



Published in final edited form as:

*Addict Behav.* 2012 September ; 37(9): 1019–1024. doi:10.1016/j.addbeh.2012.04.007.

## The Great Recession, Somatic Symptomatology and Alcohol Use and Abuse

Ganga Vijayasiri, Ph.D.<sup>a,\*</sup>, Judith A. Richman, Ph.D.<sup>b</sup>, and Kathleen M. Rospenda, Ph.D.<sup>c</sup>

Ganga Vijayasiri: gvijay2@uic.edu; Judith A. Richman: jrichman@psych.uic.edu; Kathleen M. Rospenda: krospenda@psych.uic.edu

<sup>a</sup>Institute for Health Research and Policy, University of Illinois at Chicago, 1747 West Roosevelt Street (MC 275), Chicago, Illinois 60612, United States

<sup>b</sup>Department of Psychiatry, University of Illinois at Chicago, 1601 West Taylor Street (MC 912), Chicago, Illinois 60612, United States

<sup>c</sup>Department of Psychiatry, University of Illinois at Chicago, 1601 West Taylor Street (MC 912), Chicago, Illinois 60612, United States

### Abstract

While most research has examined the long-term effects of alcohol consumption on health, the current study examines how health status impacts on drinking behavior. Using data from a national study conducted between 2010 and 2011 to assess the impact of the recession on drinking behavior, this study examines how economic hardships linked to the recent economic recession affect physical health, and how physical health may in turn affect alcohol use. Structural equation models were used to test the predicted associations. The data demonstrate that many of the economic stressors linked to the recession are associated with increased somatic symptoms. Somatic symptoms are also associated with increased drinking for men, but not for women. These findings suggest that men may use alcohol to self medicate somatic symptomatology. The current findings are consistent with gender role-based explanations that account for gender disparities in the utilization of medical care.

### Keywords

Great Recession; alcohol use; alcohol abuse; self medication

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\*Corresponding author: Tel.: +1 312 355 5907; fax: +1 312 996 2703; gvijay2@uic.edu; postal address: Institute for Health Research and Policy, University of Illinois at Chicago, 1747 West Roosevelt Street (MC 275), Chicago, Illinois 60612, United States.

### Contributions

Ganga Vijayasiri and Judith Richman conceptualized this paper. Ganga Vijayasiri conducted the literature searches, conducted the statistical analysis, and wrote the first draft of the manuscript. All authors contributed to and have approved the final manuscript.

### Conflict of Interest

All authors declare that they have no conflicts of interest.

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## 1. Introduction

Psychological distress, including anxiety and depressive symptoms, has been shown to mediate the association between stressful life events and drinking (Colder & Chassin, 1993). Similarly, research which has examined the association between employment related stressors and drinking shows that psychological distress mediates the association between job related stressors and drinking (Dooley & Prause, 1998; Power & Estaugh, 1990; Richman, Shinsako, Rospenda, Flaherty, & Freels, 2002). Findings in both cross sectional and longitudinal studies show that employment status impacts not only the psychological well-being of individuals but also the physical well-being of individuals (McKee-Ryan, Song, Wanberg, & Kinicki, 2005). The longitudinal studies have followed individuals over time from unemployment back into employment, showing increases in physical well-being among those who become reemployed. Studies have also followed individuals over time from employment into unemployment, showing decreases in physical well-being among individuals experiencing job loss. While unemployment, job insecurity, and employment frustration leads to physical health problems (Burgard, Brand, & House, 2009; De Castro, Rue, & Takeuchi, 2010; McKee-Ryan et al., 2005; Mossakowski, 2009; Thomas, Benzeval, & Stansfeld, 2005), there has been no investigation as to whether physical health problems mediate the association between employment problems and drinking, similar to the manner in which psychological distress acts as a mediator between employment-related stressors and drinking. In order to further explore the association between employment-related stressors and drinking, the current study examines whether somatic symptoms mediate the association between economic adversity and alcohol use. In the general population, among commonly reported somatic symptoms are fatigue, sleep complaints, headaches, pain in the limbs, back pain, chest pain, shortness of breath, and gastrointestinal discomfort. According to literature, somatic symptoms account for more than half of all general medical visits, and in at least up to a third of these cases lack a definitive medical explanation (Kurt, Xin & Dale, 2010; Chung\_Huang, 2010).

