An Evaluation of the Stress-Negative Affect Model in Explaining Alcohol Use in College and Adult Samples: The Role of Components of Negative Affect and Coping Style

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The associations between stressors and patterns of alcohol use have been studied for their implications for the etiology of problematic alcohol use. Proponents of the stress-negative affect mediation model suggest that negative affect induced by stressors may drive alcohol use; however, researchers have only weakly supported the mediation model. The current study used a more comprehensive approach to evaluate the stress-negative affect model by investigating the unique mediation effects of specific components of negative affect (i.e., sadness, guilt, fear, and anger) in the context of different coping styles among adults and college students. It appears that stress-negative affect model does explain alcohol use among adults but not among college students. The pathways from negative life events to alcohol use among adults who primarily rely on approach coping strategies, but rarely use avoidant coping strategies (i.e., high approach-low avoidant group), appear to operate uniquely through sadness and anger. In contrast, among adults who rely more heavily on avoidant coping strategies, but moderately use approach coping strategies (i.e., moderate approach-moderate avoidant group), stress-induced alcohol use seems to occur due to guilt. Thus, stress-negative affect model may better explain drinking patterns of individuals with certain characteristics and operate through particular components of negative affect. Interventionists who aim to reduce stress-induced alcohol use should consider focusing on specific components of negative affect and at-risk groups in order to improve treatment outcomes.

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INTRODUCTION

Alcohol addiction is prevalent in the United States, with a lifetime prevalence of alcohol abuse and dependence estimated at 17.8% and 12.5%, respectively (Hasin, Stinson, Ogburn, & Grant, 2007). Excessive alcohol consumption can lead to high rates of preventable death, potentially due to its association with serious medical illness (e.g., liver cirrhosis, malnutrition) and physical injury (e.g., car accidents, violence, falling) (Mokdad, Marks, Stroup, & Gerberding, 2004). Given the harmful impact of alcohol addiction and excess alcohol use, it is important to continue to investigate underlying mechanisms of and individual differences pertinent to alcohol use and develop effective preventative interventions and treatments.

Studies investigating the underlying mechanisms of alcohol use patterns have identified several drinking motives that are associated with increased alcohol consumption, including drinking to cope with stress, drinking for enhancement, drinking to improve social interactions, and drinking for conformity (Carey & Correia, 1997; Cooper, Frone, Russell, & Mudar, 1995). Drinking to cope with stress has been of particular interest to researchers due to its unique association with problematic alcohol use and alcohol use disorders (Abbey, Smith, & Scott; Cooper et al., 1995; Smith, Abbey, & Scott, 1993). The relation between stress and alcohol use was initially formalized as the tension reduction hypothesis, which conceptualized drinking alcohol as a learned behavior as alcohol reduced a drinker's tension and reinforced drinking (Conger, 1956). Thus, drinking alcohol becomes a learned strategy to cope with stressors, which

may subsequently lead to frequent and excessive use of alcohol in the presence of stressors.

Researchers have tested the tension reduction hypothesis by examining the relation between stressors and alcohol-related outcomes. Numerous studies show that negative life events are associated with a rapid increase in quantity and frequency of alcohol use, younger age of drinking onset, and heavier drinking in adolescent and adult samples (Aseltine & Gore, 2000; Dawson, Grant, & Ruan, 2005; Hoffmann, Cerbone, & Su, 2000; O'Hare, Sherrer, & Shen, 2006). Despite the empirical support for an association between stressors and alcohol use outcomes, there may not be a simple direct cause-effect relation between stressors and alcohol use as alcohol may only reduce stress in select situations or among certain individuals (Frone, 1999; Sayette, 1999). Thus, researchers have re-conceptualized the tension reduction hypothesis as the stress-negative affect model in order to explain the underlying process through which stressors promote alcohol use (Sher, 1991; Wills & Shiffman, 1985). Within the stress-negative affect model, negative affect, the subjective experience of negative emotion, mediates the relation between stressors and alcohol use. Specifically, negative affect due to stressors, as opposed to trait negative affect, is thought to lead to alcohol use as individuals attempt to alleviate the negative affect by drinking alcohol (Wills & Shiffman, 1985). The pattern of alcohol use intended to relieve negative affect has been hypothesized to sustain a frequent pattern of self-medication, which has prompted research of this model to explain underlying mechanisms of harmful alcohol use patterns (Cooper, Russell, & George, 1988).

Consistent with the stress-negative affect model, research studies focusing on adolescent samples have supported the mediating role of negative affect. Among adolescent children of alcoholics and matched controls, negative affect, operationalized as internalizing symptoms assessed by the Child Behavior Checklist (CBCL) during the past three months, partially

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mediated the relation between negative life events and alcohol use during the past three months (Colder & Chassin, 1993). Further research of the same adolescent samples established a mediating effect for depressed affect for the past three months between negative life events and alcohol use in the past three months (Hussong & Chassin, 1994). It appears that among adolescents, internalizing symptoms, especially depressed affect, may drive increased alcohol use following negative life events.

Researchers have inconsistently replicated the findings from adolescent samples in samples from older cohorts such as young adults, college students, and adults. For example, in a study of daily stress-related drinking among college students, daily stressors were not related to daily alcohol use (Park, Armeli, & Tennen, 2004). Furthermore, there was a marginal relation between daily global negative affect, measured as the average rating of six negative mood items (i.e., nervous, jittery, hostile, angry, sad, and dejected) and daily alcohol use, which became significant once daily positive affect was controlled for (Park et al., 2004). Similarly, global negative affect, measured by the Positive and Negative Affect Scales (PANAS), did not mediate the relation between stressors and alcohol use in a sample of young adults (M_{age} = 22 years old) due to a non-significant relation between negative affect and alcohol use (McCreary & Sadava, 2000). Thus, unlike investigations of adolescents, there appears to be limited support for stress-negative affect model among college students and young adults.

The stress-negative model has also been weakly supported in research with adult samples. Researchers who examined the relation between parental (M_{age} = 40 years old) stressors, specifically their children's externalizing behavior, and alcohol use found a mediating effect of global negative affect in a subgroup of mothers who had low social support (Handley & Chassin, 2008). In contrast, in a study of work stressors, adults' (M_{age} = 36.5 years old) self-

reported global negative affect at work did not mediate the relation between work stressors and alcohol use (Cooper, Russell, & Frone, 1990). Likewise, the relation between several life stressor measures and alcohol use was not mediated by global negative affect, measured by the PANAS, in a sample of adults (M_{age} = 31 years old) (McCreary & Sadava, 2000).

The implications of the limited support for the stress-negative affect mediation model are that additional factors should be considered in evaluating the validity of the stress-negative affect model. It could be that the stress-negative affect model only applies to individuals with certain characteristics. For example, researchers have posited that individuals who self-medicate are usually those who lack alternative, adaptive coping strategies, to alleviate stress-induced negative affect (Cooper et al., 1988; Sher, 1991). Likewise, drinking alcohol in response to stress-induced negative affect may not occur consistently across the lifespan, as the model was supported in adolescent samples and subgroups of adult but only portions of the mediation pathway were supported college students and young adults. A second implication of the limited support for the stress-negative affect model is that the mediator that is frequently evaluated by researchers, global negative affect, may need to be more specific in order to properly explain the relation between stressors and alcohol use (Hussong & Chassin, 1994). In order to address the limited support for the stress-negative affect mediation model, the current study examined the mediating role of components of negative affect as well as the relevance of individual's coping styles and age cohort within the model.

1.1   DIFFERENTIATING BETWEEN GLOBAL NEGATIVE AFFECT AND ITS COMPONENTS

Researchers who have examined the mediating role of negative affect in the stress-negative affect model have primarily examined participants' self-reported global negative affect (e.g., Handley & Chassin, 2008; McCreary & Sadava, 2000; Park et al., 2004). This approach is consistent with the hierarchical model of affect, which has been established as a robust structure of self-reported mood (Watson & Clark, 1992; Watson & Tellegen, 1985). Proponents of the hierarchical model of affect define global negative affect as the shared variance of emotions characterized by a negative valence (Watson & Tellegen, 1985). In this framework, high global negative affect refers to subjective distress and aversive mood states and low global negative affect refers to a state of calmness. Researchers have demonstrated that global negative affect encompasses several correlated, yet distinguishable, emotion states that include: Fear (e.g., "scared", "nervous"), anger (e.g., "angry", "irritable"), sadness (e.g., "sad", "lonely") and guilt (e.g., "ashamed", "dissatisfied with self") (Watson & Clark, 1992).   Thus, researchers can distinguish between an individual's global and specific affective responses to stressors.

The minimal support of global negative affect as a mediator of stress-induced alcohol use could reflect that only some components of negative affect mediate the relation between stressors and alcohol use (Hussong & Chassin, 1994). The importance of components of negative affect, as opposed to global negative affect, could explain the mixed support of the model in previous research that has included several different operalizations of negative affect, such as internalizing symptoms, global negative affect, and sadness. When a composite of negative affect is used by aggregating the specific types of negative emotion together, the specific effects of each

component could be mitigated. Thus, more care may need to be taken to specify which emotional reactions to stressors are more important when affect-related alcohol use is being explained.

An implication of the hierarchical model of affect is that meaningful, components of negative affect exist. Furthermore, they must be studied simultaneously in order to contrast their unique effects from the effects of the global negative affect factor because the shared variance of these specific affects needs to be controlled for (Watson & Clark, 1992). Among the separable components of negative affect, sadness, anger, guilt, and fear have been examined in relation to alcohol use (Hussong & Chassin, 1994; Hussong, Hicks, Levy, & Curran, 2001). Researchers who have examined the direct effect of components of negative affect on alcohol use have concluded that sadness but not anger, fear, guilt, or global negative affect measured by the PANAS, predicted increased alcohol use in college students (Hussong et al., 2001). However, mediation was not tested and the effects of each component of negative affect were examined in separate models, which did not allow them to investigate the unique effects of each component of negative affect on alcohol use. Minimal research has examined the unique relation between specific types of negative affect and alcohol use simultaneously. In a study with an adolescent sample, in which the mediated effects of components of negative affect were tested simultaneously, it was confirmed that sadness, but not anger or fear, mediated the relation between controllable stressors and increased alcohol use above and beyond the other specific negative affects (Hussong & Chassin, 1994). The process by which sadness, but not other components of negative affect, mediates the relation between stressors and alcohol use remains unclear. It has been suggested that sadness may be a more common reaction to stressors or that alcohol use may be a more frequent reaction to sadness than other components of negative affect (Hussong & Chassin, 1994).

While research on the stress-negative affect model appears to support sadness as a more important mediator for the relation between stressors in alcohol use, other research suggests fear may be another important mediator (Field & Powell, 2007). Fear is hypothesized to motivate escape behavior. When facing negative life events, alcohol use may facilitate one's escape from stressors (Sher, Bartholow, Peuser, Erickson, & Wood, 2007; Watson & Clark, 1992). For example, individuals reported greater alcohol cravings after completing an anxiety-provoking task of giving a short speech, compared to control participants who solved easy anagrams. Participants also demonstrated an attentional bias for alcohol cues in a dot probe task, responding more quickly to dots following alcohol-related stimuli than unrelated stimuli (Field & Powell, 2007). These results complement an existing literature that suggests fear may be a predictor of greater alcohol use and suggest that fear could be an important mediator of the relation between stressors and alcohol use (e.g., Kushner, Sher, Wood, & Wood, 1994; Sher et al., 2007).

In sum, prior studies on the stress-negative affect mediation model for alcohol are limited in that so few have examined specific components of negative affect simultaneously in a mediation framework. It is necessary to examine the specific types of negative affect simultaneously in order to examine their unique effects, as opposed to the effect of the global negative affect underlying all the components of negative affect (Watson & Clark, 1992). Based on the literature reviewed, it is expected that sadness and fear would mediate the relation between stressors and alcohol use, but anger and guilt would not. However, the current research literature is limited in number and has mainly focused on younger age samples such as adolescents or college students (Hussong & Chassin, 1994). Generalizing from younger age samples to older adult groups could be problematic because reactions to stressors and patterns of alcohol use change throughout one's lifespan (Amirkhan & Auyeung, 2007; Folkman, 2010).

Therefore, studies examining the relative contributions of the specific types of negative affect within the stress-negative affect mediation model may need to compare the result patterns between the developmentally different groups such as adults and college students.

