



Contents lists available at ScienceDirect

## Journal of Research in Personality

journal homepage: [www.elsevier.com/locate/jrp](http://www.elsevier.com/locate/jrp)

## Personality and the subjective experience of body mass in Australian adults

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### ARTICLE INFO

#### Article history:

Received 5 October 2015

Revised 20 April 2016

Accepted 4 May 2016

Available online xxxxx

#### Keywords:

Body weight

Body image

Body satisfaction

Body dissatisfaction

Five factor model

BMI

### ABSTRACT

This study was a conceptual replication of Sutin and Terracciano (2016). Australian adults (8296 men; 9205 women) completed self-report measures of personality, weight, height, waist circumference, perception of weight, and satisfaction with weight. Consistent with findings from North America, conscientiousness was most important for adiposity (BMI and waist circumference) and actual-perceived body weight discrepancy. Moderator effects for sex (and age) were observed but did not replicate Sutin and Terracciano (2016). Neuroticism, agreeableness and conscientiousness were important for body weight satisfaction, with stronger associations observed among women. Our findings demonstrate that personality is important for the objective and subjective experience of body weight, but further investigation of moderators is warranted. Cross-cultural prospective studies of personality and body image are recommended.

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### 1. Introduction

Obesity has become a major concern for public health. Excessive body fat has a wide range of serious complications that include an increased risk of psychiatric disorders, osteoarthritis, chronic back pain, asthma, type II diabetes, various cancers, cardiovascular disease, gallbladder disease, cardiovascular mortality, and all-cause mortality (Flegal, Kit, Orpana, & Graubard, 2013; Guh et al., 2009; Luppino et al., 2010; Reilly & Kelly, 2011). In addition to objective body fat, the subjective experience of body weight is also important for individual functioning. A negative body image is associated with greater cigarette smoking, low physical activity, impaired sexual functioning, depressive symptoms, and disordered eating behaviour (Campbell & Hausenblas, 2009; Jackson et al., 2014; Menzel et al., 2010; Woertman & van den Brink, 2012). Much is known about the social and environmental determinants of body weight perceptions (e.g., media depiction of a thin ideal), but relatively few studies have explored the potential contribution of individual difference factors such as trait personality.

A growing body of literature is providing evidence that personality is associated with excessive body fat accumulation (Armon, Melamed, Shirom, Shapira, & Berliner, 2013; Gerlach, Herpertz, &

Löber, 2015; Jokela et al., 2013; Magee & Heaven, 2011; Sutin, Ferrucci, Zonderman, & Terracciano, 2011). This body of research indicates that people with high levels of neuroticism or extraversion, or low levels of conscientiousness, are at a greater risk of accumulating body fat over time. Body fat estimates are most often assessed using BMI (body mass index) – calculated as weight (kg)/height squared (m<sup>2</sup>) – but also include other indexes such as waist circumference and skinfold measures. A less substantial body of research has explored associations between personality and the subjective experience of body weight. There is evidence that men and women higher in neuroticism are less satisfied with their bodies (Brannan & Petrie, 2008; Dalley, Buunk, & Umit, 2009; Davis, Elliott, Dionne, & Mitchell, 1991; Dionne & Davis, 2004), that women high in neuroticism invest more time in their appearance (Kvalem, von Soest, Roald, & Skolleborg, 2006), that people with high levels of extraversion or low levels of neuroticism hold a more positive body appreciation (Benford & Swami, 2014; Swami, Hadji-Michael, & Furnham, 2008), that high neuroticism is related to a greater actual-ideal body weight discrepancy (Swami et al., 2013), that high neuroticism relates to a larger perceived body size in women and high conscientiousness relates to a thinner perceived body size in both genders (Hartmann & Siegrist, 2015).

A recent study provided evidence that personality is important for both the objective and subjective experience of body weight (Sutin & Terracciano, 2016). In a large cohort of young adults from

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the United States ( $n = 15,669$ ; age range 25–34 years), conscientiousness was associated with a lower BMI and smaller waist circumference, extraversion was associated with a higher BMI and larger waist circumference for men but not women, and neuroticism was associated with a higher BMI and larger waist circumference for women but not men. The study also found that people with higher levels of neuroticism perceived themselves to be in a heavier weight category than they actually were, whereas the association between conscientiousness and actual-perceived body weight discrepancy was moderated by gender – men but not women with higher levels of conscientiousness perceived themselves to be in a lower weight category than they actually were. Taken together, the findings demonstrated that personality is not only important for adiposity, but also for how people subjectively perceive their body.

The current study is a conceptual replication of [Sutin and Terracciano \(2016\)](#) in a culturally distinct cohort (Australian adults). It is important to explore whether findings are transferrable to alternative populations and cultures where body image concerns can differ dramatically ([Holmqvist & Frisén, 2010](#); [Rodgers, Chabrol, & Paxton, 2011](#)). For instance, negative body perceptions appear more common among US adults than among Australian adults ([Holmqvist & Frisén, 2010](#)). As it stands, whether findings are transferrable to adult populations outside of North America remains unknown. The purpose of this study was to replicate the findings of [Sutin and Terracciano \(2016\)](#) in a sample of Australian adults. We also sample a greater age range than that targeted in the original study. Body image is important throughout the adult life span including old age ([Tiggemann, 2004](#)), and findings of the original work might be applicable to adults outside of the age range explored. To ensure the best possible replication, we explore associations for adults of all ages and also a subsample that matches the age range explored by [Sutin and Terracciano \(2016\)](#). The use of a wider age range also offers the possibility to explore age as a potential moderator of associations between personality and body weight estimates.

