Geographic Variation in Big 5 Personality Later in Life,

the Role of Demographics, and Implications for Health

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Abstract

Substantial research has demonstrated that personality features are key predictors of health and mortality, but only recently has geographic variation in personality been noticed. Despite a public health focus on identifying the mechanisms and sources of neighborhood effects on health, very little attention has been given to psychological factors. This project (1) replicates the finding of regional variation, but for older adults, (2) systematically assesses the geographic scale of personality (regional, metropolitan, tract, and individual) and the contribution of demographic composition to these variations, and (3) demonstrates that geographic variation in personality may play a role in geographic variation in health and health behaviors (e.g. blood pressure and smoking).

PAA Note: This project is important to me, and although it is presently disorganized, I will present a poster at Gerontological Society of America in November, and will have time to further develop a more coherent story by April 2013.

Introduction

An emerging research agenda links geography and personality. There has been almost no work in this area, although there is theory and related literature to motivate the pursuit. Few non-demographic papers in psychology (Rentfrow, Gosling, and Potter 2008; Rentfrow 2010; Schmitt, Allik, McCrae, and Benet-Martínez 2007) and a discussion piece (Wood and Rogers 2011) demonstrate U.S. regional variation in personality traits, and one shows that personality predicts migration (Jokela 2009). A large literature links personality, emotions, and other psychosocial characteristics with health outcomes (Smith 2006; Taylor, Lerner, Sage, Lehman, and Seeman. 2004; Tindle, Davis, and Kuller 2010; Turiano, Pitzer, Armour, Karlamangla, Ryff, and Mroczek 2012). However, the role of personality has been almost absent from research on geography and health.

My forthcoming paper in Social Science & Medicine (King 2012) outlines two potentially causal relationships between neighborhood conditions and personality: (1) a result of social conditions due to socioeconomic composition, or (2) a stress response to exposure to harmful physical conditions. Then, there are three potential non-causal explanations for

associations between neighborhood conditions and an observed social/behavioral outcome: (1) social composition (persons with similar sociodemographic traits both live in similar places and have similar outcomes, creating a spurious association), (2) selective in-migration, and (3) contagion. Because psychologists traditionally spurn the idea of personality change in adulthood, geographic variation in personality in adulthood is likely due to stratification processes and to selection based on personality.

But if personality is an important influence on health (e.g. conscientiousness and health behaviors, cynical hostility and cardiovascular reactivity), personality may be an important unexplored contributor to neighborhood "effects" on health. In data on Chicago (King 2012), I found clustering of cynical hostility and other negative emotions higher than that of common chronic conditions (e.g. hypertension, diabetes) commonly studied in neighborhood perspective. The present analysis seeks to determine whether a similar clustering of negative emotions in occurs among older adults in a national sample: the Health & Retirement Study (HRS). Systematically seeking to document and theorize the geographic scale of health and health-relevant psychosocial variables can greatly influence the literature by helping to prioritize spatial research on the most spatially clustered phenomena, identify the appropriate geographic scale (local, metropolitan, regional), and provide new insight into precise mechanisms.

Geographic Variation in Personality

Regional

A limited body of prior research has found regional variation in personality. Specifically, a few studies have documented regional variation in various measures of self-reported personality and emotional well-being (Krug and Kulhavy 1973; Plaut, Markus, and Lachman 2002; Rentfrow, Gosling, and Potter 2008). Krug and Kulhavy (1973) found geographic differences in Catell's (Cattell, Eber, and Tatsuoka 1970) personality factors, especially greater "creative productivity" in residents of the Northeast, Midwest, and West Coast than the Southeast, Southwest, and Mountain regions. A survey of young internet users (Rentfrow, Gosling, and Potter 2008) found statewide differences in Big 5 personality measures across the United States, and showed significant correlations of these personality traits with state-level health and social variables. In addition, and at least two essays have discussed the importance of regional differences (Rentfrow 2010; Wood and Rogers 2011).