1.2   EXAMINING STRESS-INDUCED ALCOHOL USE IN DIFFERENT POPULATIONS

As pointed out in the previous section, the stress-negative affect model may not explain alcohol use equally across all developmental groups. Research supports the stress-negative affect model in adolescent samples (e.g., Colder & Chassin, 1993; Hussong & Chassin, 1994). In contrast, the complete mediation model has not been supported in college students (e.g., McCreary & Sadava, 2000; Park et al., 2004) and has been weakly supported in subgroups of adults, who are mothers with low social support (e.g., Handley & Chassin, 2008). Differences in the utility of the stress-negative affect model in these populations may be due to different drinking motives and day-to-day life demands. In a review of the drinking motives of college-aged individuals in the United States, it was found that college students more often report drinking to celebrate or because they enjoy the taste of alcohol than drinking to cope with negative affect (Kuntsche, Knibbe, Gmel, & Engels, 2005). Preferential drinking for social reasons could be due to the college years being an opportunity to experiment and engage in risky behaviors because, for many individuals, attending college delays the transition to adulthood and associated responsibilities (e.g., working, marriage, and parenting) (Maggs, 1997). In contrast, among adults, the extent to which they engage in social drinking may be limited due to their day-to-day work schedules and increased family demands. Thus, alcohol use in response to stress-induced negative affect may be more

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pronounced. In fact, research of developmental differences of drinking motives has shown that postcollegians, who have graduated from a university between two and 13 years ago, and undergraduate students both reported stress-motivated reasons for drinking; however, a significantly greater proportion of postcollegians reported drinking predominantly for stress-related reasons compared to undergraduates (Perkins, 1999).

Given that the predominant drinking motives are different between college students and adults, the stress-negative affect model may explain alcohol use for adults better than college students. Therefore, one objective of this study was to examine how well the stress-negative affect model explains alcohol use in two developmentally different groups, college students and adults. Because adults are more likely to report drinking predominantly for stress-related reasons than college students, it was hypothesized that a greater variance of alcohol use would be explained in adults using the stress-negative affect model than the college sample. Furthermore, it was hypothesized that the mediational pathways from stressors to the components of negative affect to alcohol use would be more strongly supported with more significant mediating pathways in the model in adults compared to college students.

1.3   COPING STYLE: A MODERATOR

The current stress-negative affect model focuses on the underlying mechanism for stress-induced alcohol use; however, researchers have also hypothesized that individuals are most likely to drink alcohol to self-medicate if they lack alternative, adaptive coping strategies (Cooper et al., 1988). Coping has been broadly defined as the ways an individual responds to the demands of his or her environment (Lazarus & Folkman, 1984). Several taxonomies of coping styles have

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been utilized in research; however, coping styles are often broadly classified into approach and avoidant coping styles (Folkman & Moskowitz, 2004). Individuals who use an approach coping style tend to process or resolve a situation, cognitively or behaviorally, by dealing directly with the situation (Billings & Moos, 1981; Lazarus & Folkman, 1984; Roth & Cohen, 1986). Approach strategies may include planning, seeking instrumental social support, positive reframing, acceptance, seeking emotional social support, and focusing on and venting of emotions. In contrast, individuals who use avoidant coping strategies attempt to avoid thinking about or confronting a stressful situation. Avoidant coping strategies can include behavioral disengagement, self-distraction, self-blame, and humor.

Classifying individuals' primary coping styles into approach and avoidant styles has shown considerable utility when predicting health outcomes. Specifically, avoidant coping strategies have been associated with poorer psychological and physical health outcomes compared approach coping styles (Billings & Moos, 1981; Holahan & Moos, 1985; Penley, Tomaka, & Wiebe, 2002; Taylor & Stanton, 2007). Given the relation between coping style and health, researchers have proposed that coping style may be a moderator in the stress-negative affect model and suggested that incorporating coping resources into the stress-negative affect model can account for individual differences in the likelihood of experiencing negative affect following a stressful event and of the need to use alcohol to reduce negative affect. (Cooper et al., 1988; Frone, 1999; Sher, 1991). Specifically, coping styles may moderate the relations between stressors and negative affect as well as negative affect and alcohol use such that individuals who use less effective coping strategies may experience more negative affect and may need to drink alcohol in order to reduce the negative affect.

The importance of coping style within the stress-negative affect model is consistent with the transactional model of stress (e.g., Lazarus & Folkman, 1984) and social learning theory (SLT) (Bandura, 1977). Advocates of the transactional model of stress posit that coping style moderates the relation between stressors and negative affect because the coping strategy an individual uses when faced with a stressor will influence how much negative affect he or she will experience following the stressor (Lazarus & Folkman, 1984). If individuals experience a stressor and can initially cope properly with the stressor then he or she is expected to experience less negative affect than those who experience the same stressor but have less adaptive means of coping, such as an avoidant coping style. According to SLT, drinking in response to negative affect is most likely to occur if other more adaptive ways of coping are unavailable (Bandura, 1977; Cooper et al., 1995; Cooper et al., 1988). If an individual experiences negative affect and invokes a successful coping strategy, then he or she does not need to turn to alcohol in order to manage their negative affect. In contrast, if an individual cannot properly cope with the negative affect, he or she may drink alcohol in order to alleviate the negative affect due to the stressors.

Previous research does show that individuals who have approach coping styles are less likely to experience negative affect following stressors than those who have avoidant coping styles. Specifically, individuals who use approach coping styles, such as problem-focused coping, planful problem-solving, or positive reappraisal, in response to negative life events are less likely to experience psychological distress, such as sadness, fear, or global negative affect, than individuals who use avoidant coping styles, such as general avoidant coping styles, or distancing (Billings & Moos, 1981; Folkman & Lazarus, 1988). Likewise, males who use avoidant coping styles are more likely to experience negative affect following negative life events than those who use approach coping styles (Beasley, Thompson, & Davidson, 2003).

In addition to reporting higher levels of negative affect, it appears that individuals who report using avoidant coping styles report higher levels of alcohol consumption and alcohol-related problem behaviors compared to individuals who report using approach coping styles (Cooper et al., 1988; Evans & Dunn, 1995). While these direct relations between coping style and alcohol use have not been successfully replicated in all research (Armeli, Dehart, Tennen, Todd, & Affleck, 2007; Armeli, Todd, & Mohr, 2005), the moderating effect of coping style between negative affect and alcohol use has been supported. In particular, avoidant coping strategies moderated the relation between stressors and alcohol use in adult samples such that the relation between stressors and alcohol use was strongest among individuals who rely on avoidant coping strategies (Cooper, Russell, Skinner, Frone, & Mudar, 1992; Veenstra et al., 2007). Therefore, the presence of avoidant coping strategies or the absence of more effective coping strategies, such as approach coping strategies, may promote stress-induced alcohol use.

Although evidence supports the moderating role of coping style within the stress-negative affect model, researchers have yet to test a comprehensive model encompassing negative affect as a mediator and coping style as a moderator. A moderated mediation model could offer significant specificity as to who engages in stress-related drinking as well as information about the potential mediated process through negative affect (Frone, 1999). Furthermore, given the evidence that both low use of approach coping strategies and high use of avoidant coping strategies may promote high levels of negative affect or alcohol use, it is important to evaluate these two coping strategies simultaneously in order to fully understand the role of coping within the stress-negative affect model. The need to consider approach and avoidant coping strategies simultaneously is further highlighted by research suggesting that coping strategies are not mutually exclusive, such that individuals may use several coping strategies to deal with stressors

(Skinner, Edge, Altman, & Sherwood, 2003). Thus, one aim of the current study was to examine the moderating role of coping style in the stress-negative affect mediation model. In order to use a comprehensive approach to examine coping style, the study sought to define coping style in a multidimensional framework by taking into account the relative use of approach and avoidant coping strategies by participants using latent profile analysis.

1.4   OVERVIEW OF THE PRESENT STUDY

The current stress-negative affect model includes negative affect as the mechanism through which stressors promote alcohol use. Research has weakly supported the mediation model, which highlights the need to use alternative approaches to investigate the model (e.g., Colder & Chassin, 1993; Hussong & Chassin, 1994; Hussong et al., 2001; McCreary & Sadava, 2000; Park et al., 2004). The current study investigated the predictive utility of the stress-negative affect model by incorporating additional factors including developmental stage of the individuals and their coping style. It was hypothesized that the stress-negative affect model would explain alcohol use better in the adult sample than the college student sample. It was also predicted that individuals who rely on avoidant coping were expected to exhibit more stress-related drinking than individuals who rely on approach coping strategies. Furthermore, in order to examine the unique importance of each component of negative affect, the mediation effects of components of negative affect including fear, sadness, guilt, and anger were tested simultaneously in the stress-negative affect model. It was hypothesized that sadness and fear, but not anger and guilt, would mediate the relation between stressors and alcohol use.

2.0   METHOD

2.1   PARTICIPANTS

2.1.1   Adult sample

The data were originally collected for the University of Pittsburgh's Adult Health and Behavior (AHAB) registry, which includes behavioral and biological data on midlife adults who were recruited via mass-mail solicitation from communities in Southwestern Pennsylvania (principally Allegheny County) between 2001 and 2005. The data for participants in the registry who reported any alcohol use in the past year (81.7%, N=1057) were examined. The participants were predominantly female (50.3%) of European American descent (87.2%) who were married or living with a partner (66.3%). AHAB participants were between 30 and 54 years of age (M=44.45, SD=6.85). Participants had no clinical history of atherosclerotic cardiovascular disease, chronic kidney or liver disease, cancer treatment within the preceding year, or major neurologic disorders, schizophrenia, or other psychotic illnesses. Other AHAB study exclusions included pregnancy and the use of insulin, glucocorticoid, antiarrhythmic, psychotropic or weight-loss medications.

2.1.2 College sample

Undergraduate college students (N=402) who participated in a participant pool in a northeastern university were recruited.[1] Participants received course credit following study completion. Only participants who reported any alcohol use in the past year (87.56%, N=352) were included in the study. The participants who drink alcohol were predominantly males (51.4%) of European American descent (81.3%) who were under the legal drinking age of 21 years old (89.5%; M =19.07, SD= 1.08, range: 18-27 years).

2.2 PROCEDURE

2.2.1 Adult sample

The AHAB protocol took approximately 16 hours divided over four sessions. These sessions were generally completed within a two to four week period. Informed consent was obtained in accordance with approved guidelines of the University of Pittsburgh Institutional Review Board.

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[1] The G-Power 3.0 software program, designed by Faul and colleagues (2007), was used to determine that a sample size of at least 256 participants was needed to detect a small effect size (R^2 = .03) with a power of .80 and Type I error rate of .05.

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2.2.2 College sample

The participants were recruited through the Experimetrix System used by introductory psychology classes. The study was issued exempt status by the University of Pittsburgh Institutional Review Board. Survey data was collected from groups of 10 to 30 students at a time. Participants listened to a description of the study (Appendix A) before the survey. After filling out the questionnaires, students received a debriefing form (Appendix B). A copy of the survey is available in Appendix C.

2.3   MEASURES

2.3.1   Negative Life Events

2.3.1.1   Adult sample   Participants completed a 26 item Life Events List to report the events that they experienced during the last 12 months and rate the valence of each event on a 6-point scale (1 = *very good*, and 6 = *very bad*) (Cohen, Tyrrell, & Smith, 1991). Participants reported up to three additional events that were not on the list but that they experienced in the past year. Events including death, illness, relationships getting worse, negative business or investment, negative problems at school or work, and crime experienced were all coded as negative events. For the ambivalent events, which could be interpreted positively or negatively (e.g., *Have you moved during the last 12 months?*), the participant's ratings of the events were used to classify them as negative or positive. The final negative life events variable was the total number of negative events experienced and the additional events experienced that were rated negatively

(i.e., *slightly bad, moderately bad, very bad*). In this sample, the Cronbachs' alpha for events experienced in the past 12 months, regardless of valence, was .51 in the high approach-low avoidant group and .53 in the moderate approach-moderate avoidant group[2].

2.3.1.1   College sample   Participants completed the 66-item Life Experiences Survey (LES), which was selected because it included 10 life events unique to college life (Sarason, Johnson, & Siegel, 1978). A timeline was added to the LES so participants could indicate the timeframe in which an event occurred and its frequency of occurrence within the timeframe. The events experienced by participants in the past three months that were rated as negative events were summed for the final life event variable. Some participants indicated that particular events occurred several times during the three month window; however, each event only counted once toward the final life events variable. In this sample, the Cronbachs' alpha for negative events experienced in the past three months was .68 in the high approach-low avoidant group and .68 in the moderate approach-moderate avoidant group.

