PSYCHIATRY AND CLINICAL PSYCHOPHARMACOLOGY
2019, VOL. 29, NO. 4, 618–623
https://doi.org/10.1080/24750573.2018.1510676

Taylor & Francis
Taylor & Francis Group

OPEN ACCESS Check for updates

Personality and subjective psychiatric symptoms of parents of obese youth: a controlled study*

Gonca Özyurt [a], Gönül Çatlı [b], Gülten Cingöz [c], Bumin Nuri Dündar [b], Aynur Akay Pekcanlar [d] and Ayhan Abacı [e]

[a]Child and Adolescent Psychiatry Department, Izmir Katip Celebi University, İzmir, Turkey; [b]Department of Pediatric Endocrinology, Izmir Katip Celebi University, İzmir, Turkey; [c]Department of Pediatrics, İzmir Tepecik Research and Training Hospital, Izmir, Turkey; [d]Child and Adolescent Psychiatry Department, Dokuz Eylül University, İzmir, Turkey; [e]Department of Pediatric Endocrinology, Dokuz Eylül University, İzmir, Turkey

ABSTRACT

OBJECTIVE: In this study, it was aimed to evaluate the relationship between parental personality characteristics and psychiatric symptoms with childhood obesity.

METHODS: This cross-sectional study was conducted in third-level clinical care institution. Thirty obese adolescents and 29 age- and sex-matched healthy controls were included in the study. Both mothers and fathers were accepted to participate in the study in the obese and control group. The Temperament and Character Inventory (TCI) was used to determine the personality features of the parents, and the Brief Symptom Inventory (BSI) was used to evaluate their psychiatric symptoms.

RESULTS: According to the TCI scores, fathers of the obese group had lower scores in self-directedness and persistence subscales than the controls' fathers, and mothers of the obese group had higher scores in the harm avoidance subscale and lower scores in the cooperativeness subscale than mothers of the controls. In the BSI scores, mothers of the obese group had higher scores in anxiety and somatization subscales than mothers of the controls; however, there were no differences in paternal subscales between the parents of the obese and control groups.

CONCLUSIONS: Parental personality profiles and psychiatric symptoms may affect parenting and family functions. Thus, they may contribute to susceptibility to childhood obesity, and may be an additional area to consider when addressing the psychological environment of adolescents with obesity.

ARTICLE HISTORY
Received 15 May 2018
Accepted 7 August 2018

KEYWORDS
Adolescent psychiatry; character; paediatric obesity; temperament

Introduction

Childhood obesity is one of the most serious public health problems of this century, and its prevalence has increased in recent years [1,2]. The prevalence of obesity has been found as 15.5% in adolescents aged 12–19 years [3]. Childhood obesity is a complex and multifactorial condition. Parental factors (e.g. maternal depression, anxiety) and the parent–child relationship have recently been found to be related to obesity [5,6]. Parents usually play important roles in shaping the feeding habits of children [7]. Additionally, parental attitudes in food consumption also make a contribution to children's eating behaviour and weight [8]. In a recent a systematic review, it was shown that mothers who have their own eating psychopathologies and use behaviour control in child care choose restrictive strategies for feeding [9]. The restrictive strategies have been found as related to overeating and increased body mass index (BMI) [8]. In a study of a Turkish sample, maternal affective involvement and behaviour control were more inappropriate in the obese group [5].

Personality trait, which can be expressed as characteristic styles of personal emotions, thoughts and behaviours, may play an important role in parental attitudes and feeding strategies. In a recent study, mothers of children with obesity scored lower in personality trait of conscientiousness, which means poorer organization and discipline [10]. In addition, previous studies have shown that dietary intake can be affected by heritable personality traits and may lead to a susceptibility to obesity [11]. The Temperament and Character Inventory (TCI) was developed to evaluate dimensions of both temperament and character [12]. Temperament is heritable, formed in early life, and important for habits. The four dimensions of temperament are novelty seeking, harm avoidance, reward dependence, and persistence. The other part is the cognitive core

CONTACT Gonca Özyurt goncaenginozyurt@gmail.com Child Psychiatry Department, Izmir Katip Celebi Universitesi, Balatçık Mahallesi Havaalanı Şosesi No: 33/2 Balatçık Çiğli İZMİR, Izmir 35620, Turkey

*The work was not presented in any congresses. The work was developed in Tepecik Research and Training Hospital.

