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ECONOMIC STRESSORS AND ALCOHOL-RELATED OUTCOMES: EXPLORING GENDER DIFFERENCES IN THE MEDIATING ROLE OF SOMATIC COMPLAINTS

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Abstract

This study examined processes linking economic stressors, somatic complaints, and two alcohol-related outcomes (past-month drinking and problematic drinking). Structural equation models of data from a national survey revealed that somatic complaints partly explain the association between economic stressors and problematic drinking. The associations of both economic stressors and somatic complaints with problematic drinking were significantly greater for men than women. However, the association between economic stressors and somatic complaints was greater for women. These findings clarify the circumstances in which gender matters most for the associations among economy-related stressors, somatic complaints, and drinking. They highlight the significance of difficult economic circumstances for physical health and, in turn, problematic drinking – particularly among men.

Keywords

Economic stressors; somatic complaints; problematic drinking; gender

INTRODUCTION

The economic difficulties associated with the Great Recession - the period from 2007 to 2009 referred to as the most serious economic crisis in the U.S. since the Great Depression[1,2,3] – have had persisting health consequences for many people in the U.S.[4,5,6]. Although the majority of recent research on this topic has been devoted to understanding the psychological consequences of this economic crisis, or the psychological effects of economic stressors more generally, there is also growing recognition that various indices of economic hardship, including unemployment, job insecurity, and employment frustration, are directly linked with physical health complaints[7,8,9,10,11]. Of course, economic strain is also one of the most robust predictors of alcohol-related outcomes, including overall consumption patterns and problematic drinking patterns[10, 12, 13, 14, 15].

Indeed, given the considerable attention that has been devoted to understanding the ways in which the effects of economic stressors on alcohol-related outcomes are attenuated by

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psychological factors[4, 16, 17], it is striking that similar attention has not been devoted to the potential role of physical well-being in accounting for the association between economic strain and alcohol-related outcomes. This oversight is further emphasized by research demonstrating a high comorbidity between physical health complaints and alcohol-related difficulties, particularly among men[18, 19, 20]. Given the host of negative consequences associated with comorbid physical health and alcohol-related problems, including greater poverty, the loss of self-care abilities, and an increase in medical complications[21, 22, 23], further understanding of the linkage between somatic complaints and alcohol use, and antecedents such as economic strain, seems critical.

To this end, the present study applies a tension-reduction model of drinking to further explore the associations between economic stressors, somatic complaints and two alcohol-related outcomes (i.e., past-month drinking and problematic drinking patterns). Given that men are consistently found to drink more than women and experience more alcohol-related problems[4, 24, 25, 26], and because there is some indication that the associations between stressors, somatic complaints and alcohol-related difficulties vary by gender[6, 16, 27], particular attention is paid to the question of whether, or the extent to which, any observed associations between economic-related stressors, physical well-being, and drinking patterns vary by gender. We extend prior research concerning the direct, indirect and conditional effects of economic stressors and somatic complaints on alcohol-related outcomes by integrating tests for both mediating and moderating processes into a parsimonious structural equation model.

Drinking as a Tension-Reduction Strategy

Tension-reduction models of drinking maintain that alcohol is used as a form of self-medication to reduce the negative effects of various forms of stressor exposure[26, 28, 29]. Such a perspective has been applied to understanding the association between economic stressors and drinking[10, 12, 15, 30, 31]. For example, employees in demanding roles, who have longer hours, or low job control have been shown to use alcohol because of its tension-reducing properties. This model is also associated with understanding the effects of stressors associated with unemployment[7, 8, 9, 10].

Although a tension-reduction model is typically used to understand the manner in which psychological distress serves to mediate associations between social stressors and alcohol-related outcomes[4, 26, 28], evidence that many people manifest distress with somatic complaints rather than psychological symptoms[32] supports the possibility that physical well-being may also be an important mediator of the association between economic stressors and alcohol use. Moreover, because somatic complaints are a symptom of psychological distress, there is some concern that the emphasis in prior literature on the mediating effects of psychological distress may be, in fact, highlighting – or masking – the effects of somatic complaints[6]. This possibility is further emphasized in research documenting that physical health problems are associated with alcohol-related outcomes in their own right partly because they are associated with social stressors[6, 22, 23].

