Cardiovascular Risk Factors, Depression, and Alcohol Consumption During Joblessness and During Recessions in CARDIA Young Adults

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Web Appendix 1

Metabolic syndrome

For this investigation the metabolic syndrome was defined following usual practice as present when at least three of the five following criteria are found: waist circumference ≥ 102 cm for men or ≥ 88 cm for women; triglycerides ≥ 150 mg/dL; HDL < 40 mg/dL for men or < 50 mg/dL for women; systolic blood pressure ≥ 130 mmHg or diastolic blood pressure ≥ 85 mmHg or on hypertensive medications; fasting glucose ≥ 110 mg/dL). We did not find any association of the metabolic syndrome with macroeconomic conditions or individual employment status.

Scores of physical activity

The total physical activity score computed by the CARDIA staff is a weighted composite variable capturing frequency and intensity of exercise over the past year; it is measured in "exercise units" (EU), with 300 EU roughly approximating 5 sessions of 1260 kJ (300kcal) of energy expenditure, which is roughly equivalent to 30 minutes of moderate exercise 5 times per week. The index is computed from the answers of the CARDIA participants to questions on how frequently they get involved in 13 types of physical activity:

   a. jog or run;

b. vigorous racket sports;

c. bicycle faster than 10 miles per hour;

d. swimming;

e. vigorous exercise class or vigorous dancing;

f. non-work activity such as shoveling, weight-lifting and moving heavy objects;

g. vigorous work activity such as lifting, carrying or digging;

h. other strenuous sports such as basketball, football, skating, skiing;

i. other non-strenuous sports such as softball, shooting baskets, volleyball, ping-pong;

j. take walks or hikes or walk to work

k. bowling or golf

l. home exercises, calisthenics;

m. home maintenance and gardening, including carpentry, painting, raking, mowing.

To try to ascertain how the employment status of the individual or the contextual macroeconomic conditions, proxied by the state unemployment rate, relate to total physical activity unrelated to work, we computed a modified score of physical activity unrelated to work (PAUW) by subtracting from the total physical activity score the component corresponding to section "g", that is, "vigorous work activity such as lifting, carrying or digging". Table 1 of the paper presents the mean and standard deviations of both scores of physical activity in each CARDIA exam. PAUW is about 90% of total physical activity—though the proportion has a declining trend from 92% in Year 0 to 89% in Year 25— and the two scores have a very high correlation: 0.986 considering all observations (N = 23,617), 0.985 considering only the observations corresponding to not unemployed individuals (N = 19,798), and 0.988 considering the unemployed individuals only (N = 3,792).

Given these high correlations is to be expected that analysis with both variables will produce very similar results, and that is the case as shown by Table 1 in the paper and Web Table 1 here.

Regression models with a term for the interactions between individual and contextual unemployment

Results for these models are presented in Web Table 2. The interaction is only significant in the two types of models for the regression in which the dependent variable is waist circumference. We found waist circumference significantly diminished during recessions, but for this outcome we also found a statistically significant positive interaction between individual and contextual unemployment, such that the association of state-level unemployment with waist circumference was positive in the unemployed. This means that in the unemployed, higher contextual unemployment is associated with greater waist circumference.

   We also found a significant interaction with negative sign between individual unemployment and state unemployment rate, though this is present only in the models with non-linear detrending of the variables. This would mean that in the unemployed higher contextual unemployment would be associated with less depressive symptoms. Both interactions look meaningful, but they can be also just chance findings in the context of quite a number of interactions tested. We report them here as potential avenues for future research.

Web Table 1. Selected individual-level and state-level characteristics of CARDIA participants by CARDIA exam (1985-2011)

