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Review

Does personality affect dietary intake?

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ABSTRACT

The purpose of this review is to evaluate the evidence for an association between the Big Five dimensions of personality, dietary intake, and compliance to dietary recommendations. Poor diet is a known risk factor for overweight and obesity and associated chronic lifestyle diseases and it has been proposed that personality may be linked to dietary choices. Findings from cross-sectional surveys from different countries and cultures show a positive association between Openness and consumption of fruits and vegetables and between Conscientiousness and healthy eating. Although no evidence has been found that personality dimensions are associated with adherence to dietary recommendations over time, Conscientiousness is associated with a number of prosocial and health-promoting behaviors that include avoiding alcohol-related harm, binge-drinking, and smoking, and adherence to medication regimens. With emerging evidence of an association between higher Conscientiousness and lower obesity risk, the hypothesis that higher Conscientiousness may predict adoption of healthy dietary and other lifestyle recommendations appears to be supported.

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Introduction

Poor diet, one that is low in consumption of fruit and vegetables, is a risk factor for overweight and obesity and chronic lifestyle diseases including hypertension, type 2 diabetes, coronary heart disease, stroke, and some cancers [1]. It is also well established that the overconsumption of energy-dense, high-sugar, and high-fat foods is linked to the development of obesity [2], which is associated with comorbidities such as hypertension [3], type 2 diabetes [4] and cardiovascular disease (CVD) [5]. Conversely, it has been shown that consumption of fruit and vegetables, whole grains, nuts, and low-fat dairy products may be protective against obesity and these chronic diseases [3–5].

Many factors influence dietary intake [6]. Models of environmental and sociocultural influences show that socioeconomic area and social support have been associated with dietary choices [7]. Those living in wealthier socioeconomic areas with higher household incomes and more food choices and who are married or have more social support consume more fruit and vegetables, whereas those who are from low-income households or who watch more television consume fewer fruits and vegetables [7,8]. Knowledge about food may play a role [9]. It has been

suggested that factual knowledge about foods such as which are healthy, or low fat or high fiber is not enough to ensure their consumption, but that “how-to” or procedural knowledge about where to get them, how to choose them, and how to cook them may be more important [10]. Underlying these factors, models of biological predispositions of eating behaviors have shown that genetically heritable factors influence taste and satiety [11]. It also has been shown that personality, which is thought to be largely inherited [12], may be associated with food preferences and that certain personality types may be more prone to choose healthier food alternatives. [13]. Such associations have been found to occur in children ages 6 to 12, although mediated by relationships with parents [14], and as might be expected if personality predispositions are inherited. A large meta-analysis with 78 931 men and women completed in 2012, found an inverse dose–response relationship between levels of conscientiousness and obesity, such that those with higher levels of conscientiousness had lower risk for obesity [15]. This finding suggests a probable link between personality and dietary intake (and other healthy lifestyle attributes including physical activity) over time such that those who are more conscientious may be more likely to consume a healthy diet and maintain a healthy weight, and provides further impetus to the need for a better understanding of this relationship.

In this review we address the question of whether personality characteristics are associated with healthy dietary choices, such as the consumption of more fruit and vegetables, or compliance

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Table 1
Personality traits associated with the five-factor model

Factors	Personality traits of high scorers	Personality traits of low scorers
Neuroticism	Highly strung, anxious and irritable, envious, moody, and emotional	Relaxed and imperturbable, unemotional, and undemanding
Extraversion	Talkative, assertive and energetic, bold, daring, and unrestrained	Bashful, withdrawn and non-talkative, reserved, and unadventurous
Conscientiousness	Practical, thorough and neat, efficient, systematic, and careful	Unorganized, careless and sloppy, inconsistent, and undependable
Agreeableness	Kind, sympathetic and trustful, cooperative, and considerate	Cold, demanding and harsh, unsympathetic, selfish, and rude
Openness	Imaginative, artistic and intellectual, philosophical, complex, and bright	Simple, shallow and uncreative, unimaginative, and unsophisticated

Adapted from [19]

to dietary recommendations. First, we review personality, what it is and how it is measured. Second, we assess the effect of personality dimensions on food choice from evidence presented in cross-sectional studies. Third, we examine the evidence from cross-sectional and longitudinal studies for associations between personality and compliance and whether these may have a bearing on adherence to dietary recommendations. Finally we explore the probable genetically based multifactorial pathway for the association between personality and dietary intake.