However, a possible limitation of the few studies that have considered the mediating role of physical health complaints for the social stress—alcohol use relationship, and most research

on the tension-reducing function of alcohol-related outcomes more generally, is the tendency to separately model the effects of stress on various drinking-related outcomes. An alternate approach – and one that is increasingly becoming standard practice in alcohol research utilizing structural equation modeling – acknowledges that the volume of alcohol one consumes and impairments of daily living associated with alcohol use are interrelated, because those that drink problematically also tend to drink more than others[4]. By not allowing for this circumstance, the direct or indirect effects of stress on any of these outcomes as a function of physical health may not be properly specified in prior work. Thus, while previous research provides grounds for hypothesizing that economic stressors will have direct and indirect effects on alcohol-related outcomes, we also predict that the outcomes we consider (i.e., past month drinking and problematic drinking) are interrelated.

Gender as a Moderator

Prior research also provides grounds for anticipating that the associations between economic stressors, somatic complaints and alcohol-related outcomes may vary by gender [16, 17]. For example, studies have found somatic complaints to be associated with greater alcohol consumption for men in the context of unemployment[16] or with economic indicators controlled[6]. However, no prior work to our knowledge has examined whether the mediating effect of somatic complaints for the economic stress—alcohol use relationship varies systematically by gender.

A formal test of whether the mediating effect of somatic complaints for the stress—alcohol use association are conditional based upon gender – a circumstance referred to as moderated mediation[33] – can provide information on whether the mediating effects of somatic complaints are contingent upon gender, and clarify why this is so. For example, moderated mediation may occur because the effect of somatic complaints on past-month drinking patterns or problematic drinking, respectively, varies fundamentally by gender. This potential linkage is represented as Figure 1a. Evidence indicating that somatic complaints are associated with a tendency to drink more, and more problematically, for men compared to women when the effects of economic indicators are controlled or held constant[6, 16] supports this possibility.

Alternately, or additionally, moderated mediation may occur as a function of gender differences in the effect of economic stressors on somatic complaints, as indicated in Figure 1b. There is some indication that women may experience greater somatic complaints than men because they experience greater stressor exposure and/or respond more adversely to stressor exposure than men[27, 34]. By extension, it seems plausible that the extent to which somatic complaints account for the association between economic stressors and alcohol-related outcomes may be more pronounced among women than among men because of this linkage.

A third possibility is that, because men are more likely to exhibit externalizing problems such as alcohol misuse in response to social stressors[35], the association between economic stressors and alcohol-related outcomes may be stronger for men, thus influencing the mediating effect of somatic complaints.

In summary, previous research provides grounds for anticipating that somatic complaints may mediate the association between economic stressors and the alcohol-related outcomes of past-month drinking and problematic drinking. We extend prior work by modeling these outcomes as interrelated. Additionally, given evidence suggesting that any mediating effects observed may be conditioned by gender, we test three non-exclusive hypotheses: (1) Hypothesis 1 (H1): the effect of economic stressors on somatic complaints is moderated by gender; (2) Hypothesis 2 (H2): the effect of somatic complaints on past-month drinking patterns or problematic drinking, respectively, is moderated by gender; and/or (3) Hypothesis 3 (H3): the effect of economic stressors on past-month drinking patterns or problematic drinking, respectively, is moderated by gender. We test these hypotheses controlling for the socio-demographic characteristics of age, education and race/ethnicity.

METHODS

Study Procedures and Sample

Data are derived from a national study conducted between June, 2010 and January, 2011 that was undertaken in order to understand life change consequences of the major downturn in the economy known as the Great Recession. Respondents were selected by a Random Digit Dial (RDD) phone survey of the continental United States, and those who consented to participate in the study were mailed questionnaires. 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[36].

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, and 663 returned completed questionnaires. 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[37].

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. Additional details regarding the study procedures and sample are presented by Richman and colleagues[5]. All tables and figures present results using weighted data.

Measures

Summary statistics for all study variables are found in Table 1. Two outcomes are considered: quantity and variability of past-month drinking and problematic drinking patterns. Predictor variables are economy-related stressors, somatic complaints and gender.

The sociodemographic characteristics of age, education and race/ethnicity are controlled in all analyses.

Past-month drinking patterns—To assess past-month drinking patterns, we use the Quantity-Frequency-Variability Index (QFV)[38]. Frequency of drinking is measured as the number of days alcoholic drinks were consumed in the past 30 days, and quantity of drinking is measured as the number of drinks usually consumed on those days. Variability is calculated by the greatest number of drinks consumed on any one day in the past 30 days. Scores are calculated as the average of responses to the quantity, frequency, and variability questions (α = .87).