© 2018 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group
This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

of personality. The three dimensions of character are self-directedness, cooperativeness, and self-transcendence [12]. The TCI has been used in obesity and eating disorders in recent years to reveal the relationship between personality profiles and adulthood obesity [11] or eating disorders [13]. Fassino et al. compared the TCI scores of patients with obesity and healthy controls and found that obese group had higher scores in novelty seeking and harm avoidance, and lower scores for cooperativeness and self-directedness than healthy controls [13]. In a longitudinal study, it was found that women with obesity had higher harm avoidance and lower persistence, self-directedness, and cooperativeness than controls [14]. Personality has been found related to obesity in adult studies and maternal personality traits are also associated with childhood obesity. Parental personality profiles may affect parental attitudes and may also shape the feeding strategies that parents use in their children. The aim of the present study was to evaluate psychiatric symptoms and temperament character properties in parents of adolescents with and without obesity.

Method

The study was planned as a single-centred, multidisciplinary, cross-sectional, case-control study.

Participants

Eligible parents of adolescents aged between 12 and 18 years who had the capacity to complete self-administered questionnaires were included in the study. Parents whose educational status was less than primary school graduation and who were not native Turkish speakers were excluded. All parents were asked to complete the TCI and the Brief Symptom Inventory (BSI).

Height was measured using a Harpenden stadiometer with a sensitivity of 0.1 cm and weight was measured using a Seca scales with a sensitivity of 0.1 kg. The weight of each subject was measured with all clothing removed except the undergarments. The adolescents' BMIs were calculated as weight in kilograms divided by the square of height in metres. Obese adolescents with a BMI greater than the 95th percentile according to the standards of the Centers for Disease Control and Prevention (CDC-2000) and healthy adolescents of similar age and sex distribution with a BMI between the 5th and 85th percentile were consecutively enrolled in the study. For the calculation of BMI-SDS, data from the CDC were used [15].

Age- and sex-matched healthy adolescents who presented to Izmir Tepecik Research and Training Hospital paediatric outpatient clinics with minor physical symptoms (e.g. common cold, rhinitis) as chief complaints with no chronic medical conditions and no psychiatric disorders and agreed to participate in the study comprised the control group. The psychiatric conditions and the presence of binge eating disorder (BED) among the adolescents of the obese and healthy control groups were assessed using the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5) [16]. The diagnosis of BED was approved by child psychiatrists according to DSM-5 and adolescents with any other diagnoses were excluded from the study. Ethics committee approval for the study was obtained from İzmir Kâtip Çelebi University Clinical Trials Ethics Committee. The study was endorsed by İzmir Katip Çelebi University Ethics Committee (Approval number: 0169, Date: 8 September 2017). The verbal and written informed consents of the parents and their children who participated in the study were received. The flow of the study is shown in Figure 1.

Procedure

All participants were administered the Turkish versions of the TCI and BSI. All respondents completed paper-and-pencil versions of the questionnaires in a fixed order (a sociodemographic checklist, TCI, BSI).

Sociodemographic Data Form: This form was prepared in order to collect information about the sociodemographic characteristics of the children and parents. There were questions examining the child's age, sex, and parents' age, educational status, marital status, and occupation. This form was completed by a physician.

Temperament and Character Inventory: The TCI is a self-report scale that is used to evaluate personality profiles of individuals in accordance with the Cloninger Biosocial Model [12]. As it was mentioned above, seven dimensions were present in TCI. The reliability and validity study of the TCI was performed by Köse et al. [17].

Brief Symptom Inventory: The BSI is a self-report inventory that assesses the psychiatric symptoms of individuals with medical and psychiatric conditions as well as healthy individuals [18]. The symptom dimensions consist of depression, anxiety, somatization, and hostility. The Turkish language version of the BSI was translated by Şahin and Durak in 1994 [19].

