment and aggression were associated with lower levels of alcohol consumption (e.g., Nicolai et al., 2012; Satre & Knight, 2001).

As to the moderating role of negative alcohol expectancies, the cross-sectional data presented in Study 1 revealed no statistically significant interactions between stress and negative expectancies (e.g., cognitive impairment or aggression). Similarly, the longitudinal data revealed that none of the interactions between stress and measures of negative expectancies (e.g., cognitive impairment and aggression) were significant. It is noteworthy that two of the studies included in the review examined the moderating role of negative alcohol expectancies. These studies highlighted the presence of a significant higher-order interaction between gender, alcohol expectancies and stress in relation to alcohol use. However, given the limited sample size of the Study 1 and 2, these higher order interactions could not be reliably tested in this thesis.

It has been suggested that some categories of alcohol expectancies may be stronger predictors of alcohol measures in participants with more severe drinking problems or with greater drinking experience (e.g., Young et al., 2006). As previously discussed, participants of this thesis tended to report less alcohol consumption and fewer drinking problems than the general population. It is possible that the effect of negative expectancies of aggression were not relevant to this sample consisting largely of non-problem drinkers whose drinking patterns tend not to be associated with aggressive behaviour.

Stability of Measures

Stability analyses showed that harmful alcohol use, home stressors and financial stressors had the highest stability. However, weekly alcohol consumption varied considerably, revealing that the drinking behaviour of participants was not stable over time. However, it is noteworthy that the best predictor of levels of alcohol consumption at the follow-up was the baseline measures of the same variable suggesting that participants who reported high levels of alcohol consumption would continue to drink high doses of alcohol in the future.

Interestingly, avoidance coping varied significantly, despite previous studies revealing that coping measures were stable over time (e.g., Compas et al., 1988; Holahan & Moos, 1987; Kirchner et al., 2010; McCrae, 1989; Terry, 1994). Further research is required to examine this inconsistency, particularly in relation to alcohol use.

Limitations

One limitation of Study 1 and Study 2 is the relatively short time frame (1 year) and the inclusion of only two measuring points. It has been suggested that avoidance coping strategies are effective for dealing with the effect of ongoing stressors in the short term, and their association with drinking is better examined over longer periods of time (Stone et al., 1995). Although a longitudinal design allowed for the testing of directional and

temporal associations, the time between the baseline and the follow up (12 months) may have been insufficient to fully test the relationships between stress, avoidance coping and alcohol measures. Longer studies have shown that this relationship becomes more significant over longer periods of time such 20 years (Brennan et al., 2011). In contrast, it is possible that the studies in this thesis found a significant relationship between alcohol expectancies and alcohol use suggesting a more proximal nature for this association. Future studies need to more fully examine the target associations by increasing the follow-up period and including multiple measuring points. In addition, future studies may examine the profile of chronically stressed drinkers and compare their profile with that of people who drink to cope with shorter periods of high stress. Such analysis may provide relevant information on the effects of prolonged periods of stress and the stability of variables such as coping strategies and alcohol expectancies.

Another limitation of the studies is the large proportion of participants recruited through the Internet. Internet samples are subject to higher risk of selection bias, as the researchers rarely know the number of potential respondents resulting in an unintended selection bias (Freeman, 2002). Furthermore, the potential selection bias discussed in previous paragraphs is perpetuated by a large number participants of the original sample opting out of the second study. Therefore, the longitudinal findings of this thesis were furthered biased by a small sample size (*N*= 88), which reduced the overall statistical power of the analysis. The sample size in Study 2 was smaller than recommended for regression analysis (Tabachnick & Fidell, 2001), thus limiting the capacity to detect

potential relationships between the variables. Therefore, the findings of Study 2 need be interpreted with caution.

It is noteworthy that the sample of Study 2 was more biased, as participants who responded to the second survey endorsed less positive alcohol expectancies and relied less heavily on avoidance coping strategies. It is also noteworthy that participants who refused to be included in the 12-month follow up were younger, consumed alcohol in a more harmful way, endorsed more positive alcohol expectancies and reported greater use of avoidance coping strategies. Future studies need to incorporate methods to improve response and retention rates, particularly in younger participants. Previous studies have successfully implemented monetary incentives and token gifts coupled with intensive follow-ups in order to increase participation among student samples (Kypri & Gallagher, 2003; Kypri, Gallagher, & Cashell-Smith, 2004).

Another important limitation was the low levels of alcohol consumption reported by participants in Studies 1 and 2. The majority of the participants reported alcohol use levels that were significantly lower than those considered “risky” by the Australian Institute of Health and Welfare (2011). Although rates of “abstinence” (i.e., reporting no alcohol consumption in the previous month) were at levels similar to those reported by the general Australian population (17.6%) (Australian Bureau of Statistics, 2013) the levels of consumption reported by those who recently drank alcohol are unlikely to represent that of the general population. Lastly, the majority of participants (79.7% of men and 82.2% of

women) reported experiencing no drinking problems and therefore this variable could not be included in the analysis.

In addition, the findings of this thesis may not be applicable to clinical populations. Research has shown that alcohol-dependent clients report stronger positive and negative alcohol expectancies (Dickson, Gately, & Field, 2013), and that clinical samples tend to be older, experience a greater number of stressors, and be at greater risk of having alcohol use disorders (Bischof, Reinhardt, Freyer-Adam et al., 2010). Further studies with clinical samples are now needed.

Furthermore, the nature of the questionnaire required that participants' recalled and reflected on recent stressful events circumstances, reported their levels of alcohol consumption and indicated their alcohol expectancies. These may have led participants with greater levels of alcohol use, who endorsed more positive alcohol expectancies, and/or who relied more heavily on avoidance coping strategies, to decline being included in the follow up. Future longitudinal studies may benefit from designing questionnaires that elicit answers through less confronting questions in order to decrease dropout rates.