Problem drinking—Our measure of problematic drinking is the 10-item BMAST (α = .74), which assesses drinking patterns over the past year. The BMAST correlates strongly with the full-length MAST[39] and is used as a screening tool for alcohol dependence and problems among current drinkers[40].

Somatic complaints are assessed with a latent variable index (α = .85), that measures physical health symptoms experienced in the 12-month period preceding the survey. The index includes four items: sleep problems, stomach problems, migraines or frequent headaches, and feelings of fatigue or exhaustion.

Economic stressors—The measure of economy-related stressors is the Life Change Consequences of the Great Recession (LCCGR) instrument, for which evidence of both reliability and construct validity is available[4, 5]. The items fall into seven categories: Home ownership problems; undesirable living situation; problematic employment situation; unemployment or underemployment; inadequate health insurance; social role constraints; and inadequate sick time. Consistent with common practice, each score for this measure is a straight count of the number of stressors reported.

Gender is coded 1 for females and 0 for males.

Sociodemographic control variables—*Age* is employed as a continuous measure in years. *Education* is a categorical variable based on the educational attainment categories of (1) less than high school (n=45); (2) high school graduate (n=350); (3) college graduate (n=110); and (4) post-college training (n=150). *Race/ethnicity* is a dummy variable including non-Hispanic Whites (n=436), African Americans (n=80), Hispanics (n=91), Asians (n=29), and individuals who identify as an “other” race/ethnicity (n=17). In all analyses, non-Hispanic Whites serve as the reference category.

Analytic Strategy

After examining bivariate correlations in order to assess the basic patterns of correlation among key study variables, we performed SEM analysis using Mplus software (version 6.11)[41] to examine the predictive significance of economic stressors for somatic complaints and the alcohol-related outcomes considered (i.e., past-month drinking and problematic drinking), net of gender and the sociodemographic control variables. We then considered the potential for somatic complaints to mediate the associations between economic stressors and

each of the drinking outcomes assessed. We formally tested for mediation using the procedures described by Muthén & Muthén[41] for Mplus software.

In the next step in our analysis, we examined whether any significant indirect paths from economic stressor exposure to the drinking outcomes considered are conditional based upon gender using moderated mediation procedures developed for Mplus software[33]. These tests determine whether any indirect effects observed are conditional because: (H1) the effect of economic stress on somatic symptomatology is moderated by gender; (H2) the effect of somatic complaints on past-month drinking patterns or problematic drinking is moderated by gender; and/or (H3) the effect of economic stressors on past-month drinking patterns or problematic drinking is moderated by gender.

RESULTS

Table 2 presents the inter-correlations of major study variables. It is noteworthy that stressors related to the economy are associated with somatic complaints and each of the alcohol-related factors considered: Economy-related stressors are associated with more alcohol consumption and problematic drinking, as well as greater somatic complaints. The significant correlations between somatic complaints and problematic drinking provides some preliminary support for the hypothesis that the association between economic stressors and alcohol use and misuse may partly derive from their associations with somatic complaints. Additionally, the possibility that the effects of economic stressors on somatic complaints and/or alcohol-related outcomes may vary by gender is supported by the observation that women drank significantly less than men in the past month and are less likely to have had problematic drinking issues in the past year, but experienced higher levels of somatic complaints than men.

The structural equation model testing our hypothesized model of the associations between economic stressors, somatic complaints, and the alcohol-related outcomes considered is presented as Figure 2. As expected for a fully saturated model, fit indices were perfect (e.g., CFI = 1.000; RMSEA = 0.000; SRMR = 0.000).

The SEM results conform to predictions based upon prior research and theory. Net of gender and the sociodemographic control variables, greater levels of economic stressor exposure are associated with greater somatic complaints (β=.188, s.e.=.072, p<.001). Greater economic stressor exposure is also associated with more alcohol consumption over the past month (β=.166, s.e.=.011, p<.001) and more problematic drinking over the past year (β=.139, s.e.=.018, p<.001).

Mediation tests reveal that the effect of economic stressors on one of the alcohol-related outcomes assessed is partly explained by variation in somatic complaints: A significant indirect association is found for the pathway from economic stressors to problematic drinking. The total effect of economic stressors on problematic drinking is .144 (s.e.=.017, p<.001), of which .139 (s.e.=.018, p<.001) is explained by the direct effect of economic stressors and .005 (s.e.=.005, p<.01) is accounted for by the indirect effect of pathway through somatic complaints.

