

AN ANALYSIS OF THE RELATIONSHIP BETWEEN STIGMATIZATION OF OVERWEIGHT PEOPLE AND PATHOLOGICAL EATING PATTERNS

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Abstract

This study was aimed at revealing the relationship between pathological eating patterns and the expression of negative explicit attitudes towards overweight people. Further aim was to examine the importance of other factors possibly influencing stigmatization such as body weight, body image satisfaction, attribution (as influenced by external sources of information), and gender differences frequently addressed in related studies. Eating disorders were assessed with the validated Hungarian adaptation of the EDE-Q, while explicit attitudes were measured with the ATOP and BAOP scales. Participants were presented with one of two texts relating overweight to different causes, which were designed to manipulate their explicit attitudes towards overweight people. Body image satisfaction was assessed with one specifically designed item. Data were collected from 500 participants (436 females, 64 males) by convenience sampling. The results showed that women but not men with pathological eating behaviours were more likely to express negative explicit attitudes towards overweight people and to believe that overweight is controllable. Body image dissatisfaction proved an important factor contributing to pathological eating patterns, while BMI was a less important moderating factor. The results confirmed that participants with severer eating pathology were more susceptible to manipulation of their views on overweight, and that having high body weight did not exclude the expression of negative explicit prejudice against overweight. The results revealed important gender differences.

Keywords: stigma ▪ explicit attitude ▪ pathological eating pattern ▪ body image ▪ attribution ▪ BMI ▪ EDE-Q ▪ ATOP ▪ BAOP

THEORETICAL BACKGROUND

According to the 2016 world health survey conducted by the WHO, the prevalence of overweight has nearly tripled since 1975. More than 1.9 billion adult people are overweight and more than 650 million of them are obese, while 41 million children under age 5 are overweight or obese. About 13% of the overall population are obese and 39% are overweight. In Hungary, 65% of men and 60% of women are overweight or obese according to the most recent national diet and nutritional

status survey published in 2014 (Kovács, Erdei, Martos & Bakacs, 2017). According to the OECD Health Statistics (2015), Hungary is the fourth most obese country in the world following the United States, Mexico and New-Zealand.

The term “epidemic” is frequently used in the Western culture as a metaphor for the increasing prevalence of obesity (Barry, Brescoll, Brownell & Schlesinger, 2009), which is dramatized by the media (Saguy & Almeling, 2008). As a result, overweight people have to face increasing negative attitudes and stigmatization (Emery, Szczypka, Powell & Chaloupka, 2007). The Greeks originated the term of stigma to refer to bodily signs which suggest something unusual and bad about the individual’s moral status. Thus, stigma is an attribute which implies discrediting effect and makes somebody different from the others (Goffman, 1963). Overweight people are frequently considered deviant due to their physical appearance, which is closely associated with prejudicial views on their character (DeJong, 1980). Stigmatization of overweight people have both explicit and implicit forms (Browne, 2012). Wilson, Lindsey and Schooler (2000) suggest that explicit attitudes reflect conformity with social norms while implicit attitudes are based on internalized beliefs integrated into one’s value system. Internalized beliefs about obese people often include negative views such as they are lazy and hypersensitive, and they have poor self-control and willpower (Puhl & Brownell, 2001).

The effect of such prejudicial views is that the concerned people have even more difficulty losing weight (Wott & Carels, 2010), and they avoid physical activity (Varatanian & Novak, 2011). Furthermore, exposure to stigmatization and internalization of the stigma are positively associated with the occurrence of eating disorders (Durso, Latner & Hayashi, 2012). A possible explanation of this finding is that stigmatization significantly reduces the efficiency of the concerned individuals’ coping mechanisms (Puhl & Heuer, 2009). The prevalence of pathological eating patterns and the associated body image dissatisfaction is higher among women and female adolescents than among men, the latter amounting to only 10% of the cases, although this proportion is probably underestimated (Ata, Ludden & Lally, 2007). Túry, Szumska and Szabó (2008) suggest that continuously changing cultural conditions and social ideals lead to changes in gender roles showing increasing similarity in several respects, as a result of which higher prevalence of eating disorders among women may disappear within half a century.

Information communicated through the media may have adverse effects on body image and eating habits: they may increase preference for an unhealthy diet and aggravate body weight concerns (Harris, Bargh & Brownell, 2009). The impact of trends shaped by the media, body image dissatisfaction and eating disorders are closely associated (Grabe, Ward & Hyde, 2008). The more negative body image one has, the more likely one is to internalize weight-related prejudicial views and this spiral may eventually lead to eating disorders (Sienko, Saules &

Carr, 2016) whose frequent occurrence is a public health concern in Hungary as well, the prevalence of clinical eating disorders reaching 2% to 3% (Túry et al., 2008). The scale of the problem is reflected in the finding that 64% of women with normal weight believe they should lose weight (Matthiasdottir, Jonsson & Kristjansson, 2012). Negative perceptions of one's own body may also contribute to prejudice against obese people (Hansson & Rasmussen, 2014).

