



## Predictors of health behaviors after the economic downturn: A longitudinal study

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### ABSTRACT

Economic declines and their associated stress, shortage of financial resources, and changes in available time can impair health behaviors. This study tested the association between change in working hours, change in employment status, and financial strain and health behaviors measured after the 2008 recession after controlling for pre-recession levels of the health behaviors. The moderating influences of demographic factors and pre-recession levels of the health behaviors on the association between change in working hours and employment status and financial strain and the health behaviors were also tested. Participants ( $N = 3984$ ) were from a longitudinal study of a U.S. Midwestern community-based sample. Regression analyses tested the unique relations between change in hours worked per week, change in employment status, and financial strain and five health behaviors over and above demographic factors and pre-recession levels of the same behavior. Models included predictor by covariate interactions. Participants who reported higher levels of financial strain engaged in lower levels of all but one of the five health behaviors, but there were no significant main effects of a change in the number of hours worked per week or change in employment status. Significant interactions revealed moderation of these relations by demographic characteristics, but findings differed across health behaviors. Financial strain negatively affected engagement in multiple healthy behaviors. Promoting the maintenance of healthy behaviors for disease prevention is an important public health goal during times of economic decline.

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### Introduction

Considerable research has investigated the health effects of economic decline. Recent reviews concluded that poor economic conditions increase the risk of psychological and behavioral morbidity, including violence and suicide (Catalano et al., 2011), and mental health problems, including depression and substance use (Goldman-Mellor, Saxton, & Catalano, 2010). Most of this prior work has focused on health *outcomes*, as opposed to health *behaviors*, which can help to prevent adverse health outcomes. However, economic downturns might be expected to negatively influence health behaviors through multiple mechanisms, including increases in stress that change motivation to engage in health behaviors, decreased financial resources, and changes in working hours or employment status that influence the time available to commit to health behaviors such as exercise. Few studies have tested the effect of an economic downturn on specific health behaviors, and they have not been entirely consistent in their findings. For example, financial strain has been associated

with cigarette smoking, difficulty quitting smoking, and smoking relapse (Falba, Hsun-Mei, Sindelar, & Gallo, 2005; Kendzor et al., 2010; Nelson, Lust, Story, & Ehlinger, 2008; Siahpush & Carlin, 2006), and a recent cross-sectional study found that full-time employment was associated with healthier eating habits, more physical activity, less cigarette smoking, and less alcohol consumption, compared with part-time employment or unemployment (Rosenthal, Carroll-Scott, Earnshaw, Santilli, & Ickovics, 2012). In contrast, however, findings from prospective studies in Iceland showed that the 2008 recession there led to improvements in most health behaviors considered, including smoking, heavy drinking, unhealthy eating, and indoor tanning (Ásgeirsdóttir, Corman, Noonan, Ólafsdóttir, & Reichman, 2012; McClure, Valdimarsdóttir, Hauksdóttir, & Kawachi, 2012), and Ruhm (2005) found that smoking and excess weight declined while physical activity rose during temporary economic downturns from 1987 to 2000 in the United States. Importantly, Ruhm (2005) predicted changes in health behaviors from relatively small-scale, temporary declines in macroeconomic activity. The inconsistencies in these studies' findings might be due in part to differences in how different recession-related factors influence health behaviors. That is, financial strain may have a different impact on health behaviors

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than changes in working hours or changes in employment status. For example, financial strain may negatively affect health behaviors due to decreased financial resources to purchase healthier foods or participate in organized exercise activities. In contrast, changes in employment status may result in more leisure time thus increasing opportunities for physical activity. Thus, the current study tested the association between financial strain, changes in working hours, and changes in employment status and engagement in health behaviors.

The current economic recession in the United States, the largest financial crisis since the Great Depression, will continue to place many Americans under financial strain. As such, it is critical for public health to better understand how financial challenges affect health behaviors, especially given the current recession, which has affected individuals of varying income levels. We capitalized on two waves of longitudinal data, one collected before and one collected after the recession started in 2008, so that we tested the relations between financial strain and changes in working hours and employment status and health behaviors over and above pre-recession levels of the health behaviors. Moreover, poor economic conditions may have different influences on different health behaviors, and previous studies have generally been restricted to one outcome. In addition to the *Ruhm (2005)* study that preceded the current recession, exceptions include the *Rosenthal et al. (2012)* cross-sectional analysis, the prospective studies from Iceland (*Ásgeirsdóttir et al., 2012*; *McClure et al., 2012*), and a study that reported significant associations between credit card debt and several health behaviors, but it was cross-sectional and restricted to a sample of college students (*Nelson et al., 2008*). In the current study, we examined changes in five health behaviors of mid-life adults – checking the ingredient label when buying food, choosing foods to eat based on health value, frequency of vigorous exercise, cigarette smoking, and seat belt use. We chose a range of health behaviors because financial strain and changes in working hours and employment status may have differential effects on different behaviors. For example, financial strain is likely to reduce resources available to purchase healthy foods, whereas a reduction in working hours (or a change in employment status from full-time to part-time) may provide additional leisure time to engage in physical activity. Therefore, we hypothesized that financial strain would be negatively associated with the behaviors related to healthy eating and with cigarette smoking, and change in working hours and employment status would be associated with increased frequency of vigorous exercise. Finally, we included seat belt use as a health behavior that requires neither financial nor time resources hypothesizing that there would be no relation between the predictors of interest and post-recession seat belt use.