Additional tests considered whether the pattern of findings would vary significantly if the correlation between the two drinking-related outcomes was not controlled for, as in the present model. The pattern of findings for this model was virtually the same. However, because of the conceptual linkages between the outcomes of interest, we retained the present model.

Moderated mediation tests of H1 and H2 next determine whether the mediating effects of somatic complaints vary depending upon gender. These tests add interaction terms to the path models reported in Figure 2. The first stage in this analysis tests H1 by considering whether moderated mediation occurs as a function of gender variation in the effect of economy-related stressors on the mediating variable (somatic complaints) and each of the alcohol-related outcomes. This is expressed as an interaction between gender and the economy-related stressors measure. Separate equations consider the effect of this interaction term on the path to somatic complaints and for the direct effect of economy-related stressors on problematic drinking. Both interaction terms reveal significant differences, supporting H1 and H3: The significant interaction of economic stressors and gender in the prediction of somatic complaints (β = .133, s.e.=.026, p<.01) demonstrates that the association between economic stressors and somatic complaints is significantly stronger for women than men, whereas the significant interaction of these factors in the prediction of problematic drinking (β =−.218, s.e.=.008, p<.001) indicates that the direct association between economic stressors and problematic drinking is significantly stronger for men than women.

The next stage in the analyses tests H2 by assessing whether moderated mediation additionally occurs as a function of gender variation in the effects of somatic complaints on problematic drinking. Findings of these tests reveal that the mediating effects of somatic complaints for the economic stressor—problematic drinking association differ for men and women such that the connection between somatic complaints and problematic drinking is significantly less strong for women compared to men (β= −.224, s.e.=.022, p<.01).

Taken together, the findings of this moderated mediation analysis suggest clearly gendered patterns in the associations between economic stressors, somatic complaints and problematic drinking: Women experience greater somatic complaints in the context of economic stressor exposure than men, who are more likely to exhibit problematic drinking behaviors. However, the extent to which somatic complaints are associated with problematic drinking is also significantly stronger for men than women.

DISCUSSION

The deleterious mental and physical health consequences of the Great Recession are becoming increasingly apparent[4, 5, 6]. Within this context, the present study sought to extend research on the associations between economic stressors, somatic complaints, and alcohol-related outcomes by addressing two questions: Do somatic complaints influence the association between economic stressors and two potentially-interrelated drinking outcomes? And, do any observed linkages between economic stressors, somatic complaints and drinking outcomes vary systematically by gender?

Study findings, first, strengthen earlier investigations supporting the mediating role of somatic complaints in explaining the associations between social stressors and alcohol use and abuse[6, 22, 23]. Elaborating upon this work, we demonstrate that the alcohol-related outcomes of past-month drinking and problematic drinking are interrelated, and that each is greater in the context of greater economic stressor exposure. However, only the association between economic stressors and problematic drinking is mediated by somatic complaints. This observation suggests that a tension-reduction model of drinking may be particularly salient in understanding the linkage between social stressors and alcohol problems rather than general consumption patterns. In particular, while varied motives such as the desire for sociability or the celebration of positive life events may influence alcohol consumption per se, stressful experiences such as those derived from the Great Recession may contribute to the transition from non-problem drinking to problem-related drinking. Further consideration of the ways in which interrelated drinking outcomes are influenced by stressful as well as positive social experience might enrich our understanding of these associations.

The present investigation also furthers our understanding of gender differences in the associations between economic stressors, somatic complaints, and alcohol-related outcomes. Consistent with previous research[6, 16], and supporting H1, we find that the effects of economic stressors on alcohol-related outcomes are more pronounced among men than among women when the effects of somatic complaints are controlled. We further demonstrate that somatic complaints are associated with a tendency to drink more problematically for men than women in the context of greater economic stressor exposure, supporting H3. In contrast, the association between economic stressors and somatic complaints is significantly stronger among women, as predicted by H2.

Taken together, this set of findings adds credence to prior research suggesting that men and women respond to stressors in ways that are systematically different and, specifically, that men are more likely to exhibit externalizing problems such as alcohol misuse and women are more likely to exhibit internalizing problems such as depression or anxiety[35]. The finding that women are more likely to report somatic complaints in the context of stressor exposure raises questions concerning whether physical and psychological distress are functionally equivalent responses to stressors. This issue, which is beyond the scope of the present study, is recommended for further study. Additionally, the gender differences observed in the linkages between economic stressors and the outcomes considered raises the possibility that economic stressors, or other types of stressors, may have different gender-linked meanings or different consequences depending upon the extent to which gender is salient for understanding them. One particularly important issue would be to determine whether gender differences in health outcomes associated with economic stress are a result of the use of different coping strategies by men and women. Also, elucidating which coping strategies are most health-protective for economically stressed men and women would provide crucial information for treatment and intervention with these individuals. We also recommend that these questions be addressed in future research.