2.3.2   Negative Affect

2.3.2.1   Adult sample   Participants completed the abbreviated, 20-item Positive and Negative Affect Schedule (PANAS) (Watson, Clark, & Tellegen, 1988). They rated the extent to which they felt each emotion *in general* using a 5-point response scale (1 = *very slightly or not at all,* 5 = *extremely*). Thus, the measure of negative affect represents trait negative affect, as opposed to state negative affect, because the items measured the extent to which they felt each emotion *in*

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[2] The patterns of two coping groups are described in the Results section.

general. The PANAS includes four items that measure fear, two items for guilt, two items for anger, and one item for sadness (Watson & Clark, 1994). Participants also completed the Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977), which included 20 depressive symptoms experienced during the past week (0=*Rarely or none of the time [less than one day], 3= most or all of the time [5-7 days]*). As the PANAS included only one item measuring sadness (i.e., upset), two items from the CES-D scale including "I felt depressed" and "I felt sad" were selected to supplement the sadness scale based on the correlations with the PANAS sadness item, .51 and .47, respectively. Each component of negative affect (i.e., fear, guilt, anger, sadness) was represented as a latent factor in the analyses. The measurement model is described in the preliminary analyses section. The omega reliability coefficients for each negative affect component ranged from .57 to .81 (Table 1) (Raykov, 1997)[3].

Table 1. Omega reliability coefficients for the indicators of the latent variables in each sample

		Coping Style	
Sample	*Latent Variable*	*Approach*	*Avoidant*
Adult	Sadness	0.60	0.77
	Fear	0.74	0.81
	Anger	0.66	0.76
	Guilt	0.57	0.61
	Alcohol use	0.97	0.98
College	Sadness	0.76	0.71
	Fear	0.74	0.79
	Anger	0.76	0.75
	Guilt	0.81	0.85
	Alcohol use	0.93	0.84

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[3] The omega reliability coefficient was used instead of Cronbach's alpha to estimate the reliability of the scales because Cronbach's alpha tends to underestimate reliability (Ravkov, 1997).

2.3.2.2   College sample   The full version of the 60-item PANAS-X was completed (Watson & Clark, 1994). Participants indicated the extent to which they felt each emotion in a given time period (i.e., past week, past month, past three months). The PANAS-X includes six items that measure fear, five items for anger, four items for sadness, and six items for guilt (Watson & Clark, 1994). In this study, items that measured emotions during the past three months were used in order to match the three month timeframe of negative life events. Each component of negative affect (i.e., fear, guilt, anger, sadness) was represented as a latent factor. The measurement model is described in the preliminary analyses section. The omega reliability coefficients for each negative affect component ranged from .71 to .85 (Table 1) (Raykov, 1997).

2.3.3   Alcohol Use

2.3.3.1   Adult sample   Participants completed a brief interview that included questions assessing general and problematic alcohol use. Two of the questions assessed the frequency each participant gets drunk and binge drinks (i.e., four or more drinks for women, five or more drinks for men on one occasion) (1=*Everyday*, 2=*Every other day*, 3=*Once a week*, 4=*Weekends*, 5=*Once every 2 weeks*, 6=*Every month*, 7=*Every 3 months*, 8=*Every 6 months*, 9=*Every 9 months*, 10=*Once a year*, 11=*never*, 12=*Other*, 13=*Every other month*). The response options were ranked from least frequent alcohol use (i.e., never) to most frequent alcohol use (i.e., everyday). Participants who indicated "other" for each question (N=2 and N=6, respectively) were coded as missing. The third open-ended question assessed how many alcoholic drinks each participant drank in the past month. The three items were modeled as indicators for a latent factor that represented the participant's level of alcohol use. The omega reliability coefficients

for the indicators were .97 for the high approach-low avoidant group and .98 for the moderate approach-moderate avoidant group (Table 1) (Raykov, 1997).

2.3.3.2   College sample   Alcohol use for the college sample included the items used in the AHAB study and additional questions from the Monitoring the Future study (Johnston, O'Malley, Bachman, & Schulenberg, 2009). Questions from the Monitoring the Future study assessed alcohol use during the past 30 days and the previous week, with modified response options that are more suitable to assess the prevalence of alcohol use in a college sample. Three items measured frequency of alcohol use, drunkenness, and binge drinking (i.e., four drinks or more for women, five drinks or more for men on one occasion) in the past month were chosen as indicators for an alcohol use latent variable. The three questions had seven response options (0 = *0 times,* 6 = *more than 21 times*). The omega reliability coefficients for the indicators were .93 for the high approach-low avoidant group and .84 for the moderate approach-moderate avoidant group (Table 1)(Raykov, 1997).

2.3.4   Coping Style

2.3.4.1   Adult and College Samples   Participants completed the brief COPE, which contains 28 statements measuring 14 coping strategies (Carver, 1997). Participants rated how often they engage in particular coping behaviors, using a 4-point response scale (1 = *I usually don't do this at all*, 4 = *I usually do this a lot*). The current study excluded coping strategies related to substance use (*i.e., I use alcohol or other drugs to help me get through it, I use alcohol or other drugs to make myself feel better)*. The Cronbach's alpha for the brief COPE was .76 in the adult sample and .75 in the college sample.

2.3.5 Personality

2.3.5.1 Adult sample Participants completed the 240-item Revised NEO Personality Inventory (Costa & McCrae, 1992). The inventory has five subscales based on the five-factor model of personality: Neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness, which were calculated as the sum of the 48 items that make up each scale. The Cronbach's alphas for each personality scale in this sample were .80, .73, .77, .76, and .82, for the high approach-low avoidant group and .72, .71, .77, .79, and .83 for the moderate approach-moderate avoidant group, respectively.

2.3.5.2 College sample Participants completed the 44-item Big Five Inventory (John, Donahue, & Kentle, 1991). The inventory has five subscales: Neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. The items on each subscale were averaged taking into account reverse-scored items. The Cronbach's alphas for the personality scales in this sample were .74, .88, .82, .76, and .78 for the high approach-low avoidant group and .67, .86, .70, .81, and .81 for the moderate approach-moderate avoidant group.

2.3.6 Demographics

2.3.6.1 Adult and College Samples Demographic variables included respondent's age, gender, race, and marital status. These variables were used as covariates.

2.4   ANALYTIC OVERVIEW

Data analyses were carried out in the structural equation modeling (SEM) framework using the Mplus software program (Muthen & Muthen, 2004). A robust estimation method, MLR, was used to take into account the non-normality of negative life event and alcohol use variables. All models were run separately for the adult and college student samples. The mediation model was specified as negative affect mediating the relation between negative life events and alcohol use. Specifically, negative life events were modeled to be related to four components of negative affect, which, in turn, were modeled to be related to alcohol use. The direct pathway from negative life events to alcohol use was also estimated. Components of negative affect were modeled as latent variables and included in the model simultaneously in order to estimate the effect of negative life events on each of the negative affect components and the unique effect of each component of negative affect on alcohol use.

To examine the moderating effects of coping style, the participants were classified into two coping groups based on the pattern of their use of approach and avoidant coping styles. The overall mediation model was then estimated in the multiple-group framework using the coping style group membership as the grouping variable. The significance tests for the relations between variables in the model were carried out, followed by comparing the strength of the relations across coping groups. Finally, when the paths involved in the mediation were statistically significant, the mediated effects were estimated and the significance tests were carried out using the Asymmetric Confidence Interval (ACI) method implemented in Prodclin, a software program, in order to account for the possible non-normality of the distribution of the mediated effect (MacKinnon, Fritz, Williams, & Lockwood, 2007).

2.5   PRELIMINARY ANALYSES

2.5.1   Coping Style Latent Profile Analysis

Before identifying coping style patterns, exploratory factor analyses (EFA) were conducted on the Brief COPE items to examine whether the 13 coping strategies can be grouped in a meaningful way, particularly, to represent approach and avoidant coping styles. Two-, three-, and four-factor models were estimated using promax rotation, one of the orthogonal rotation methods. The largest factor loading greater than .4 in the structure matrix was used as a criterion for deciding whether an item was loaded on a factor.

Examining the visual change of slope of the Scree Plot and the eigenvalues, as well as the meaningful content of the factors, a four factor solution was chosen in the adult sample. Factor 1 included items identified as approach coping strategies including active coping, positive reframing, planning, humor, acceptance; Factor 2 included items related to social support as a coping strategy including the use of emotional support, use of instrumental support, venting; Factor 3 included items related to avoidant coping strategies such as denial, behavioral disengagement, self-blame; Factor 4 included items related to religion as a coping strategy such as pray or meditate and finding comfort in religious or spiritual beliefs. Three of these factors overlap with the four factors identified in prior studies on the COPE inventory, which included approach, avoidant, support, and positive restructuring (Folkman & Moskowitz, 2004). Unlike previous research, positive restructuring was loaded on the approach coping factor in the current study. This may reflect the frequent co-occurrence between positive reappraisal and problem-focused coping (Folkman & Moskowitz, 2004). In addition, religious or spiritual coping strategies were extracted as a separate factor. In previous research, the relation of religious

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coping and other coping factors have been inconsistent as religion has loaded on no factors or loaded on either an approach coping factor or avoidant coping factor in previous research (Carver, Scheier, & Weintraub, 1989; Taylor & Stanton, 2007). As the current study focused on approach and avoidant coping strategies, the items that were loaded on Factor 1 and Factor 3 were averaged separately to create an approach coping score and an avoidant coping score, respectively, in the adult sample. The same items from Factor 1 and Factor 3 in the adult sample EFA were also averaged separately in the college sample to obtain the two coping scores.

Using the approach and avoidant scores, latent profile analysis was used in order to identify subgroups of individuals showing different patterns of relative use of approach and avoidant coping strategies.[4] To extract a meaningful and optimal number of coping typologies, latent profile analysis was carried out for two-, three-, and four-group solutions. In addition, five personality traits (i.e., neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness) were included as covariates in the latent profile analysis to incorporate the findings of meta-analyses that these personality traits are related to coping style (Carver & Connor-Smith, 2010; Connor-Smith & Flachsbart, 2007).

Comparing the model fit indices, the two-group solution appeared to be more appropriate (entropy=.74, AIC=2328.64, BIC=2397.81) than the three- and four-group solutions. More specifically, extracting additional classes in the three- and four-group solutions did not necessarily improve the model fit: entropy increased as expected but AIC and BIC increased as well (as opposed to decrease).[5] Furthermore, the sample sizes of the additional 3rd and 4th classes were small (ranging from 4 to 35), which potentially would result in unstable estimates if

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[4] Latent profile analysis was chosen over using the difference scores between the approach and the avoidant coping scores in order to account for coping theory that individuals generally use a combination of coping strategies in their daily lives as opposed to rely solely on one coping strategy (Folkman & Moskowitz, 2004).
[5] Greater entropy and smaller AIC and BIC suggest better model fit in the latent profile analysis framework.

modeled as a separate coping group. Taking these factors into account, the two class model was selected. In the adult sample, Class 1 (N=256; 24.76%) showed a moderate level of avoidant coping and moderate level of approach coping, while Class 2 (N=778; 75.24%) showed a low level of avoidant coping and high level of approach coping (Table 2). Thus, Class 1 was named *moderate approach-moderate avoidant group* and Class 2 was named *high approach-low avoidant group.* The average latent class probabilities for most likely class membership of two class solution were .89 in the moderate approach-moderate avoidant group and .94 in the high approach-low avoidant group, which suggests that most individuals were properly assigned to each coping style group. Neuroticism (b = .10, SE = .01, *p* < .001) and conscientiousness (b = -.02, SE = .01, *p* < .05) were significantly related to Class 1 membership, suggesting that compared to the high approach-low avoidant group, the moderate approach-moderate avoidant group was more likely to be high on neuroticism and low in conscientiousness.