Another important issue is the use of self-report measures to assess alcohol consumption. It is noteworthy that the large majority of studies reviewed relied on self-report scales to examine stressors variables and alcohol measures. Self-report measures rely on the participant's recollections of the events and circumstances, which are strongly related to the salience of the situation. Studies have raised the issue of how variables such as

perceived social desirability, the level of sensitivity of the information and the context of the assessment affect self-reported data on stress and alcohol use (Babor, Stephens, & Marlatt, 1987; Midanik, 1988). Previous research has shown that participants may underreport alcohol consumption and drinking problems when asked in relation to socially sensitive stressors, such as loss of job, divorce or friends and family stressors (Gallo et al., 2001). In particular, researchers have highlighted the difficulties of using self-report measures with older adults, since underreporting and recall difficulties have also been observed in this age group (Heuberger, 2009; Pabst et al., 2010). One common problem when assessing the frequency of alcohol consumption relates to the time period that is referenced. Studies tend to probe for alcohol consumption in the past day, week, month and even year (Taylor, 2013). Items related to the frequency of consumption require details on all types of alcohol consumed, which can be time consuming, and not always a reliable reflection of drinking patters, due particularly to recall difficulties (Taylor, 2013). In a similar manner, self-reported measuring of drinking quantities is complicated by the many types of alcohol and their different volumes of pure alcohol per drink.

Despite these concerns, researchers have pointed out that it is unlikely that other methods (e.g., reports from peers or relatives) would provide more reliable or valid information, as both drinking problems and alcohol consumption are not frequently observed by others (Connors & Maisto, 2003). In addition, there is a growing body of evidence showing that self-reported measures of drinking behaviour and associated stressors are sufficiently reliable and valid (Czarnecki, Russell, Cooper et al., 1990;

Chaikelson, Arbuckle, Lapidus et al., 1994; Liu , Serdula, Byers et al., 1996; Northcote & Livingstone, 2011). In the light of these considerations, future researchers could incorporate secondary measures of alcohol use, such as family or partner reports. Furthermore, prospective studies could better reflect alcohol consumption through the use of a diary collecting daily data on drinking behaviour (Armeli et al., 2000). Such an instrument would decrease the impact memory and social desirability on the data. Ideally, future studies would include biological measures of alcohol consumption, to more fully register changes in drinking associated to the independent and moderating variables, and assess the validity of self-reported data (Byrne et al., 1999). One of the studies included in this review used a biological measure consisting of blood samples testing serum liver enzyme levels, which are commonly elevated in people using or abusing alcohol (Byrne et al., 1999). These biological measures, while accurate and reliable, tend to be impractical and costly, thus limiting the number of studies that rely on them to verify self-reported data.

Directions for Future Research

Stressor appraisal

The stress-coping model proposes that the behavioural reaction to stress is strongly determined by the cognitive appraisal of stressors. Cognitive appraisal includes the perceived threat of stressors and the perceived abilities and resources available for the individual to cope with those stressors (Lazarus & Folkman, 1984). Previous studies have

shown gender-related differences in stress, suggesting that men and women appraise stressors differently based on their culturally assigned roles and expectations. One study revealed that women were more likely to report family, children and spouse related stressors (Castillo et al., 2008). A second study revealed that women reported more family and friend stressors, while men were more likely to report work and financial stressors (Moos et al., 1990). A third study showed that women were more likely to respond to family related stressors whereas men dealt with financial and peer relationships (Brennan et al., 1993). A fourth study revealed that women reported more stressors related to their social networks, while men reported more stressors related to work and personal finances (Conger, Lorenz, Elder et al., 1993). Another showed that women were more likely to recall and report interpersonal issues than men, but men were more prone than women to externalise their response to stress by increasing their drinking behaviour (Lemke et al., 2008). Although the findings of the cross-sectional provide some support for the stress-coping model, testing the full model by examining gender differences in the appraisal of stress was beyond the scope of this thesis.

Spouse support, social support and alcohol consumption

Research has shown that marital status plays an important role in the moderation of drinking behaviour (Dawson, Goldstein, & Grant, 2013; Dawson, Grant, Stinson et al., 2006; Pilowsky, Keyes, Geier et al., 2013), and the relationship between work stress and alcohol consumption (Hagihara, Miller, Tarumi, et al., 2003). In some cases, spouses have

been shown to encourage decreases in drinking behaviour (Flynn, Alvarez, Jason, et al., 2006), while in others drinking becomes a behaviour that aids the bonding process of the couple and spouses encourage greater alcohol consumption (Moos et al., 2010)

Spouse support is but one dimension of the broader concept of social support. Social support is defined by Cohen and McKay (1984) as the mechanisms by which interpersonal relationships may buffer one against a stressful environment preventing psychological or somatic disorders. This definition highlights the association between social support, stress and coping, particularly in relation to alcohol use. In support of this view, studies have shown that social support can be a significant influence in the drinking behaviour of both young and older adults (Preston & Goodfellow, 2006). However, findings describing the direction and strength of this association are inconsistent (Borsari & Carey, 2006). The great variance of results in the existing literature is considered to be a consequence of the different measures used to assess social support (Maulik et al., 2010) and the different age groups on which these studies have been conducted (Groh, Jason, Davis, et al., 2007).

It is important to note that most of the research on social support and alcohol consumption has been conducted with younger samples. Caution must be exercised when extrapolating these findings from younger populations to older people, as the quality of social relationships, life cycle events and psychosocial resources are quite different between these two cohorts (Preston & Goodfellow, 2006). Evidence suggests that changes in social support provided by family members decreases with time, and people attribute

greater importance to social support from friends as they age (Levitt, Guacci-Franco & Levitt, 1993). Further examination of the associations between social support, age and alcohol use are needed in order to better describe the relationship between these variables, particularly in relation to acute and chronic stressors

Financial resources and alcohol use

Several studies indicate that there is a significant association between socio-economic status and alcohol use, showing that higher income and socioeconomic status is positively associated with alcohol consumption (Merrick et al., 2008; Moos et al., 2010; Platt et al., 2009, 2010; Preston & Goodfellow, 2006; Tucker, Vuchinich, Black, et al., 2006). This association can be explained through several hypotheses. Financial resources may provide the means to obtain desirable rewards and decrease social alienation and distress, protecting the individual from the need to consume alcohol in order to reduce stress. In contrast, higher economic status can be associated with an increased demand for alcohol, or higher income may lead to more workload and stress. Another hypothesis suggests that financial resources provide more opportunity to purchase alcoholic beverages and maintain social activities (Moos & Moos, 2007; Tucker et al., 2006). Other research has suggested that finances and income may be associated to other constructs such as time available for drinking, social demands for alcohol consumption, educational attainment, or cultural use of alcohol for career advancement (Platt et al., 2010). These associations

remain to be examined in order to more fully understand the relationship between financial stress and alcohol measures.

