韓國心理學會誌 : 健康
Korean Journal of Health Psychology
2000, Vol. 5, No. 1, 1 ~ 9

Predictors of Alcohol Consumption: Tension-Reduction Expectancies, Gender, and Hardiness

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To investigate whether gender, tension-reduction expectancies, and hardiness would be predictors of alcohol consumption level, the 15-item Hardiness Scale, the Alcohol Expectancy Questionnaire-III, and the Cahalan Drinking Practices Questionnaire were given to 603 college students (female = 454). A forward stepwise regression analysis revealed that all three variables were significant independent predictors of alcohol consumption yet tension-reduction expectancies accounted for the most variance. These findings reiterate the role of tension-reduction expectancies and gender in alcohol consumption and suggest a role for hardiness.

The present study explored whether hardiness, thought to be a moderator of the stress-illness connection (Holahan & Moos, 1985; Kobasa, Maddi, & Kahn, 1982; Suls & Rittenhouse, 1987), might moderate individuals' alcohol consumption, a behavior also thought to be motivated by stress (Bandura, 1977; Domenico & Windle, 1993; Levenson, Sher, Grossman, Newman, & Newlin, 1980). Past research on hardiness has indicated that it may indirectly influence the connection between stress and illness through interactions with such variables as social support (e.g., Bartone, Ursano, Wright, & Ingraham, 1989).

Kobasa (1979) introduced the concept of hardiness, which consists of three interrelated characteristics: (1) *commitment*, which is an ability to become profoundly involved in and committed to one's life goals; (2) *control*, which is an ability to have a sense of control over one's life and to influence the events of one's life, and (3) *challenge*, which implies anticipation or expectation that one's experience leads to personal growth no matter whether the experience is positive or negative. Recognizing the limits of Holmes and Rahe's (1967) approach for understanding individual differences in the stress-illness connection, Kobasa and her associates developed the concept of

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hardiness. They emphasized that some people do not become ill in spite of experiencing many excessively stressful events. They suggested that having a hardy personality could produce a buffering effect against stress, and yield positive long-term effects on one's health. Furthermore, hardiness has been found to predict general mental health (Maddi & Khoshaba, 1994; Torf, 1990) and to correlate highly with neuroticism (Funk, 1992; Hills & Norvell, 1991), suggesting that individuals who are highly neurotic or who have non-hardy personalities are more reactive to stress than those who are low in neuroticism and high in hardiness.

Although Kobasa's conceptualization of hardiness is similar to that of Lazarus (Lazarus, DeLongis, Forkman, & Gruen, 1985) in emphasizing the cognitive appraisal of stress, Kobasa, Maddi, Puccetti, and Zola (1985) explain that the hardiness style of appraisal of stress also results in decreased sympathetic arousal, in turn, reducing the long-term health consequences of stress. Past studies of cardiovascular reactivity and hardiness, however, have yielded inconsistent results. Other physiological research examining hardiness has found high hardiness to be associated with high plasma cortisol level (i.e., high basal pituitary- adrenal hormone level), as well as less psychological distress (Zorrilla, DeRubeis, & Redei, 1995).

Hardiness also may influence drinking. Kashubeck and Christensen (1992) found that high-hardy and low-hardy children of alcoholics differed in terms of psychological distress, which, in turn, may be related to drinking problems (e.g., Caetano & Weiner, 1995). More recently, Maddi, Wadhwa, and Haier (1996) found that hardiness is inversely related to frequency of self-reported past alcohol and drug use as well as current drug use as detected with an urine test. They concluded that hardiness is negatively correlated with alcohol and other substance use in adolescence and young adulthood. Only one study has examined whether an individual's level of hardiness relates to her or his actual level of alcohol consumption (Neavins, 1997). In a study of undergraduate, moderate-to-heavy social drinkers, Neavins (1997) found that low-hardy males consumed more alcohol under a stress challenge than did low-hardy females but not more than either high-hardy males or high-hardy females. This finding seems to suggest that low hardiness may be a predictor of drinking to reduce tension only for males.