The same coping groups were found in the college sample (entropy=.74, AIC=835.30, BIC=896.98). Class 1 (N=86; 24.64%) had a moderate of avoidant coping and a moderate level of approach coping, while Class 2 (N=263; 75.36%) had a low level of avoidant coping and high level of approach coping (Table 2). Thus, Class 1 was named *moderate approach-moderate avoidant group* and Class 2 was named *high approach-low avoidant group*. The average latent class probabilities for most likely class membership were .90 for the moderate approach-moderate avoidant group and .93 for the high approach-low avoidant group, which suggests that most individuals were properly assigned to coping style groups. Neuroticism (b = 3.02, SE = .62, *p* < .001) was significantly related to Class 1 membership, indicating that compared to the high approach-low avoidant group, the moderate approach-moderate avoidant group was more likely to be high on neuroticism.

Table 2. Means and standard deviations of model variables within each sample across coping style

		Coping Style	
Sample	*Variables*	*Approach*	*Avoidant*
Adult	Approach coping[a]	2.93(.48)	2.50(.50)
	Avoidant coping[a]	1.51(.28)	2.19(.39)
	Negative events[a]	2.55(2.59)	3.13(2.72)
	Sadness[a]	.63(.40)	1.28(.78)
	Fear[a]	1.28(.40)	1.90(.77)
	Anger[a]	1.37(.48)	2.07(.85)
	Guilt[a]	1.19(.38)	1.83(.80)
	Alcohol use[a]	2.52(2.16)	3.17(2.58)
	Age[a]	44.96(6.68)	43.00(7.27)
	Sex	1.50(.50)	1.52(.50)
	Ethnicity	1.12(.33)	1.13(.34)
	Marital status	2.10(1.67)	2.42(1.79)
College	Approach coping[b]	2.78(.43)	2.44(.57)
	Avoidant coping[b]	1.67(.33)	2.46(.44)
	Negative events[b]	2.14(1.98)	3.16(2.60)
	Sadness[b]	2.01(.92)	3.03(1.01)
	Fear[b]	1.70(.68)	2.56(.95)
	Anger[b]	1.62(.61)	2.41(1.00)
	Guilt[b]	1.68(.84)	2.58(1.09)
	Alcohol use	1.20(1.12)	1.76(1.30)
	Age	19.08(1.20)	19.05(1.26)
	Sex	.44(.50)	.60(.49)
	Ethnicity	1.90(.86)	2.07(1.00)

Table 2. Values in the cells represent the average of each variable within the sample for individuals with either approach or avoidant coping styles. For the latent variables, the indicators were averaged for these comparisons.
[a] Group differences were significant at the Bonferroni corrected alpha value ($\alpha = .004$), which was used to account for alpha inflation due to multiple comparisons.
[b] Group differences were significant at the Bonferroni corrected alpha value ($\alpha = .005$).

2.5.2   Negative Affect Measurement Models

The measurement models for the negative affect latent factors in the adult and college sample were evaluated to confirm that the negative affect scales were equivalent across the coping style groups. In the adult sample, the indicators were chosen based on specific affect scales derived in a previous varimax-rotated factor analytic study of the expanded version of the PANAS scale (PANAS-X) (Watson & Clark, 1994). The indicators that were cross-loaded on two different negative affect components in the prior study were loaded on only one component in the current study based on the largest loadings found in the factor analytic study. The indicators for fear included: jittery, afraid, nervous, and scared; guilt included: guilty and ashamed; anger included: hostile and irritable; sadness included: upset and two additional indicators obtained from the CES-D, including: *"I felt depressed."* and *"I felt sad."* Complete invariance of the factor loadings across coping style groups was not supported. Thus, the partially invariant measurement model was used in the main analyses. The model fit of the measurement model with partial invariance was acceptable, χ^2 (87) = 184.76, p < .001; RMSEA= .047; CFI = .96.

In the college student sample, the indicators were also chosen based on specific affect scales derived by Watson and Clark (1994). As responses to the extended version of the PANAS were available, all of the indicators in the factor analytic study that were significantly loaded onto only one factor were used as indicators in this study. The indicators for fear included: scared, nervous, shaky, jittery, afraid, frightened; guilt included: dissatisfied with self, disgusted with self, guilty, blameworthy, angry at self, and ashamed; anger included: angry, irritable, hostile, loathing, and scornful; and sadness included: lonely, alone, downhearted, and sad. The measurement model demonstrated lambda partial invariance with acceptable model fit, χ^2 (398) = 600.195, p < .001; RMSEA= .055; CFI = .92.

2.5.3 Alcohol Use Measurement Models

The measurement model for the alcohol use latent factor was evaluated for measurement invariance across coping style groups. The alcohol use measurement model included a single latent factor with three indicators. In the adult sample, the indicators included: frequency of binge drinking, frequency of drunkenness, and number of alcoholic drinks in the past month. In the college sample, the indicators included: frequency of alcohol use, drunkenness, and binge drinking in the past month. The adult sample measurement model demonstrated lamda and variance invariance, with acceptable model fit, $\chi^2(6) = 683.72$, $p < .001$; RMSEA= .069; CFI = .98. The college sample measurement model demonstrated lamda and variance invariance, with good model fit, $\chi^2(6) = 270.66$, $p < .001$; RMSEA= .049; CFI = .99.

3.0   RESULTS

3.1   EVALUATION OF STRESS-NEGATIVE AFFECT MODEL

3.1.1   Adult Sample

The final multiple-group meditational model was analyzed twice, with and without forcing measurement invariance across coping groups, because partial measurement invariance of the negative affect scales suggests that the scale may not behave in the same way across the coping style groups. The pattern of findings did not differ if the negative affect scales were constrained using complete invariance or partial invariance. Thus, only the results from the model with the partial measurement invariance were reported. The final multiple-group, meditational model fit the data adequately, χ^2 (282) = 531.207, $p < .001$; RMSEA = .041; CFI = .94. The final model is depicted in Figure 1.

Figure 1. Stress-negative affect models for approach and avoidant coping styles in an adult sample
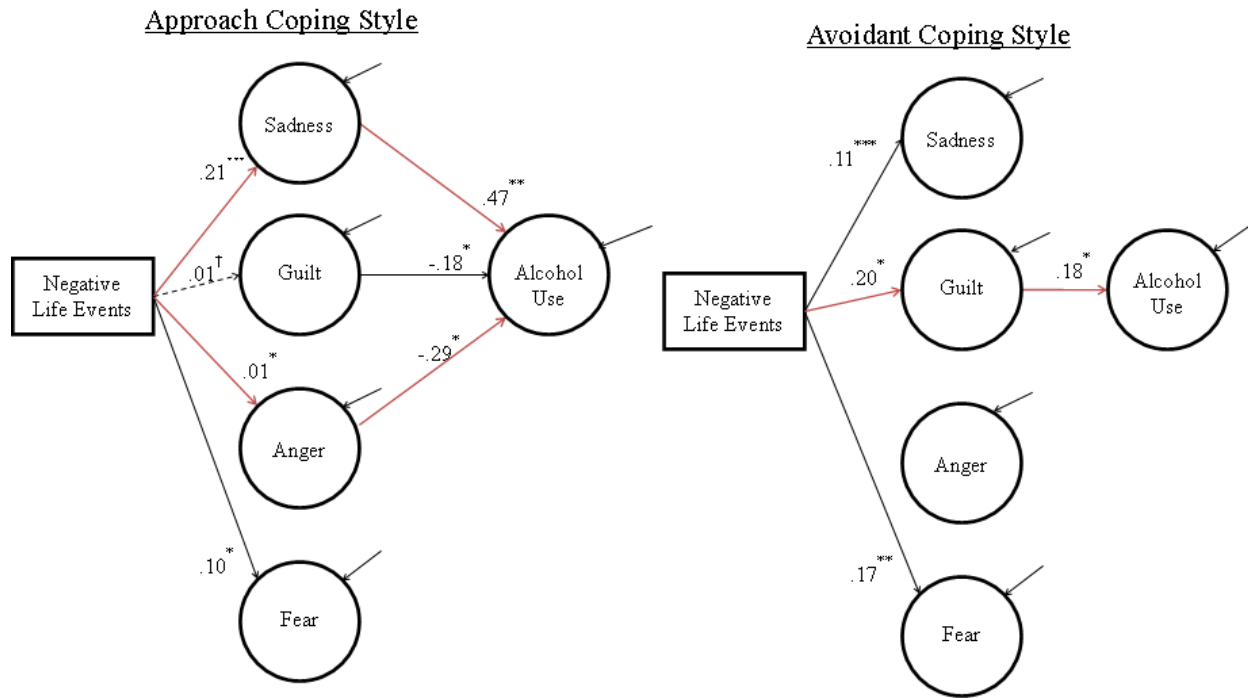
Notes: a. Marital status, gender, age, and ethnicity were included as covariates; b. The negative affect measurement model demonstrated partial lambda invariance; however, results were identical regardless of whether partial invariance or complete invariance was constrained. Thus, the results from the partial invariance model were reported; c. The correlations between the exogenous variables and the correlations between the residual variances of the negative affect latent factors were estimated in the model but omitted in the figure for simplicity; d. Standardized path coefficients were reported in the figure. $^{\dagger}p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

**3.1.1.1 High approach-low avoidant coping subgroup** Negative life events in the past 12 months were significantly and positively associated with sadness ($B = .21$, $p < .001$), anger ($B = .01$, $p < .05$), and fear ($B = .10$, $p < .05$). Negative life events were marginally associated with greater levels of guilt ($B = .01$, $p < .10$). Negative life events explained 7.7% of the variance of sadness, 3.8% of anger, and 1.4% of fear. In turn, sadness was significantly and positively associated with alcohol use ($B = .47$, $p < .01$) and guilt and anger were significantly and

negatively associated with alcohol use (B = -.18, $p < .05$ and B = -.29, $p < .05$, respectively). Negative affect components collectively explained 4.3% of the variance of alcohol use. Testing the significance of the meditation effect via the specific negative affect component, sadness was a significant mediator of the relation between negative life events and alcohol use (mediated effect = .12, SE = .05, 95% CI: .04, .22), with negative life events associated with greater sadness and sadness, in turn, predicting higher levels of alcohol use. Anger was also a significant mediator of the pathway from negative life events to alcohol use (mediated effect = -.03, SE = .02, 95% CI: -.08, -.001). Specifically, negative life events predicted higher levels of anger and anger, in turn, predicted less alcohol use. The meditational pathway from negative life events to alcohol use through guilt (mediated effect = -.02, SE = .01, 95% CI: -.05, .002) was not significant.

3.1.1.2 Moderate approach-moderate avoidant coping subgroup

Negative life events in the past 12 months were significantly and positively associated with sadness (B = .11, $p < .001$), guilt (B = .20, $p < .05$), and fear (B =.17, $p < .01$). Negative life events explained 2.9% of the variance of fear, 6.8% of guilt, and 1.1% of sadness. In turn, guilt, but not sadness and fear, was significantly and positively associated with alcohol use (B = .18, $p < .05$). Negative affect components collectively explained 5.6% of the variance of alcohol use. The meditational pathway from negative life events to guilt to alcohol use was significant (mediated effect = .04, SE = .03, 95% CI: .003, .10), such that negative life events predicted higher levels of guilt and guilt, in turn, predicted higher levels of alcohol use.

3.1.1.3 Mean comparisons between the two coping subgroups In order to supplement the results from the SEM models, which compared the strength of the relations between variables across coping groups, the mean levels of all the model variables were compared between the two coping groups using t-tests (Table 2). The moderate approach-moderate avoidant group reported significantly more negative life events and alcohol use than the high approach-low avoidant group. The moderate approach-moderate avoidant group also reported higher levels of all the negative affect components. The two coping groups were similar on all demographic variables except for age, with individuals in the high approach-low avoidant group being significantly older than individuals in the moderate approach-moderate avoidant group.

3.1.2 College sample

The final multiple-group meditational model was analyzed with the complete lambda invariance and partial lambda invariance separately to evaluate if the results changed due to the different measurement models. Again, the pattern of findings was equivalent across the complete and partial lambda invariant models for negative affect components. Thus, only the results from the final model with the partial lambda invariance are reported. The final multiple-group, meditational model fit the data adequately, χ^2 (711) = 1026.92, $p < .001$; RMSEA = .05; CFI = .91. The final model is shown in Figure 2.

