Body Image 14 (2015) 67–71

Contents lists available at ScienceDirect

Body Image

journal homepage: www.elsevier.com/locate/bodyimage

Brief research report

A longitudinal study of the relationships between the Big Five personality traits and body size perception

Christina Hartmann*, Michael Siegrist

Department of Health Science and Technology, ETH Zurich, Zurich, Switzerland

ARTICLE INFO

Article history:
Received 29 August 2014
Received in revised form 24 March 2015
Accepted 24 March 2015

Keywords:
Personality
Body size perception
Conscientiousness
Neuroticism
Longitudinal

ABSTRACT

The present study investigated the longitudinal development of body size perception in relation to different personality traits. A sample of Swiss adults ($N = 2905$, 47% men), randomly selected from the telephone book, completed a questionnaire on two consecutive years (2012, 2013). Body size perception was assessed with the Contour Drawing Rating Scale and personality traits were assessed with a short version of the Big Five Inventory. Longitudinal analysis of change indicated that men and women scoring higher on conscientiousness perceived themselves as thinner one year later. In contrast, women scoring higher on neuroticism perceived their body size as larger one year later. No significant effect was observed for men scoring higher on neuroticism. These results were independent of weight changes, body mass index, age, and education. Our findings suggest that personality traits contribute to body size perception among adults.

Introduction

According to the Big Five taxonomy, five traits can be used to describe personality structure at a broad level of abstraction: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (Costa, McCrae, & Dye, 1991). A growing body of research suggests a relationship between some of these personality traits and measures of perceptual and attitudinal corporeal experiences, such as body image dissatisfaction and body appreciation (e.g., Benford & Swami, 2014; Swami et al., 2013). The focus of the present study was on perceptual body image. In particular, weight-related figure evaluation (i.e., self-related body size perception) was measured in two consecutive years to examine whether the Big Five personality traits are associated with changes in perceived body size over time.

There is a small body of research on body size perception in relation to observer personality. For example, openness to experience and agreeableness were associated with the perception of a wider range of figures as physically attractive (Swami, Buchanan, Furnham, & Tovée, 2008). In addition, there have been some studies on the Big Five and broader evaluations of body image. Evidence suggests that neuroticism is connected with greater actual-ideal weight discrepancies in women (Swami, Taylor, & Carvalho, 2011; Swami et al., 2013) and drive for muscularity in men (Benford & Swami, 2014; Davis, Karvinen, & McCreary, 2005). Furthermore, neuroticism was associated with lower levels of body appreciation in both genders (Benford & Swami, 2014; Swami, Hadji-Michael, & Furnham, 2008) and poorer appearance evaluation in women (Davis, Dionne, & Shuster, 2001). These results imply that neuroticism is a risk factor for negative body image evaluation, probably because people scoring higher on neuroticism are more emotionally unstable, prone to experiencing negative affect, and have diminished evaluations of self-worth.

Conscientiousness, which describes the propensity to follow social norms and rules, to be task- and goal-directed, self-disciplined, and self-controlling, is negatively associated with a drive for thinness in women (Podar, Hannus, & Allik, 1999), though not associated with a drive for muscularity in men (Benford & Swami, 2014). Studies have also found a positive correlation between conscientiousness and body appreciation in women (Swami, Hadji-Michael, et al., 2008; Swami et al., 2013), but in a similar vein, failed to reveal conscientiousness as a significant correlate of body appreciation in men (Swami, Hadji-Michael, et al., 2008). Despite the fact that associations between conscientiousness and body image evaluation have tended to be weaker and less stable than those for neuroticism, previous results suggest a positive association between conscientiousness and body image evaluation.

* Corresponding author at: Consumer Behavior, Department of Health Science and Technology, Universitatstrasse 22, CH-8092 Zurich, Switzerland.
Tel.: +41 44 632 9747.
E-mail addresses: chartmann@ethz.ch (C. Hartmann), msiegrist@ethz.ch (M. Siegrist).

http://dx.doi.org/10.1016/j.bodyim.2015.03.011
1740-1445/

With regard to the other Big Five constructs, associations are less stable and their impact seems to be largely dependent on the outcome measured. For example, extraversion has been found to be positively correlated with body appreciation in both genders (Benford & Swami, 2014; Swami, Buchanan, et al., 2008) and lower levels of actual-ideal weight discrepancy in women (Swami et al., 2013), but studies have also failed to find an association between extraversion and other aspects of body image (Benford & Swami, 2014; Swami, Buchanan, et al., 2008).