The self medication model of alcohol use suggests that individuals use alcohol, at least in part, to cope with the emotional distress resulting from stressors. There is considerable empirical evidence in the drinking motives and alcohol expectancies literatures showing that individuals use alcohol to diminish feelings of psychological distress (Carey & Correia, 1997; Carpenter & Hasin, 1998a; Carpenter & Hasin, 1998b; Cooper, Russell, Skinner, & Windle, 1992; Cooper, Russell, Skinner, Frone, & Mudar, 1992; Leigh, 1989). According to this research, individuals use alcohol to cope with negative affect resulting from stressful life events and daily hassles (Cooper, Russell, Skinner, Frone et al., 1992; McCreary & Sadava, 1998; Newcomb & Harlow, 1986). The self medication model has also been used to explain the association between unemployment and drinking and between work stress and drinking (Butler, Dodge, & Faurote, 2010; Frone, 1999; Greenberg & Grunberg, 1995; Grunberg, Moore, Anderson-Connolly, & Greenberg, 1999; Martin et al., 1992; Martin, Blum, & Roman, 1992; Mossakowski, 2008; Parker & Farmer, 1988; Richman, Flaherty, & Rospenda, 1996; Svare, Miller, & Ames, 2004; Vasse, Nijhuis, & Kok, 1998). Employees who are confronted with high work demands, longer work hours, low job control, and poor interpersonal relations at work have been shown to use alcohol because of the tension-reducing properties of alcohol. Based on previous studies (Burgard et al., 2009; De Castro et al., 2010; McKee-Ryan et al., 2005; Mossakowski, 2009; Thomas et al., 2005), it is possible that economic adversity resulting from the current recession such as job losses, underemployment, benefit reductions, and the inability to pay a mortgage or the loss of a home, may negatively impact the physical well-being of individuals. Similar to the manner in which unemployed individuals use alcohol to self medicate emotional distress, it is possible that individuals use alcohol to self medicate their physical health problems.

Women have higher health care utilization rates than men (Cleary, Mechanic, & Greenley, 1982; Verbrugge, 1979), and the largest sex differences in utilization rates occur in those categories which represent more mild morbidities where there is discretion in defining illness. Thus, the largest sex differences in utilization rates have been observed in the case of vague and mild symptoms not indicative of a disease state, and in the case of acute conditions involving microorganisms that are often self-limiting and are of shorter duration (Hibbard & Pope, 1986). Explanations for this disparity have focused on sex differences in the response to illness. For example, women have been socialized toward the more ready acknowledgement of illness and comfort in help seeking in contrast to men who have been socialized toward stoic denial of illness (Muller, 1986). While socialization and traditional role expectations may discourage men from adopting the sick role and seeking medical help, it is possible that men may respond to health problems in other, more gender normative, ways -- for example, with the use to alcohol to self medicate health problems. To examine this gender role based argument, we test whether men with health problems are more likely to use alcohol than similarly situated women.

For the last several years, the United States has been experiencing the most severe economic crisis since the Great Depression. The Great Recession, as it has been labeled, began in December, 2007 and was declared over, in National Bureau of Economic Research terms, in June, 2009 (Aruoba, 2010). However, the human devastation resulting from the U.S. economic crisis has persisted, starting with an unemployment rate that remained close to 10% in 2010 (Current Population Survey on Labor Force Statistics, 2010), remained at 9.1% in August, 2011 (Hall, 2011) and was reported to be 8.3% in January 2012 (Bureau of Labor Statistics, 2012). Recession related deleterious social experiences has included an increase in home foreclosures (Pollack & Lynch, 2011), loss of retirement savings and limited opportunities for those entering the labor force (Taylor, Kochnar, Livingston, Cohn, & Wang, 2010; Uchitelle, 2010). Moreover, according to a recent Gallup poll, 3 in 10 workers expressed fears of being laid off (Saad, 2011). Examining the ways in which economic stressors linked to the Great Recession affect the physical health of individuals, and the manner in which that may in turn affect drinking behavior, will expand our understanding of the relationship between economic hardships and alcohol use.