Health stressors and alcohol use

Mental and physical health is thought to influence drinking behaviour and may moderate the association between age and alcohol consumption (Heurberg, 2009). Support for this hypothesis can be found in studies showing that age-related increases in medical conditions, health events and medication use correlate with decreased alcohol consumption and drinking problems (Moos et al., 2010).

Studies have shown that changes in physical health may contribute to a decrease in alcohol use (Gurnak, 1997; Holahan, Schutte, Brennan et al., 2010; Moos et al., 2010), and that older adults are more likely to display signs of negative alcohol-related consequences in relation to changes in physical health (e.g., Moos et al., 2010). Other studies have shown that being diagnosed with a life threatening illness increased alcohol use (e.g., Maulik, Eaton, & Bradshaw, 2010). Similarly, mental health problems such as depression and anxiety may increase the levels of alcohol consumption in older adults (e.g., Heuberger, 2009).

The aforementioned findings suggest that some health events may increase alcohol consumption, while others decrease this behaviour. There are several hypothesis of how health problems may interact with alcohol consumption. Patients may try to decrease their alcohol intake to avoid aggravating their health problems (Gurnak, 1997); people

who are taking medications may need to stop drinking alcohol to avoid harmful interactions (Gurnak, 1997; Moos et al., 2010); new health problems may disrupt normal eating and social habits which would modify an individual's drinking behaviours (Moos et al., 2010) or the health problem may be an "eye opener" confronting the individual with his own mortality and increasing the intrinsic motivation to stop drinking (Moos et al., 2010). In addition, factors such as reduced social interactions, negative side effects from medication and other environmental factors may account for the effects of health stressors on alcohol consumption (Perreira & Sloan, 2001). In order to more fully understand the association between age and alcohol consumption, further studies examining the recency and chronicity of health problems, and how these variables may moderate the association between stress and alcohol use are required.

Implications for Interventions

The findings of this study support the association between alcohol expectancies and alcohol consumption, suggesting that modifications in alcohol expectancies would result in changes in alcohol consumption. Alcohol expectancies are learned associations or beliefs, and can be challenged using cognitive behavioural strategies, resulting in decreased beliefs of positive outcomes of alcohol use (Young, Connor, & Feeney, 2011). As a therapeutical technique, expectancy change has been shown to successfully reduce

alcohol use in clinical and non-clinical samples (Carrigan, Ham, Thomas, & Randall, 2008; Lau-Barraco & Dunn, 2008; Wiers & Kummeling, 2004).

Similarly, the findings of this study describing the association between avoidance coping and alcohol use suggest that intervention strategies aimed to reduce reliance on avoidance coping strategies by teaching approach and problem solving coping strategies may reduce alcohol use. Interventions focusing on the development of approach coping strategies may prove useful in helping people manage distress associated to the experience of environmental stressor (Conrod, Castellanos-Ryan, & Strang, 2010, Conrod, Castellanos-Ryan, & Mackie 2011; Vieten, Astin, Buscemi, et al., 2010). It is expected that the resulting increased reliance on approach coping strategies will result in a reduced use of avoidance coping strategies and, in turn, decreased alcohol consumption.

Summary and Conclusions

This thesis addressed some of the limitations of past research. Prior studies have shown that a longitudinal model is needed to evaluate the relationship between stress and alcohol use (Brennan et al, 2011; Stone, Kennedy-Moor, & Neale, 1995). Therefore, a longitudinal design was used to complement the analysis of cross-sectional data.

The majority of studies examining the association between stressors and alcohol use have focused on particular age groups (e.g., teenagers, middle-aged adults, older adults).

However, to better examine the moderating role of age, in this thesis age was examined by including participants with ages ranging from 18 to 87, and examined as a moderator.

Thirdly, prior studies examining the association between stressors and alcohol use have tended to test either acute (e.g., life stressing events) or chronic stressors (ongoing financial, work and marital difficulties). Therefore, the analyses of the influence of both types of stressors are limited. In this thesis, both acute and chronic stressors were assessed in order to identify the differential effects of both types of stressors on alcohol measures.

Lastly, no prior study testing the moderating roles of avoidance coping, positive and negative expectancies, age and gender in relation to the association between stress and alcohol use was identified. Therefore, these variables were integrated in the model tested by this thesis, allowing for a more complete examination of these associations. While this thesis addressed some of the limitations of previous studies, it was not without its limitations.

This thesis was designed to examine the associations between both acute and chronic stressors and alcohol measures (i.e., harmful drinking and weekly alcohol use). Although bivariate analyses showed weak support for an association in the positive direction between stressful life events and harmful alcohol use, and financial stressors and harmful alcohol use, the regression analyses of the cross-sectional and longitudinal data revealed

no statistically significant associations between chronic home, spouse, friend, and work stressors, and alcohol measures (i.e., weekly alcohol use and harmful drinking).

Although prior research showed that age, gender, avoidance coping, and positive and negative expectancies moderated the relationship between stressors and alcohol measures, no evidence for this moderating effect was found in this thesis. However, longitudinal research is required to examine these associations over longer periods of time, as studies have shown that shorter periods of time may be insufficient to test the relationships between stress and alcohol measures.