Drinking has been widely believed to be one of several alternatives for coping with stress. The tension-reduction theory is derived from Conger's drive reduction model (1951) which focuses on the relation between alcohol and stress. This model has been evaluated extensively (e.g., Cappell, & Herman, 1972).

Expectancies of tension reduction have been found to have a direct influence on drinking (Brown, Christiansen, & Goldman, 1987; Brown, Goldman, Inn, & Anderson, 1980; Corcoran & Parker, 1991). Individuals who believe that alcohol consumption reduces tension drink more than those who do not hold this belief. Moreover, tension reduction is a reinforcer for alcohol consumption (Greeley & Oei, 1999).

The concept of expectancies related to the effects of alcohol consumption is derived from Bandura's cognitive social learning theory, and has become an aid in the understanding of drug use (Adesso, 1985). Adesso (1985) concluded that drinkers have well-defined expectancies about the effects of alcohol, and general expectancies are initially developed by observation of models, indirect experience, and exposure to the media. Expectancies then often become more specific with

direct experience with alcohol. A factor analysis of adults' positive expectancies of alcohol consumption identified six expectancy factors: global positive transformation, social and physical pleasure, sexual enhancement, arousal and feeling of power, increased social assertiveness, and tension reduction (Brown, Goldman, Inn, & Anderson, 1980).

Gender differences have been found for alcohol consumption such that men tend to drink twice as much alcohol as women (Dawson & Archer, 1992). In addition, men may be more apt than women to believe that alcohol reduces tension (Kline, 1990; Rohsenow, 1983), although some researchers have failed to find this relation (Leonard & Blane, 1988; O'Hare, 1990) or have found the opposite pattern (e.g., Mooney, Fromme, Kivlahan, & Marlett, 1987). Finally, it is unclear how gender may affect hardiness (Rhodewalt & Zone, 1989; Schmied & Lawler, 1986; Wiebe, 1991).

Therefore, the present study attempted to predict individuals' drinking level based on their gender, scores on a measure of tension-reduction expectancies, and scores on a measure of hardiness. It was expected that gender would be the best predictor of alcohol consumption, followed by expectancies, and then by hardiness. A possible interaction was posited such that combining these three factors would account for additional variance in individuals' level of alcohol consumption.

METHOD

Participants

Participants (N = 603) in this study were introductory psychology students (454 females), who voluntarily completed a survey regarding their personality characteristics, family history, and drinking beliefs and experience. Participants earned extra credit toward their class grade. Subjects ranged in age from 17 to 68 years (M = 22.5 years, SD = 7.44).

Materials and Procedure

Participants received a survey which included a consent form, a demographics sheet, the 15-item Hardiness Scale (Hardiness Institute, 1994), the Alcohol Expectancy Questionnaire-III (AEQ-III; Brown et al., 1987), and the Cahalan Drinking Practices Questionnaire (CQFV; Cahalan, Cisin, & Crossley, 1969) in their introductory psychology classes. The surveys were collected one week later in the same classroom.

The 15-item Hardiness Scale (Bartone, 1995, August) explores three dimensions: (1) commitment, (2) control, and (3) challenge. This measure is the most recently revised hardiness scale and is based on Kobasa's (1979) original conceptualization of hardiness. In order to control for response bias, both positively- and negatively-worded statements are included. Subjects respond using a Likert-type scale (ranging from "not at all true" to "completely true"). Bartone (1995, August) found that scores on the 15-item Hardiness Scale predicted illness, symptoms, and health behaviors in a study of female and male Army reservists during the Gulf War (N = 787). This investigator noted that the 15-item Hardiness Scale has demonstrated adequate criterion-related and predictive validity in terms of health and behavior for various participants exposed to high levels of stress. Finally, he reported that Cronbach's alphas were

.70-.77 for the three hardiness dimensions, and .83 for the overall 15-item Hardiness Scale. In a sample of college students who were social drinkers, however, Cronbach's alpha for the 15-item hardiness scale was .59 (Neavins, 1997).