In the current study, we extend the focus of the current self-medication and medical care utilization literature in several ways. We are interested in finding out whether economic adversity linked to the current economic crisis leads to physical health problems. We also examine the ways in which physical health problems influence drinking behavior, including whether men have a greater tendency than women to self medicate physical health problems by using alcohol. Considerable empirical evidence suggests that men are less likely than women to seek medical care for health problems and that men spend less in health care dollars than women (Bertakis, Azari, Helms, Callahan, & Robbins, 2000; Cylus, Hartman, Washington, Andrews, & Catlin, 2011; Kaur, Stechuchak, Coffman, Allen, & Bastian, 2007; Owens, 2008; Stoverinck, Lagro-Janssen, & Weel, 1996). If our data indicate that men are more likely than women to self medicate somatic symptoms using alcohol, this finding could shed some light on men's lower propensity to use medical help than women. While the major focus of the self-medication literature has been on psychological distress consequences of life stressors such as anxiety and depression, there has been little focus on physiological consequences of stressors (Colder, 2001). Our study fills this gap by examining whether individuals use alcohol to self-medicate somatic symptoms.

The conceptual model relating economic stressors, somatic symptomatology, and drinking behavior is shown in Figure 1.

## 2. Methods

### 2.1. Sample

The data used are from a national study conducted between June, 2010 and January, 2011 to assess the impact of the economic recession on psychological distress and drinking outcomes. The data were derived from a Random Digit Dial (RDD) phone survey of the continental United States, followed by mailed questionnaires to individuals consenting to participate in the study. The phone screener was conducted using Computerized Assisted Telephone Interview (CATI) software. Eligibility criteria involved being aged 18 or older and English-speaking. Eligible respondents were selected from the households using the Troldahl-Carter-Bryant method of respondent selection, which is designed to ensure a proper balance of females and males and of younger and older adults compared with the target population (Lavrakas, 1993). Respondents were told during the phone screener that a \$50 American Express gift card would be sent to the eligible respondent if he/she completed the questionnaire. Respondents were sent: an initial mailing, a postcard reminder to non-respondents, and a second questionnaire mailed to those who were still non-respondents. The Institutional Review Board (IRB) of the authors' university approved this component of the study.

A total of 1,424 households were identified as eligible during the screening telephone calls. Of these, 1,006 agreed to have the questionnaire mailed to them. The cooperation rate to the telephone screening calls was 25.5%. That is, 25.5% of the eligible and assumed eligible households in the sample agreed to have the questionnaire mailed to them. Of these, 65.9% (n=663) subsequently completed and returned the questionnaire. The telephone screening cooperation rate and the mail survey response rate were each calculated using the conservative AAPOR response rate formula 3 (American Association for Public Opinion Research, 2011). The overall survey response rate is the product of the telephone screening cooperation rate (25.5%) and the mail questionnaire return response rate (65.9%), or 16.8%.

The final sample obtained was weighted in two ways. Selection weights were calculated for each of the cases to weight for the different probability of selection for each case. Post-stratification weights were calculated for the dataset to ensure that the distribution of sample cases on important demographic variables (age, race/ethnicity and gender) conformed to the distribution of these variables in the Census Bureau's 2008 United States Population Estimates.

### 2.2. Measures

**2.2.1. Economic Stress**—The economic stressors measure used in the study consisted of six subscales derived from the Life Change Consequences of the Great Recession Scale (Richman et al., in press) developed to tap various domains of economic and social stressors experienced by individuals following the "Great Recession". The six subscales included Unemployment or Underemployment Subscale (Alpha: men = .835, women = .820), Problematic Employment Situation Subscale (Alpha: men = .798, women = .747), Home Ownership Problems Subscale (Alpha: men = .723, women = .753), Undesirable Living Situation Subscale (Alpha: men = .852, women = .722), Inadequate Health Insurance Subscale (Alpha: men = .809, women = .725), and the Inadequate Sick Leave Subscale (Alpha: men = .729, women = .621). The items comprising each subscale are listed in the Appendix. In the survey instrument, these items were preceded by the question: "The current economic recession has affected many people in different ways and to different degrees. Please indicate whether you experienced any of the following in the past twelve months".

**2.2.2. Somatic symptomatology**—Somatic symptomatology is a latent variable that measures physical health problems experienced during the 12 month period preceding the survey. This latent variable is measured with four items: sleep problems, stomach problems, migraines or frequent headaches, and fatigue/exhaustion. The somatic symptomatology measure has sufficient reliability with an Alpha value of 0.862 for women and an Alpha value of 0.843 for men.