These conclusions should be considered within the context of two methodological concerns. The first concerns the cross-sectional nature of the data we employ. Future research can more definitively address both mediating and moderating processes linking social stressors

to drinking outcomes by utilizing longitudinal data to more clearly demonstrate causality. Additionally, the random digit dial (RDD) methodology for obtaining the study 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 inspection of unweighted 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. 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.

Conclusion

These limitations notwithstanding, this research extends previous studies by utilizing structural equation modeling to examine mediating and moderating processes linking economy-related stressors, somatic complaints, and both drinking patterns and problematic drinking in a national sample. Most importantly, it demonstrated that the mediating effects of economic stressors on problematic drinking vary systematically by gender such that the effects of both economic stressors and somatic complaints on problematic drinking were significantly greater for men than women, whereas the effects of economic stressors on somatic complaints were greater for women. These findings suggest the importance of highlighting gender as a central factor impacting the linkages between economic or other types of stressors, physical health, and drinking outcomes. In practical terms, these findings indicate that, in difficult economic times, prevention or intervention strategies aimed at reducing problematic drinking may be more efficacious if they address more adaptive modes of coping with economically-based stressors and physical health symptoms – particularly among men.

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FIGURE 1a.

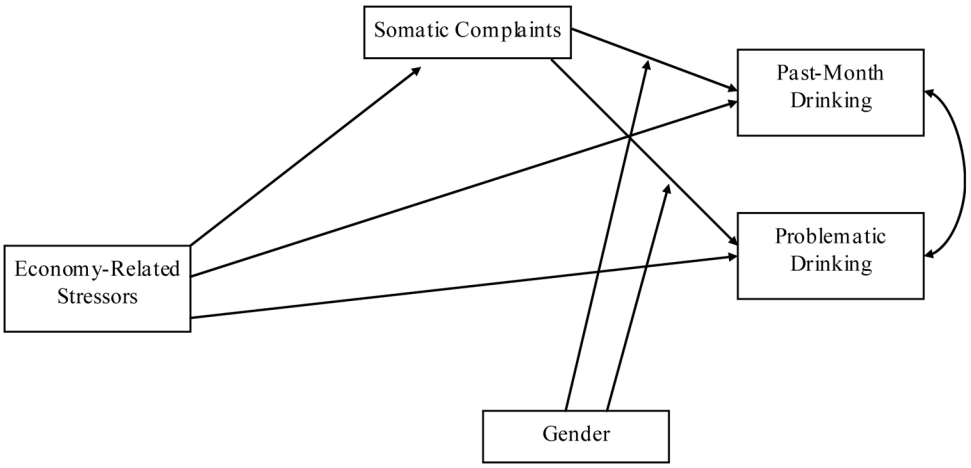

FIGURE 1b.

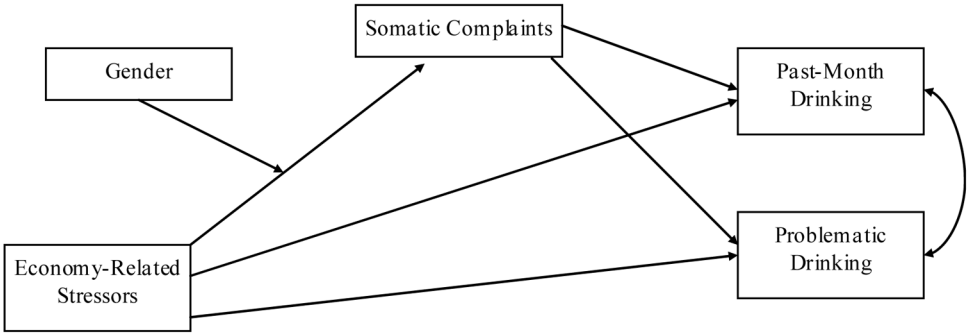

FIGURE 1c.