As to the relationship between avoidance coping and alcohol use, cross-sectional data indicated that participants who relied more often on avoidance coping reported greater alcohol consumption. Moreover, regression analyses showed that the association between avoidance coping and weekly alcohol consumption was moderated by gender, as women who relied more heavily on avoidance coping consumed less alcohol. In contrast, men who relied less on avoidance coping consumed more alcohol than women with similar levels of avoidance coping. These findings are in line with prior research showing that avoidance coping predicted poorer drinking outcomes, and that this association was stronger in men than in women (Brennan & Moos, 1996; Timko et al., 2005). Although this thesis did not show a significant interaction between stress and coping in relation to alcohol measures, the findings showing a significant relationship between avoidance coping and alcohol use provide some support for the stress-coping model of alcohol

consumption, suggesting that people who lack more adaptive coping strategies are more likely to consume alcohol in response to stress. In order to more fully examine this model, further studies which larger sample sizes are required to test the higher-order interactions between stressors, gender, and avoidance coping in relation to alcohol measures.

Interestingly, the post-hoc analyses in one instance showed that women who relied more heavily on avoidance coping consumed less alcohol. In contrast, men who relied less on avoidance coping consumed more alcohol than women with similar levels of avoidance coping. Future research is needed to determine the influence of factors such as culturally assigned roles and expectations that may influence drinking behaviour, particularly in relation to stress.

In regards to the association between alcohol expectancies and alcohol measures, cross-sectional data indicated that positive expectancies were associated with greater alcohol use. Moreover, cross-sectional data revealed that participants who endorsed more negative alcohol expectancies of cognitive impairment consumed less alcohol and reported less harmful drinking. Furthermore, cross-sectional data revealed that the association between negative expectancies of cognitive impairment and weekly alcohol consumption was moderated by gender, as the relationship between these variables was stronger in women.

Cross-sectional and longitudinal data showed that the interactions between stress and negative expectancies (e.g., cognitive impairment or aggression) were not significant, thus

failing to support the hypothesis that negative expectancies moderated the association between stress and alcohol use. These findings suggest that the tenets of the tension-reduction theory are insufficient to account for the examined associations. Interestingly, cross-sectional data provided some support for the stress-vulnerability model, suggesting that people who hold more positive alcohol expectancies or rely more heavily on avoidance coping are at greater risk of consuming alcohol. However, in order to fully examine this model, further research is required to test the higher order interactions between stress, avoidance coping, and alcohol expectancies in relation to alcohol consumption over a period of time.

The expectation that age and gender would moderate the relationship between stress and alcohol measures was not supported by the findings of this thesis, perhaps because the range and distribution of the age variable, and the smaller number of male participants. Furthermore, avoidance coping, positive expectancies, and negative expectancies (i.e., cognitive impairment and aggression) did not moderate the relationship between stress and alcohol measures.

An analysis of the longitudinal data revealed that the majority of the acute and chronic stressors were not associated to changes in alcohol measures (i.e., weekly alcohol use and harmful drinking). Although avoidance coping was not a predictor of alcohol measures, age moderated this association, as the relationship between negative expectancies of cognitive impairment and weekly alcohol use was stronger in older participants.

Furthermore, no significant association between alcohol expectancies (i.e., positive and negative) and alcohol measures was observed. However, positive expectancies were found to be more strongly correlated with weekly alcohol use in older participants.

In conclusion, this study provided weak support for the tension-reduction model of alcohol consumption showing that only life stressing events and financial stressors were associated with harmful alcohol consumption in the bivariate analyses. There was partial support for the moderating role of age, showing that age moderated the association between positive expectancies and alcohol consumption, and negative expectancies of cognitive impairment and alcohol consumption. Furthermore, the findings revealed partial support for the expectation that gender moderated the relationship between negative expectancies of cognitive impairment and alcohol consumption, and avoidance coping and cognitive impairment. The expectation that avoidance coping and alcohol expectancies moderated the association between stressors and alcohol use was not supported by the findings. The examination of other possible moderating factors, such as health stressors, drinking contexts, and drinking history is now required.

APPENDICES

Appendix A

1. **Gender**
   - ☐ Male
   - ☐ Female

2. **When were you born?**
   Day:
   Month:
   Year:

3. **What country where you born in?**

4. **What language do you speak at home?**

SOME FACTS ABOUT YOU

5. **What is the highest level of education you have completed?**
   - ☐ 8 or less
   - ☐ 9th
   - ☐ 10th
   - ☐ 11th
   - ☐ 12th
   - ☐ 1st
   - ☐ 2nd
   - ☐ 3rd
   - ☐ 4th
   - ☐ 5th
   - ☐ Higher Education
   - ☐ Post Graduate Education

6. **In what country or State in Australia did you complete your schooling?**

7. **At what age did you leave school?**

8. **Not counting check-ups, how many times did you see doctor DURING THE LAST 12 MONTHS? (please indicate a NUMBER)**

9. **Have you been hospitalised during the last year?**
   (If "No" skip to question 13)
   ☐ Yes
   ☐ No

10. **If YES, how long (number of days)?**

11. **If YES, for what condition(s)?**

12. **If YES, how long (number of days)**

13. **Here is a list of physical symptoms. Have you experienced any of them FAIRLYOFTEN IN THE PAST 12 MONTHS?**
   ☐ Felt weak all over
   ☐ Suddenly felt hot all over
   ☐ Heart beating hard, pounding
   ☐ Poor appetite
   ☐ Nervousness (Fidgety, tense)
   ☐ Restlessness, couldn't sit still.
   ☐ Acid stomach or indigestion
   ☐ Cold sweats
   ☐ Hands trembling
   ☐ Headaches
   ☐ Constipation
   ☐ Insomnia (trouble falling asleep or staying asleep)

14. Here is a list of medical conditions that usually last some time. DURING THE LAST 12 MONTHS, have you had any of these conditions? (Mark Yes" only if diagnosed by a physician).