Statistical analysis

The Statistical Package for the Social Sciences (SPSS 18.0) program was used for statistical analysis of the data obtained in the study. The sociodemographic and clinical categorical variables of the case and control groups were evaluated using number and percentage values. The chi-square test was used for the comparison of classified categorical variables. The distribution of data was evaluated using the Kolmogorov–Smirnov test. The Mann–Whitney *U* test was used to compare

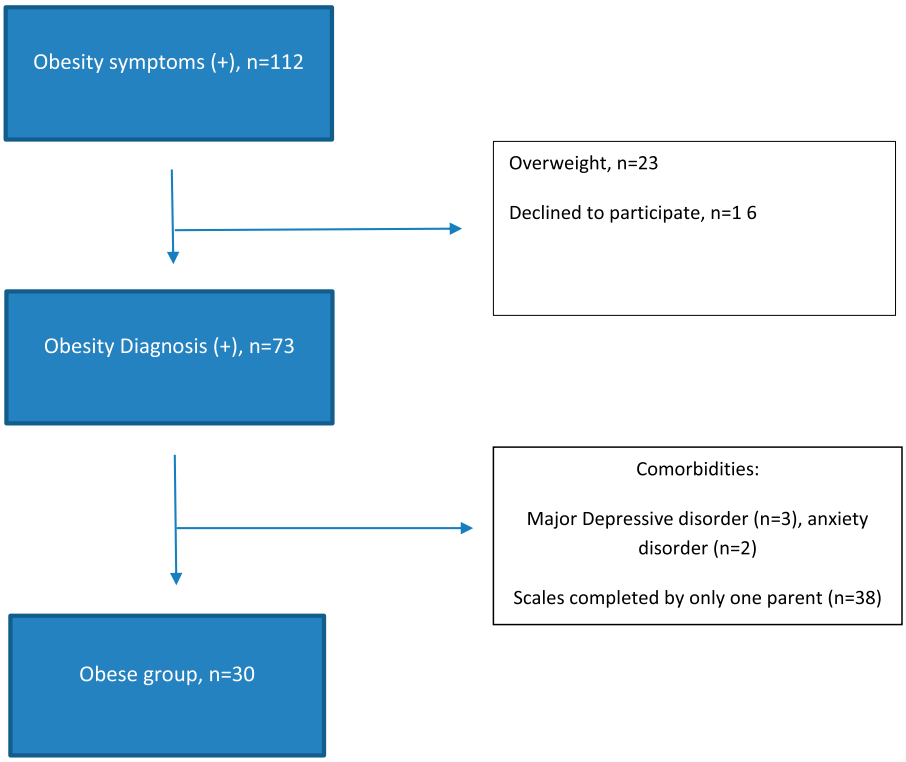


Figure 1. Study flow chart.

the groups because the distribution of data was not compatible with normal distribution. Spearman's correlation analysis was used to evaluate correlations. *p*-values <0.05 were accepted as statistically significant.

Results

Thirty obese adolescents and 29 healthy adolescents were included in the study. The obese group included 18 girls and 12 boys and the healthy controls comprised 18 girls and 11 boys. The median age of the obese group and controls group were (Q1–Q3) 14.85 (range: 13.47–16.18) years and 14 (range: 13.5–15) years, respectively. The sociodemographics of the adolescents and their parents are shown in Table 1. The data of both parents were available for 30 adolescents in the obese group and 29 adolescents in the healthy group.

Eighteen adolescents in the obese group were diagnosed as having BED. Seventeen of the obese adolescents' BMIs were between the 97th and 99th percentile, and 13 of obese adolescents' BMIs were above the 99th percentile. The median BMI of the obese group was 32.15 (Q1–Q3 = 29.07–36.42) kg/m^2. The median BMI of obese adolescents with and without BED was 31.6 (Q1–Q3 = 29.0–35.52) kg/m^2 and 33.25 (Q1–Q3 = 29.12–39) kg/m^2, respectively. There was no statistically significant difference in mean BMIs between obese adolescents with and without BED ($p = 0.611$). The median BMI of the healthy adolescents was 21.08 (Q1–Q3 = 20.13–22.26) kg/m^2.

