



Research report

The association between personality traits and body mass index varies with nativity among individuals of Mexican origin



Angelina R. Sutin^{a,*}, Darrin L. Rogers^b, Alfonso Mercado^c, Amy Weimer^c,
Cecilia Colunga Rodriguez^d, Monica Gonzalez^e, Richard W. Robins^f, Seth J. Schwartz^g,
Antonio Terracciano^h

^a Department of Behavioral Sciences and Social Medicine, Florida State University College of Medicine, 1115 W. Call Street, Tallahassee, FL 32308

^b Psychology Department, W357 Thompson Hall, State University of New York at Fredonia, Fredonia, NY 14063

^c Department of Psychology, The University of Texas-Pan American, 1201 W. University, Edinburg, TX 78539

^d Sierra Mojada 950, Colonia Independencia, C.P. 44340, Guadalajara, Jalisco, Mexico

^e Pedro de Alba S/N, Ciudad Universitaria, 66450 San Nicolás de Los Garza, N.L., Mexico

^f Department of Psychology, University of California, Davis One Shields Avenue, Davis, CA 95616

^g Department of Public Health Sciences, Leonard M. Miller School of Medicine, University of Miami, 1120 N.W. 14th Street, 10th Floor, Miami, FL 33136

^h Department of Geriatrics, Florida State University College of Medicine, 1115 W. Call Street, Tallahassee, FL 32308

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ABSTRACT

Personality traits have been associated consistently with health-related outcomes, but less is known about how aspects of the sociocultural environment modify these associations. This study uses a sample of participants of Mexican origin ($N = 1013$) to test whether exposure to the United States, indexed by nativity (Mexicans living in Mexico, foreign-born Mexican Americans, and U.S.-born Mexican Americans), moderates the association between personality traits and body mass index (BMI). Higher Conscientiousness was associated with lower BMI, regardless of nativity. In contrast, the association between Neuroticism and BMI was moderated by exposure to the U.S.: Neuroticism was associated with higher BMI among U.S.-born Mexican Americans (partial $r = .15$) but not among Mexican participants (partial $r = .00$), an effect strongest and most robust for the impulsivity facet of Neuroticism. This finding suggests that with more exposure to the United States, those who are more emotionally impulsive are at greater risk for obesity. More broadly, these findings suggest that social and psychological vulnerabilities interact to contribute to health outcomes.

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Introduction

A growing literature implicates personality in a number of important life outcomes, such as depression (Bienvenu et al., 2004), income (Sutin, Costa, Miech, & Eaton, 2009), Alzheimer's disease (Terracciano et al., 2014), and longevity (Weiss, Gale, Batty, & Deary, 2009). Less research, however, has addressed how traits interact with sociocultural factors to predict these outcomes. That is, personality might be more or less consequential depending on the social and cultural environment in which the individual functions (Jaconelli, Stephan, Canada, & Chapman, 2013). The present research addresses the association between personality and body mass index (BMI) in a sample of participants of Mexican origin and tests whether associations vary as a function of exposure to American culture in a sample of Mexican and Mexican American participants.

Within the Five Factor Model (FFM) of personality, Conscientiousness – the tendency to be organized and disciplined – has the most consistent relation with BMI: Individuals who score higher on this trait tend to be leaner and are less likely to become obese (Lahti et al., 2013; Sutin, Ferrucci, Zonderman, & Terracciano, 2011). This protective effect has been found across samples that vary in age and sex (Jokela et al., 2012) and samples from different countries (e.g., Magee & Heaven, 2011; Möttus et al., 2013). Conscientiousness may thus be protective against obesity regardless of the situation or population. The effect of Neuroticism – the tendency to experience negative emotions – on obesity is less consistent. Many studies have found Neuroticism to be associated with obesity (Magee & Heaven, 2011; Sutin et al., 2011; Terracciano et al., 2009), but not all (e.g., Möttus et al., 2013). There is also evidence that the association between Neuroticism and BMI is moderated by sex (Brummett et al., 2006; Sutin & Terracciano, 2015). Thus, in contrast to Conscientiousness, Neuroticism might have a more complex relation with BMI that is moderated by demographic and/or environmental factors.

* Corresponding author.

E-mail address: angelina.sutin@med.fsu.edu (A.R. Sutin).

There is less evidence for an association between BMI and the remaining three traits. The relation between Extraversion (the tendency to be outgoing, sociable, and active) and BMI, for example, is mixed, with some samples showing a positive relation (Sutin et al., 2011) and some showing a negative (Kakizaki et al., 2008) or no (Magee & Heaven, 2011) relation. Openness (the tendency to be creative and open-minded) tends to be unrelated to BMI (Chapman, Fiscella, Duberstein, Coletta, & Kawachi, 2009), with few exceptions (Brummett et al., 2006). Agreeableness (the tendency to be trusting, sympathetic, and helpful) is likewise associated with BMI in some samples (Magee & Heaven, 2011), but not others (Armon, Melamed, Shirom, Shapira, & Berliner, 2013). As such, a clear pattern has yet to emerge for these three traits.