- ☐ Anaemia
- ☐ Asthma
- ☐ Arthritis or Rheumatism
- ☐ Bronchitis
- ☐ Cancer
- ☐ Chronic Liver trouble
- ☐ Diabetes
- ☐ Serious back trouble
- ☐ Heart Trouble
- ☐ High blood pressure
- ☐ Kidney trouble
- ☐ Stroke
- ☐ Tuberculosis Ulcer
- ☐ Menopause
- ☐ Other (please specify)

15. How TRUE of FALSE is EACH of the following statements for you?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
I seem to get sick a little easier than other people	○	○	○	○	○
I am as healthy as anybody I know	○	○	○	○	○
I expect my health to get worse	○	○	○	○	○
My health is excellent	○	○	○	○	○

16. How often do you have a drink containing alcohol? (If "Never", skip to the end of the survey)

- ☐ Never
- ☐ Monthly or less
- ☐ 2 to 4 times a month
- ☐ 2 to 3 times a week
- ☐ 4 or more times a week

17. **How many drinks containing alcohol do you have on a typical day when you are drinking?**
    - ☐ 1 or 2
    - ☐ 3 or 4
    - ☐ 5 or 6
    - ☐ 7, 8, or 9
    - ☐ 10 or more

18. **How often do you have six or more drinks on one occasion?**
    - ☐ Never
    - ☐ Less than monthly
    - ☐ Monthly
    - ☐ Weekly
    - ☐ Daily or almost daily

19. **How often during the last year have you found that you were not able to stop drinking once you had started?**
    - ☐ Never
    - ☐ Less than monthly
    - ☐ Monthly
    - ☐ Weekly
    - ☐ Daily or almost daily

20. **How often during the last year have you failed to do what was normally expected from you because of drinking?**
    - ☐ Never
    - ☐ Less than monthly
    - ☐ Monthly
    - ☐ Weekly
    - ☐ Daily or almost daily

21. **How often during the last year have you been unable to remember what happened the night before because you had been drinking?**
    - ☐ Never
    - ☐ Less than monthly
    - ☐ Monthly
    - ☐ Weekly
    - ☐ Daily or almost daily

22. How often during the last year have you needed an alcoholic drink first thing in the morning to get yourself going after a night of heavy drinking?

- ☐ Never
- ☐ Less than monthly
- ☐ Monthly
- ☐ Weekly
- ☐ Daily or almost daily

23. How often during the last year have you had a feeling of guilt or remorse after drinking?

- ☐ Never
- ☐ Less than monthly
- ☐ Monthly
- ☐ Weekly
- ☐ Daily or almost daily

24. Have you or someone else been injured as a result of your drinking?

- ☐ No
- ☐ Yes, but not in the last year
- ☐ Yes, during the last year

25. Has a relative, friend, doctor, or another health professional expressed concern about your drinking or suggested you cut down?

- ☐ No
- ☐ Yes, but not in the last year
- ☐ Yes, during the last year

26. How often did you drink wine, beer, or hard liquor DURING THE PAST MONTH?

	None in last month	Less than once a week	Once or twice a week	3-4 days a week	Nearly every day
Wine	○	○	○	○	○
Beer	○	○	○	○	○
Hard Liquor	○	○	○	○	○

27. During the last month, how much did you usually drink on the days that you drank?

	None	1 glass	2-3 glasses	1 fifth	2 fifths	3 fifths or more
Wine	○	○	○	○	○	○

	None	1 glass	1-2 cans	3-6 cans	9-12 cans	5 quarts or more
Beer	○	○	○	○	○	○

	None	1 shot	2-3 shots	1 pint	2 pints	3 pints or more
Hard Liquor	○	○	○	○	○	○

28. Have you had any difficulty IN THE PAST because of too much drinking?
(If "No" skip to question 30)

☐ Yes
☐ No

29. What kind of difficulties have you had?

☐ Your health
☐ Your job
☐ Money problems
☐ Family arguments
☐ Hit someone
☐ Trouble in the neighbourhood
☐ Trouble with the police
☐ Trouble with friends

30. Place a check beside any of the following events that you have experienced in your life over the past 12 months:

- ☐ Death of a spouse
- ☐ Divorce
- ☐ Marital separation
- ☐ Jail term
- ☐ Death of close family member
- ☐ Personal injury or illness
- ☐ Marriage
- ☐ Fired at work
- ☐ Marital reconciliation
- ☐ Retirement
- ☐ Change in health of family member
- ☐ Pregnancy
- ☐ Sex difficulties
- ☐ Gain of new family member
- ☐ Business readjustment
- ☐ Change in financial state
- ☐ Death of close friend
- ☐ Change to different line of work
- ☐ Change in number of arguments with spouse
- ☐ Mortgage more than $51,000
- ☐ Foreclosure of mortgage or loan
- ☐ Change in responsibilities at work
- ☐ Son or daughter leaving home
- ☐ Trouble with in-laws
- ☐ Outstanding personal achievement
- ☐ Spouse begin or stop work
- ☐ Begin or end school
- ☐ Change in living conditions
- ☐ Revision of personal habits
- ☐ Trouble with boss
- ☐ Change in work hours or conditions
- ☐ Change in residence
- ☐ Change in schools
- ☐ Change in recreation
- ☐ Change in church activities
- ☐ Change in social activities
- ☐ Mortgage or loan less than $51,000
- ☐ Change in sleeping habits

- ☐ Change in number of family get-togethers
- ☐ Change in eating habits
- ☐ Vacation
- ☐ Christmas
- ☐ Minor violations of the law

31. Do you have enough money to afford:

	Definitely Yes	Mainly Yes	Mainly No	Definitely No
Good medical and dental care when you (your family) need it?	○	○	○	○
Leisure activities and entertainment?	○	○	○	○
Furniture or household equipment that needs to be replaced?	○	○	○	○
The kind of car you need?	○	○	○	○
A large, unexpected bill (over $500) for auto repair, etc.?	○	○	○	○
Adequate food and clothing?	○	○	○	○

What is your total annual family income (your earnings plus those of others who live with you)?