Local

Personality and Health

Assessing the Sources and Scale of Geographic "Effects"

Analytic Plan

Previous research has demonstrated regional variation in personality in young internet users. The present analysis replicates this finding in a representative study of adults 50 years of age and older, before taking a more systematic approach to documenting the scale (region, metropolitan area, neighborhood, individual) of geographic variation. Scale is assessed separately for metropolitan and non-metropolitan residents, using multilevel unrestricted models to partition the variance attributable to each level. This analysis is then repeated with individual sociodemographic controls to show the contribution of social composition to spatial variation. The paper continues by identifying some neighborhood-level predictors of personality, now using the two-level modeling strategy common in public health research. Finally, multilevel models of smoking and blood pressure with and without controls for personality allow assessment of how spatial variation in personality contributes to spatial variation in health and health behavior.

Data

The Health and Retirement Study (HRS) is a prospective, nationally representative survey of physical, functional, and cognitive changes in US adults over the age of 50 and their socioeconomic antecedents. In 2006, an in-home written psychosocial questionnaire was administered to a randomly-chosen half (n=8,568) of community-dwelling respondents, and the other half (n=7,500) of the respondents received the psychosocial questionnaire in 2008. Geographic identifiers are available with a restricted data agreement. The analytic sample consisted of all respondents with complete data.

METHODS

Results

Descriptive statistics on Big 5 personality and sociodemographic measures are reported in Table 1. Being a sample of older adults, most are non-Hispanic white, U.S. born, and married/partnered, and women outnumber men. Almost half have attended some college.

Table 2 shows regional variation in Big 5 personality, significant except for neuroticism.

Table 3 discusses the geographic scale of Big 5 personality traits.

In Table 4, the implications of personality for geographic scale of a health outcome, probably hypertension, are shown.

Comparing Figures 1 and 2 shows high levels of clustering of cynical hostility and pessimism both in Chicago and nationally.

