

# An Investigation of the Relationship Between Income and Anxiety Disorders

Katherine A. McMillan, BA (Hons.), Gordon J.G. Asmundson, PhD., Tracie O. Afifi, PhD., Jitender Sareen, MD FRCPC

Department of Psychology, Anxiety and Illness Behaviors Laboratory, University of Regina, Regina, SK  
Department of Psychiatry, University of Manitoba, Winnipeg, MB

## Introduction

- The recent economic crisis has resulted in an increased number of low income Americans.
- It is particularly important during these difficult economic times to understand the relationship between income and the mental health of Americans.
- Previous research suggests that low income may be associated with higher rates of psychopathology in general, and anxiety and substance use disorders in particular (McMillan, Enns, Asmundson, & Sareen, In Press).
- Many previous studies of the relationship between income and anxiety disorders have been limited by small sample size, self-report screening measures, and did not include a comprehensive assessment of all Axis I and II mental disorders.
- Much remains to be learned regarding the relationship between income and anxiety disorders and how this relationship is influenced by sociodemographic factors, physical health, and the presence of comorbid Axis I and II mental disorders.
- The purpose of the current investigation was to examine the relationship between household income level and anxiety disorder diagnoses among a nationally representative sample of adults.

## Method

- Data came from Wave II of the National Epidemiologic Survey of Alcohol and Related Conditions, a large, nationally representative survey of American adults ( $n=34,653$ ).
- The relationship between income and anxiety disorders were examined using logistic regressions and cross-tabulations.
- Regressions were conducted on each anxiety disorder individually and as a group after adjusting for sociodemographic variables, physical disorders, and number of persons in the household, mood, personality, substance use disorders, and every other anxiety disorder.
- Household income was divided into four quartiles: <\$19,999, \$20,000-\$39,999, \$40,000-\$69,999, and more than \$70,000.
- Lifetime Anxiety Disorders included:** PTSD, social phobia, panic disorder, specific phobia, agoraphobia, and GAD.
- Lifetime Mood Disorders included:** major depression, dysthymia, and bipolar disorder.
- Lifetime Substance Use Disorders included:** alcohol use disorders, illicit drug use disorders, and nicotine dependence.
- Personality Disorders included:** schizoid, paranoid, schizotypal, borderline, narcissistic, antisocial, dependent, histrionic, obsessive compulsive, and avoidant PD.

## Results

- Cross-tabulations and multiple logistic regressions were used to determine the distribution of anxiety disorder diagnoses across income quartiles.
- Anxiety disorders as a group demonstrated a strong, inverse association with income after adjusting for sociodemographics.
- This relationship between income and anxiety disorders as a group was no longer significant after adjusting for sociodemographics, mood disorders, personality disorders, and substance use disorders.
- Every anxiety disorder, except for agoraphobia, was significantly associated with income with odds ratios ranging from 1.39 (specific phobia) to 1.96 (PTSD) when the lowest income quartile was compared to the highest and 1.19 (specific phobia) to 1.53 (social phobia) when the second lowest quartile was compared to the highest income quartile.
- Social phobia was the only disorder to show a strong, inverse association with income at all income levels after adjusting for sociodemographics.
- Even after adjusting for sociodemographics, mood disorders, personality disorders, substance use disorders, and every other anxiety disorder, PTSD and social phobia remained significantly associated with income.

## Discussion

- The results of this study suggest a strong, inverse association between anxiety disorder diagnoses and household income.
- Contrary to previous research (McMillan et al., In Press) which found elevated levels of anxiety disorders only when individuals in the second lowest income quartile were compared to those in the highest income quartile, the results of the present study which used a significantly larger sample demonstrated a strong inverse association across all income quartiles after adjusting for sociodemographics.
- The results of the present study strongly support the results of the aforementioned study which found that social phobia and PTSD were most strongly associated with income.
- The current study extends the results of previous research by examining each anxiety disorder independently after adjusting for the presence of all other Axis I mood, anxiety, and substance use disorders as well as all Axis II personality disorders.
- One significant limitation of this study was that it did not examine the relationship between anxiety disorder diagnoses and income longitudinally; therefore, no statement can be made regarding the directionality of the relationship.
- Future research should examine the relationship between anxiety disorders and income longitudinally.

Lifetime Anxiety Disorders	Household Income											
	n(%)				AOR-1 99% CI				AOR-2 99% CI			
	< \$19,999	\$20,000-39,999	\$40,000-69,999	> \$70,000	< \$19,999	\$20,000-39,999	\$40,000-69,999	> \$70,000	< \$19,999	\$20,000-39,999	\$40,000-69,999	> \$70,000
Any Anxiety Disorder	2597(31.9)	2569 (27.9)	2542 (28.0)	6531(26.1)	<b>1.44 (1.26-1.65)</b>	<b>1.19 (1.07-1.34)</b>	<b>1.12 (1.00-1.25)</b>	1.00	NA	NA	NA	NA
Panic Disorder	774 (9.8)	652 (7.2)	622 (7.1)	579 (6.3)	<b>1.90 (1.51-2.39)</b>	<b>1.31 (1.06-1.62)</b>	1.15 (0.95-1.41)	1.00	1.15 (0.90-1.47)	0.94 (0.75-1.18)	1.00 (0.81-1.24)	1.00
GAD	814 (10.3)	702 (7.9)	668 (7.3)	546 (6.2)	<b>1.88 (1.49-2.37)</b>	<b>1.42 (1.14-1.75)</b>	1.21 (0.98-1.50)	1.00	1.04 (0.80-1.36)	1.03 (0.82-1.31)	1.08 (0.85-1.37)	1.00
PTSD	776 (9.3)	680 (7.1)	534 (5.5)	473 (4.9)	<b>1.96 (1.54-2.50)</b>	<b>1.51 (1.21-1.88)</b>	1.11 (0.88-1.39)	1.00	<b>1.35 (1.04-1.76)</b>	1.22 (0.97-1.52)	1.00 (0.79-1.27)	1.00
Agoraphobia	27 (0.4)	19 (0.2)	29 (0.5)	20 (0.2)	1.47 (0.51-4.20)	0.87 (0.33-2.28)	1.84 (0.72-4.70)	1.00	0.64 (0.22-1.85)	0.51 (0.20-1.31)	1.41 (0.57-3.47)	1.00
Specific Phobia	1442 (17.3)	1404 (15.4)	1347 (14.6)	1294 (14.1)	<b>1.39 (1.18-1.64)</b>	<b>1.19 (1.04-1.36)</b>	1.05 (0.93-1.20)	1.00	1.02 (0.85-1.22)	0.98 (0.86-1.13)	0.95 (0.82-1.09)	1.00
Social Phobia	685 (8.7)	617 (7.2)	643 (7.4)	503 (5.5)	<b>1.88 (1.49-2.36)</b>	<b>1.53 (1.24-1.87)</b>	<b>1.43 (1.17-1.75)</b>	1.00	1.12 (0.87-1.45)	1.19 (0.94-1.51)	<b>1.32 (1.04-1.67)</b>	1.00

Note. All n's were unweighted. All percents were weighted.  
AOR1 indicates adjustments for age, marital status, race, sex, number of individuals in the household, and physical disorders  
AOR2 indicates adjustments for age, marital status, race, sex, number of individuals in the household, physical disorders, any mood disorder, any personality disorder, any substance use disorder, any other anxiety disorder