- ☐ Less than $20,000
- ☐ $20,000-$24,999
- ☐ $25,000-$29,999
- ☐ $30,000-$34,999
- ☐ $35,000-$39,999
- ☐ $40,000-$49,999
- ☐ $50,000-$59,999
- ☐ $60,000 or more

32. Have you been employed, or held a job during the last month?
(If "No" skip to question 35)

- ☐ Yes
- ☐ No

33. How often does each of these things happen in your current job?

- ☐ Does your supervisor criticize you over minor things?
- ☐ Do you have conflicts with your co-workers?
- ☐ Do you have conflicts with your supervisor?
- ☐ Is there constant pressure to keep working?
- ☐ Does there seem to be a rush or urgency about everything?
- ☐ Are there unpleasant physical conditions on your job, such as too much noise or dust?
- ☐ Do you talk to your fellow employees about your work problems?
- ☐ Are your co-workers friendly toward you?
- ☐ Do you get adequate recognition for your contributions at work?
- ☐ Is your work really challenging?
- ☐ Can you use your own initiative to do things?

34. The following questions have to do with your home:

	Definitely Yes	Mainly Yes	Mainly No	Definitely No
Is it well kept up (e.g., painting, repairs)?	○	○	○	○
Is the amount of living space comfortable?	○	○	○	○
In there enough heat in the winter?	○	○	○	○
Is it cool enough in the summer?	○	○	○	○
Is the inside lighting adequate?	○	○	○	○
Is it quiet enough?	○	○	○	○

35. The following questions have to do with your neighbourhood (the two blocks around your home):

	Definitely Yes	Mainly Yes	Mainly No	Definitely No
Are the houses in the neighbourhood well maintained?	○	○	○	○
Are the streets clean and free of litter?	○	○	○	○
Is it safe to walk alone in the neighbourhood at night?	○	○	○	○
In general, are the people who live near you (within one block of your home) good neighbours?	○	○	○	○

36. How often does each of these things happen with your spouse or partner?

	Never	Seldom	Sometimes	Fairly Often	Often
Does he or she disagree with you about important things?	○	○	○	○	○
Is he or she critical or disapproving of you?	○	○	○	○	○
Does he or she get on your nerves?	○	○	○	○	○
Does he or she get angry or lose his or her temper with you?	○	○	○	○	○
Does he or she expect too much of you?	○	○	○	○	○
Can you count on him or her to help you when you need it?	○	○	○	○	○
Does he or she cheer you up when you are sad or worried?	○	○	○	○	○
Do you confide in him or her?	○	○	○	○	○
Do you share mutual interests or activities with him or her?	○	○	○	○	○
Does he or she really understand how you feel about things?	○	○	○	○	○
Does he or she respect your opinion?	○	○	○	○	○

Do not include parents, relatives, or spouse or partner as friends when answering the following questions.

37. How often:

	Never	Seldom	Sometimes	Fairly Often	Often
Do any of your friends disagree with you about important things?	○	○	○	○	○
Are any of your friends critical or disapproving of you?	○	○	○	○	○
Do any of your friends get on your nerves?	○	○	○	○	○
Do any of your friends get angry or lose their temper with you?	○	○	○	○	○
Do any of your friends expect too much of you?	○	○	○	○	○

38. How many clubs and organisations (e.g., church groups, union, PTA, bowling team) do you belong to?

- ☐ 0
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ More than 3

39. How many friends do you have, people you feel at ease with and can talk to about personal matters?

- ☐ 0
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ More than 3

40. How often do you attend religious services?

- ☐ Never
- ☐ Seldom (less than twice a year)
- ☐ Sometimes (several times a year)
- ☐ Fairly Often (once or twice a month)
- ☐ Often (every week)

41. How often are you in touch with the friend or friends to whom you feel closest?

- ☐ Never
- ☐ Seldom (less than twice a year)
- ☐ Sometimes (several times a year)
- ☐ Fairly Often (once or twice a month)
- ☐ Often (every week)

42. How often:

	Never	Seldom	Sometimes	Fairly Often	Often
Can you count on your friends to help you when you need it?	○	○	○	○	○
Do your friends cheer you up when you are sad or worried?	○	○	○	○	○
Do you confide in any of your friends?	○	○	○	○	○
Do you share mutual interests or activities with your friends?	○	○	○	○	○
Do your friends really understand how you feel about things?	○	○	○	○	○
Do your friends respect your opinion?	○	○	○	○	○

43. When I drink alcohol:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am more relaxed and more at ease socially	○	○	○	○	○
I am in high spirits	○	○	○	○	○
I am not so shy anymore	○	○	○	○	○
It's easier for me to approach other people	○	○	○	○	○
Somehow I think everything is funnier – at any rate, I laugh more	○	○	○	○	○
I am more likely to come out of my shell	○	○	○	○	○
My self-confidence increases	○	○	○	○	○
I am more daring	○	○	○	○	○

I am more talkative	○	○	○	○	○
I am less self-conscious	○	○	○	○	○
I can get to know people more easily	○	○	○	○	○
I am more likely to flirt	○	○	○	○	○
I can have more fun at parties	○	○	○	○	○
I am full of energy and thirsting for action	○	○	○	○	○
I am funnier	○	○	○	○	○
I am more prepared to take risks	○	○	○	○	○
I start making myself the centre of attention	○	○	○	○	○
It doesn't matter as much anymore what people think of me	○	○	○	○	○
I feel closer to other people	○	○	○	○	○

44. When I drink alcohol:

	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
I can switch my mind off better	○	○	○	○	○
I am not so tensed up anymore	○	○	○	○	○
I can forget about my problems and worries	○	○	○	○	○
Any pain that I have eases greatly	○	○	○	○	○
I am not as tense anymore	○	○	○	○	○
I can bear pain more easily	○	○	○	○	○
I am more tranquil	○	○	○	○	○
I can fall asleep better	○	○	○	○	○
I no longer feel so rushed or under time pressure	○	○	○	○	○
I can cool off faster when I'm angry	○	○	○	○	○