Despite the growing number of studies on personality and BMI, none has specifically examined these associations in samples of Mexican origin. Mexican Americans have disproportionate rates of overweight/obesity compared to non-Hispanic white individuals. Recent estimates indicate that 80% of Mexican American adults are overweight or obese, compared to about 69% of the overall US population (Flegal, Carroll, Kit, & Ogden, 2012). The risk of obesity for Mexican Americans increases with exposure to the United States: With each generation in the US, the prevalence of obesity increases (Liu, Chu, Frongillo, & Probst, 2012). This trend is not limited to Mexican Americans but generalizes to other immigrant groups (Harris, Ferreira, & Lee, 2009). Changes in lifestyle, such as increased consumption of processed food and more limited physical activity, are thought to contribute to the increase in BMI across generations (Liu et al., 2012).

In environments such as the United States, where it is easier to engage in behaviors that are conducive to obesity (e.g., overeating and physical inactivity), personality might be more relevant. That is, when individuals have more choice, their tendencies to behave in certain ways might be more powerful predictors of outcomes related to the tendency (i.e., the effect of personality in weak versus strong situations; Snyder & Ickes, 1985). Indeed, weak versus strong experiences elicit different affective and cognitive evaluations, a process that may differ across cultures (Miller, Das, & Chakravarthy, 2011). Further, although FFM personality traits are evident in cultures around the world (McCrae & Terracciano, 2005), the development and expression of traits may vary by cultural context. For example, studies of sex differences in personality consistently reveal that personality differences between the sexes are greater in more egalitarian societies than in more traditional ones (Costa, Terracciano, & McCrae, 2001; Schmitt, Realo, Voracek, & Allik, 2008). In more economically developed countries, where there is greater opportunity for education and economic advancement, the fewer constraints on behavior may allow men and women to more freely express their personalities. In less developed countries, by contrast, constraints on behavior may restrain personality development, which contributes to fewer differences in personality between the sexes. In addition, there may be fewer constraints on the expression of personality across different situations (e.g., with friends versus with parents) in the U.S. than in other countries. For example, the cross-observer agreement in personality tends to be somewhat stronger in the U.S. than in Mexico. This pattern suggests that individuals in the U.S. behave in similar ways regardless of whom they are with, whereas individuals in Mexico may be more constrained by role expectations (Katigbak et al., 2013). As such, cultural contexts may shape the expression of personality traits across different environments. The extent to which cultural context may shape the association between personality and health indicators, such as BMI, has yet to be examined.

The purpose of this study is twofold. First, we examine the association between personality and BMI in a sample of participants of Mexican origin to test whether the same pattern of personality correlates of BMI is apparent in this population as in other popu-

lations. Based on previous research, we expect that higher Neuroticism and lower Conscientiousness will be associated with higher BMI; we do not expect the other three traits to be associated with adiposity.

Second, we examine whether the association between personality and BMI varies as a function of exposure to US culture, defined by nativity. We test whether the association between personality and BMI is similar across participants living in Mexico (Mexicans), participants born in Mexico but now living in the United States (foreign-born Mexican Americans), and participants born in the United States but whose parents or grandparents were born in Mexico (U.S.-born Mexican Americans). Given that Conscientiousness is consistently related to healthier body weight across samples from different cultures, we expect that this association will not vary by nativity. The association between Neuroticism and BMI, however, may be more dependent on other factors; we thus expect that this association may differ by nativity.

Across both of these aims, in addition to the broad domain-level associations, we also examine the association between BMI and the more specific aspects, or facets, of personality. Facets have greater predictive power for important life outcomes, perhaps because of their greater specificity (Paunonen, Haddock, Forsterling, & Keinonen, 2003). Facet-level analyses can also uncover nuances in the relation between personality and BMI. For example, the activity facet of Extraversion often shares the opposite relation with BMI than the other facets of Extraversion, obscuring this relation at the domain level (e.g., Terracciano et al., 2009). Facets can thus provide a richer understanding of the relation between personality and adiposity.

Method

Participants

A total of 1306 participants from universities in the United States and Mexico was recruited into a study on personality, health behaviors, and acculturation. Participants in the United States were from an area with the highest rate of obesity in the country (Sharpe, 2013). About 20% of these participants ($n = 293$) did not complete the personality measure, report their weight and height, or were missing other pertinent demographic information, and thus could not be included in the analyses. Participants included in the final sample were all of Mexican origin ($N = 1013$). The sample was 71% female and was, on average, 22.75 years old ($SD = 5.70$). There were no differences between the Mexican and US samples in terms of sex ($\chi^2 = .27$, *ns*), but the US sample was slightly older (Mean age = 23.31 ($SD = 5.98$) versus 21.09 ($SD = 4.27$), $p < .01$). Since participants were college students, we tested for differences in parent education to examine differences in socioeconomic status between the two samples. Although there was no difference in the percentage of fathers who had less than a high school education and the percentage of fathers who had earned an advanced degree in the Mexican and US samples, more fathers in the US sample had a high school education compared to the Mexican sample (36% versus 27%), but more fathers in the Mexican sample had a college degree than in the US sample (35% versus 22%; $\chi^2 = 15.04$, $p < .05$). There was no difference between the two samples on mother's education ($\chi^2 = 4.85$, *ns*).

Measures

Personality traits

Personality was assessed with the Revised NEO Personality Inventory (NEO-PI-R), a reliable and valid measure of personality traits that has been translated into several languages, including Spanish (Costa & McCrae, 1992). The NEO-PI-R measures the five broad

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