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Title: Association of biologic, psychological and lifestyle risk factors for eating disturbances in adolescents

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Abstract

We aimed to assess the association of several risk factors for eating disturbances in adolescents. Participants were 448 girls and boys aged 12-15. Being female, higher body mass index, internalisation of standard of appearance, perfectionism, body dissatisfaction, number of lifetime addictive behaviours and lower self-esteem were associated with higher eating disturbance scores, whereas frequency of sedentary behaviours and physical activity were not ($R\text{-square} \geq 41\%$). Findings suggest the need to guide prevention efforts toward the broad spectrum of individual potentially modifiable factors. A non-specific comprehensive perspective may be adequate to prevent problems related to weight, body image and drug use.

Key-words: adolescence, disordered eating, personality, lifestyle, drugs.

In recent decades in Spain, eating disorders have appeared at younger ages and in less severe forms. In adolescents aged 9 to 13 years, 3.6% of girls and 3.2% of boys present an eating disorder. These disorders are mainly eating disorders not otherwise specified (EDNOS) and subthreshold anorexia nervosa (Sancho, Arija, Asorey, & Canals, 2007). In addition, the percentage of adolescents who present eating disturbances and are at risk of developing an eating disorder varies between 12% (Sancho et al., 2007) and 22% (Peláez-Fernández, Labrador, & Raich, 2007). Research suggests that eating disturbances and overweight can occur simultaneously, with their severity increasing over time, leading to the onset of different weight-related problems, such as binge eating, extreme weight-control behaviours, weight and shape concern or full-syndrome eating disorders (bulimia nervosa and binge eating disorders) among children and adolescents (Neumark-Sztainer, Wall, Eisenberg, Story, & Hannan, 2006). In Spain, 45.2% of children and pre-adolescents present overweight and child obesity (AESAN, 2011), and thus, the prevalence of adolescents at risk of developing eating disorders could increase in the coming years.

Sociocultural influences (most notably the media, family, and peers) contribute to the development of body dissatisfaction, and consequently increase the probability of developing eating disorders. The internalisation of social standards and the tendency to compare one's appearance to those standards act as mediators between sociocultural influences and body dissatisfaction (Cafri, Yamamiya, Brannick, & Thompson, 2005; Stice, 2002; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). However, although all individuals are exposed to the constant bombardment of unattainable beauty ideals, they do not all develop body image and eating disorders. Individuals who are at high risk of developing eating disorders would be more sensitive to the media exposure of the ideal physique (Hausenblas et al., 2013). It is also important to bear in mind psychological risk factors, body dissatisfaction (Dakanali et al., in press; Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006; Stice, et al., 2010), low

self-esteem (Mischner, Van Schie, & Engels, 2013; Neumark-Sztainer, Wall et al., 2007) and personality traits such as perfectionism (Holland, Bodell, & Keel, 2013) and impulsiveness (Waxman, 2009).

The lifestyle of adolescents and youths has changed in recent decades, especially regarding leisure activities and free time. Sedentary behaviours have increased, especially following the breakthrough of new communication technologies, physical activity has decreased (see, for example for Spanish adolescents, Salvador, 2009), the consumption of alcohol has increased (especially among 14 and 15 year olds) and getting drunk and binge drinking are more frequent (Observatorio Español sobre Drogas, 2013). These lifestyle changes can affect the bio-psychosocial wellbeing of adolescents. For example, sedentary behaviours referring to excessive sitting time, usually screen-based behaviours such as television (TV) and computer (Pearson & Biddle, 2011), have been associated with unhealthy dietary behaviours (Gebremariam et al., 2013; Pearson & Biddle, 2011) and overweight and obesity (Janssen et al., 2005; Neumark-Sztainer, Wall, et al. 2007).

The relationship between sedentary behaviours and eating disturbances has been studied less. However, a positive relationship can be expected, since almost half of girls and one third of boys present eating disturbances and overweight-obesity simultaneously (Neumark-Sztainer et al., 2006). It is thought that the association between watching TV and the deterioration of eating behaviours is brought about by different mechanisms. Food commercials increase preference for energy-dense foods and the replacement of less advertised foods such as fruits and vegetables (Boyland et al., 2011). Furthermore, sedentary behaviours can take the place of hours of physical activity, but there is no conclusive evidence supporting this hypothesis (Gebremariam et al., 2013). Moreover, TV and videogames expose the viewer to unattainable and unreal beauty models which interfere with the psychological wellbeing of children and adolescents (Becker, et al., 2011; Fernández &

Pritchard, 2012; Levine & Murnen, 2009). A recent cross-cultural study has found that individuals with full or subthreshold eating disorder syndromes spent more time performing individual activities than healthy controls, such as watching TV and doing school-work at home, during childhood and adulthood (Krug, Penelo et al., 2013).