45. When I drink alcohol:

	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**

I have difficulty concentrating	○	○	○	○	○
I can no longer follow a conversation very well	○	○	○	○	○
I become sluggish	○	○	○	○	○
I can't think clearly anymore	○	○	○	○	○
I get tired	○	○	○	○	○
I behave clumsily	○	○	○	○	○
I feel listless	○	○	○	○	○
I react more slowly than usual	○	○	○	○	○
I have difficulty judging situations correctly	○	○	○	○	○
I feel dazed and dizzy	○	○	○	○	○
It is harder for me to think about knotty problems	○	○	○	○	○
I am less productive	○	○	○	○	○
I feel sick to my stomach	○	○	○	○	○

46. When I drink alcohol:

	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
I am irritable and hot-headed	○	○	○	○	○
I get aggressive more quickly	○	○	○	○	○
I am more likely to pick a fight	○	○	○	○	○
I lose my temper more quickly and fly into rages	○	○	○	○	○

47. When I drink alcohol:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Sex is more intense	○	○	○	○	○
I enjoy sex even more	○	○	○	○	○
I am in a romantic mood	○	○	○	○	○
I am more emotional	○	○	○	○	○
My sexual desire increases	○	○	○	○	○

48. Please think about the most important problem or stressful situation that you have experienced IN THE LAST 12 MONTHS (for example: troubles with a relative or friend, the illness or death of a relative or friend, an accident or illness, financial or work problems). If you have not experienced a major problem, think of a minor problem that you have had to deal with. Answer the following 10 questions about the problem or situation and then briefly describe the problem in the space provided at the end of the questions list:

	Definitely No	Mainly No	Mainly Yes	Definitely Yes
Have you ever faced a problem like this before?	○	○	○	○
Did you know this problem was going to occur?	○	○	○	○
Did you have enough time to get ready to handle this problem?	○	○	○	○
When this problem occurred, did you think of it as a challenge?	○	○	○	○
Was this problem caused by something you did?	○	○	○	○
Was this problem caused by something someone else did?	○	○	○	○
Did anything good come out dealing with this problem?	○	○	○	○
Has this problem or situation been resolved?	○	○	○	○
If the problem has been worked out, did it turn out all right for you?	○	○	○	○

Briefly describe the problem or situation:

55. Read each item and indicate how often you engaged in that behaviour in connection with the problem you described in the previous question.

	NO, Not at all	YES, Once or twice	YES, Sometimes	YES, Fairly often	Not Applicable
Did you think of different ways to deal with the problem?	○	○	○	○	○
Did you tell yourself different things to make yourself feel better?	○	○	○	○	○
Did you talk with your spouse or other relative about the problem?	○	○	○	○	○
Did you make a plan of action and follow it?	○	○	○	○	○
Did you try to forget the whole thing?	○	○	○	○	○
Did you feel that time would make a difference-that the only thing to do was wait?	○	○	○	○	○
Did you try to help others deal with a similar problem?	○	○	○	○	○
Did you take it out on other people when you felt angry or depressed?	○	○	○	○	○
Did you try to step back from the situation and be more objective?	○	○	○	○	○

Did you remind yourself how much worse things could be?	○	○	○	○	○
Did you talk with a friend about the problem?	○	○	○	○	○
Did you know what had to be done and try hard to make things work?	○	○	○	○	○
Did you try not to think about the problem?	○	○	○	○	○
Did you get involved in new activities?	○	○	○	○	○
Did you take a chance and do something risky?	○	○	○	○	○
Did you go over in your mind what you would say or do?	○	○	○	○	○
Did you try to see the good side of the situation?	○	○	○	○	○
Did you talk with a professional person (e.g., doctor, lawyer, clergy)?	○	○	○	○	○
Did you decide what you wanted and try hard to get it?	○	○	○	○	○
Did you daydream or imagine a better time or place than the one you were in?	○	○	○	○	○
Did you think that the outcome would be decided by fate?	○	○	○	○	○
Did you try to make new friends?	○	○	○	○	○
Did you keep away from people in general?	○	○	○	○	○
Did you try to anticipate how things would turn out?	○	○	○	○	○
Did you think about how you were much better off than other people with similar problems?	○	○	○	○	○
Did you seek help from persons or groups with the same type of problem?	○	○	○	○	○
Did you try at least two different ways to solve the problem?	○	○	○	○	○
Did you try to put off thinking about the situation, even	○	○	○	○	○

though you knew you would have to at some point?					
Did you accept it; nothing could be done?	○	○	○	○	○
Did you read more often as a source of enjoyment?	○	○	○	○	○
Did you yell or shout to let off steam?	○	○	○	○	○
Did you try to find some personal meaning in the situation?	○	○	○	○	○
Did you try to tell yourself that things would get better?	○	○	○	○	○
Did you try to find out more about the situation?	○	○	○	○	○
Did you try to learn to do more things on your own?	○	○	○	○	○
Did you wish the problem would go away or somehow be over with?	○	○	○	○	○
Did you expect the worst possible outcome?	○	○	○	○	○
Did you spend more time in recreational activities?	○	○	○	○	○
Did you cry to let your feelings out?	○	○	○	○	○
Did you try to anticipate the new demands that would be placed on you?	○	○	○	○	○
Did you think about how this event could change your life in a positive way?	○	○	○	○	○
Did you pray for guidance and/or strength?	○	○	○	○	○
Did you take things a day at a time, one step at a time?	○	○	○	○	○
Did you try to deny how serious the problem really was?	○	○	○	○	○
Did you lose hope that things would ever be the same?	○	○	○	○	○
Did you turn to work or other activities to help you manage things?	○	○	○	○	○
Did you do something that you didn't think would work,	○	○	○	○	○

but at least you were doing something?

56. Please enter your email address if you wish to enter a draw to win a 50$ Coles/Myers gift card

Thank you for participating in the survey!

Appendix B

DEAKIN UNIVERSITY AUSTRALIA

PLAIN LANGUAGE STATEMENT AND CONSENT FORM

PLAIN LANGUAGE STATEMENT

Date: May 2011

Full Project Title: Social, Cognitive and Economic Factors as Mediators and Moderators of the Relationship between Life Stressors and Patterns of Alcohol Consumption in Older Adults.