Characteristics	Year 0 n=5114	Year 2 n=4622	Year 5 n=4351	Year 7 n=4085	Year 10 n=3943	Year 15 n=3671	Year 20 n=3549	Year 25 n=3498
Age, mean	24.8	27.0	30.0	32.0	35.0	40.2	45.2	50.2
standard deviation	3.7	3.6	3.6	3.6	3.7	3.6	3.6	3.6
Women (%)	54.5	54.8	55.0	55.1	55.5	55.9	56.7	56.6
Blacks (%)	51.6	49.4	48.7	48.3	48.7	47.1	46.5	46.9
More than high school education (%)	30.7	38.7	44.5	47.7	49.6	55.0	57.3	58.8
Unemployed (%)[a]	18.2	12.6	10.7	11.2	9.5	7.9	11.1	13.3
Blood pressure								
Systolic, mean	110.4	107.9	107.8	108.7	110.0	113.2	116.7	119.7
standard deviation	10.9	10.8	11.6	12.4	12.8	14.9	15.3	16.2
Diastolic, mean	68.6	67.4	69.2	69.3	72.4	74.5	73.1	74.9
standard deviation	9.6	9.7	10.2	10.3	10.2	11.6	11.5	11.3
Smoking, drinking & depression								
Current smokers (%)	30.4	29.6	28.6	26.9	25.6	22.0	19.4	17.1
Alcohol consumption, ml/day, mean	12.1	14.2	11.2	11.2	10.9	11.0	10.8	
standard deviation	21.9	24.0	25.6	23.4	22.1	24.9	22.2	
Depression score, mean			11.2		10.7	9.2	9.3	9.5
standard deviation			8.1		8.2	7.8	7.9	7.7
Physical activity								
Total,[b] mean	420	382	379	338	331	347	331	338
standard deviation	301	289	292	274	275	283	274	276
unrelated to work,[c] mean	387	354	347	309	299	310	299	301
standard deviation	277	266	266	250	248	252	244	246
Cholesterol								
LDL cholesterol, mean	109.1	112.7	108.5	107.6	109.2	113.0	110.0	
standard deviation	31.2	33.1	32.0	31.6	32.1	32.3	32.1	
HDL cholesterol, mean	53.2	54.8	53.3	52.1	50.3	50.7	54.2	
standard deviation	13.2	14.1	14.2	14.2	14.0	14.6	16.7	
Anthropometric indices								
Body mass index,[d] mean	24.5	25.2	26.2	26.8	27.5	28.8	29.5	30.2
standard deviation	5.0	5.4	5.9	6.1	6.5	6.8	7.2	7.2
Waist circumference (cm), mean	77.7	79.9	82.0	84.0	85.9	89.5	91.9	94.4
standard deviation	11.4	12.2	12.8	14.1	14.7	15.4	15.6	16.0
Unemployment rate								
State unemployment rate, Alabama[e]	8.6	7.6	6.3	6.9	5.2	4.1	3.8	9.3
State unemployment rate, California	7.2	5.8	5.8	9.4	7.9	4.9	5.4	12.4
State unemployment rate, Illinois	9.1	7.4	6.3	7.8	5.2	4.5	5.8	10.4
State unemployment rate, Minnesota	6.0	5.1	4.8	5.1	3.7	3.1	4.2	7.4

[a] Number of unemployed individuals among all individuals in the CARDIA cohort at the time (including those keeping house or studying which usually are not considered part of the labor force).

[b] Total physical activity is a composite variable capturing frequency and intensity of physical activity over the past year; 300 units roughly approximates 5 sessions of 1260 kJ (300 kcal) of energy expenditure weekly.

[c] Physical activity unrelated to work is total physical activity excluding the component of physical activity related with "vigorous work activity such as lifting, carrying or digging".

[d] Person's weight in kilograms (kg) divided by his or her height in meters squared (m²).

[e] For the state unemployment rates (in percentage of the labor force), CARDIA Year 0 is 1985, Year 2 is 1987, Year 5 is 1990, Year 7 is 1992, Year 10 is 1995, Year 15 is 2000, Year 20 is 2005, and Year 25 is 2010. CARDIA participants were originally located in the 4 states listed, but over time, have dispersed to all 50 states.

Web Table 2. Effect estimate of a unit increase in the explanatory variable in fixed effect (FE) models in which a numerical variable is regressed on individual and contextual characteristics of CARDIA respondents. Each column in each panel corresponds to a regression model. All models include a FE for each individual.