There have also been few studies of the relationship between physical activity and eating disorders. Physical activity may be a protective factor against eating disturbances because it reduces the risk of obesity and of unhealthy weight control behaviours, or a risk factor of these weight control behaviours, if girls perform the physical activity moderately or vigorously (Neumark-Sztainer, Wall, et al. 2007).

The interrelation between tobacco, alcohol and cannabis use with eating disturbances has been less documented, at least in Spanish adolescents. However, tobacco and drug use in adults and adolescents are more prevalent in ED patients than healthy controls (Castro-Fornieles, 2010; Krug, et al., 2008). Tobacco consumption and the difficulty of giving it up are, in many cases, linked to weight concerns and a fear of putting on weight (Copeland & Carney, 2003; John, Meyer, Hapke, Rumpf, & Schuman, 2004).

The aim of the present study was to assess the association of biologic, psychological/personality and lifestyle risk factors, for eating disturbances in adolescents. A positive association is expected between eating disturbances and being female, BMI, internalisation of an ideal of thinness, perfectionism, impulsiveness, body dissatisfaction, drug use and sedentary behaviour. Moreover, a negative association is expected between eating disturbances and self-esteem and physical activity. Simultaneously studying the association of these factors with eating disturbances may contribute to developing holistic prevention programmes which incorporate individual differences into the sociocultural perspectives understanding these disturbances.

Method

Participants

Participants were recruited from the second year of compulsory secondary education at 11 urban state and state-subsidised schools in the cities of Manresa and Terrassa, located in the Barcelona area (Catalonia, Spain), selected by means of incidental sampling. Of 483 initial participants, data were obtained from 448 adolescents (92.8%; 232 girls and 216 boys) aged 12-15 ($M = 13.4$ years; $SD = 0.5$). Mean BMI, based on in situ measurements of height and weight, was 20.3 ($SD = 3.2$) for girls and 20.3 ($SD = 3.4$) for boys. Weight status, according to international criteria that consider sex and age (Cole et al., 2000, 2007) was: 5.6% underweight, 72.5% normal weight, 18.0% overweight, and the remaining 3.8% being classified as obese. The distribution of participants in terms of origin was: 82.25% from Spain/Europe, 9.1% from Morocco, 7.8% from Central and South America, and 0.9% from China. Table 1 presents the descriptives for each of the measures considered and internal consistency reliability for self-reported questionnaire scores (see below) in the present study sample. Cronbach's alpha values for all questionnaire measures were equivalent across sex ($p > .01$), since α comparison tests (Feldt, Woodruff & Salih, 1987) showed no statistical differences between groups, except for the SATAQ-R internalisation scale score (.85 for girls and .71 for boys; $p < .001$).

Measures

Socio-biographical data. Personal, family and social details were collected; socioeconomic status (SES) based on the parents' educational level and occupation according to Hollingshead's index (Hollingshead, 1975) was obtained.

Weight and height. In situ measurements of weight and height were taken and BMI was calculated.

Eating Attitudes Test (EAT-26; Garner Olmsted, Bohr, & Garfinkel, 1982). This 26-item self-report questionnaire assesses feelings and behaviours that are characteristic of individuals with disordered eating. The items provide six response options ranging from 1 (*never*) to 6 (*always*); the three least pathological responses receive 0 points and the other responses 1, 2, and 3 to denote increasing severity. The total score is obtained by the sum of the items, reversed when necessary. We applied the Spanish adaptation (Gandarillas, Zorrilla, Sepúlveda, & Muñoz, 2003).

Sick, Control, One, Fat, Food questionnaire (SCOFF; Morgan, Reid, & Lacey, 1999). The SCOFF is a screening questionnaire to assess disordered eating and it contains 5 dichotomous questions (*yes/no*); the total score is the sum of positive answers. We applied the Spanish adaptation (García-Campayo et al., 2005; Rueda et al., 2005).