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Figure 2. Stress-negative affect models for approach and avoidant coping styles in a college student sample
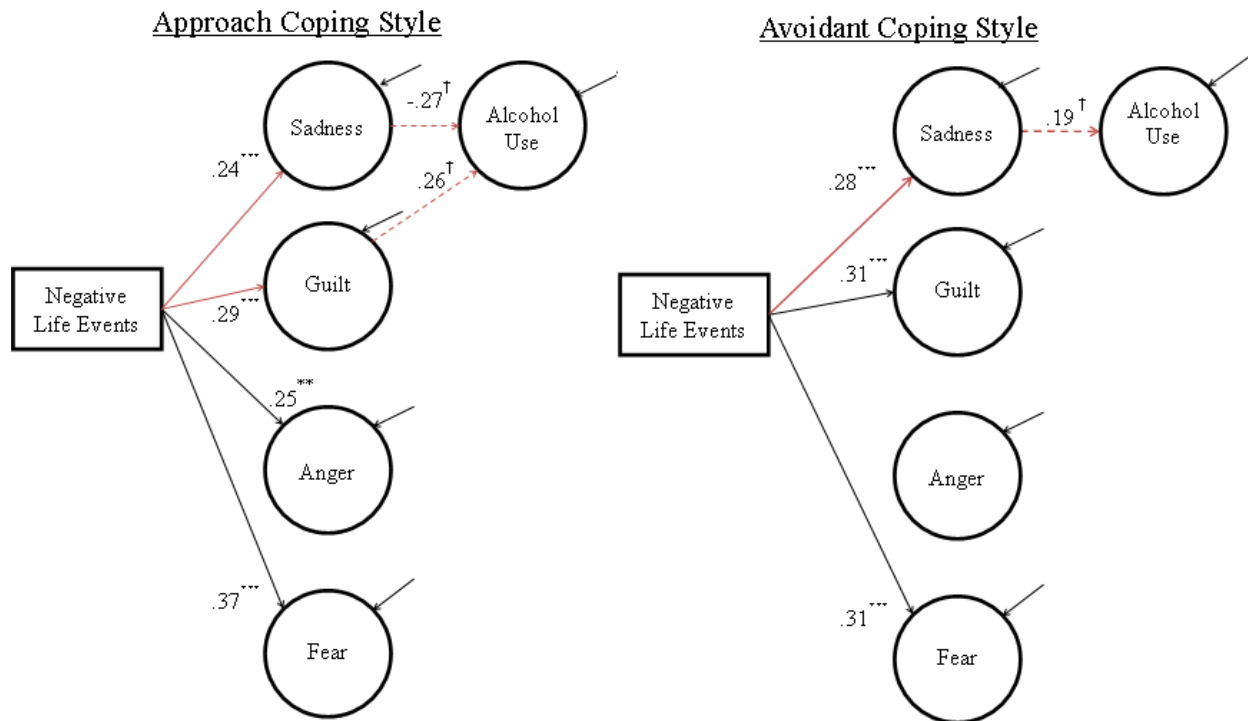
Notes: a. Gender, age, and ethnicity were included as covariates;
b. The negative affect measurement model demonstrated partial lambda invariance; however, results were identical regardless of whether partial invariance or complete invariance was constrained. Thus, the results from the partial invariance model were reported; c. The correlations between the exogenous variables and the correlations between the residual variances of the negative affect latent factors were estimated in the model but omitted in the figure for simplicity; d. Standardized path coefficients were reported in the figure. †p < .10; *p < .05; **p < .01; ***p < .001.

3.1.2.1 High approach-low avoidant coping subgroup   Similar to the findings in the high approach-low avoidant group in the adult sample, negative life events in the past three months were significantly and positively associated with all four components of negative affect: sadness ($B = .24$, $p < .001$), guilt ($B = .29$, $p < .001$), anger ($B = .25$, $p < .01$), and fear ($B = .37$, $p < .001$) in the past three months. Negative life events explained 5.5% of the variance of sadness, 14.8% of fear, 6.4% of anger, and 10.4% of guilt. However, none of these negative affect components

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were significantly related to alcohol use. Sadness was marginally associated with decreased alcohol use ($B = -.27$, $p < .10$) and guilt was marginally associated with increased alcohol use ($B = .26$, $p < .10$). Negative affect as a whole explained 3.2% of the variance of alcohol use. The two potential meditational pathways were not supported.

3.1.2.2   Moderate approach-moderate avoidant coping subgroup   As in the moderate approach-moderate avoidant group in the adult sample, negative life events in the past three months were significantly and positively associated with sadness ($B = .28$, $p < .001$), guilt ($B = .31$, $p < .001$), and fear ($B = .31$, $p < .001$) in the past three months. Negative life events explained 8.0% of the variance of sadness, 10.1% of fear, and 10.6% of guilt. In turn, sadness was only marginally associated with increased alcohol use in the past month ($B = .19$, $p < .10$). Negative affect as a whole explained 8.8% of the variance of alcohol use. The meditational pathway from negative life events to alcohol use through sadness was not supported (mediated effect=.03, SE=.02, 95% CI: -.002, .07).

3.1.2.3   Mean comparisons between the two coping subgroups   Like the moderate approach-moderate avoidant group in the adult sample, the moderate approach-moderate avoidant group in the college sample reported significantly more negative events, sadness, fear, anger, and guilt than the high approach-low avoidant group (Table 2). However, the two coping groups were demographically similar and reported similar drinking levels.

4.0   DISCUSSION

Previous research has provided limited support for the stress-negative affect model, in which negative affect mediates the relation between stressors and alcohol use. In order to further investigate the relation between stress-induced affect and alcohol use, the importance of the components of negative affect among individuals who use different coping strategies were examined in two samples that are at different developmental stages. Based on the research literature, it was expected that components of negative affect, such as sadness and fear, would be more important when explaining the relation between stressors and alcohol use than other components of negative affect. Further, it was hypothesized the stress-negative affect model would best explain alcohol use among adults who ineffectively cope with stressors using avoidant coping strategies.

4.1   THE STRESS-NEGATIVE AFFECT MODEL IN THE ADULT SAMPLE

In the adult sample, the coping styles were characterized by two subgroups: (1) an approach coping group, who used high levels of approach coping strategies and relatively low levels of avoidant strategies (i.e., high approach-low avoidant group), and (2) an avoidant coping group, who reported moderate use of both coping strategies with more frequent use of avoidant strategies and less frequent use of approach strategies than the high approach-low avoidant group

(i.e., moderate approach-moderate avoidant group). As expected, experiencing more negative life events in the past 12 months was associated with higher levels of the components of negative affect in the past 12 months in both coping groups, with the exception of a non-significant relation between negative life events and anger in the moderate approach-moderate avoidant group and marginal relation between negative life events and guilt in the high approach-low avoidant group.

The two coping groups, however, showed different patterns of the relations between the components of negative affect and alcohol use. In the high approach-low avoidant group, sadness, guilt, and anger were associated with alcohol use but only the mediational pathways for sadness and anger were supported. Specifically, for adults who primarily use approach coping strategies, negative life events were associated with a higher level of sadness, which, in turn, was associated with greater alcohol use. Negative life events were also associated with a higher level of anger; however, unlike sadness, a higher level of anger was associated with a lower level of alcohol use. In the moderate approach-moderate avoidant group, guilt was the only mediator intervening in the relation between negative life events and alcohol use such that negative life events were associated with higher level of guilt, which, in turn, was associated with greater alcohol use.

The findings of the adult sample indicate that the association between stressors and alcohol use were mediated by different components of negative affect, depending on the coping strategies individuals use. The differential mediational pathways were primarily due to the varying relations between components of negative affect and alcohol use. Given the novelty of the approach of the current study investigating components of negative affect within the stress-negative affect model and incorporating individual's coping styles, the underlying mechanism of

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why particular types of negative affect may lead to different drinking responses across different coping styles is not entirely clear; however, the results of the current study can be understood with the appraisal theory of emotion (Arnold, 1960; Smith & Lazarus, 1993). The theory suggests that an individual's specific emotional reactions to stressors, and the actions they take to cope with these emotions, are dependent on that individual's evaluation of the antecedents of the negative event and the individual's perceived ability to cope with the negative event. Based on the findings of the current study, it appears that the appraisals of negative life events and the subsequent experiences of negative affect are similar in both coping groups; however, individuals using different coping strategies react to the negative affect in different manners. Specifically, in appraising their own ability to cope with the consequences of stressors, individuals may or may not turn to drinking to deal with particular components of negative affect.

The finding of sadness as a unique mediator of the negative life events in the high approach-low avoidant group is consistent with research hypotheses and prior research with adolescent samples, in which stressor-induced sadness predicted greater alcohol use above and beyond the influence of fear and anger (Hussong & Chassin, 1994). According to the cognitive appraisal theory of emotion, sadness is typically experienced when individuals appraise themselves as helpless in a situation and as having low approach coping potential (Smith & Lazarus, 1993). When these appraisals occur, those who typically use approach coping strategies seem to drink alcohol to ameliorate sadness following stressors because of the perceived inability to deal with their current situation with their typical coping strategies.

The role of anger as a mediator found in the adult high approach-low avoidant coping group was unexpected because previous studies with adolescent samples have not supported

anger as a unique contributor to alcohol use (Hussong & Chassin, 1994). The negative relation between anger and alcohol use among adults, however, can be understood with the cognitive appraisal theory of emotion. Anger is experienced following an appraisal that other individuals are accountable for the negative event (Carver & Harmon-Jones, 2009; Smith & Lazarus, 1993). Anger has been shown to motivate individuals to enact approach coping strategies in order to resolve their anger and handle the situation (Carver & Harmon-Jones, 2009). Thus, individuals who tend to use approach coping strategies may decrease their alcohol use as they mobilize approach coping strategies to cope with the anger, especially if drinking alcohol could impede their ability to enact the coping strategies.

In the adult moderate approach-moderate avoidant group, guilt was the only component of negative affect uniquely associated with alcohol use. Testing the meditational pathway revealed that experiencing negative life events was associated with higher levels of guilt and guilt was associated with greater alcohol use. The unique mediating effect of guilt within the stress-negative affect model was not expected and has not been evaluated in previous research of the stress-negative affect model. According to the cognitive appraisal theory of emotion, guilt occurs when an individual holds himself or herself accountable for a negative stressor (Smith & Lazarus, 1993). Individuals using relatively high levels of avoidant coping strategies, such as criticizing and blaming oneself for a stressor or not actively working on the stressor, may have greater guilty feelings when facing negative life events. As a result, they may primarily drink alcohol in order to alleviate guilt, as opposed to other components of negative affect.

Contrary to the research hypotheses, fear was not a mediator in either coping group. Prior studies that have discovered a relation between fear and alcohol use have not controlled for other components of negative affect (e.g., Kushner, Sher, Wood, & Wood, 1994; Sher et al., 2007).

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Thus, the significant relation found in the previous studies might have resulted from the effect of fear that is shared with other components of negative affect. In the current study, the unique contribution of fear on alcohol use was examined by including the other components of negative affect and when the effects of other components were controlled for, the unique effect of fear did not remain significant. This finding is consistent with prior research with an adolescent sample that simultaneously compared the effects of sadness, fear, and anger on alcohol use but only found a unique effect of sadness on alcohol use (Hussong & Chassin, 1994).

4.2   THE STRESS-NEGATIVE AFFECT MODEL IN THE COLLEGE SAMPLE

The same coping groups found in the adult sample were identified in the college sample. The pattern of the relations between negative life events and the components of negative affect in the adult sample were also replicated in the college sample. Specifically, negative life events during the past three months were associated with all components of negative affect experienced in the past three month in both coping groups, except for anger in the moderate approach-moderate avoidant group. The relations between the negative affect components during the past three months and alcohol use during the last month; however, did not reach the significance level in either of the coping groups in the college sample. Therefore, there were no significant mediation pathways from negative life events to alcohol use that operated through components of negative affect.

The results across both coping style groups in the college sample indicate that stress-related drinking may be rare among college students, especially in response to components of

negative affect. The pattern of findings is consistent with research of drinking motives suggesting that college students report drinking in response to stressors; however, they tend to drink primarily for social reasons or enhancement (Kuntsche et al., 2005; Perkins, 1999). Thus, heavy alcohol use among college students may be closely tied to celebrations and social gatherings as opposed to negative life events and negative affect. Alternative alcohol use models, perhaps focused on drinking associated with different levels of positive affect, may be most informative when explaining normative college students' alcohol use. Another possibility of the null findings in the college sample may be due to the time frames used for the alcohol use measures in the current study. Specifically, alcohol use in the past month was predicted by stressors and negative affect in the past three months. While this temporal ordering of negative affect and alcohol use improved the confidence of the directionality of the relations, it may have led to weaker relations between these variables because alcohol use was predicted by the negative affect that was experienced two months earlier.