The temperament and characteristics of the parents were evaluated using the TCI. The fathers of the obese group had lower scores in self-directedness ($p < 0.001$, effect size = −0.568, Cohen's $d = -1.371$) and persistence ($p < 0.001$, effect size = −0.664, Cohen's $d = -1.779$) than fathers of the controls. The mothers of the obese group had higher scores in harm avoidance ($p = 0.023$, effect size = 0.371, Cohen's $d = 0.799$) and lower scores in cooperativeness ($p < 0.001$, effect size = −0.609, Cohen's $d = -1.535$) than mothers of the controls. There were no statistically significant differences in the other subscales of the TCI. The psychiatric symptoms of the parents were evaluated using the BSI and there were no differences in fathers' psychiatric symptoms, whereas mothers of the obese group had higher scores in subscales of anxiety ($p = 0.002$, effect size = 0.472, Cohen's $d = 1.072$) and somatization ($p < 0.001$, effect size = 0.546, Cohen's $d = 1.306$).

Table 2 shows the details of the maternal psychiatric symptoms according to the BSI and temperament character features according to the TCI. Table 3 shows the details of paternal psychiatric symptoms and temperament character features.

Spearman's correlation analysis was used to find possible correlations between maternal and paternal BSI and TCI subscales. A positive correlation was found between maternal cooperativeness and paternal persistence ($p = 0.002$, $r = 0.403$) and maternal cooperativeness and paternal self-directedness ($p = 0.001$, $r = 0.416$). A negative correlation was found between maternal somatization symptoms and paternal

Table 1. Sociodemographic features of obese and control group.

	Obese (*n*: 30) Median (Q1–Q3) *n* (%)	Control (*n*: 29) Median (Q1–Q3) *n* (%)	*p*	z/x^2
Age[a]	14.85 (13.47–16.18)	14 (13.5–15)	0.365	−0.907
Sex[b]				
Female	18 (60%)	18	0.871	0.027
Male	12 (40%)	11		
Maternal age[a]	42 (39–44)	42 (39–44)	0.970	−0.038
Paternal age[a]	42 (39.75–44.25)	42 (39.5–44.5)	0.920	−0.100
Maternal BMI[a]	29 (21.69–33.45)	22.5 (21.3–28.71	0.025	−2.240
Paternal BMI[a]	29.5 (22.1–33.37)	23.83 (21.83–28.85)	0.007	−2.692
Maternal education[b]				
<8 years	12 (40%)	10 (34%)	0.661	0.192
>8 years	18 (60%)	19 (66%)		
Maternal working status[b]				
Housewife	20 (67%)	17 (59%)	0.302	1.067
Working	10 (33%)	12 (41%)		
Paternal education[b]				
<8 years	13 (43%)	12 (41%)	0.712	0.136
>8 years	17 (57%)	17 (59%)		
Paternal working status[b]				
Working	29 (97%)	29 (100%)	0.321	0.983
Non-working	1 (3%)			

Note: BMI: body mass index.
[a]Evaluated by Mann–Whitney *U* test.
[b]Evaluated by chi-square test.

persistence ($p = 0.04$, $r = -0.268$), and paternal self-directedness and maternal somatization ($p = 0.01$, $r = -0.334$). Maternal BMI was not correlated with any subscale of the TCI or BSI; similarly, paternal BMI was not correlated with any subscale of the TCI or BSI.

Sex differences of the obese group in the BSI and TCI subscales of mothers were evaluated using the Mann–Whitney *U* test; we found no statistically significant differences in any subscales of TCI or BSI. No statistically significant difference was found in paternal BSI and TCI subscales between the girls and boys.

When we compared the BSI and TCI subscales of the mothers of the obese group with and without BED, we found no statistically significant difference in any subscales of TCI or BSI. Similar to the mothers, we found no statistically significant difference in paternal BSI and TCI subscales according to the presence or absence of BED in the obese group.

Discussion

This study represents the first to use the TCI to evaluate personality characteristics in both parents of obese adolescents. The major findings of the present study are that (1) mothers of obese adolescents have higher harm avoidance and lower cooperativeness, (2) fathers of obese adolescents have less persistence and self-directedness than those of healthy controls, and (3) mothers of obese adolescents have higher levels of anxiety and somatization than those of healthy

Table 2. Comparison of TCI and BSI subscale scores in mothers of obese and healthy adolescents.