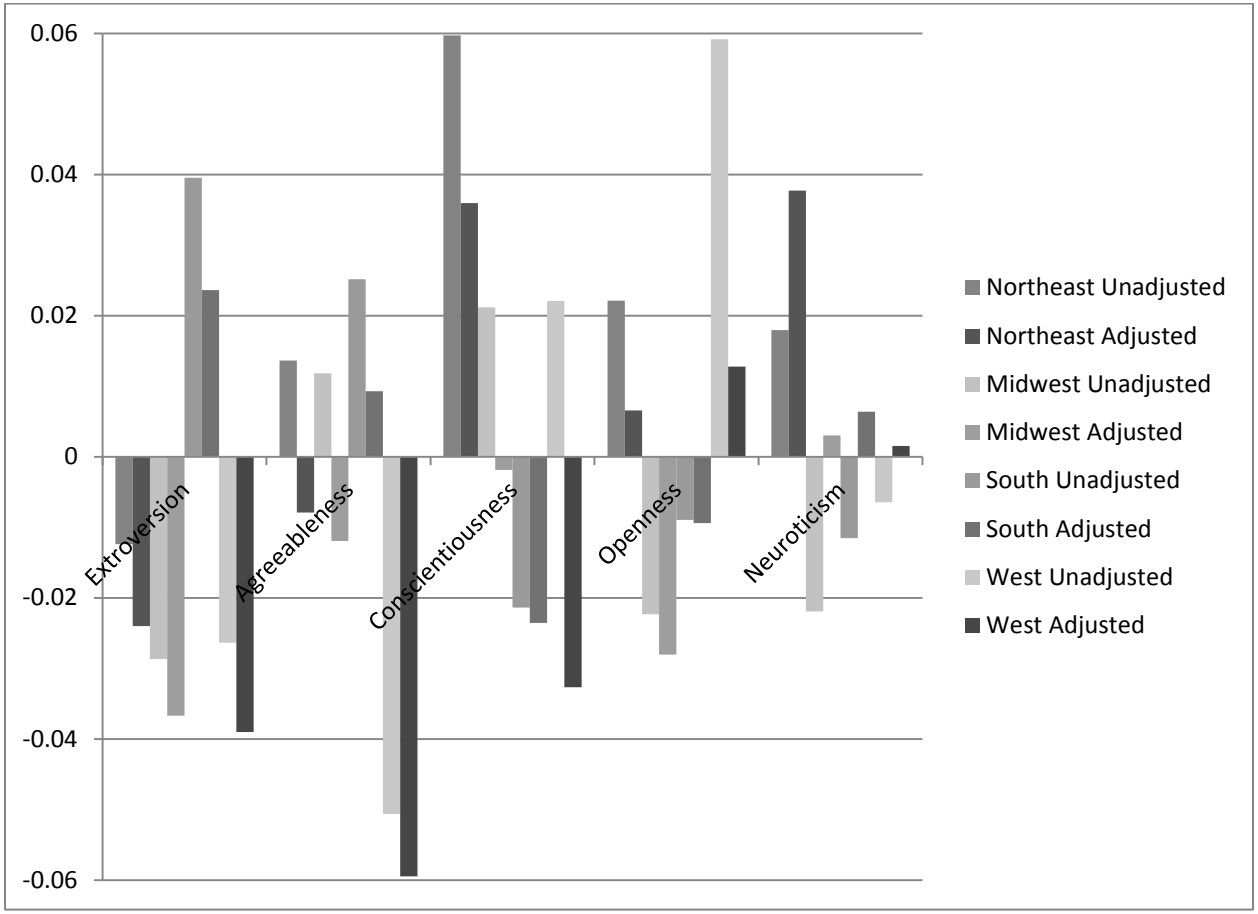
Discussion

Consistent with prior findings from less systematic samples, the HRS also shows large regional variations in personality, much larger than for chronic conditions, which vary more locally. More importantly, the pattern of clustering levels of personality/emotion in the HRS is similar to that in the CCAHS, supporting an emerging view that negative emotions are spatially clustered.

Table 1. Summary Statistics on Big 5 Personality, Sociodemographic, and Health Measures

Variable	*n*	Mean	Std. Dev.	Min	Max
Psychological Variables (Std.)					
Neuroticism	11547	-0.03	0.72	-1.33	2.35
Extroversion	11547	0.02	0.69	-2.98	1.11
Agreeableness	11547	0.02	0.71	-3.94	0.78
Conscientiousness	11547	0.03	0.63	-3.07	0.96
Openness	11547	0.02	0.65	-2.39	1.30
Time-Invariant Sociodemographics					
Male	11547	41.4%	0.49		
Non-Hispanic Black	11547	11.3%	0.32		
Non-Hispanic White	11547	80.0%			
Hispanic	11547	6.7%	0.25		
Non-Hispanic Other	11547	1.9%	0.14		
< High School	11537	16.7%	0.37		
High School	11537	36.8%			
Some College	11537	23.3%	0.42		
>= College	11537	23.2%	0.42		
US Born	11539	92.3%	0.27		
Time-Variant Sociodemographics					
Age 50-59	11547	22.2%	0.42		
60-69	11547	33.7%	0.47		
70-79	11547	30.0%	0.46		
80-106	11547	14.0%	0.35		
Married/Partnered	11546	68.5%	0.46		
Wealth, Quartile 1	11547	20.5%	0.40		
2	11547	24.1%			
3	11547	27.1%	0.44		
4	11547	28.2%	0.45		
Income, Quartile 1	11547	20.2%	0.40		
2	11547	25.8%			
3	11547	26.6%	0.44		
4	11547	27.4%	0.45		
2008 Questionnaire	11547	47.3%	0.50		

Table 2. Regional Variation in Big 5 Personality Measures by Region, without and with Adjustment for Sociodemographics



All differences significant at $p<0.0000$ except adjusted openness significant at $p<0.01$ and neuroticism not significant

Table 3. Assessing the Geographic Scale of Personality Variation and the Role of Sociodemographics and Metropolitan Residence

Metropolitan Residents

	Extroversion			Agreeableness			Conscientiousness			Neuroticism			Openness		
Adjustment	None	Invariant	All	None	Invariant	All	None	Invariant	All	None	Invariant	All	None	Invariant	All
Variance at Level															
Region															
Metro Area															
Tract															
Individual															

Non-Metropolitan Residents

	Extroversion			Agreeableness			Conscientiousness			Neuroticism			Openness		
Adjustment	None	Invariant	All	None	Invariant	All	None	Invariant	All	None	Invariant	All	None	Invariant	All
Variance at Level															
Region															
Tract															
Individual															

Time-Invariant: sex; race/ethnicity; age; education; whether born in U.S.