The Alcohol Expectancy Questionnaire - Third Edition (AEQ-III; Brown et al., 1987) examines individuals' beliefs about the behavioral effects of alcohol consumption. There are six subscales: (1) Global Changes, (2) Sexual Enhancement, (3) Physical and Social Pleasure, (4) Social Assertion, (5) Relaxation and Tension Reduction, and (6) Arousal and Aggression. Individuals who endorse more alcohol expectancies tend to drink more heavily, to experience more adverse consequences from drinking, and to be more likely to engage in problem drinking (Brown et al., 1987; Kline et al., 1987). Cronbach's alphas for the AEQ scales have been found to be between .72 and .92 (average = .84) for adults who do not evidence drinking problems (Brown et al., 1987). For college students, one and two month test-retest reliability coefficients have been observed to range from .47 to .76 (average =.66; Brown et al., 1987). Although the AEQ-III has been found to be highly correlated with other measures of problem drinking (e.g., the Michigan Alcoholism Screening Test), it has been shown to add incremental validity to the prediction of alcohol consumption, abuse, and relapse (Brown et al., 1987). The present study utilized only the scores from the AEQ-III tension-reduction subscale.

The CQFV distinguishes between heavy drinkers, moderate drinkers, light drinkers, and abstainers. The classification of CQFV is based on the modal quantity, variability, and the frequency of consumption of the type of alcoholic beverage (beer, wine, liquor) and overall consumption of any type of alcoholic beverage. The classification ranges from 1 (heavy drinking) to 18 (abstainers).

RESULTS

SPSS Mainframe Release 6.1.4 was used for all statistical analyses. Effects were tested at the .05 level of significance. Means and standard deviations were computed for both females and males for the following variables: tension-reduction expectancies, hardiness, and alcohol consumption (Table 1).

Table 1
Means, Standard Deviations, and Ranges for the Tension-Reduction Subscale of the Alcohol Expectancy Questionnaire-III, Hardiness, and Alcohol Consumption as Measured by the Cahalan Drinking Practices Questionnaire (CQFV)

Variable	M	SD	Range
Female (n = 454)			
Tension-Reduction Expectancies	4.67	2.81	0-9
Hardiness	29.73	5.61	7-43
Alcohol Consumption	11.60	5.45	1-18
Males (n = 148)			
Tension-Reduction Expectancies	4.63	2.80	0-9
Hardiness	29.51	5.76	5-44
Alcohol Consumption	9.39	5.79	1-18

Unlike the scoring for both hardiness and tension-reduction expectancies, the CQFV is reverse-scored, such that higher overall scores indicate less alcohol consumption (1-6 represents heavy drinkers, 7-12 indicates moderate drinkers, 13-17 depicts light drinkers, and 18 represent abstainers). Although 603 individuals completed the survey, one individual did not specify her or his gender.

Pearson product-moment correlations were computed to examine the relations between hardiness, tension-reduction expectancies, and gender (Table 2). In terms of the variable, gender, males were coded as "0" and females were coded as "1." For both tension-reduction expectancies and hardiness, higher scores indicate greater amounts of each of these variables. Only hardiness and tension-reduction expectancies were significantly correlated, r (598) = -.12, $p < .01$. This means that hardiness and tension-reduction expectancies of alcohol consumption are negatively related.

Table 2
Pearson Product-Moment Correlation Coefficients for the Tension-Reduction Subscale of the Alcohol Expectancy Questionnaire-III, Gender, and Hardiness (N = 603)

Variable	1	2	3
1. Tension-Reduction Scale of the Alcohol Expectancy Questionnaire-III	1.00	.01	-.12*
2. Gender		1.00	.01
3. Hardiness			1.00

Note. *$p < .01$.