The most important factor influencing discrimination against overweight people is causal attribution, that is, specific ways of explaining one's being obese (DeJong, 1980). The media plays an important role in this respect as well, since external sources of negative information perpetuate and aggravate stigmatization (Anderson et al., 2016). Media messages elicit cognitive responses that lead to the development of certain social attitudes, stereotypes and emotional reactions such as disgust, anger and fear (Smith, 2007).

Behavioural explanations for obesity (e.g. prolonged static sitting at work, unhealthy diet) increase stigmatization (O'Brien, Puhl, Latner, Mir & Hunter, 2010), while psychological and genetic explanations reduce it (Crandall, 1994; O'Brien et al., 2010). Among various explanations, increasing attention is attracted by the "addiction theory" (Gearhardt, Corbin & Brownell, 2009), which accounts for overeating as a consequence of addiction (Volkow, Wang & Baler, 2011). Those who believe body weight is controllable (e.g. by exercises, physical activity, a healthy diet) show more negative attitudes than those who attribute overweight to uncontrollable factors (e.g. disease, hereditary factors, genetic predisposition; Carels & Musher-Eizenman, 2010).

Crandall (1994) and Rudman, Feinberg and Fairchild (2002) found that obese people as opposed to other minorities (e.g. homosexual people, Asian people) did not report positive attitudes towards the ingroup (i.e. overweight people), but they also internalized the stigma and expressed negative attitudes.

HYPOTHESES

This study was aimed at revealing the relationship between pathological eating behaviours and the expression of negative explicit attitudes towards overweight people. A further aim was to examine the importance of other factors possibly influencing stigmatization. A more general objective was to gain a broader picture of pathological eating patterns. For a related reason, the study involved both women and men in order to reveal possible gender differences.

Hypothesis 1. While both BMI as an objective factor and body image satisfaction influence the occurrence of pathological eating patterns, the latter is in stronger relation to disordered patterns (Schvey & White, 2014). *Hypothesis 2.* There is a positive relationship between the occurrence of pathological eating patterns and the expression of negative explicit attitudes towards overweight

people (Coker & Abraham, 2014; Hansson & Rasmussen, 2014). *Hypothesis 3.* Those showing severer symptoms of eating disorders are more likely to attribute changes in their body weight to controllable factors (Carels et al., 2010). *Hypothesis 4.* Those dissatisfied with their body are less aware of their being exposed to media effects on their views related to body weight and shape (Holmqvist & Frisén, 2012). As a consequence, those who show severer symptoms of eating disorders are (a) more responsive to attempts at influencing their views (attributions), and (b) more likely to change their attitudes towards overweight people in response to information obtained from an external source. More specifically, those who read a text explaining overweight by controllable factors are more likely to consider overweight controllable and to adopt stigmatizing views. By contrast, those presented with a text focusing on controllable factors are more likely to perceive overweight as less controllable and less likely to endorse stigmatization (DeJong, 1980; Latner et al., 2014). *Hypothesis 5.* High body weight does not exclude the expression of negative explicit attitudes towards overweight people (Crandall, 1994).

METHOD

Participants

A total of 500 participants including 64 men and 436 women were recruited by convenience sampling who completed an online questionnaire. The mean age of the sample was 27.75 years (SD = 9.3; range: 12 to 68 years). Each participant's BMI was calculated from their self-reported body weight (kg) and height (cm). The mean body weight was 73.02 kg (SD = 19.66; range: 34 to 180 kg), the mean height was 168.37 cm (SD = 7.53; range: 149 to 196 cm), and the mean of the calculated BMI values was 25.71 (SD = 6.52; range: 16.07 to 58.78). Participants were sorted into 7 classes according to the BMI ranges defined by the WHO (2014): moderate underweight (16 to 16.99; n = 2); mild underweight (17 to 18.49; n = 26); normal weight (18.5 to 24.99; n = 234); overweight (25 to 29.99; n = 130); obesity class I (30 to 34.99; n = 62); obesity class II (35-39.99; n = 23); obesity class III (≥ 40 ; n = 18).

Materials

Participants first completed the Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994; adapted to Hungarian by Túry, Mezei & Gulec, 2014). The 28-item questionnaire assesses behavioural symptoms of eating disorders. Besides the global scale, the questionnaire includes four subscales: Restraint, Eating Concern, Weight Concern and Shape Concern. Furthermore, 6 of the 28 items which statistically fall outside the four subscales, tap symptoms of pathological overeating specifically. These 6 items were not used in the study,

since it was aimed at gaining a general picture of eating disorders. Each of the 22 remaining items of the EDE-Q was rated on a 7-point scale pertaining to the previous 28 days. The scale used in the study showed high internal consistency (Cronbach's $\alpha = .923$), and the items replicated the original factor structure.

Body image satisfaction is determined by the difference between one's actual and desired body weight (Thompson & Stroman, 1996; Coker & Abraham, 2014). Following this definition, one specifically designed item was used to assess participants' body image satisfaction, which was rated on a 5-point scale ("To what extent are you satisfied with your weight?"; Hansson & Rasmussen, 2014).