Method of article selection

Articles were searched for this narrative review in the following EBSCOhost databases: Academic Search Complete, Ageline, CINAHL, Global Health, Health Source: Nursing/Academic Edition, Medline, PsychARTICLES, psychEXTRA, Psychology and Behavioural Sciences Collection, psychINFO, SocINDEX with full text and SPORTDiscus with full text. For the first section on personality and dietary intake the following search terms were used: *Agreeableness, Big Five, Big 5, five factor model, FFM, Openness, Conscientiousness, Extraversion, Neuroticism, diet*, dietary intake, food intake, fruit*, vegetable**, and for the second section on personality and compliance the keywords: *compliance, adherence, health and health* behavior* were added. For inclusion, articles had to be original research and published in peer-reviewed journals in English, and, as a primary end point in the first section, had to investigate the association between the Big Five personality dimensions and dietary intake but excluding eating disorders, and in the second section, between the Big Five personality dimensions and health-related compliance behavior. This review focused on the association between personality and dietary intake in the general population and not in relation to disordered eating or its comorbidities. The search was conducted first in May 2012 and was repeated in January 2013 and again in May 2013. There was no specific time constraint on when articles were published; however, most work in this area has been published since 2000.

Personality

Personality is the unique constellation of behavioral traits in every individual [16]. These are the distinguishable and enduring ways in which one individual varies from another, and which are consistent in different situations [16]. For example, someone described as being conscientious and reliable would be expected to exhibit this characteristic in all situations, in school, at work, in the family and when socializing, and across time. One of the best-known measures of personality is the five-factor model, or the Big Five dimensions of Neuroticism, Extraversion, Openness to experience, Conscientiousness, and Agreeableness [17]. Although there are thousands of words in the English language that describe personality, prominent personality theorists have elicited structure in these using factor analysis to reduce them to five groups of behavioral traits or facets called the Big Five personality dimensions [18].

Among the more popular personality measurement scales have been Goldberg's 100-item inventory that includes 20 traits for each of the five dimensions [19], and Costa and McCrae's 240-item NEO personality inventory—revised (NEO-PI-R) that includes eight items in each of six trait scales within the Big Five domains [20]. Some of the trait characteristics of high and low scorers on each of these dimensions are shown in Table 1.

There are sex differences in personality. Whereas women tend to score higher in Conscientiousness, Neuroticism, and Agreeableness, men score higher in Extraversion and Openness [21]. These sex differences may prove important when investigating the influence of the Big Five personality factors in adherence to dietary recommendations and suggest evaluating men and women separately, or at least controlling for sex in the analyses.

The Big Five personality model is commonly used in dietary analyses and is the basis of this review, ensuring comparability in personality measures across the studies examined. There are older personality inventories still in use, such as Eysenck's EPQ and Cattell's 16PF, but it has been estimated that by the mid-2000s about eight of nine publications measuring personality traits used Big Five personality inventories [22].

Personality and dietary intake

In the following sections, evidence is reviewed from cross-sectional studies on the relationship between personality and dietary intake. It should be noted that we could not find randomized controlled trials examining the Big Five personality dimensions in association with dietary intake or other health-related regimes. The majority of the evidence relates to adults and because studies in children and adolescents have shown that personality may play a lesser role compared with other factors such as parental influences [14,23], this review focuses on adult studies. The evidence from nine cross-sectional studies examining the relationship between the Big Five personality dimensions and dietary intake are summarized in Table 2. Overall, Openness and Conscientiousness are associated with healthy dietary practices across a range of populations.

The association between dietary intake and Openness

This section focuses on evidence presented in Table 2 relating to Openness and dietary intake. In a study of 1691 adult Estonians, those who scored higher on Openness were found to be more likely to consume a "health-aware" diet that included fresh fruit and vegetables, cereals, dairy, and fish, and less likely to consume a "traditional" diet of meat, potatoes, and bread [24]. In a similar study of 1091 elderly Scottish people, those who scored higher in Openness were more likely to have a Mediterranean-style diet with a higher intake of vegetables, fish, poultry, pasta, rice and water, tomato-based sauces, oil, vinegar, and beans [25]. They were less likely to have a "convenience" diet of tinned vegetables, meat pies, sausage rolls, and mashed potatoes or "sweet foods" including puddings, cakes, biscuits, and chocolate [25]. The authors of these two studies hypothesized that the consumption of foods in the Mediterranean and health-aware diets and the avoidance of foods in the convenience and sweet foods diets by people higher in Openness might result

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