In testing the relations between changes in working hours and employment status and financial strain and health behaviors, we utilized a large, longitudinal, community sample. In addition to considering pre-recession levels of each health behavior, we also tested the association between changes in working hours and employment status and financial strain and the health behaviors over and above the effects of sex, age, marital status, and educational attainment, all of which were expected to influence the health behaviors. National epidemiologic data demonstrate that females are more likely to eat a healthy diet, more likely to always wear a seat belt, and less likely to smoke cigarettes. Those who are married are more likely to always wear a seat belt and less likely to smoke, and those with higher educational attainment are more likely to eat a healthy diet, more likely to exercise regularly, more likely to always wear a seat belt, and less likely to smoke (*Centers for Disease Control and Prevention, 2009; 2010*). Based on these data, we expected that females, those who were married, and those of higher educational attainment would be more likely to engage in healthy behaviors.

Moreover, the relations between financial strain and change in hours worked per week and employment status and health

behaviors may vary as a function of demographic characteristics or prior levels of the health behaviors. One study found that financial strain was more strongly associated with difficulty quitting smoking for single individuals compared to those who were married or living with a partner (*Kendzor et al., 2010*), but another study of older adults did not find this (*Falba et al., 2005*). *Rosenthal et al. (2012)* did not find evidence of gender, race, or ethnicity moderating the effect of employment status on health behaviors, but *McClure et al. (2012)* found that a reduction in income resulted in lower risk of smoking relapse for males but not for females. Thus, little is known about whether financial strain or changes in working hours or employment status affect health behaviors differently as a function of demographic differences. Moreover, it is unknown whether the relations between financial strain or changes in working hours or employment status and health behaviors will vary as a function of pre-existing levels of health behaviors. Perhaps if high levels of health behaviors are already established, there will be little negative impact of financial strain and changed working hours or employment status. Accordingly, we tested both demographic factors and pre-existing levels of health behaviors as potential moderators of the relations between financial strain and changes in working hours and employment status and the five health behaviors.

In sum, the current study utilized a large sample to test the association between financial strain and changes in working hours and employment status and multiple health behaviors measured after the recent economic downturn. Availability of longitudinal data allowed us to control for pre-recession levels of the same behaviors. We also controlled for known demographic predictors of health behaviors. Although these methods create a conservative test, they increase confidence that any significant findings can be attributed to the effects of financial strain and changes in hours worked and employment status. Finally, the current study is the first to examine whether demographic characteristics and the prior level of the behavior moderate the relations between financial strain and changes in working hours and employment status and health behaviors.

## Methods

### Participants

Participants were from the Indiana University Smoking Survey, an ongoing cohort-sequential study of the natural history of cigarette smoking (*Chassin, Presson, Sherman, & Pitts, 2000*). Between 1980 and 1983, all consenting 6th to 12th grades in a U.S. Mid-western county school system completed annual surveys. The total sample size of those who were assessed at least once was 8487. Follow-up surveys were conducted in 1987, 1993, 1999, and 2005. An additional wave of follow-up started in late 2009 and is nearing completion (this wave is referred to as the 2011 wave). At each completed wave, 70% or more of the original sample has been retained. The original 1980 to 1983 survey data were collected with group-administered questionnaires in school. In 1987, these procedures were followed for cohorts who were still in high school. For older cohorts and for all participants in 1993, 1999, 2005, and 2011, a survey was sent by mail followed by telephone interviews, and an online survey in 2011, if surveys were not returned. Participants were paid \$15–\$35 over the waves, and in 1999, 2005, and 2011 they were also entered into lottery drawings for cash prizes up to \$500. The research protocol was approved by the Institutional Review Board at Indiana University, and informed consent was obtained for participation in the research.

Demographically, the sample is similar to the community from which it was drawn. For example, the marriage rate is 64% in this sample compared to 66% among similarly aged adults in the Midwest (*Lugaila, 1998*), and the high school graduation rate is 97% in

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