Sociocultural Attitudes Towards Appearance Questionnaire-R (SATAQ-R; Cusumano & Thompson 1997). This self-report questionnaire assesses awareness of and tendency to strive toward social standards of appearance (Heinberg, Thompson, & Stormer, 1995). We used the Spanish version (Calado, 2008), with both a male and a female version containing 21 items adapted for each sex, that provide five response options ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The SATAQ-R consists of two subscales: awareness (11 items; knowledge that a standard of appearance exists) and internalisation (10 items; profound incorporation or acceptance of these values affects one's attitudes or personal behaviour); for the present study, only the latter was used. Scale scores are obtained by the average of the corresponding items, reversed when necessary, and higher scores indicate (worse) more internalisation.

Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). It is a 10-item self-report measure of global self-esteem. The items provide four response options ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). The total score is obtained by the sum of the items,

reversed when necessary, and higher scores indicate better self-esteem. We applied the Spanish version (Guillén, Quero, Baños, & Botella, 1999) adapted for adolescents (Atienza, Moreno, & Balaguer, 2000).

Eating Disorder Inventory-3 (EDI-3; Garner, 2004). We applied two subscales of the Spanish adaptation (Garner, 2010) of this self-report questionnaire to assess individual factors associated with the development of ED: Perfectionism (6 items; tendency to strive for flawlessness and set excessively high performance standards) and Emotional dysregulation (8 items; tendency towards impulsivity and recklessness). The items provide six response options ranging from 0 (*never*) to 5 (*always*); the three least pathological responses receive 0 points and the other responses 1, 2, and 3 to denote increasing severity. Scale scores are obtained by the sum of the corresponding items and higher scores indicate a higher presence of the corresponding construct.

Contour Drawing Rating Scale (CDRS; Thompson & Gray, 1995). The CDRS consists of nine drawings of a female figure or a male figure, depending on the sex of the respondent. Each drawing increases in size from extremely thin (1) to very obese (9). Participants are asked to rate their ideal figure (what they ideally want to look like) and their current size (perceived figure). We used the discrepancy between the ideal and current size scores as an index of body size dissatisfaction, which can range from 8 (extreme desire to lose weight) to -8 (extreme desire to gain weight). Evidence of satisfactory validity and test-retest reliability in male and female undergraduates and early adolescent girls has been reported (Thompson & Gray, 1995; Wertheim, Paxton, & Tilgner, 2004).

Habits and sedentary behaviours. The questions we included are derived from the Health Behaviour in School-aged Children (HBSC; Currie, Nic Gabhainn, & Godeau, 2009) and were taken from Moreno, Muñoz, Pérez, and Sánchez (2005). First, dichotomous questions about lifetime use of tobacco, alcohol (getting drunk) and cannabis were

considered. Because each of the three questions was endorsed by less than 10% of the participants (5.5%, 3.2% and 3.7%, respectively), they were summed to obtain the number of addictive behaviours ever experienced. Second, the frequency of four sedentary behaviours during weekend free time was asked: watching television (including videos and DVDs) (0-7 hours/day), playing computer or console (PlayStation, Wii, Xbox, GameCube, etc.) (0-7 hours/day), connecting to internet (also sending emails or chats) (0-7 hours/day), and daily speaking with friends by mobile phone or Skype (0-24 hours). And third, a final question about the monthly frequency of physical activity out of school (0: *never*; 6: *daily*) was included.

Procedure

The data are part of a larger project welcomed by the Ethics Committee of our institution and approved and mediated by the Municipal Institute of Health and Social Welfare of the cities of Manresa and Terrassa, collected by our team at the schools at the beginning of the 2010-2011 and 2011-2012 academic years. Informed written consent from parents and oral consent from adolescents were obtained. After obtaining the teachers' agreement, and after giving general instructions in class, participants answered the battery assessment individually and anonymously during normal lesson time. Confidentiality was assured, as well as the possibility of obtaining feedback through a mnemonic code. In situ height and weight measures were taken individually and privately by two members of our team, to ensure confidentiality.

Statistical Analysis

The statistical analyses were carried out with SPSS19 (SPSS, 2010). Two hierarchical multiple regression models were performed to examine the relation between each group of

predictors and each of the criterion variables: EAT and SCOFF total scores, adjusted by SES. Predictors were sex in the first step; BMI in the second step; internalisation of standard of appearance (SATAQ-R), self-esteem (RSES), perfectionism and emotional dysregulation (EDI-3), and body size dissatisfaction (CDRS) in the third step; number of lifetime addictive behaviours (tobacco, alcohol, cannabis) in the fourth step; and time spent on sedentary behaviours during weekend (TV, e-games, computer), and frequency of physical activity in the last step. Checks for overlap among predictors (independent variables and covariates) were conducted with bivariate Pearson's correlations and the variance inflation factor (VIF). Adjusted R^2 valued the predictive validity for each model and incremental predictive accuracy was estimated with the changes in R^2 coefficient between steps. The listwise deletion method was used.