**2.2.3. Drinking behavior**—Drinking and problem drinking were measured with several indicators: 1. drinking frequency (During the last 30 days, about how many days did you drink any type of alcoholic beverage?), 2. highest drinking quantity (During the last 30 days, what is the greatest amount of alcohol that you drank in any single day?), 3. binge drinking (During the last 12 months, how often did you have 5 or more (4 or more for women) drinks of wine, beer, or liquor in a single day?), 4. drinking to intoxication (About how often in the last 12 months did you drink enough to feel drunk, that is, where drinking affected your thinking, talking, and behavior?), and 5. problem-related drinking. Problem-related drinking was measured with a past-year version of the Brief Michigan Alcoholism Screening Test (BMAST). The BMAST correlates strongly with the full length MAST (Pokorny, Miller, & Kaplan, 1972) and is used as a screening tool for alcohol dependence and problems among current drinkers (Maisto, Connors, & Allen, 1995).

### 3. Data Analysis

The theoretical model was estimated using Structural Equation Modeling (SEM) in Mplus. As the model presented in Figure 1 contains interaction terms, Mplus fails to produce standard model fit indices such as Chi-Square, RMSEA, GFI, and AGFI.

As a first step, we ran a model that included interaction terms between the six economic-stressor subscales and gender to test whether one gender is more likely to experience somatic symptoms in response to economic stress. According to results, none of the interaction terms were statistically significant. This model was then compared to a model that constrained the interaction terms between economic-stressor subscales and gender to zero. The TRd test statistic using log-likelihood values was used to compare the fit of the two models (Satorra & Bentler, 2001). The model containing interaction terms did not provide a better fit than the nested model ( $TRd(6) = 7.327, p > 0.25$ ). Therefore, these findings support the more parsimonious model. In the model presented in Figure 1, we also predicted that men would be more likely to use alcohol in response to health concerns than women. We wanted to find out whether a model incorporating gender as a moderator of the association between somatic symptoms and drinking behavior resulted in a better fitting model than a model that predicted the absence of such an interaction. To do this, the model containing an interaction term between somatic symptomatology and gender was compared with a nested model in which the interaction term was constrained to zero. The two models were statistically different ( $TRd(5) = 23.688, p < .001$ ), with the initial model providing a better fit. Based on these model comparisons, the best fitting model appeared to be one that contains an interaction effect between somatic symptoms and gender in predicting drinking behavior but does not contain an interaction effect between economic stress and gender in predicting somatic symptoms. Therefore the following analyses are based on the results for this best fitting model.

## 4. Results

### 4.1 Descriptive information

The gender distribution of the sample ( $N=663$ ) was as follows: 51.3% women, 48.7% men. Out of the sample, 67% were white, 12.2% were Black, 13.9% were Hispanic, 4.4% were



Asian, while 2.5% consisted of other races. The values for education ranged from 'less than a high school education' (coded '1') to 'Doctorate' (coded '9'), with a mean of 4.61 that represented some college education but the absence of a 2-year or 4-year college degree. The mean age for the sample was 48 years. Additional descriptive statistics are provided in Table 1.

#### 4.2 Somatic Symptoms

According to the SEM analysis (see Figure 2), the unstandardized factor loadings for the somatic symptomatology measure ranged from 0.783 to 0.962. According to previous research, women report higher illness rates and disability days than men (Verbrugge, 1979). As women in the current sample were more likely than men to report somatic symptoms, the results in the current study are consistent with these earlier findings.

#### 4.3 Association between economic stress and somatic symptoms

According to the SEM results presented in Figure 2, there is considerable support for our theoretical model. According to the results in Figure 2, there is partial support for our prediction that economic stress resulting from the economic recession is associated with physical health problems. Thus, home ownership problems, reductions in health coverage, and inadequate sick time were associated with increased somatic symptoms. Unemployment/underemployment only had a marginally significant association with more somatic symptoms. An undesirable living situation or an undesirable work situation was not associated with health problems.