4.3   CONCLUSIONS AND IMPLICATIONS

Previous research has only weakly supported the stress-negative affect model; however, the current study's findings indicate that there are several factors to be considered in evaluating the stress-negative affect model for alcohol use. Based on the results of the current study, it the stress-negative affect model appears to better explain alcohol use in the adult population than the college population. Individuals at different developmental stages may have different predominant motives for drinking. The null findings among college students could reflect the fact that college students drink alcohol primarily for social and emotional enhancement and thus,

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different underlying mechanisms may explain alcohol use in this population. Further, the results highlight the importance of components of negative affect and their interplay with different coping styles. Alcohol use among adults who heavily rely on approach coping strategies appears to be uniquely associated with sadness and anger following stressors. In contrast, adults who often utilize avoidant coping strategies more frequently drink alcohol to deal with guilt that they experience following negative life events.

The findings of the current study should be considered with some limitations in mind. The cross-sectional and retrospective nature of the current research design prevents any causal inferences about the results and poses a challenge when understanding the directionality of the relations among the study variables. In addition, the negative affect measured in the current study, particularly in the adult sample, is trait negative affect because the participants rated the extent to which they felt each emotion *in general*. Thus, while statistical associations were established between stressors and negative affect measures, causal associations cannot be inferred. Future research may benefit from a longitudinal design that can allow clearer connections from negative life events to subsequent negative affect and alcohol use. For example, with more frequent measures of model variables that assess day-to-day or weekly life events, negative affect, and alcohol use, causal directions from negative life events to negative affect to alcohol use can be evaluated with greater confidence and state negative affect due to stressors can be measured.

Another limitation of the current study is the relatively small sample size of the moderate approach-moderate avoidant group (N=86; 24.64%) in the college sample. Although the proportion of the college sample in the moderate approach-moderate avoidant group was equivalent to the proportion of the moderate approach-moderate avoidant group in the adult

sample (N=256; 24.76%), the overall sample size of the college drinkers (N=352) was smaller than the adult sample and the resulting group size of the moderate approach-moderate avoidant group was quite small. The small sample size may have reduced power to detect stress-related drinking in the moderate approach-moderate avoidant group. Stress induced alcohol use might, if at all, occur among the college student who rely on avoidant coping strategies. Future research may benefit from oversampling individuals who heavily rely on avoidant coping style in order to further investigate the presence of stress-related drinking in this subgroup.

Despite these shortcomings, the current study was the first to test the stress-negative affect model using a comprehensive approach that incorporates both specific components of negative affect and coping style. It appears that examining various components of negative affect simultaneously is important when explaining alcohol use. Depending on the type of negative affect the individual experiences, it may lead to increased or decreased alcohol use or may not lead to alcohol use at all. Despite the importance of the components of negative affect, the effect of the shared variance among the negative affect components could not be examined in the current study. As the components of negative affect were highly correlated with each other, especially in the moderate approach-moderate avoidant groups (ranging from .24 to .60 in adults and .53 to .76 in college students), modeling the general negative affect factor that underlies all the negative affect components may provide more information on the validity of the negative affect stress model in explaining alcohol use.

Another strength of the current study is the use of a rigorous, sophisticated method that is suitable for identifying subgroups of participants who show different patterns of coping strategies. Using latent class analysis, coping groups were identified that may more accurately represent real-life patterns of coping. These groups showed that individuals tend to use a

combination of coping strategies, rather than using a single strategy exclusively or predominantly, as reflected in the alternative methods used in previous research, such as examining levels of approach and avoidant coping separately or using difference scores between the two strategies (Folkman & Moskowitz, 2004; Skinner et al., 2003). Furthermore, personality factors were taken into account when identifying the coping groups. In both the adult and college samples, neuroticism, which is characterized by a greater physical and emotional response to stressors (McCrae & John, 1992), was uniquely related to moderate use of avoidant coping strategies. The relation between neuroticism and avoidant coping strategies is consistent with the findings from a meta-analysis study showing that neuroticism was related to greater use of avoidant strategies and lesser use of approach strategies (Carver & Connor-Smith, 2010; Connor-Smith & Flachsbart, 2007). Future research could further explore the role of coping style by including additional coping strategies, such as social support and incorporating more comprehensive coping style patterns in the stress-negative affect model for alcohol use.

In sum, despite the weak support for the stress-negative affect model to date, it appears that the stress-negative affect may in fact predict increased alcohol use primarily among adults. The relation between stressors and alcohol use appears to operate through components of negative affect, such as sadness, anger, and guilt; however, the patterns differ depending on the individual's coping strategies. Considering the moderate to high correlations among the components of negative affect, it may be useful to examine general factor of negative affect a mediating variable. A comprehensive approach to explaining stress-induced alcohol use through components of negative affect in the context of different coping styles can be beneficial as it elaborates on the process by which negative life events promote alcohol use. Understanding these processes can help delineate the important factors when developing alcohol use

interventions. Specifically, adults who use heavily rely on avoidant coping strategies might be at higher risk for stress induced alcohol use. Thus, interventionists may want to focus on enhancing coping strategies or helping these individuals cope with guilt and self-blame following stressors.

APPENDIX A

SCRIPT

Dr. JeeWon Cheong and Sarah Siodmok in the psychology department at the University of Pittsburgh are conducting a research project on the stressors college students encounter and deal with in their daily lives. The purpose of this project is to investigate the presence of stressors, negative moods, coping strategies, alcohol use, and additional characteristics of college students. We hope to use the findings of this study to understand what coping strategies are used and are successful among college students in order to deal with stressors. Likewise, we hope to learn if some coping styles co-occur with particular levels of alcohol use. If you are at least 18 years old and agree to participate, we will ask you to answer a series of questions that concern your personal beliefs, behaviors, and characteristics in a survey. Although it is preferred that you answer every question, you may skip any question that you do not want to answer. Your answers will not be shared with anyone and the information you provide will not be used to get you into any kind of trouble, no matter what your answers are. Therefore, please answer all questions as honestly as possible. You will receive 1 credit toward the research participation requirement for your Introduction to Psychology course. Your participation will also contribute to the advancement of psychological research.You have the option throughout the survey to cancel your participation if you feel uncomfortable with the research project. If you want to cancel your participation please mark a large 'X' on the inside of the coversheet and turn in the survey in the box in the front of the room used for all other submissions. All materials related to your participation in the study will be shredded by the end of the same workday in a shredder located on the third floor of Sennot Square if you choose to cancel your participation. You will not be penalized for ending your participation in this study without completing the survey and you will receive your full research credit. It will take you between 40 and 60 minutes to finish the survey. No one but Dr. Cheong and her research assistants will see your responses. Your responses will be kept on a secure server or in a locked cabinet in a locked office at the University of Pittsburgh. No one will be able to associate your responses to the questionnaires with your name because there is no way to connect the information on your packet to your contact information, as that will only be located on Experimetrix. The sheet you will record your name on in order to receive research credit will be kept separate from your response packets in a locked cabinet. These attendance sheets will be shredded at the end of the Spring, 2010, semester and they will not be used for any purpose other than giving you research credit. If you are interested in the

study findings, please feel free to contact Dr. Cheong or Sarah Siodmok at the address below. If you have any questions or concerns about the research or your participation, please contact the primary researcher, Sarah Siodmok (sls124@pitt.edu), or her faculty supervisor, Dr. JeeWon Cheong (jcheong@pitt.edu), who will be happy to answer any of your questions. For questions about your rights as a subject or about consequences caused by this research, contact the University of Pittsburgh Institutional Review Board at (412) 383-1480.

APPENDIX B

DEBRIEFING FORM

Previous research has shown that individuals may use alcohol to cope with stressors that they cannot otherwise cope with (Colder & Chassin, 1993; Chassin et al., 1993; Cooper et al., 1995; Rankin & Maggs, 2006; Park et al., 2004). There is evidence that drinking to cope with negative emotions that result from stressors may be related to the specific types of negative emotions experienced and the ways that people cope with these emotions (Billings & Moos, 1981; Evans & Dunn, 1995; Fields & Powell, 2007; Folkman & Lazarus, 1988; Hussong, Hicks, Levy, & Curran, 2001; Hussong & Chassin, 1994). Determining if these factors play a role in behavior among college students could be valuable to those helping students that are experiencing various negative events in their lives but do not know how to cope. Thus, the purpose of this study is to examine how undergraduate students commonly react to stressful life events in terms of negative emotions experienced, coping behaviors, and alcohol use. Our expectation is that students that do not have sufficient skills to cope with negative life events may experience more negative emotions than others, and may even turn to alcohol use in order to deal with these emotions. We hope that the findings of this study may be used to help understand drinking behavior in college students and enhance their overall adjustment.

If you believe that you or a friend may need or want help coping with difficult stressors or with heavy alcohol use, consider contacting the University Counseling Center. Appointments can be made at 334 William Pitt Union or by calling (412) 648-7930. Another possible resource for help with alcohol-related difficulties is the University's Health Education/Promotion Services, which can be contacted by calling (412) 383-1830.

Thank you again for your participation in this research. If you have any further questions, please feel free to contact the primary researcher, Sarah Siodmok (sls124@pitt.edu), or her faculty supervisor, Dr. JeeWon Cheong (jcheong@pitt.edu).

Select Relevant References:

Chassin, L., Curran, P. J., Hussong, A. M., & Colder, C. R., (1996). The relation of parent alcoholism to adolescent substance use: A longitudinal follow-up study. *Journal of Abnormal Psychology, 105,* 70-80.

Cooper, M. L., Frone, M. R., Russell, M., & Mudar, P. (1995). Drinking to regulate positive and negative emotions: A motivational model of alcohol use. *Journal of Personality and Social Psychology, 69,* 990-1005.

APPENDIX C

COMPLETE SURVEY

1. What is your age in years? _____ years old

2. Please indicate your gender:

    ☐ male
    ☐ female

3. Please indicate your year in school:

    ☐ freshman
    ☐ sophomore
    ☐ junior
    ☐ senior
    ☐ other (please specify: _____)

4. Please indicate your current marital status:

    ☐ single
    ☐ married
    ☐ living with another
    ☐ separated
    ☐ divorced
    ☐ widowed

5. Please indicate your race/ethnicity:

    ☐ Asian or Pacific Islander
    ☐ African American (not of Hispanic origin)
    ☐ Caucasian (not of Hispanic origin)
    ☐ Hispanic
    ☐ Latino
    ☐ Multiracial
    ☐ Other (please specify: _____)

6. Are you a *non-drinker* (i.e., you have not had an alcoholic beverage in the last 12 months)?

    ☐ Yes
    ☐ No

7. In a typical week, on how many days do you smoke cigarettes? _____

    a. On these days, how many cigarettes do you typically smoke? _____

Listed below are a number of events which sometimes bring about change in the lives of those who experience them and which necessitate social readjustment. *Please circle the number of those events* which you have experienced in the past 12 months and indicate when you have experienced each event on the corresponding timeline. If the event occurred more than once in the past 12 months you can make more than one mark on the timeline.

Also, for each item checked below, *please indicate the extent to which you viewed the event as having either a positive or negative impact on your life* at the time the event occurred. That is, *indicate the type and extent of impact that the event had.* The range of impact ranges from -3 (extremely negative) to +3 (extremely positive) as shown below:

-3	-2	-1	0	+1	+2	+3
Extremely Negative	Moderately Negative	Somewhat Negative	No Impact	Slightly Positive	Moderately Positive	Extremely Positive

For example, if an event occurred 4 months ago and again last month and if you think the event has moderately negative impact on your life, you would mark your answers as follows:
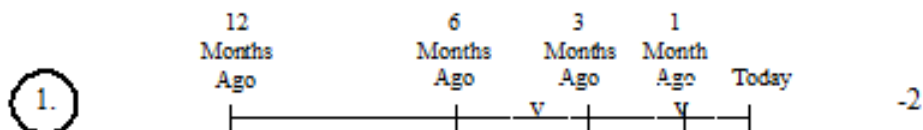
Please indicate your answers for the following events.