Results

None of the predictors showed collinearity ($r \leq .58$ in absolute value; $VIF \leq 1.83$). Table 2 shows the final models of the two hierarchical multiple regressions that evaluated the incremental validity of sociodemographics, physical characteristics, psychological and personality traits, and habits and sedentary behaviours on EAT (top) and SCOFF (bottom) scores. Both models explained a considerable percentage of total variance (corrected R -square above 40%).

For EAT scores, higher internalisation of standard of appearance ($\beta = .23$; $p < .001$), perfectionism ($\beta = .15$; $p < .001$), body dissatisfaction ($\beta = .21$; $p < .001$), lifetime addictive behaviours ($\beta = .14$; $p = .001$) and lower self-esteem ($\beta = -.31$; $p < .001$) were related to higher disordered eating attitude scores. The incremental validity of BMI at step 2 was statistically significant (change in $R^2 = .054$; $p < .001$), despite it was not significantly related to higher EAT scores after controlling for the remaining predictors ($\beta = .02$; $p = .704$). The

group of variables that most variance explained were those referring to psychological and personality traits at step 3 (change in $R^2 = .343$; $p < .001$). Moreover, the number of lifetime addictive behaviours at step 4 also significantly increased the explained variance (change in $R^2 = .016$; $p = .001$), whereas predictors asking for habits at step 5 did not (change in $R^2 = .003$; $p = .825$).

For SCOFF scores, being female ($\beta = .09$; $p = .044$), higher BMI ($\beta = .10$; $p = .036$), internalisation of standard of appearance ($\beta = .18$; $p < .001$), perfectionism ($\beta = .12$; $p = .004$), body dissatisfaction ($\beta = .27$; $p < .001$) and lower self-esteem ($\beta = -.27$; $p < .001$) were associated with higher eating disturbance scores. Regarding incremental validity, predictors which explained most of the variance were demographics at step 1 (change in $R^2 = .063$; $p < .001$), BMI at step 2 (change in $R^2 = .109$; $p < .001$), and mainly psychological and personality traits at step 3 (change in $R^2 = .275$; $p < .001$), while the number of lifetime addictive behaviours at step 4 (change in $R^2 = .003$; $p = .155$) and habits at step 5 (change in $R^2 = .010$; $p = .237$) did not.

Discussion

The aim of the present study was to evaluate the associations of risk factors -biologic, psychological, personality and lifestyle- with eating disturbances in adolescents. For both criteria, a positive association was found between eating disturbances (EAT and SCOFF) and the internalisation of a beauty ideal, body dissatisfaction and perfectionism, and a negative association was found with self-esteem. These results are consistent with our hypothesis and other studies (Espinoza, Penelo, & Raich, 2010; Holland et al., 2013; Neumark-Sztainer, Paxton et al., 2006; Neumark-Sztainer, Wall et al., 2007; Stice, et al., 2010). On the contrary, the number of lifetime addictive behaviours was only related to higher EAT scores, whereas sex and BMI were only associated with higher SCOFF scores. These instruments distinguish

the different degrees of severity of the eating disturbances. Therefore, our results suggest that when there are more severe symptoms (evaluated with SCOFF), there is a higher BMI and the female sex presents more disturbances (Stice et al., 2010). The positive association between BMI and SCOFF scores is in line with the issue that eating disturbances and overweight or obesity usually coexist (Neumark-Sztainer, Paxton et al., 2006; Neumark-Sztainer, Wall et al., 2007). On the other hand, disordered attitudes (evaluated with EAT) were not statistically associated to sex, which is aligned with studies reporting an increasing presence of eating disturbances in boys (Daniel & Bridges, 2010; McCabe & Ricciardelli, 2004), closer to girls. Thus, our results may be contrasted using techniques sensitive to differences between sexes, such as disordered eating to attain more muscle mass usually characteristic in boys.