Scale	Obese group Median (Q1–Q3)	Control group Median (Q1–Q3)	*p*	*Z*
TCI novelty seeking	13 (11–14.25)	12 (11–14)	0.448	−0.758
TCI harm avoidance	19 (18–20.25)	19 (18–21)	0.023	−2.279
TCI reward dependence	15 (14–16.25)	7 (6–14)	0.988	−0.015
TCI persistence	4 (3–5)	4 (4–5)	0.781	−0.278
TCI self-directedness	26 (24–28)	25 (21–29)	0.494	−0.684
TCI cooperativeness	25 (24–27)	28 (28–30)	**<0.001**	−4.985
TCI self-transcendence	15.5 (14–16.25)	15 (14–17)	0.854	−0.184
BSI anxiety	14 (6–16)	6 (5–7)	**0.002**	−3.133
BSI depression	10 (5.75–15)	7 (5–12)	0.099	−1.551
BSI somatization	14 (14–16)	12 (5.5–14)	**<0.001**	−3.994
BSI hostility	6 (5–6)	6 (5–6)	0.422	0.802
BSI negative egotism	7 (5–15.25)	14 (6–16)	0.098	−1.655

Note: TCI: Temperament and Character Inventory; BSI: Brief Symptom Inventory. Parametric Mann–Whitney *U* test was used.

Table 3. Comparison of TCI and BSI subscale scores in fathers of obese and healthy adolescents.

Scale	Obese group Median(Q1–Q3)	Control group Median (Q1–Q3)	*p*	*z*
TCI novelty seeking	14 (12.75–15)	13 (12–15)	0.770	−0.292
TCI harm avoidance	18 (18–21)	19 (18–21)	0.159	−1.409
TCI reward dependence	10 (6–15)	7 (6–14)	0.92	−0.857
TCI persistence	2 (2–3)	4 (4–5)	<0.001	−5.206
TCI self-directedness	25 (23–26.25)	28 (26–29)	**<0.001**	−4.341
TCI cooperativeness	26 (22–28)	26 (23–28)	0.860	−0.176
TCI self-transcendence	15 (13–16)	14 (13.5–16)	0.655	−0.447
BSI anxiety	4 (3–5)	4 (3–4)	0.729	−0.346
BSI depression	4 (4–4.25)	4 (3–5)	0.165	−1.389
BSI somatization	3 (2–3)	3 (2–3)	0.957	−0.054
BSI hostility	4 (3–4)	3 (3–4)	0.359	−0.917
BSI negative egotism	3 (2.75–3)	3 (2–3)	0.760	−0.305

Note: TCI: Temperament and Character Inventory; BSI: Brief Symptom Inventory. Parametric Mann–Whitney *U* test was used.

controls. These data suggest that specific parental personality characteristics may be involved in the susceptibility to obesity in their children.

Greater harm avoidance and lower cooperativeness were associated with a disrupted mother–child relationship, which may lead to less warmth and responsiveness in mothers [20,21]. It was recently shown that insecure attachment relations may lead to a predominance of a permissive parenting style around food [4]. Greater harm avoidance and less cooperativeness may be related to less organization and discipline in the parent–child relationship. Similar to our findings, less conscientiousness was found to be related to childhood obesity in a recent study [10]. Mothers with less conscientiousness also chose to use a restrictive style of feeding, which was associated with increased childhood BMI [8]. This style may also be related with less cooperativeness. Additionally, in a recent large-sample-sized study, it was found that restriction and pressure to eat mediated the association between mother conscientiousness and child BMI [10]. Personality is related with the feeding strategies and BMI of children.

When we investigated paternal personality profiles, low self-directedness and persistence were found in the fathers of obese adolescents. As an important consequence, low self-directedness and persistence of fathers were found positively correlated with maternal cooperativeness and negatively correlated with harm avoidance. These correlations show that characteristic maternal and paternal personal traits may increase the effect of each other in childhood obesity.

The relation of obesity and low self-directedness and persistence were also shown in adult studies [22]. Maternal personal profiles affect parenting attitudes [23], and also paternal personal features may affect parental characteristics and the feeding environment of children [23]. Lower persistence and less cooperativeness may cause careless patterns in food intake and cause weight gain in childhood [24–27].