Table 3
Summary of a Forward Stepwise Regression to Predict Cahalan Drinking Practices Questionnaire (CQFV) Scores Based on Tension-Reduction Expectancies, Gender, and Hardiness (N = 603)

Variable	β	t	p
1. Tension-Reduction Scale of the Alcohol Expectancy Questionnaire-III	-.40	-10.77	<.0001
2. Gender	.17	4.56	<.0001
3. Hardiness	-.08	-.09	.0372

A forward stepwise regression analysis was computed to determine how well each of the these three variables predicted individuals' level of alcohol consumption (Table 3). Table 3 shows that the males consumed more alcoholic beverages than females. Individuals with high tension-reduction expectancies drank more than those with low tension-reduction expectancies. Finally, individuals low in hardiness tended to drink more than individuals high in hardiness. All three predictors loaded on alcohol consumption, the dependent measure, multiple R (3, 595) = .43, $p <$ .0001: tension-reduction expectancies accounted for the most variance, followed by gender and hardiness, respectively. Therefore, these findings indicate that tension-reduction expectancies and gender are more powerful predictors of alcohol consumption than is hardiness. Hardiness, however, still added incremental validity to the prediction of alcohol consumption. There were no interactions among these three factors; all factors were independent predictors.

DISCUSSION

This study found that individuals who had high expectancies of tension reduction from alcohol consumption drank more alcohol than individuals with low tension-reduction expectancies. Males tended to drink more than females, and individuals who scored high on the hardiness measure drank less than those who scored low in hardiness. As hypothesized, the three factors in the present study are useful predictors of level of alcohol consumption for this sample. Contrary to the order postulated, however, the best predictor was tension-reduction expectancies followed by gender and hardiness, respectively. The strong predictive validity of tension-reduction expectancies in terms of alcohol consumption supports past research

(Corcoran & Parker, 1991; Kalodner, Delucia, & Urspring, 1983), and confirms that people may use alcoholic beverages to reduce tension. The finding of gender as a predictor of alcohol consumption also is consistent with past investigations (e.g., Dawson, 1993).

The present study replicates and extends past research exploring the effects of hardiness and gender on actual alcohol consumption (Neavins, 1997). For males, in particular, there may be a connection between low levels of hardiness and greater alcohol consumption as a means of coping with stress. One novel contribution of the current study is that it establishes a link between low levels of hardiness and high tension-reduction expectancies, which may be linked to problematic drinking. Thus, in addition to mediating the relation between stress and illness (Kobasa et al., 1982), hardiness may help shield individuals from developing alcohol problems. This result is related to Kobasa and Maddi's (1982) view that individuals high in hardiness tend to maintain healthy life-styles, which may include less alcohol consumption and drinking in moderation.

The correlation between tension-reduction expectancies and hardiness suggests that high-hardy individuals may expect less tension reduction from alcohol consumption than low-hardy individuals. This may suggest that hardiness' influence on drinking is mediated through tension-reduction expectancies. Limitations of this study include the problems associated with self-report data and the use of college students, who are apt to have limited drinking problems. Accordingly, further study with clinical samples is highly recommended.

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Korean Journal of Health Psychology
2000, Vol. 5, No. 1, 1 ~ 9

음주의 예측변인: 긴장완화에 대한 기대, 성별, 강인성

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성별, 긴장완화에 대한 기대, 강인성이 음주수준의 예측변인이 될 수 있는가를 측정하기 위하여 15문항 강인성척도(15-item Hardiness Scale), 알코올 기대 설문지-3판(Alcohol Expectancy Questionnaire-III), Cahalan 음주습관 설문지(Cahalan Drinking Practices Questionnaire)를 603명(여성 = 454)의 대학생에게 실시하였다. 회귀분석을 행한 결과, 세 가지 변인들 모두 음주에 대해 유의미한 예측변인으로 작용하는 것으로 나타났고, 그 중에서 긴장완화에 대한 기대가 가장 많은 변량을 설명하는 것으로 나타났다. 이러한 결과들은 음주에 대한 긴장완화 기대와 성별의 역할을 재차 확인하여 볼 수 있는 기회와, 특히 강인성의 역할에 대해서 새로운 시사점을 제공하고 있다.