Furthermore, the association that was expected between impulsiveness (emotional dysregulation) and eating disturbances was not observed, contradicting the results obtained by other authors (Waxman, 2009). Other researchers highlight that when impulsiveness is evaluated as a personality trait a predictive association is less likely to be found with the appearance of eating behaviour disturbances. However, when behaviours associated with the driver of impulsiveness, such as substance use and/or theft, are evaluated, an association can be found between these behaviours and eating disorders (Wonderlich, Connolly, & Stice, 2004). In the present study, we also found a positive association between the number of addictive behaviours experienced and the eating attitudes test (EAT scores). These results suggest that there may be a group of especially vulnerable adolescents with personality traits and identity styles that encourage the development of “binge” behaviours, such as binge drinking and binge eating (Laghi, Baiocco, Liga, Lonigro, & Baumgartner, 2014). In these adolescents, a diffuse identity (Laghi, et al., 2014), impulsive behaviour and the tendency to make decisions with short-term positive and potentially long-term negative effects (Brand,

Franke-Sievert, Jacoby, Markowitsch, & Tuschen-Caffier, 2007), would increase the negative affect and the probability of seeking refuge through “binge” behaviours (Laghi, et al., 2014).

Moreover, no association was observed between eating disturbances and sedentary behaviours, as found in previous research regarding adolescents (Neumark-Sztainer, Wall et al., 2007). Nor was a statistically significant association observed between physical activity and eating disturbances. Physical activity may act as a modulator of other risk or protective factors which take part in the development of eating disturbances, for example, self-esteem and body dissatisfaction (Haugen, Säfvenbom & Ommundsen, 2011).

We consider that prospective longitudinal studies are required which help to clarify the direction of the association between eating disturbances and substance use and check if the presence of both risk behaviours at the beginning of adolescence could be considered a sign of a posterior non-specific pathology. The association between eating disturbances, a sedentary lifestyle and physical activity also needs to be clarified, as well as whether these behaviours are common risk or protective factors for weight-related problems (Krug, Villarejo et al., 2013). In this regard, wide-spectrum intervention programmes could be developed (Neumark-Sztainer, Wall et al., 2007).

For both criteria, regression models explained a considerable percentage of overall variance (around 40%), in which the psychological and personality factors are the variables with the greatest influence (around 30%), followed by BMI (between 5% and 11%). As regards the lifestyles and habits of adolescents, only in the EAT model the number of lifetime addictive behaviours (tobacco, alcohol/getting drunk and cannabis) was statistically significant. These results point to the importance of guiding prevention efforts towards the wide spectrum of potentially modifiable individual factors (such as overweight-obesity, self-esteem, body dissatisfaction and internalisation of idealised beauty models and, partly, drug use). The combination of a holistic, comprehensive and non-specific perspective (non-

specific vulnerability-stressor model; Levine & Smolak, 2006), and youth and adolescent education that is critical of the models of beauty and success that are transmitted by the media (Espinoza, Penelo, & Raich, 2013; González, Penelo, Gutiérrez, & Raich, 2011; Raich, Portell, & Peláez-Fernández, 2010) appear to be adequate to prevent the problems related with weight, nutrition and drug use.

One of the limitations of this study is the sampling technique, because data were collected with a cross-sectional design, which precludes any causal inference. As mentioned earlier, prospective longitudinal studies would allow determining the direction of the associations observed. Second, with the exception of demographics and BMI, the rest of variables are based on self-reported measures, which could imply social desirability bias. In addition, regarding the evaluation of adolescents' lifestyles and habits (physical activity and drug use), studies are required that differentiate between excessive exercise and the healthy practice of physical exercise, and a detailed measurement of drug consumption patterns in recent months, such as the frequency of use and problematic consumption. These data will help to clarify the relationship between lifestyles and eating disturbances.

A wide spectrum of variables associated with eating disturbances were simultaneously included in this study, providing a holistic view of the possible associations between eating disturbances and biological, psychological/personality and lifestyle risk factors. A wide number of sedentary behaviours were also covered, beyond those that have generally been researched (watching TV), incorporating the sedentary behaviours that became a part of adolescents' daily life and free time through the breakthrough of communication technologies.

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Table 1: Description of the sample ($N = 448$).