#### 4.3 Association between somatic symptoms and alcohol use

As predicted, health problems were also associated with several drinking measures. Thus, a higher number of somatic symptoms were associated with greater frequency of drinking, drinking to intoxication, binge drinking, and problem-related drinking. As we predicted, on each of these four drinking measures, results showed a stronger association for men. In the SEM model presented in Figure 2, men were treated as the omitted category. To estimate and test the coefficients for women, we ran a corresponding SEM model that treated women as the omitted category. According to these results, for women, none of the coefficients for the association between somatic symptoms and alcohol use were statistically significant, pointing to the possibility that, unlike men, women might not respond to somatic symptoms through the use of alcohol.

### 5. Discussion

Studies have consistently shown that women have higher rates of illness reporting and health care utilization than men (Verbrugge, 1979). Sex differences in morbidity reports and medical care utilization have generated considerable discussion and speculation. Often these sex differences have been attributed to sex differences in illness behavior, i.e. perception and evaluation of symptoms, and propensity to take curative action. The general argument has been that obligations, expectations, and socialization associated with gender roles influences illness behavior through a variety of mechanisms (Hibbard & Pope, 1983). First, women's greater responsibility for family health may increase the salience of health matters and influence symptom perception and response to illness. Second, due to socialization, the social acceptability of admitting illness, discussing symptoms and seeking help may differ for men and women. Though the current study did not look at this specific question of sex differences in medical care utilization, the current findings appear to be in line with explanations for this disparity, which are based on gender norms. While it is likely that current gender roles and the masculine norm of stoicism lead to men's lower propensity to seek medical help, men may also respond to the stress and discomfort of somatic symptoms

through other means. Current findings suggest that one such possible avenue could be through self-medication using alcohol.

With a few exceptions, most research in recent years has been directed toward examining the long-term effects of alcohol consumption *on* health (Green, Polen, & Perrin, 2003). Our interest however was on how health problems affect alcohol consumption. It has been observed that sex differences in health care utilization are most pronounced in the case of mild morbidities (Hibbard & Pope, 1986). Thus, for men, self medication using alcohol may be more likely in the case of mild morbidities where there is more discretion in defining illness and the need for medical care, rather than in serious illnesses. While the cross-sectional data in the current study do not provide evidence of causal direction, the findings suggest that, at least for men, somatic symptoms could contribute to increased alcohol consumption. In future studies, longitudinal data could more definitively explore the causal path between somatic symptoms and alcohol consumption suggested by the current findings.

Evidence suggests that it is not the objective characteristics of the adverse, environmental event but rather the psychological dimension of controllability over the event that determines drinking behavior (Volpicelli, 1987). Thus, individuals may be more likely to drink when facing uncontrollable adverse events than when they face controllable events. Structural and macro-level causes which are beyond the control of individual actors have contributed significantly to the economic hardships linked to the current recession (Treas, 2010). Research also suggests that experience with uncontrollable events, but not controllable events are likely to lead to physical pathologies (Volpicelli, 1987). In the current study, we have tried to expand our understanding of how the self medication model of alcohol use operates by studying drinking behavior in the context of the current economic crisis, an ongoing event that engenders feelings of economic vulnerability and helplessness. In the future, longitudinal data can be used to examine how feelings of self efficacy and mastery are affected by the ongoing recession, and how that may in turn affect somatic symptoms and drinking behavior.

Finally, methodological limitations of this study should be noted. The random digit dialing methodology for obtaining the sample only included individuals with land line phone numbers. Thus, individuals relying on cell phones only, along with those households without access to any telephone, were not included in this study. This potential non-coverage error is a source of concern, as comparisons of our unweighted and weighted sample demographics revealed the sample under-represented African Americans, Latinos, younger (under age 40) and less-educated (high school or less) persons. Although a source of concern, we note that findings such as these are very typical of RDD surveys. In addition, our response rate was 16.8%, a level very consistent in our experience with the findings from other national RDD surveys. It is now generally understood that it is non-response bias, rather than response rate, that is most critical when evaluating the quality of survey data (Groves, Couper, Lepkowski, Singer, & Tourangeau, 2004). Our data were weighted to reflect the demographics of the overall population and we compared the weighted and unweighted estimates of each of our dependent variables to determine if non-response and/or non-coverage may have introduced serious bias into one or more of them. In each instance, we found that the weighted values of each alcohol use measure fell well within one standard deviation of the unweighted values, suggesting that the distribution of our key measures were not appreciably influenced by these processes. The validity of self-reports of sensitive behaviors, such as alcohol consumption, may also be called into question, although there are several published studies that have generally confirmed the quality of self-reported alcohol consumption (Babor, Brown, & del Boca, 1990; Del Boca & Darkes, 2003).