Time-Variant: married/partnered; income; wealth; an indicator for the year responses given

Table 4. Change in Regional Variation in Selected Health Outcomes When Adjusting for Personality

Figure 1. Clustering Levels in CCAHS

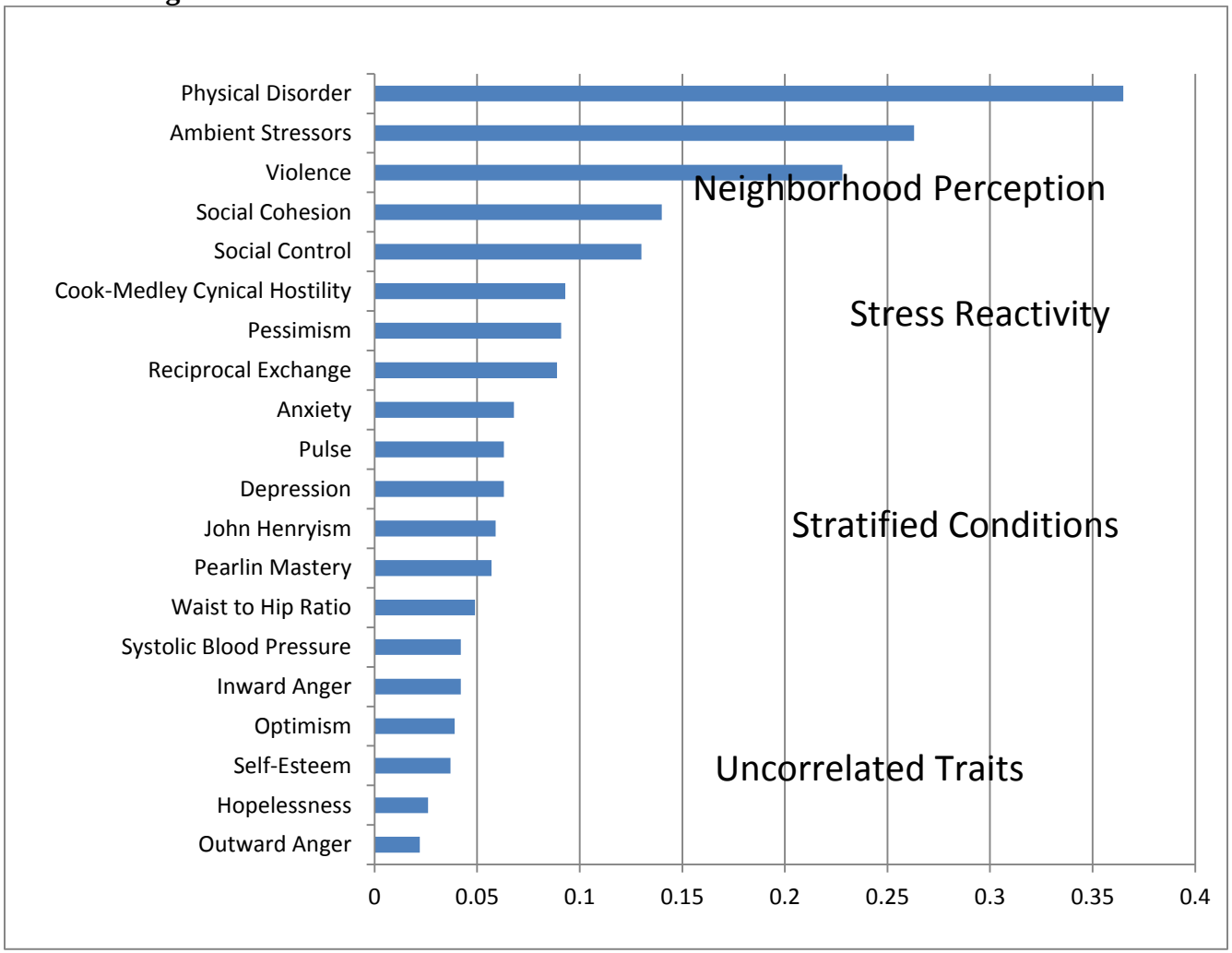
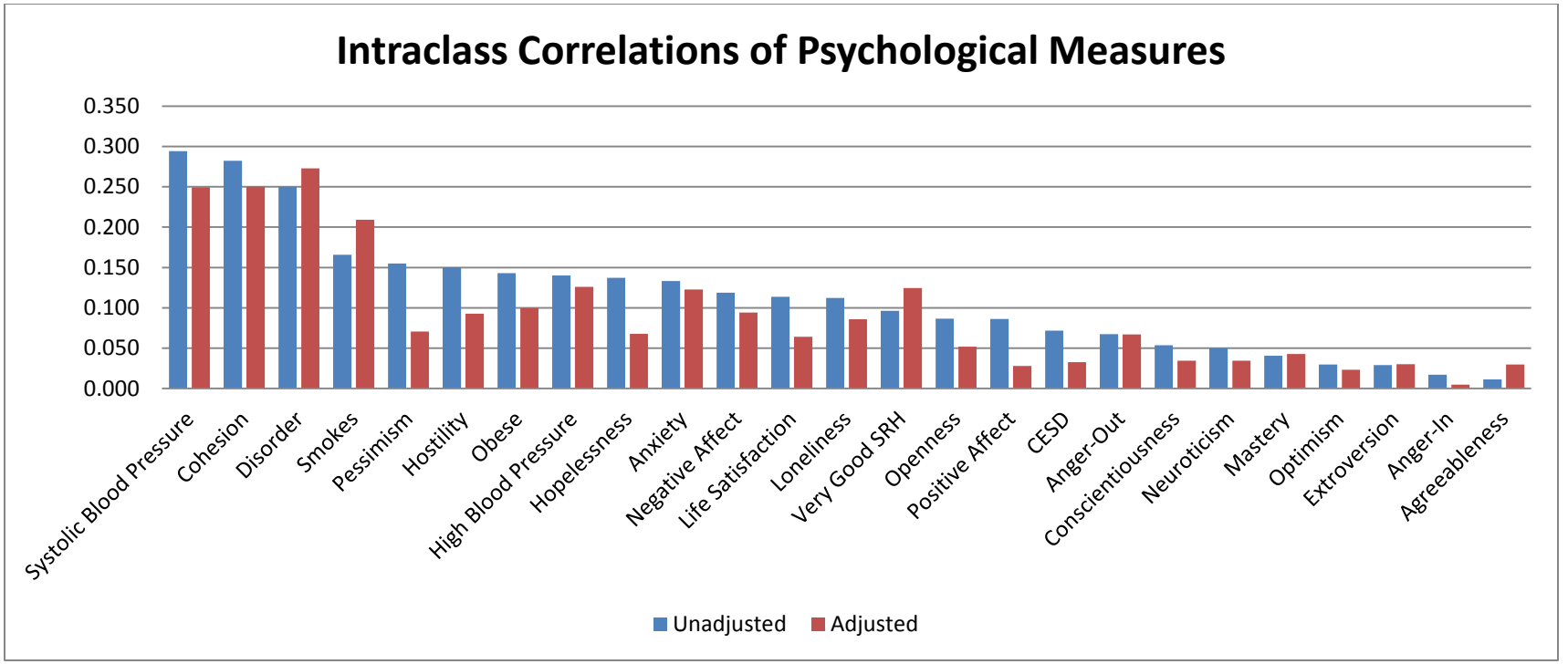


Figure 2. Geographic Clustering of Measures in HRS, with and without Adjustment for Sociodemographics



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