In summary, previous research indicates that, with the exception of neuroticism, associations between the Big Five and body image are not robust across different dimensions of perceptual and attitudinal body image. In addition, many studies are based on convenience samples (e.g., college students) and cross-sectional data that only suggest co-occurrence of personality traits and body image. Longitudinal studies in this area are limited and have focused on adolescents or young adults (e.g., Quick, Eisenberg, Bucchianeri, & Neumark-Sztainer, 2013). Of course, adolescence is a critical time for body image development. However, these studies do not allow conclusions to be drawn about developmental trends in adults and the general population. Body image in general, and body size perception in particular, is not expected to be a stable phenomenon. It can vary over a person's lifetime and is influenced by a range of factors (e.g., internalisation of societal ideals, interpersonal experiences, and age-related bodily changes). Thus, preoccupation with body appearance and changes in body image evaluation are not necessarily restricted to a certain age group and can occur in middle aged and older adults as well (e.g., McLaren & Kuh, 2004). This has important implications because a person's evaluation of his or her body and body size can have an influence on their mental health (Jackson et al., 2014) and behaviour (Stice, 2002).

The present study was conducted using a population-based randomly selected adult sample, which enables greater generalisability of results than most past studies. The population-based sample permits a survey of both genders and includes participants from different socio-demographic groups, in different body weight categories, and outside clinical settings. To the best of our knowledge, this research is the first to estimate the degree to which the Big Five personality traits are associated with changes in perceived body size in a demographically diverse adult sample. Based on the literature described above, it was predicted that neuroticism would be associated with negative changes in people's perceived body size. Regarding the robustness of associations between the other Big Five and aspects of body image, current cross-sectional evidence is less clear and no concrete prediction were made regarding its impact on the longitudinal development of body size perception. In addition, as evidenced by prior work (Swami, Hadji-Michael, et al., 2008; Swami et al., 2011), the Big Five personality traits may account for a small amount of variance in body image. Moreover, changes in peoples' perceived body size within one year are not expected to be large on a population level. Thus, it is unlikely that large effects would be observed in the present longitudinal study. Despite these considerations, by conducting a longitudinal study, developmental trends could be uncovered and causal ordering of effects could be examined.

Method

Sampling

The present study examined data from the third (2012) and fourth (2013) waves of the Swiss Food Panel (2010–2014), a population-based longitudinal study conducted in Switzerland on behavioural determinants related to eating and physical activity. The Swiss Food Panel began in 2010 and participants, randomly selected from the telephone book, completed a paper-and-pencil questionnaire each consecutive year. Study participation was voluntary and participants did not receive any financial incentives. For the present study, data from persons with a body mass index (BMI) >50 kg/m^2 ($n = 7$) and extreme weight changes[1] (weight gain/loss of $\geq$30 kg) within one year ($n = 5$) were excluded, as it might be indicative of an underlying clinical condition. Additionally, women who indicated the birth of a child during the study period under consideration ($n = 72$) were excluded. Further information related to the sampling procedure, the standard data cleaning procedure, and the sample's development over the waves can be found elsewhere (Keller & Siegrist, 2015). Ethics approval was not necessary for this study.

Participants

The final sample for the present study was comprised of 2905 persons (47% males) with a mean age of 57.64 years (SD = 13.69) (range 23–94 years, in 2013). Distribution of educational level[2] was as follows: 6.6% low, 37.7% middle, and 55.2% high.

Measures

Perceived body size. Perceived body size were assessed with the Contour Drawing Rating Scale (CDRS; Thompson & Gray, 1995), which consists of nine female and male contour drawings of graduated sizes from very thin (coded 1) to very heavy (coded 9). At both time points, participants were asked to select the drawing that best reflected their current body size (perceived body size). The CDRS figures were presented in ascending order from smallest to largest.

Big Five personality traits. The 21-item short version of the Big Five Inventory (BFI-K, Rammstedt & John, 2005) was used to assess the five dimensions of personality: extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience. Self-ratings were made on a 5-point response scale (1 = *Very incorrect*, 5 = *Very correct*). Cronbach's alpha (number of items) for the total sample was as follows: extraversion $\alpha = .75$ (4), agreeableness $\alpha = .58$ (4), conscientiousness $\alpha = .51$ (4), neuroticism $\alpha = .70$ (4), openness to experience $\alpha = .68$ (5). The data from the 2013 survey were used to characterise participants' personality traits, because the Big Five scale was only included in the 2013 survey. This should not be a problem, because personality factors are considered to be a stable construct and not assumed to change significantly within one year (Watson, 2004).

Statistical Approach

In addition to correlational analysis, a longitudinal hierarchical multiple regression was performed. An analysis of change (i.e., a regressor variable approach) was conducted, which is the analysis of choice for longitudinal continuous data with two measurement points (Cohen, Cohen, West, & Aiken, 2003). The dependent variable was perceived body size at T2. In a first step, perceived body size at T1 was included in the model as independent variable. By including the T1 value, the potential influence of the initial value at T1 can be removed, so that the estimated effects of the other variables are independent of it (Cohen et al., 2003). This first step indicates how much of the variance in perceived body size at T2 is already accounted for by the value of perceived body size at T1;

[1] Weight change was calculated using self-reported body weights (kg) at T1 and T2 (difference score T2 – T1).

[2] For descriptive purposes, educational level was categorised into three categories: (low) no education, primary, and lower secondary school; (middle) vocational school; (high) higher secondary school, college, and university.