An additional aim of the current study was to explore whether personality is important for body weight satisfaction. In their discussion of study limitations, [Sutin and Terracciano \(2016\)](#) noted that satisfaction with body weight was not assessed in their sample and recommended subsequent research explore further whether personality is important for body weight satisfaction. Studies exploring general body satisfaction (rather than weight satisfaction) have found that high neuroticism is related to greater dissatisfaction ([Brannan & Petrie, 2008](#); [Dalley et al., 2009](#); [Davis et al., 1991](#); [Dionne & Davis, 2004](#)). Exploration of the big five personality dimensions and body weight satisfaction will provide valuable additional information on the contribution of personality to the subjective experience of body weight.

The present study was designed to be as close to a direct replication of [Sutin and Terracciano \(2016\)](#) as possible, using a culturally distinct cohort, with additional moderator analyses for age, and additional analyses of personality and body weight satisfaction. Such a replication will provide important information regarding the generalisability of findings beyond the initial study population. The methods were almost identical but no objective measure of BMI was used in the current study meaning we were unable to replicate analyses for misreported weight and height. Considering the research demonstrating negative consequences of overweight and obesity ([Flegal et al., 2013](#); [Guh et al., 2009](#)) and the negative consequences of body dissatisfaction ([Jackson et al., 2014](#); [Menzel et al., 2010](#)), the findings of the current study could have implications for health care professionals targeting the objective and subjective experience of body weight. For example, using personality tests to help identify those at greater risk of maladaptive body perceptions (e.g., underweight and a perception of

being overweight; obese and satisfied with body weight), that would benefit greatest from participation in body weight focused interventions.

## 2. Method

### 2.1. Sample

The Household, Income and Labour Dynamics in Australia (HILDA) project is a household-based social and economic longitudinal survey that targets family and household formation, income and work-related processes. The HILDA survey represents a large national sample of Australian households occupying private dwellings, with questionnaires administered to every member of the household aged over 15 years. Data collected in HILDA is close to being nationally-representative when compared to population estimates (see [Watson & Wooden, 2012](#), for details on sampling). This study used data collected in 2014 (wave 13). In total, 17,501 participants (9205 women; 8296 men) with an age range 15–101 years ( $M = 44.41 \pm 18.96$  years) were included in the study. Because this is a replication study, and the original study targeted US adults aged 25–34 ([Sutin & Terracciano, 2016](#)), we analysed data for the full sample and also a subsample aged 25–34. The subsample included 3083 participants (1598 women; 1485 men;  $M_{\text{age}} = 29.23 \pm 2.85$  years).

### 2.2. Measures

#### 2.2.1. Personality

Personality was assessed using 28 adjectives from the mini-marker personality scale ([Saucier, 1994](#)). The adjectives correspond to five personality dimensions: neuroticism (6 items; e.g., “envious”), extraversion (6 items; e.g., “talkative”), openness (6 items; e.g., “creative”), agreeableness (4 items; e.g., “cooperative”), and conscientiousness (6 items; e.g., “systematic”). Items were scored from 1 (*does not describe me at all*) to 7 (*describes me very well*). This measure has demonstrated evidence of internal consistency and test-retest reliability in previous work on the HILDA sample ([Cobb-Clark & Schurer, 2012](#); [Losoncz, 2009](#)). In the full sample, reliability coefficients (Cronbach’s alpha) were 0.80 (neuroticism), 0.75 (extraversion), 0.74 (openness), 0.78 (agreeableness), and 0.78 (conscientiousness). In the subsample, reliability coefficients were 0.78 (neuroticism), 0.77 (extraversion), 0.74 (openness), 0.77 (agreeableness), and 0.80 (conscientiousness).

#### 2.2.2. BMI

A self-report assessment of height and weight is used in HILDA. Participants responded to the questions: “how tall are you without shoes?” (with responses provided in cm or feet/inches) and “what is your current weight?” (with responses provided in kg or stones/pounds). No objective measurement of height and weight were taken. [Sutin and Terracciano \(2016\)](#) use both objective and self-report assessments in their investigation, meaning we are unable to replicate their analyses of objective BMI measures. Subjective assessments of weight and BMI tend to be underestimated when compared to objective measures ([Gorber, Tremblay, Moher, & Gorber, 2007](#)).

#### 2.2.3. Waist circumference

Participants were provided with a tape measure and asked to provide their waist measurement in centimetres. Participants were given the following instructions: “Use the tape measure provided to measure yourself around your waist at the level of your belly button. The measure is best taken against bare skin or light clothing. Do not suck in your stomach.”

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