		<i>n</i> (%)	
Sex: females		232 (51.8%)	
Socioeconomic status	Low	71 (16.4%)	
	Medium-low	69 (15.9%)	
	Medium	77 (17.8%)	
	Medium-high	103 (23.8%)	
	High	113 (26.1)	
Measure (minimum ÷ maximum for self-reported scores)		Mean (<i>SD</i>)	Internal consistency ^a
EAT-26 total score (0 ÷ 78)		7.23 (9.09)	.90 (.29)
SCOFF (0 ÷ 5)		0.83 (1.10)	.54 (.19)
SATAQ-R internalisation (1 ÷ 5)		2.73 (0.82)	.85 (.35)/.71 (.20) ^b
RSE self-esteem (10 ÷ 40)		30.86 (5.46)	.82 (.32)
EDI-3 perfectionism (0 ÷ 18)		4.51 (3.57)	.66 (.24)
EDI-3 emotional dysregulation (0 ÷ 24)		1.91 (3.14)	.70 (.23)
CDRS body size dissatisfaction (−8 ÷ 8)		0.62 (1.37)	--
No. of lifetime addictive behaviours (0 ÷ 3)		0.10 (0.42)	--
Time spent watching TV during weekend (0 ÷ 7)		3.88 (1.81)	--
Time spent playing e-games during weekend (0 ÷ 7)		2.85 (1.97)	--
Time spent using computer during weekend (0 ÷ 7)		3.17 (1.95)	--
Hours speaking with friends (0 ÷ 24)		1.93 (2.94)	--
Weekly frequency of physical activity (0 ÷ 6)		3.87 (1.63)	--
BMI (kg/m ²)		20.28 (3.31)	--

^a Cronbach's α value (mean inter-item correlation)^b Values non-equivalent between girls/boys (Feldt's test)

Table 2. Results of multiple linear regression models (adjusted by socioeconomic status).

Criterion	Predictors	<i>B</i>	<i>B</i> (CI 95%)	β	<i>F</i> (<i>p</i>)	<i>Rc</i> ²	ΔR^2 (<i>p</i>)
EAT-26 total score	Sex: female	−0.20	(−1.66; 1.27)	−.01	2.40	.011	
	BMI	0.05	(−0.19; 0.28)	.02	7.26	.062	.054 ***
	SATAQ-R internalisation	2.33	(1.40; 3.26)	.23 ***	29.03 ***	.402	.343 ***
	RSE self-esteem	−0.47	(−0.63; −0.32)	−.31 ***			
	EDI-3 perfectionism	0.36	(0.17; 0.55)	.15 ***			
	EDI-3 emotional dysregulation	0.00	(−0.24; 0.24)	.00			
	CDRS body size dissatisfaction	1.28	(0.68; 1.89)	.21 ***			
	No. of lifetime addictive behaviours	2.86	(1.14; 4.57)	.14 **	27.87 ***	.417	.016 **
	Time spent watching TV during weekend	0.03	(−0.35; 0.42)	.01	18.58 ***	.412	.003
	Time spent playing e-games during weekend	0.11	(−0.33; 0.55)	.03			
	Time spent using computer during weekend	−0.05	(−0.50; 0.41)	−.01			
	Hours speaking with friends	−0.03	(−0.28; 0.21)	−.01			
	Weekly frequency of physical activity	−0.28	(−0.72; 0.15)	−.05			
SCOFF total score	Sex: female	0.19	(0.01; 0.37)	.09 *	8.20 ***	.055	
	BMI	0.03	(0.00; 0.06)	.10 *	19.03 ***	.162	.109 ***
	SATAQ-R internalisation	0.22	(0.11; 0.34)	.18 ***	32.52 ***	.433	.275 ***
	RSE self-esteem	−0.05	(−0.07; −0.03)	−.27 ***			
	EDI-3 perfectionism	0.04	(0.01; 0.06)	.12 **			
	EDI-3 emotional dysregulation	0.00	(−0.03; 0.03)	−.01			
	CDRS body size dissatisfaction	0.20	(0.13; 0.28)	.27 ***			
	No. of lifetime addictive behaviours	0.15	(−0.06; 0.36)	.06	29.55 ***	.434	.003
	Time spent watching TV during weekend	−0.02	(−0.07; 0.03)	−.03	20.26 ***	.437	.010
	Time spent playing e-games during weekend	0.04	(−0.02; 0.09)	.07			
	Time spent using computer during weekend	0.04	(−0.02; 0.09)	.07			
	Hours speaking with friends	−0.02	(−0.05; 0.01)	−.07			
	Weekly frequency of physical activity	0.00	(−0.05; 0.05)	.00			

In bold: predictors statistically significant based on *p*-value (* < .05; ** < .01; *** < .001). ΔR^2 : Change in *R*² for the step.