1. Leaving home for the first time

2. Beginning a new school experience at a higher academic level (college, graduate school, etc.)

3. Changing to a new school at same academic level

(Please continue to the next page)

-3 Extremely Negative	-2 Moderately Negative	-1 Somewhat Negative	0 No Impact	+1 Slightly Positive	+2 Moderately Positive	+3 Extremely Positive

	12 Months Ago	6 Months Ago	3 Months Ago	1 Month Ago	Today	*How Negative or Positive*
4. Academic Probation						____
5. Being dismissed from dorm or other residence						____
6. Failing an important exam						____
7. Changing a major						____
8. Failing a course						____
9. Dropping a course						____
10. Joining a fraternity or sorority						____
11. Financial problems concerning school						____
12. Marriage						____
13. Detention in jail or comparable institution						____
14. Death of spouse						____
15. Major change in sleep (much more or less)						____
16. Death of mother						____
17. Death of father						____
18. Death of brother						____
19. Death of sister						____

(Please continue to the next page)

-3 Extremely Negative	-2 Moderately Negative	-1 Somewhat Negative	0 No Impact	+1 Slightly Positive	+2 Moderately Positive	+3 Extremely Positive
		12 Months Ago	6 Months Ago	3 Months Ago	1 Month Ago Today	*How Negative or Positive*

20. Death of grandmother ⊢————————┼————————┼————————┼————————┤ _____

21. Death of grandfather ⊢————————┼————————┼————————┼————————┤ _____

22. Other death (specify: _____) ⊢————————┼————————┼————————┼————————┤ _____

23. Major change in eating (much more or less food intake) ⊢————————┼————————┼————————┼————————┤ _____

24. Foreclosure on mortgage or loan ⊢————————┼————————┼————————┼————————┤ _____

25. Death of a close friend ⊢————————┼————————┼————————┼————————┤ _____

26. Outstanding personal achievement ⊢————————┼————————┼————————┼————————┤ _____

27. Minor law violations (traffic tickets, disturbing the peace, etc.) ⊢————————┼————————┼————————┼————————┤ _____

28. Wife/girlfriend's pregnancy ⊢————————┼————————┼————————┼————————┤ _____

29. *Female:* Pregnancy ⊢————————┼————————┼————————┼————————┤ _____

30. Changed work situation (different work responsibility, major change in work conditions, working hours, etc.) ⊢————————┼————————┼————————┼————————┤ _____

31. New job ⊢————————┼————————┼————————┼————————┤ _____

32. Serious illness or injury of mother ⊢————————┼————————┼————————┼————————┤ _____

53

-3	-2	-1	0	+1	+2	+3
Extremely Negative	Moderately Negative	Somewhat Negative	No Impact	Slightly Positive	Moderately Positive	Extremely Positive

	12 Months Ago	6 Months Ago	3 Months Ago	1 Month Ago	Today	How Negative or Positive

33. Serious illness or injury of father ____

34. Serious illness or injury of brother ____

35. Serious illness or injury of sister ____

36. Serious illness or injury of grandmother ____

37. Serious illness or injury of grandfather ____

38. Other person will serious illness or injury (specify:_____) ____

39. Sexual difficulties ____

40. Trouble with employer (in danger of losing job, being suspended, demoted, etc.) ____

41. Trouble with in-laws ____

42. Major change in financial status (a lot better off or a lot worse off) ____

43. Major change in closeness of family members (increased or decreased closeness) ____

(Please continue to the next page)

-3	-2	-1	0	+1	+2	+3
Extremely Negative	Moderately Negative	Somewhat Negative	No Impact	Slightly Positive	Moderately Positive	Extremely Positive

		12 Months Ago		6 Months Ago	3 Months Ago	1 Month Ago	Today	*How Negative or Positive*

44. **Gaining a new family member (through birth, adoption, family moving in, etc.)**   ____

45. **Change of residence**   ____

46. **Marital separation from mate (due to conflict)**   ____

47. **Major change in church activities (increased or decreased attendance)**   ____

48. **Marital reconciliation with mate**   ____

49. **Major change in number of arguments with spouse (a lot more or a lot less)**   ____

50. *Married individual:* **change in spouse's work (loss of job, beginning new job, retirement, etc.)**   ____

51. **Major change in usual type and/or amount of recreation**   ____

52. **Borrowing more than $10,000**   ____

53. **Borrowing less than $10,000**   ____

54. **Being fired from a job**   ____

-3	-2	-1	0	+1	+2	+3
Extremely Negative	Moderately Negative	Somewhat Negative	No Impact	Slightly Positive	Moderately Positive	Extremely Positive

	12 Months Ago	6 Months Ago	3 Months Ago	1 Month Ago	Today	*How Negative or Positive*

55. *Male:* Wife/girlfriend having an abortion   ____

56. *Female:* Having an abortion   ____

57. Major personal illness or injury   ____

58. Major change in social activities (increased or decreased participation)   ____

59. Major change in living conditions of family (building new home, remodeling, deterioration of home, neighborhood, etc.)   ____

60. Divorce   ____

61. Serious injury or illness of close friend   ____

62. Retirement from work   ____

63. Separation from spouse (due to work, travel, etc.)   ____

64. Engagement   ____

65. Breaking up with boyfriend/girlfriend   ____

66. Reconciliation with boyfriend/girlfriend   ____

(Please continue to the next page)

56

-3	-2	-1	0	+1	+2	+3
Extremely Negative	Moderately Negative	Somewhat Negative	No Impact	Slightly Positive	Moderately Positive	Extremely Positive

		12 Months Ago		6 Months Ago	3 Months Ago	1 Month Ago	Today	*How Negative or Positive*
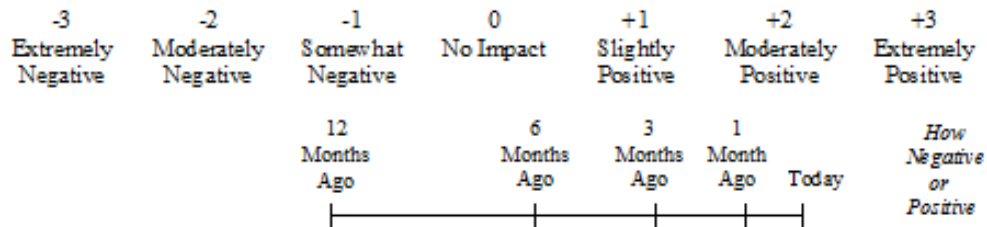
67. Other: Specify_____ ├──────────┼──────────┼──────────┼──────────┤ ____

68. Other: Specify_____ ├──────────┼──────────┼──────────┼──────────┤ ____

69. Other: Specify_____ ├──────────┼──────────┼──────────┼──────────┤ ____

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way in a *given time period*.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

Feelings/Emotions	Past 1 Week	Past 1 Month	Past 3 Months
cheerful	____	____	____
sad	____	____	____
active	____	____	____
angry at self	____	____	____
disgusted	____	____	____
calm	____	____	____
guilty	____	____	____
enthusiastic	____	____	____
attentive	____	____	____
afraid	____	____	____
joyful	____	____	____
downhearted	____	____	____
bashful	____	____	____
tired	____	____	____
nervous	____	____	____
sheepish	____	____	____
sluggish	____	____	____
amazed	____	____	____
lonely	____	____	____
distressed	____	____	____
daring	____	____	____
shaky	____	____	____
sleepy	____	____	____
blameworthy	____	____	____
surprised	____	____	____
happy	____	____	____
excited	____	____	____
determined	____	____	____
strong	____	____	____

(Please continue to the next page)

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

Feeling/Emotion	Past 1 Week	Past 1 Month	Past 3 Months
alone	____	____	____
proud	____	____	____
astonished	____	____	____
relaxed	____	____	____
alert	____	____	____
jittery	____	____	____
interested	____	____	____
irritable	____	____	____
upset	____	____	____
lively	____	____	____
loathing	____	____	____
delighted	____	____	____
angry	____	____	____
ashamed	____	____	____
confident	____	____	____
inspired	____	____	____
bold	____	____	____
at ease	____	____	____
energetic	____	____	____
fearless	____	____	____
blue	____	____	____
scared	____	____	____
concentrating	____	____	____
shy	____	____	____
drowsy	____	____	____
disgusted with self	____	____	____
dissatisfied with self	____	____	____
frightened	____	____	____
scornful	____	____	____
hostile	____	____	____
timid	____	____	____

In the following questions, please indicate how often you drink alcohol.

1. On how many occasions (if any) have you used alcohol **during the last 12 months?**

- ☐ 0 Times
- ☐ 1-2 Times
- ☐ 3-5 Times
- ☐ 6-9 Times

- ☐ 10-19 Times
- ☐ 20-39 Times
- ☐ More than 40 Times

2. On how many occasions (if any) have you used alcohol **during the last 6 months?**

- ☐ 0 Times
- ☐ 1-2 Times
- ☐ 3-5 Times
- ☐ 6-9 Times

- ☐ 10-19 Times
- ☐ 20-39 Times
- ☐ More than 40 Times

3. On how many occasions (if any) have you used alcohol **during the last 30 days**?

- ☐ 0 Times
- ☐ 1-2 Times
- ☐ 3-5 Times
- ☐ 6-9 Times

- ☐ 10-15 Times
- ☐ 16-20 Times
- ☐ More than 21 Times

4. How many alcoholic drinks (if any) have you had **during the last 30 days**?

- ☐ 0 Drinks
- ☐ 1-5 Drinks
- ☐ 5-10 Drinks
- ☐ 11-15 Drinks

- ☐ 16-20 Drinks
- ☐ 20-25 Drinks
- ☐ 26-30 Drinks
- ☐ 31 or more Drinks

5. On how many occasions (if any) have you used alcohol **during the last week**?

- ☐ 0 Times
- ☐ 1-2 Times

- ☐ 3-5 Times
- ☐ 6-7 Times

6. How many drinks of alcohol (beer, wine, liquor) did you have on each day of the last week?
   Count as a drink a can or bottle of beer; a wine cooler or a glass of wine, champagne, or sherry; a shot of liquor or a mixed drink or cocktail.

	BEER	WINE	LIQUOR	OTHER (SPECIFY) *Other = long island iced tea, margarita, malt liquor, fortified wine, cider, etc.*
Today	_____	_____	_____	_____
Yesterday	_____	_____	_____	_____
2 days ago	_____	_____	_____	_____
3 days ago	_____	_____	_____	_____
4 days ago	_____	_____	_____	_____
5 days ago	_____	_____	_____	_____
6 days ago	_____	_____	_____	_____

7. On how many occasions (if any) have you been **drunk (i.e. tipsy, wasted, buzzed) during the last 30 days**?

   ☐ 0 Times   ☐ 10-15 Times
   ☐ 1-2 Times   ☐ 16-20 Times
   ☐ 3-5 Times   ☐ More than 21 Times
   ☐ 6-9 Times

8. On how many occasions (if any) have you been **drunk (i.e. tipsy, wasted, buzzed) during the last week**?

   ☐ 0 Times   ☐ 3-5 Times
   ☐ 1-2 Times   ☐ 6-7 Times

9. How often do you get drunk (i.e. tipsy, wasted, buzzed)?

   ☐ Everyday   ☐ Every 6 months
   ☐ Every other day   ☐ Every 9 months
   ☐ Once a week   ☐ Once a year
   ☐ Weekends   ☐ Never
   ☐ Once every 2 weeks   ☐ Other _____
   ☐ Every month   ☐ Every other month

(Please continue to the next page)

If you are <u>male</u>, please continue to questions 10
If you are <u>female</u>, please go to question 12

10. On how many occasions (if any) have you had **five or more drinks in a row on one occasion during the last 30 days**? Count as a drink a can or bottle of beer; a wine cooler or a glass of wine, champagne, or sherry, a shot of liquor or a mixed drink or cocktail.

- ☐ 0 Times
- ☐ 1-2 Times
- ☐ 3-5 Times
- ☐ 6-9 Times

- ☐ 10-15 Times
- ☐ 16-20 Times
- ☐ More than 21 Times

11. On how many occasions (if any) have you had **five or more drinks in a row during the last week**? Again, count as a drink a can or bottle of beer; a wine cooler or a glass of wine, champagne, or sherry, a shot of liquor or a mixed drink or cocktail.

- ☐ 0 Times
- ☐ 1-2 Times

- ☐ 3-5 Times
- ☐ 6-7 Times

12. On how many occasions (if any) have you had **four or more drinks in a row on one occasion during the last 30 days**? Count as a drink a can or bottle of beer; a wine cooler or a glass of wine, champagne, or sherry, a shot of liquor or a mixed drink or cocktail.

