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Personality and Overweight in 6 – 12 Year-Old Children

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Abstract

We investigated the association between children's personality traits and weight status in a sample of 1533 6–12 year olds. Mothers rated their child's personality using the Norwegian Hierarchical Personality Inventory for Children, and reported on their child's height and weight. Relative to their normal weight peers, overweight children were rated lower on energy, optimism, compliance, concentration, perseverance, and self-confidence, and higher on egocentricity, irritability, and anxiety. These findings suggest possible mechanisms to investigate in future research relating personality to childhood obesity.

Keywords

weight; obesity; personality traits; children; behavioral mechanisms

Worldwide, childhood obesity has increased dramatically since 1990 (1). In Norway, the prevalence of overweight including obesity is 17% among primary school age children (6–12 years) and 13.8% overall for children aged 2–19 years (2). Whereas biological and environmental causes of childhood obesity have been investigated extensively, comparatively few studies have examined children's psychological characteristics. Previous studies have shown that obese children have lower impulse control compared to normal weight children (3). Comparisons that represent the full range of personality traits may give additional insights into possible psychological mechanisms underlying the relation between children's personality and weight. The present study was designed to add to research on childhood personality and obesity by relating a comprehensive personality assessment to weight status in a community sample of children. However, the direction of causality between personality traits and obesity could not be inferred from this correlational study.

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The study was approved by the Ethical Committee in South-East Norway. Questionnaires were mailed to addresses identified by Statistics Norway to represent a random sample of Norwegian households with a 6–12 year old child ($N = 4000$). In total, 1565 (39%) questionnaires were returned. We eliminated 32 questionnaires lacking information on the child's gender, age, height, or weight ($n = 22$) and 10 with information on the children's height and weight that resulted in implausibly low values (z -scores for height < -4.0 and z -scores for weight < -5.0). Thus, the final sample consisted of 1533 children. The children's age span was 6.2 to 12.9 years ($M = 8.9$; $SD = 1.7$), and there were 796 boys and 737 girls. Most families were intact, with 86.6 % of the mothers married or cohabiting with their partner. Half of the mothers (50.6%) had education or more, which is somewhat higher than that for 30 to 49 year old women in Norway (44.4%; calculated from <http://www.ssb.no/a/kortnavn/utniv/tab-2012-06-19-03.html>).

Mothers described their child's personality using the Norwegian translation of the Hierarchical Personality Inventory for Children (NHIPIC) (4, 5, 6). Like the original HiPIC, the NHIPIC assesses the five broad domains (Extraversion, Benevolence, Conscientiousness, Neuroticism, and Imagination) and the 18 facets which they subsume. There are 144 items, 8 for each of the 18 facets, which are: energy, expressiveness, optimism, and shyness (Extraversion); altruism, dominance, egocentrism, compliance, and irritability (Benevolence); concentration, perseverance, order and achievement striving (Conscientiousness); anxiety and self-confidence (Neuroticism); and creativity, intellect and curiosity (Imagination). This measure has been widely used for the assessment of the Big Five in children by their parents (7) and has been translated into several languages. Each item refers to a specific overt behavior and is formulated in the third-person singular without negations (e.g., "Is always on the go" is an item of the energy facet of Extraversion). Items are rated on a 5-point Likert scale ranging from 1 = *uncharacteristic* to 5 = *very characteristic*. The Cronbach's alphas (internal reliabilities) for the NHIPIC facets (0.66 – 0.87) and the five domains (0.88 – 0.93) are excellent (4). The facets measuring the same factor are typically moderately to highly positively correlated with each other (range of $r = 0.09$ to $r = 0.64$ in the current study). De Fruyt and Vollaard (8) demonstrated good convergent and discriminant validity of the broad factors and the facets between ratings by mothers and fathers. The predictive validity of the HiPIC has been demonstrated in studies relating HiPIC factors to children's adjustment problems, including the autism spectrum (9).

Mothers' reports of their child's height and weight were converted into Body Mass Index (BMI; kg/meters^2). The categories normal/underweight ($N=1317$) versus overweight/obese ($N=216$) were defined using international criteria (10). All analyses were carried out using SPSS v. 20 (11). Personality differences with regard to weight status were analysed using a multivariate general linear model testing the joint distribution of personality scores, controlling for maternal education and civil status. Variances were homogenous ($F = 0.957$; $p = 0.616$), and the joint distribution of personality traits explained 4.8 % of the variance of weight.

Trait scores were standardized with respect to the normal weight group. The personality profile of the overweight group in z -scores relative to the normal weight group is shown in Figure 1. Significant differences ($p < 0.001$) between groups were observed on 9 traits

(overall Wilks' Lambda = 4.490; df = 18.000; $p = 0.001$). The direction of causality cannot be inferred from this cross-sectional study, so it is only possible to offer speculations regarding potential obesogenic mechanisms suggested by these personality differences.

Overweight children were more egocentric, less compliant, and more irritable (Benevolence). Children with these characteristics may become overweight because they evoke placatory behaviors in adults including feeding obesogenic, pleasure-giving foods high in fat and sugar (12). Overweight children had less concentration and perseverance (Conscientiousness), indicative of poor executive functioning, and also less energy (Extraversion). These traits may lead to less physical activity as a result of more TV watching or playing computer-games, and less self-determined, active behavior, such as playing with others or pursuing a hobby (13, 14, 15). Overweight children could become more anxious and less self-confident (Neuroticism) as a result of bullying and stigmatization by their peers (16, 17). Alternatively, these neurotic facets, as well as less optimism (Extraversion) may lead to obesity through depressive mechanisms, including greater appetite, lower activity and dysregulated metabolism. Mechanisms to explain the association between personality traits and obesity may also include third variables, such as genetic factors that give rise to personality traits, obesogenic behaviors, and obesity (18, 19). It is likely that the association between childhood personality and obesity is explained by a complex combination of third variables and reciprocal processes in which traits influence obesity and obesity influences traits.

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Figure I.

The personality profile of the overweight group relative to the normal weight group across all the traits showing the deviations of the overweight group from the normal weight group in standard scores (significant deviations indicated by an asterisk). E = Extraversion, B = Benevolence, C = Conscientiousness, N = Neuroticism, I = Imagination.