In sum, the present study fills a gap in the current research on alcohol use in response to stress. This study indicates that stressful experiences associated with the Great Recession contribute to somatic symptoms, which are in turn associated with alcohol use for men but not women. These results have implications for public health intervention efforts, which could target men to highlight benefits associated with early detection of illness through use of the medical system, along with the dangers of use of alcohol to self-medicate somatic symptoms, particularly when alcohol may ultimately contribute to making these symptoms worse, or to alcohol dependence over time.

## Acknowledgments

### Role of Funding Sources

This study was funded by grant #R01AA017202 from the National Institute on Alcohol Abuse and Alcoholism to the second author. NIAAA had no role in the study design, collection, analysis or interpretation of the data, writing the manuscript, or the decision to submit the paper for publication.

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## APPENDIX: ECONOMIC STRESS MEASURES

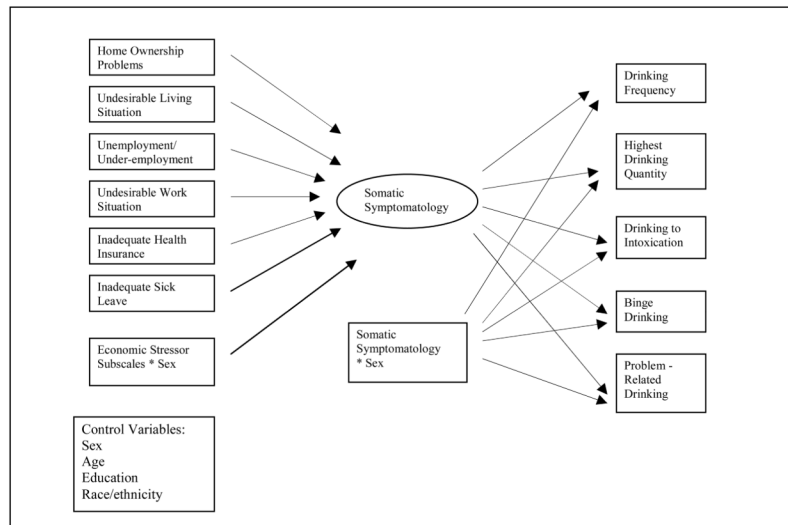
- 1 Home Ownership Problems Subscale
  - a. Difficulties with mortgage payments
  - b. Inability to refinance home
  - c. Difficulties paying property taxes
  - d. Drop in credit rating
- 2 Undesirable Living Situation Subscale
  - a. Problems paying rent
  - b. Not being able to afford to move to a more desired location/ neighborhood
  - c. Difficulty buying a home due to credit rating
  - d. Moving to a less expensive place to save money
  - e. Gas, electricity, and/or heat shut off due to lack of money to pay bills
- 3 Problematic Employment Situation Subscale
  - a. Working in a job for which you are overqualified
  - b. Furlough days
  - c. Salary/Pay cut, or hours cut or job demotion
  - d. Lack of raises or bonuses
  - e. Not knowing if your employment situation will continue
  - f. Increased responsibilities in your current job linked with cuts in the work force or hiring freezes
  - g. Increased feelings of competition with fellow employees
  - h. Delaying having children because of finances
  - i. Loss of satisfaction from one's job
- 4 Unemployment or Underemployment Subscale
  - a. Loss of job/Unemployment
  - b. Inability to find a job
  - c. Inability to find more desirable work that matches your skills
  - d. Increased experiences of discrimination (linked with your race/ ethnicity, gender, age, or sexual orientation) when performing your job or seeking a new one
  - e. Problems with your own business or self-employment (such as loss of business, difficulty maintaining business, decrease in demand for your services)
  - f. Increased competition when applying for jobs
  - g. Going back to school as a way to deal with job loss
- 5 Inadequate Health Insurance Subscale