- ☐ 0 Times
- ☐ 1-2 Times
- ☐ 3-5 Times
- ☐ 6-9 Times

- ☐ 10-15 Times
- ☐ 16-20 Times
- ☐ More than 21 Times

13. On how many occasions (if any) have you had **four or more drinks in a row during the last week**? Again, count as a drink a can or bottle of beer; a wine cooler or a glass of wine, champagne, or sherry, a shot of liquor or a mixed drink or cocktail.

- ☐ 0 Times
- ☐ 1-2 Times

- ☐ 3-5 Times
- ☐ 6-7 Times

14. How often do you have **four (for women), five (for men) or more drinks in a row** on one occasion?

- ☐ Everyday
- ☐ Every other day
- ☐ Once a week
- ☐ Weekends
- ☐ Once every 2 weeks
- ☐ Every month
- ☐ Every Other Month

These items deal with ways you've been coping with the stress in your life. There are many ways to try to deal with problems. Obviously, different people deal with things in different ways, but we are interested in how you usually deal with stress in your life. Each item says something about a particular way of coping. **Please indicate to what extent you've been doing what the item says.** *Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it.* Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

1	2	3	4
I usually don't do this at all	I usually do this a little bit	I usually do this a medium amount	I usually do this a lot

1. _____ I turn to work or other activities to take my mind off things.

2. _____ I concentrate my efforts on doing something about the situation I'm in.

3. _____ I say to myself "this isn't real".

4. _____ I get emotional support from others.

5. _____ I give up trying to deal with it.

6. _____ I take action to try to make the situation better.

7. _____ I refuse to believe that it has happened.

8. _____ I say things to let my unpleasant feelings escape.

9. _____ I get help and advice from other people.

10. _____ I try to see it in a different light, to make it seem more positive.

11. _____ I criticize myself.

12. _____ I try to come up with a strategy about what to do.

13. _____ I get comfort and understanding from someone.

14. _____ I give up the attempt to cope.

15. _____ I look for something good in what is happening.

16. _____ I make jokes about it.

1	2	3	4
I usually don't do this at all	I usually do this a little bit	I usually do this a medium amount	I usually do this a lot

17. _____ I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.

18. _____ I accept the reality of the fact that it has happened.

19. _____ I express my negative feelings.

20. _____ I try to find comfort in my religion or spiritual beliefs.

21. _____ I try to get advice or help from other people about what to do.

22. _____ I learn to live with it.

23. _____ I think hard about what steps to take.

24. _____ I blame myself for things that happened.

25. _____ I pray or meditate.

26. _____ I make fun of the situation.

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who *likes to spend time with others*? Please write a number next to each statement to indicate the extent to which **you agree or disagree with that statement.**

1	2	3	4	5
Disagree Strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree strongly

I am someone who…

1. _____ Is talkative
1. _____ Tends to find fault with others
2. _____ Does a thorough job
3. _____ Is depressed, blue
4. _____ Is original, comes up with new ideas
5. _____ Is reserved
6. _____ Is helpful and unselfish with others
7. _____ Can be somewhat careless
8. _____ Is relaxed, handles stress well.
9. _____ Is curious about many different things
11. _____ Is full of energy
12. _____ Starts quarrels with others
13. _____ Is a reliable worker
14. _____ Can be tense
15. _____ Is ingenious, a deep thinker
16. _____ Generates a lot of enthusiasm
17. _____ Has a forgiving nature
18. _____ Tends to be disorganized
19. _____ Worries a lot
20. _____ Has an active imagination
21. _____ Tends to be quiet
22. _____ Is generally trusting

23. _____ Tends to be lazy
24. _____ Is emotionally stable, not easily upset
25. _____ Is inventive
26. _____ Has an assertive personality
27. _____ Can be cold and aloof
28. _____ Perseveres until the task is finished
29. _____ Can be moody
30. _____ Values artistic, aesthetic experiences
31. _____ Is sometimes shy, inhibited
32. _____ Is considerate and kind to almost everyone
33. _____ Does things efficiently
34. _____ Remains calm in tense situations
35. _____ Prefers work that is routine
36. _____ Is outgoing, sociable
37. _____ Is sometimes rude to others
38. _____ Makes plans and follows through with them
39. _____ Gets nervous easily
40. _____ Likes to reflect, play with ideas
41. _____ Has few artistic interests
42. _____ Likes to cooperate with others
43. _____ Is easily distracted
44. _____ Is sophisticated in art, music, or literature

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Different things happen to people while they are drinking ALCOHOL or because of their <u>ALCOHOL</u> drinking. Several of these things are listed below. Indicate <u>how many times</u> each of these things happened to you WITHIN THE LAST YEAR.

How many times has this happened to you while you were drinking or because you were drinking <u>during the last year?</u>

		None	1-2 times	3-5 times	More than 5 times
1	Not able to do your homework or study for a test	$\square_0$	$\square_1$	$\square_2$	$\square_3$
2	Got into fights with other people (friends, relatives, strangers)	$\square_0$	$\square_1$	$\square_2$	$\square_3$
3	Missed out on other things because you spent too much money on alcohol	$\square_0$	$\square_1$	$\square_2$	$\square_3$
4	Caused shame or embarrassment to someone	$\square_0$	$\square_1$	$\square_2$	$\square_3$
5	Went to work or school high or drunk	$\square_0$	$\square_1$	$\square_2$	$\square_3$
6	Neglected your responsibilities	$\square_0$	$\square_1$	$\square_2$	$\square_3$
7	Relatives avoided you	$\square_0$	$\square_1$	$\square_2$	$\square_3$
8	Felt that you needed more alcohol than you used to in order to get the same effect	$\square_0$	$\square_1$	$\square_2$	$\square_3$
9	Tried to control your drinking (tried to drink only at certain times of the day or in certain places, that is, tried to change your pattern of drinking)	$\square_0$	$\square_1$	$\square_2$	$\square_3$
10	Had withdrawal symptoms, that is, felt sick because you stopped or cut down on drinking	$\square_0$	$\square_1$	$\square_2$	$\square_3$
11	Noticed a change in your personality	$\square_0$	$\square_1$	$\square_2$	$\square_3$
12	Felt that you had a problem with alcohol	$\square_0$	$\square_1$	$\square_2$	$\square_3$
13	Missed a day (or part of a day) of school or work	$\square_0$	$\square_1$	$\square_2$	$\square_3$
14	Wanted to stop drinking but couldn't	$\square_0$	$\square_1$	$\square_2$	$\square_3$
15	Suddenly found yourself in a place that you could not remember getting to	$\square_0$	$\square_1$	$\square_2$	$\square_3$
16	Passed out or fainted suddenly	$\square_0$	$\square_1$	$\square_2$	$\square_3$
17	Had a fight, argument or bad feeling with a friend	$\square_0$	$\square_1$	$\square_2$	$\square_3$
18	Had a fight, argument or bad feeling with a family member	$\square_0$	$\square_1$	$\square_2$	$\square_3$
19	Kept drinking when you promised yourself not to	$\square_0$	$\square_1$	$\square_2$	$\square_3$
20	Felt you were going crazy	$\square_0$	$\square_1$	$\square_2$	$\square_3$
21	Had a bad time	$\square_0$	$\square_1$	$\square_2$	$\square_3$
22	Felt physically or psychologically dependent on alcohol	$\square_0$	$\square_1$	$\square_2$	$\square_3$
3	Was told by a friend, neighbor or relative to stop or cut down drinking	$\square_0$	$\square_1$	$\square_2$	$\square_3$

I want you to respond according to your own personal thoughts, feelings, and beliefs about alcohol now. I am interested in what you think about alcohol, regardless of what other people might think. Please write a number next to each statement to indicate the extent to which **you agree or disagree with that statement.**

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

1. _____ Drinking makes me feel warm and flushed.

2. _____ Alcohol lowers muscle tension in my body.

3. _____ A few drinks make me feel less shy.

4. _____ Alcohol helps me to fall asleep more easily.

5. _____ I feel powerful when I drink, as if I can really make other people do as I want.

6. _____ I'm more clumsy after a few drinks.

7. _____ I am more romantic when I drink.

8. _____ Drinking makes the future seem brighter to me.

9. _____ If I have had a couple of drinks, it is easier for me to tell someone off.

10. _____ I can't act as quickly when I've been drinking.

11. _____ Alcohol can act as an anesthetic for me, that is, it can stop pain.

12. _____ I often feel sexier after I've had a few drinks.

13. _____ Drinking makes me feel good.

14. _____ Alcohol makes me careless about my actions.

15. _____ Some alcohol has a pleasant, cleansing, tingly, taste to me.

16. _____ Drinking makes me more aggressive.

(Please continue to the next page)

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1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

17. _____ Alcohol seems like magic to me.

18. _____ Alcohol makes it hard for me to concentrate.

19. _____ I'm a better lover after a few drinks.

20. _____ When I'm drinking, it is easier to open up and express my feelings.

21. _____ Drinking adds a certain warmth and friendliness to social occasions for me.

22. _____ If I'm feeling tied down or frustrated, a few drinks make me feel better.

23. _____ I can't think as quickly after I drink.

24. _____ Having a few drinks is a nice way for me to celebrate special occasions.

25. _____ Alcohol makes me worry less.

26. _____ Drinking makes me less efficient.

27. _____ Drinking is pleasurable because it's enjoyable for me to join in with people who are enjoying themselves.

28. _____ After a few drinks, I am more sexually responsive, that is, more in the mood for sex.

29. _____ I feel more physically coordinated after I drink.

30. _____ I'm more likely to say embarrassing things after drinking.

31. _____ I enjoy having sex more if I've had some alcohol.

32. _____ I'm more likely to get into an argument if I've had some alcohol.

33. _____ Alcohol makes me less worried about doing things well.

34. _____ Alcohol helps me sleep better.

35. _____ Drinking gives me more confidence in myself.

36. _____ Alcohol makes me more irresponsible.

(Please continue to the next page)

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slight	Agree Moderately	Agree Strongly

37. _____ After a few drinks it is easier for me to pick a fight.

38. _____ A few drinks make it easier for me to talk to people.

39. _____ If I have a couple of drinks, it is easier to express my feelings.

40. _____ Alcohol makes me more interesting.

This is a list of reasons people sometimes give for drinking alcohol. Thinking of all the times you drink, how often would you say that you drink for each of the following reasons? Please write a number next to each statement to indicate the **frequency you drink for each of the following reasons.**

1	2	3	4	5
Almost Never/Never	Some of the Time	Half of the Time	Most of the Time	Almost Always/Always

1. _____ To forget your worries.

2. _____ Because your friends pressure you to drink.

3. _____ Because it helps you enjoy a party.

4. _____ Because it helps you when you feel depressed or nervous.

5. _____ To be sociable.

6. _____ To cheer up when you are in a bad mood.

7. _____ Because you like the feeling.

8. _____ So that others won't kid you about *not* drinking.

9. _____ Because it's exciting.

10. _____ To get high.

11. _____ Because it makes social gatherings more fun.

12. _____ To fit in with a group you like.

13. _____ Because it gives you a pleasant feeling.

14. _____ Because it improves parties and celebrations.

15. _____ Because you feel more self-confident and sure of yourself.

16. _____ To celebrate a special occasion with friends.

17. _____ To forget about your problems.

1	2	3	4	5
Almost Never/Never	Some of the Time	Half of the Time	Most of the Time	Almost Always/Always

1. _____ Because it's fun.

2. _____ To be liked.

3. _____ So you won't feel left out.

Below are statements concerning one's general ability to respond to life events. Please indicate the extent to which these items are true for you. Please write a number next to each statement to indicate the **extent to which these items are true for you.**

1	2	3	4
Not at all true	Hardly true	Moderately true	Exactly true

1. _____ I can always manage to solve difficult problems if I try hard enough.

2. _____ If someone opposes me, I can find the means and ways to get what I want.

3. _____ It is easy for me to stick to my aims and accomplish my goals.

4. _____ I am confident that I could deal efficiently with unexpected events.

5. _____ Thanks to my resourcefulness, I know how to handle unforeseen situations.

6. _____ I can solve most problems if I invest the necessary effort.

7. _____ I can remain calm when facing difficulties because I can rely on my coping abilities.

8. _____ When I am confronted with a problem, I can usually find several solutions.

9. _____ If I am in trouble, I can usually think of a solution.

10. _____ I can usually handle whatever comes my way.

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