Principal Researcher: Associate Professor Lina Ricciardelli

Student Researcher: Jose Molina

This Plain Language Statement and Consent form is 4 pages long. Please make sure you have all pages.

---

1. **Your consent**

You are invited to take part in a new project on the drinking habits of Australian adults. This plain Language Statement contains detailed information about the research project. Whether you choose to take part in the project is completely up to you. You will be provided with a consent form which you can sign if you agree to participate in the research.

2. **Purpose and Background**

The purpose of our project is to examine the drinking patterns and the risk factors for high alcohol use among adults aged between 50 years and older. Some of these factors include

stressful life events, social support, coping styles and attitudes about alcohol. This project is being conducted by Jose Molina for his Doctor in Clinical Psychology.

3. Funding

This research is supported and funded by Deakin University

4. Procedure

This study will include 400 Australian men and women. The questionnaire includes 67 questions relating to drinking habits and expectancies; social support; coping strategies and background information. It will take about 40 minutes of your time to complete (either online or hard-copy). In order to examine individual changes and how these aspects change, you will be required to complete the questions three times, six months apart.

An example of the type of questions that you will be asked is:

a) How often did you drink wine, beer, or hard liquor DURING THE PAST MONTH?

None in last month	Less than once a week	Once or twice a week	3-4 days a week	Every day
❑	❑	❑	❑	❑

b) Did you take on a large mortgage, loan, or financial obligation IN THE LAST YEAR?

Yes	No
❑	❑

c) Think about the most important problem or stressful situation you have experienced IN THE LAST 12 MONTHS:

- Have you ever faced a problem like this before?

Definitely No	Mainly No	Mainly Yes	Definitely Yes
❑	❑	❑	❑

Once your questionnaire is completed and submitted, your responses will be sent directly to a database. If you complete a hard-copy questionnaire, please return it using the reply paid envelope provided. If you agree to participate, please complete the questionnaire before July, 1st, 2011.

5. Possible Benefits

This research is important as Australia has a high prevalence of alcohol consumption and in order to design prevention strategies it is important to understand the different factors that influence drinking behaviour.

6. Possible risks

No physical or psychological harms to participants are expected. Questions contained within the questionnaire are not intrusive in nature. However, it is possible that answering questions relating to alcohol consumption, health and drinking habits may raise concerns about your drinking habits. If you have any concerns about your health we suggest you contact your general practitioner or DirectLine calling 1800 888 236.

7. Privacy, Confidentiality and Disclosure of Information

The identifying information that you provide will be coded and only accessible to the researchers. We do ask general questions about you (such as age and education level) to help interpret the information you provide. You may withdraw from this project during the data collection if you wish to do so. The information we collect will be stored in a locked cabinet and password protected computer within the School of Psychology at Deakin University for a minimum of six years, after which it will be destroyed. The results of this study will be part of a thesis, and may be published in scientific journals, but as grouped data only. Your personal information will not be disclosed to any other individuals or organisations.

The questionnaire will also include some questions about the relationship between you and your spouse/partner. Therefore, we also need obtain his/her consent for you to answer these questions. The information you provide about your spouse/partner will be protected under the same privacy and confidentiality guidelines as yours, and he/she may withdraw from this project during the data collection if he/she wishes to do so.

8. Results of Project

If you are interested in the results of this study a summary of the overall findings can be provided to you by contacting Lina Ricciardelli (details given below). You will be informed by mail/email when the study is completed and the results are accessible.

9. Participation is Voluntary

Whether you choose to take part in this study is entirely up to you.

10. Payment

You will have the opportunity to be entered into a draw to win one of four $50 Coles-Myer vouchers to thank you for your time and participation in our project. This will involve completing an entry form which is to be returned with the questionnaire in the same envelope. If you are completing the online survey you will be able to fill a digital version of the entry form. Winners will be randomly drawn and contacted via email or telephone.

11. Ethical Guidelines

This research project has been approved by Deakin University's Ethics Committee.

12. Complaints

If you have any complaints about any aspect of the project, the way it is being conducted or any questions about your rights as a research participant, then you may contact:

The Manager, Office of Research Integrity, Deakin University, 221 Burwood Highway, Burwood Victoria 3125, Telephone: 9251 7129, Facsimile: 9244 6581; research-ethics@deakin.edu.au

Please quote project number 2010-247.

13. Further Information

Contact Lina Ricciardelli in the School of Psychology, Deakin University, Burwood Highway, Burwood, 3125 on (03) 9244 6866 or (03) 9889 5002 or email: lina@deakin.edu.au

or

Jose Molina Toledo in the School of Psychology, Deakin University, Burwood Highway, Burwood, 3125. Mob: 0401967833 or email: jmmol@deakin.edu.au

Appendix C

DEAKIN UNIVERSITY AUSTRALIA

PLAIN LANGUAGE STATEMENT AND CONSENT FORM

Consent Form

Date: May, 2011

Full Project Title: Social, Cognitive and Economic Factors as Mediators and Moderators of the Relationship between Life Stressors and Patterns of Alcohol Consumption in Older Adults.

Reference Number: 2010-247

I have read, or have had read to me, and I understand the attached Plain Language Statement.

I freely agree to participate in this project according to the conditions in the Plain Language Statement.

I have been given a copy of the Plain Language Statement and Consent Form to keep.

The researcher has agreed not to reveal my identity and personal details, including where information about this project is published, or presented in any public form.

Participant's Name (printed) ……

Signature …… Date ……

Spouse/Partner (printed) ……

Signature …… Date ……

Contact

Lina Ricciardelli in the School of Psychology, Deakin University, Burwood Highway, Burwood, 3125 on (03) 9244 6866 or (03) 9889 5002 or email: lina@deakin.edu.au

Jose Molina Toledo in the School of Psychology, Deakin University, Burwood Highway, Burwood, 3125. Mob: 0401967833 or email: jmmol@deakin.edu.au

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