Explanatory variable	Dependent variable										Type of model
	Systolic BP	Diastolic BP	Physical activity	PAUW	Depre-ssion	ml/day alcohol	HDL chol.	LDL chol.	BMI	Waist circumf.	
Age	0.14 (0.24)	-0.01 (0.21)	-8.0† (4.7)	-7.6† (4.3)	-0.13 (0.18)	0.11 (0.49)	0.46* (0.23)	0.77 (0.53)	0.12† (0.07)	0.26 (0.16)	A. Models with FE for year, state, and individual
Unemployed	-0.77** (0.24)	-0.31 (0.19)	-11.1* (4.7)	-10.8* (4.3)	1.43*** (0.22)	-0.99† (0.56)	-0.45* (0.23)	0.04 (0.51)	-0.11 (0.07)	-0.04 (0.16)	
State unemployment rate	-0.27*** (0.07)	-0.27*** (0.06)	6.8*** (1.6)	6.2*** (1.5)	0.12* (0.06)	0.09 (0.15)	-0.26*** (0.08)	0.26 (0.18)	-0.03 (0.02)	-0.13* (0.05)	
Age	0.14 (0.24)	0.01 (0.21)	-7.3 (4.7)	-7.6† (4.3)	-0.09 (0.18)	0.14 (0.49)	0.45* (0.23)	0.71 (0.54)	0.12† (0.07)	0.21 (0.16)	A+. Models like panel A including an extra term for the interaction between individual unemployed status and the state unemployment rate
Unemployed	0.59 (0.77)	0.23 (0.61)	-23.0† (13.2)	-21.3† (12.0)	1.34* (0.52)	0.42 (2.01)	-0.89 (0.75)	-1.78 (1.71)	0.16 (0.20)	-0.23 (0.16)	
State unemployment rate	-0.23** (0.08)	-0.26*** (0.06)	5.0*** (1.5)	5.95*** (1.5)	0.10 (0.06)	0.17 (0.14)	-0.24** (0.08)	0.16 (0.17)	-0.03 (0.02)	-0.28*** (0.08)	
Unemployed * State Unemployment Rate	-0.20† (0.11)	-0.08 (0.09)	1.8 (1.8)	1.52 (1.68)	0.01 (0.07)	-0.22 (0.28)	0.07 (0.11)	0.27 (0.25)	-0.04 (0.03)	0.51*** (0.14)	
Age	0.19 (0.18)	0.12 (0.15)	-6.5† (3.57)	-5.84† (3.28)	0.03 (0.12)	-0.06 (0.35)	0.36† (0.21)	0.38 (0.39)	0.10* (0.05)	0.23* (0.10)	B. Models with FE for year and individual. Both the dependent variable and state unemployment rates are HP-detrended
Unemployed	-0.48** (0.18)	-0.26† (0.14)	-9.02* (3.52)	-7.9* (3.3)	0.6*** (0.15)	-0.64 (0.46)	-0.61*** (0.16)	0.59† (0.35)	-0.03 (0.04)	0.00 (0.10)	
HP-detrended state unemployment rate	-0.41*** (0.12)	-0.19† (0.10)	14.29*** (2.54)	12.8*** (2.3)	0.23** (0.09)	0.12 (0.21)	-0.07 (0.1)	0.05 (0.24)	-0.04 (0.03)	-0.34*** (0.07)	
Age	0.19 (0.18)	0.12 (0.15)	-6.49† (3.57)	-5.8† (3.3)	0.03 (0.12)	-0.06 (0.35)	0.36† (0.21)	0.37 (0.39)	0.10* (0.05)	0.23* (0.1)	B+. Models like those in panel B with interaction between HP-detrended unemployment rate and individual unemployment
Unemployed	-0.48* (0.19)	-0.28† (0.15)	-9.57** (3.61)	-8.3* (3.3)	0.64*** (0.16)	-0.64 (0.46)	-0.61*** (0.16)	0.59† (0.35)	-0.05 (0.04)	-0.07 (0.11)	
HP-detrended state unemployment rate	-0.42*** (0.13)	-0.20† (0.10)	14.03*** (2.56)	12.6*** (2.4)	0.26** (0.09)	0.11 (0.21)	-0.08 (0.10)	-0.02 (0.25)	-0.05 (0.03)	-0.37*** (0.07)	
Interact. ind. unempl. status &	0.02 (0.19)	0.05 (0.14)	2.34 (3.23)	2.0 (3.0)	-0.26* (0.11)	0.11 (0.37)	0.07 (0.17)	0.53 (0.45)	0.07† (0.04)	0.30** (0.1)	

† P < 0.1, * P < 0.05, ** P < 0.01, *** P < 0.001. Standard errors are robust, clustered for individuals. All models were computed using over 23,000 observations and the PROC GENMOD in SAS.