- a.** Lack of medical coverage/health insurance
  - b.** Lack of dental coverage
  - c.** Decreased quality of medical and/or dental coverage (such as being less covered)
  - d.** Inability to afford copays despite medical and/or dental coverage or to afford the overall cost of coverage
  - e.** Inability to obtain medical coverage due to pre-existing conditions
  - f.** Use of free clinics and/or medical charities
- 7** Inadequate Sick Time Subscale
- a.** Having to work despite poor health since family depends on your benefits and/or salary
  - b.** Lack of sick days & having to work when sick

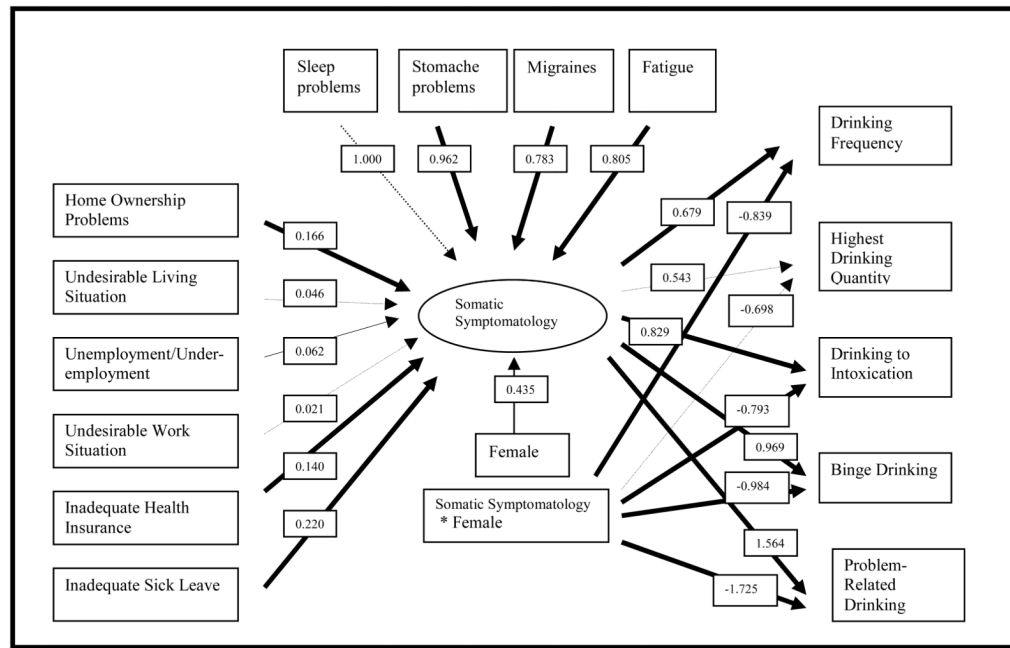
### Highlights

- We examine the relationship between economic stressors and health status
- We also examine how health status impacts drinking behavior
- For both men and women, economic stressors lead to increased somatic symptoms
- For men, but not for women, somatic symptoms are associated with increased drinking
- Men may be more likely to self medicate somatic symptoms using alcohol than women





**Figure 1.** The Theoretical Model Linking Economic Stress, Somatic Symptomatology, and Drinking Behavior



**Figure 2. SEM Results Predicting Drinking Behavior Using Economic Stress and Somatic Symptoms**

Note: Significant ( $p < .05$ ) paths are *bolded solid lines*. Marginally significant paths ( $.05 < p < .1$ ) paths are *unbolded solid lines*, and non-significant paths are *unbolded dashed lines*.

**Table 1**

Descriptive Statistics(N = 663)

<b>Variables</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b><i>Range</i></b>
Unemployment or underemployment subscale	.87	1.225	0–4
Problematic employment situation subscale	.87	1.377	0–5
Home ownership problems subscale	2.30	2.263	0–8
Undesirable living situation subscale	1.54	1.981	0–7
Inadequate health insurance subscale	1.41	1.688	0–6
Inadequate sick leave subscale	.34	.656	0–2
Somatic symptomatology	6.17	4.956	0–20
Frequency of drinking	2.76	1.760	0–7
Quantity of drinking	3.95	2.165	0–7
Drinking to intoxication	1.05	1.606	0–7
Binge drinking	1.14	1.744	0–7
Problem-related drinking	1.68	2.787	0–18
Age	47.63	16.625	19–91
Education	4.61	2.361	1–9