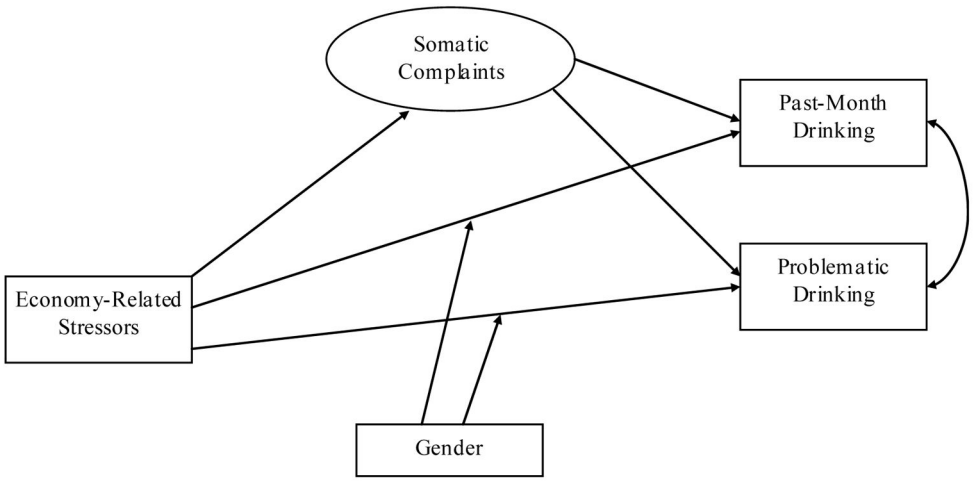

FIGURE 1.

FIGURE 1a. First Potential Moderating Effect of Gender on the Associations between Economy-Related Stressors, Somatic Complaints, and Alcohol-Related Outcomes

FIGURE 1b. Second Potential Moderating Effect of Gender on the Associations between Economy-Related Stressors, Somatic Complaints, and Alcohol-Related Outcomes

FIGURE 1c. Third Potential Moderating Effect of Gender on the Associations between Economy-Related Stressors, Somatic Complaints, and Alcohol-Related Outcomes

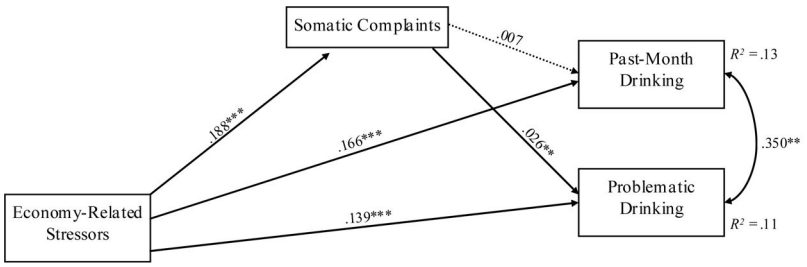

FIGURE 2.

Structural Equation Model Relating Economy-Related Stressors to Somatic Complaints and Alcohol-Related Outcomes

Notes: Model controls for gender, age, education and race/ethnicity. * significant at .05; ** significant at .01; *** significant at .001.

TABLE 1

Characteristics of Study Variables (N = 663)*

Characteristics	Range	Mean	Standard Deviation
Past-Month Drinking	0—14	5.389	2.307
Problematic Drinking	0—7	.580	1.046
Somatic Complaints	0—16	4.257	3.839
Economic Stressors	0—48	13.553	9.863
Gender (% female)	0,1	51.3	–
Age	19—91	54.838	14.713
Education (%)			
Less than high school	0,1	6.8	–
High school graduate	0,1	53.4	–
College graduate	0,1	16.8	–
Post-college training	0,1	23.0	–
Race/Ethnicity (%)			
Non-Hispanic White	0,1	67.0	–
African American	0,1	12.2	–
Hispanic	0,1	13.9	–
Asian	0,1	4.4	–
Other	0,1	2.5	–

TABLE 2

Correlation Matrix of Drinking Outcomes, Somatic Complaints, Economic Stressors and Gender (N=663)

	1	2	3	4	5
1. Past-Month Drinking	1.000				
2. Problematic Drinking	.309***	1.000			
3. Somatic Complaints	.054	.096*	1.000		
4. Economy-Related Stressors	.138***	.128***	.482***	1.000	
5. Gender (1=female)	−.182***	−.107*	.199***	.026	1.000

Note:

* significant at .05;

** significant at .01;

*** significant at .001.

The biserial correlation coefficients are presented for gender; for all other variables, the Pearson correlation coefficients are reported.