Personality profiles may be partially heritable. Accordingly, higher maternal harm avoidance and lower cooperativeness or lower paternal self-directedness and persistence may directly affect children through genetic transmission to offspring inherited by their mother or father, and as a consequence, it may lead to a direct tendency to obesity by genetic transmission. Put another way, these parental personality profiles may influence the food environment and feeding habits or interpersonal relationships, especially through the mother–child relationship and attachment. Relational problems or feeding habits may also cause a tendency to obesity.

According to the BSI results of the current study, the anxiety and somatization scores of mothers were found higher in the obese group, whereas other dimensions were found similar. Increased maternal anxiety was shown in previous studies in obese children [28]. This may be related with parenting stress and it may contribute to children's obesity. There were inconsistent results in studies that investigated the relationship between maternal depression and obesity [29,30]. Two previous studies showed that maternal depression levels were correlated with children's BMI, but there were no differences between the groups in the current study [31,32].

As a priori result, there was no difference in parental personal profiles and mental health between adolescents with or without BED. It is difficult to generalize the current study's findings because there is little knowledge in this area. Another important point is that 60% of our obese sample was also diagnosed as having BED, which is not consistent with the current literature [33,34]. This may be because adolescents with BED seek help for treatment and they may be more willing to explain the difficulties in their lives.

Our results may be due to the cross-sectional design or dependence on only subjective reports. Assessing the lifetime history of parental mental health in children with obesity, evaluating psychological symptoms or personality features from reports of multiple informants, and using more objective measures or semi-structured interviews as well as longitudinal designs may clarify the relationship between parental personal profiles and parental mental health with childhood obesity.

Other limitations of the current study involve the lack of evaluation of the children themselves in terms of temperament and character, lack of evaluation of feeding strategies, lack of evaluation of other members of the families, and use of subjective measures. Despite these limitations, the current study suggested that parental personality trait and mental health may be an additional area to consider when addressing the psychological environment of adolescents with obesity.

Disclosure statement

No potential conflict of interest was reported by the authors.

ORCID

Gonca Özyurt http://orcid.org/0000-0002-0508-0594
Gönül Çatlı http://orcid.org/0000-0002-0488-6377
Gülten Cingöz http://orcid.org/0000-0002-3002-480X
Bumin Nuri Dündar http://orcid.org/0000-0002-7506-061X
Aynur Akay Pekcanlar http://orcid.org/0000-0001-7535-1735
Ayhan Abacı http://orcid.org/0000-0002-1812-0321

References

[1] Bass R, Eneli I. Severe childhood obesity: an under-recognised and growing health problem. Postgrad Med J. 2015;91(1081):639–645.

[2] Williams EP, Mesidor M, Winters K, et al. Overweight and obesity: prevalence, consequences, and causes of a growing public health problem. Curr Obes Rep. 2015;4(3):363–370.
[3] Kipping RR, Jago R, Lawlor DA. Obesity in children. Part 1: epidemiology, measurement, risk factors, and screening. BMJ. 2008;337:922.
[4] Wardle J, Cooke L. The impact of obesity on psychological well-being. Best Pract Res Clin Endocrinol Metab. 2005;19:421–440.
[5] Vargas Martínez G, Cruzat Mandich C, Díaz Castrillón F, et al. Early mother-child bonding factors associated with children obesity. Nutr Hosp. 2015;32(5):1994–1999.
[6] Akay AP, Ozturk Y, Avcil SN, et al. Relationships between pediatric obesity and maternal emotional states and attitudes. Int J Psychiatry Med. 2015;50(2):178–190.
[7] Campbell KJ, Crawford DA, Salmon J, et al. Associations between the home food environment and obesity-promoting eating behaviors in adolescence. Obesity (Silver Spring). 2007;15(3):719–730.
[8] Couch SC, Glanz K, Zhou C, et al. Home food environment in relation to children's diet quality and weight status. J Acad Nutr Diet. 2014;114(10):1569–1579.
[9] McPhie S, Skouteris H, Daniels L, et al. Maternal correlates of maternal child feeding practices: a systematic review. Matern Child Nutr. 2014;10(1):18–43.
[10] Sutin AR, Terracciano A. Mother and child personality traits associated with common feeding strategies and child body mass index. Appetite. 2018;125:295–301.
[11] Sullivan S, Cloninger CR, Przybeck TR, et al. Personality characteristics in obesity and relationship with successful weight loss. Int J Obes (Lond). 2007;31(4): 669–674.
[12] Cloninger CR, Przybeck TR, Svrakic DM, et al. The Temperament and Character Inventory (TCI): a guide to its development and use. St Louis (MO): Center for Psychobiology of Personality, Washington University; 1994.
[13] Fassino S, Leombruni P, Piero A, et al. Temperament and character in obese women with and without binge eating disorder. Compr Psychiatry. 2002;43:431–437.
[14] Villarejo C, Fernandez-Aranda F, Jimenez-Murcia S, et al. Lifetime obesity in patients with eating disorders: increasing prevalence, clinical and personality correlates. Eur Eat Disord Rev. 2012;20:250–254.
[15] Kuczmarski RJ, Ogden CL, Guo SS, et al. CDC growth charts for the United States: methods and development. Vital Health Stat. 2002;246:1–190.
[16] American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 5th ed. Washington (DC): American Psychiatric Association Press; 2013.
[17] Köse S, Sayar K, Ak İ, et al. Turkish version of the temperament and character inventory (TCI): reliability, validity, and factorial structure. Bull Clin Psychopharmacol. 2004;14:107–131.
[18] Derogatis LR, Melisaratos N. The Brief Symptom Inventory (BSI): an introductory report. Psychol Med. 1983;13:595–605.
[19] Şahin NH, Durak A. Kısa semptom envanteri: Türk gençleri için uyarlanması. Türk Psikol. Derg. 1994;9:44–56. Turkish.
[20] Kochanska G, Aksan N, Nichols KE. Maternal power assertion in discipline and moral discourse contexts: commonalities, differences, and implications for children's moral conduct and cognition. Dev Psychol. 2003;39:949–963.
[21] Belsky J, Crnic K, Woodworth S. Personality and parenting: exploring the mediating role of transient mood and daily hassles. J Personal. 1995;63:905–929.
[22] Sarısoy G, Atmaca A, Ecemiş G, et al. Personality characteristics and body image in obese individuals. Asia Pac Psychiatry. 2014;6(2):191–199.
[23] Belsky J. The determinants of parenting: a process model. Child Dev. 1984;55:83–96.
[24] Brewerton TD, Hand LD, Bishop ER Jr. The tridimensional personality questionnaire in eating disorder patients. Int J Eat Disord. 1993;14:213–218.
[25] Bulik CM, Sullivan PF, Weltzin TE, et al. Temperament in eating disorders. Int J Eat Disord. 1995;17:251–261.
[26] Kleifield EI, Sunday S, Hurt S, et al. The Tridimensional Personality Questionnaire: an exploration of personality traits in eating disorders. J Psychiatr Res. 1994;28:413–423.
[27] Fassino S, Daga GA, Piero A, et al. Anger and personality in eating disorders. J Psychosomat Res. 2001;51:757–764.
[28] Tabacchi G, Giammanco S, La Guardia M, et al. A review of the literature and a new classification of the early determinants of childhood obesity: from pregnancy to the first years of life. Nutr Res. 2007;27:587–604.
[29] Ajslev TA, Andersen CS, Ingstrup KG, et al. Maternal postpartum distress and childhood overweight. PLoS One. 2010;30:e11136.
[30] Taveras EM, Gillman MW, Kleinman K, et al. Racial/ethnic differences in early-life risk factors for childhood obesity. Pediatrics. 2010;18:686–695.
[31] Duarte CS, Shen S, Wu P, et al. Maternal depression and child BMI: longitudinal findings from a US sample. Pediatr Obes. 2012;7:124–133.
[32] Ertel KA, Koenen KC, Rich-Edwards JW, et al. Maternal depressive symptoms not associated with reduced height in young children in a US prospective cohort study. PLoS One. 2010;5:e1365.
[33] Severi F, Verri A, Livieri C. Eating behaviour and psychological profile in childhood obesity. Adv Biosci. 1993;90:329–336.
[34] Britz B, Siegfried W, Ziegler A, et al. Rates of psychiatric disorders in a clinical study group of adolescents with extreme obesity and in obese adolescents ascertained via population based study. Int J Obes Relat Metab Disord. 2000;24:1707–1714.