Participants were presented with either of two different written accounts of the causes of obesity which were designed to manipulate their explicit attitudes towards overweight people (Latner, Puhl, Murakami & O'Brien, 2014). One of the texts focused on personal responsibility by emphasizing the importance of an unhealthy diet and a lack of regular physical activity. The other text drew attention to uncontrollable factors such as genetic predispositions and food addiction as a health condition. Participants were divided into two groups according to the two experimental conditions: those with an odd birth month read about uncontrollable factors, while those with an even birth month read about controllable factors.

The dependent variable was provided by participants' scores on the Attitudes Toward Obese Persons scale (ATOP; Allison et al., 1991). The ATOP is a Likert scale comprising 20 items, which assess explicit attitudes towards overweight people. Each Likert item is rated on a 6-point scale ranging from "strongly disagree" to "strongly agree". The Cronbach's α coefficient of the scale was .753.

Furthermore, the Beliefs About Obese Persons scale (BAOP; Allison et al., 1991) was used to measure participants' views on the controllability of overweight. The BAOP scale consists of 8 Likert items, each rated on a 6-point scale according to the extent the respondent agrees with each. This scale showed inadequate internal consistency in the study (Cronbach's $\alpha = .571$). Two items (No. 2 and 7) fell outside the scale statistically, therefore they were removed. The remaining six items showed adequate internal consistency (Cronbach's $\alpha = .739$).

The Hungarian translations of the item tapping body weight satisfaction, the texts discussing the causes of overweight and the ATOP and BAOP scales were verified by the back-translation procedure. An English-Hungarian bilingual person translated the original contents to Hungarian, then the Hungarian translations were back-translated by another person also having adequate skills in both languages, and the original and back-translated English versions were finally collated and approved by other competent contributors.

Procedure

Completion of the online questionnaire took 10 to 15 minutes. Participants first provided basic demographic data (gender, age) and their weight (kg) and height

(cm). Then they were assigned to one of two experimental conditions according to whether they entered an even or odd birth month. Participants in each condition were presented with one of the two texts designed to manipulate their views on the controllability of overweight and their explicit attitudes towards overweight people.

The EDE-Q scale was then administered to all participants. They were instructed to respond with sincerity and to the best of their knowledge. Participants then indicated how satisfied they were with their weight on the designated 5-point scale. Next, their explicit attitudes towards overweight people were assessed by the ATOP scale. Finally, they shared their views on the controllability of overweight by completing the BAOP scale.

RESULTS

Hypothesis 1 predicted that BMI as an objective factor would influence the occurrence of pathological eating patterns, but body image satisfaction would be in stronger relation to disordered patterns. A Shapiro-Wilk test revealed that the involved variables (BMI, body image satisfaction, overall score on symptoms of eating disorders) did not have normal distribution ($p < .05$), therefore their correlations were examined with Spearman's non-parametric rank correlation coefficient. The results confirmed the hypothesis. On one hand, the overall EDE-Q score on symptoms of eating disorders and body image satisfaction showed a moderate negative correlation ($r(496) = -.556, p < .001$). No significant difference was found between women and men ($r(432) = -.557, p < .001$; and $r(62) = -.434, p < .001$, respectively). On the other hand, the BMI and the overall EDE-Q score showed a significant but weak positive correlation as expected ($r(496) = .268, p < .001$). No significant difference was found between women and men in this case either ($r(432) = .283, p < .001$; and $r(62) = .276, p = .027$, respectively).

Hypothesis 2 predicted that participants showing severer symptoms of eating disorders would express more negative explicit attitudes towards overweight people. A Shapiro-Wilk test revealed that the involved variables (overall EDE-Q score and ATOP score) did not have normal distribution ($p < .05$), therefore their correlation was examined with Spearman's rank correlation coefficient. Data on the overall sample confirmed the hypothesis: a significant but weak positive correlation was found between the two variables ($r(498) = -.323, p < .001$). However, a significant difference was found between women and men in this regard: the two variables did not show a significant relationship in the latter case ($r(434) = -.367, p < .001$; and $r(62) = -.068, p = .591$, respectively). A Kruskal-Wallis test was conducted with ATOP as the dependent variable and the overall EDE-Q score as the grouping variable. Participants were assigned to low, normal

and high EDE-Q groups depending on whether their respective EDE-Q scores lay within or fell outside one standard deviation. According to pairwise comparisons by the Mann-Whitney U test the three groups showed significantly different ATOP medians (low EDE-Q = 65, normal EDE-Q = 63, high EDE-Q = 48; $H(2) = 49.95, p < .001$; see *Table 1* and *Fig. 1*). A gender difference was also found: while the three male groups did not show a significant difference in their ATOP medians ($H(2) = 1.97, p = .373$), the female groups did ($H(2) = 47.051, p < .001$; see *Fig 2*).

EDE-Q	ATOP					
Group	n	M	SD	Median	Min.	Max.
LOW	84	65,1	14,35	65	25	110
NORMAL	331	62,62	13,54	63	22	99
HIGH	85	48,68	17,4	48	12	82

Table 1. Descriptive data of the ATOP scale in the three EDE-Q groups.

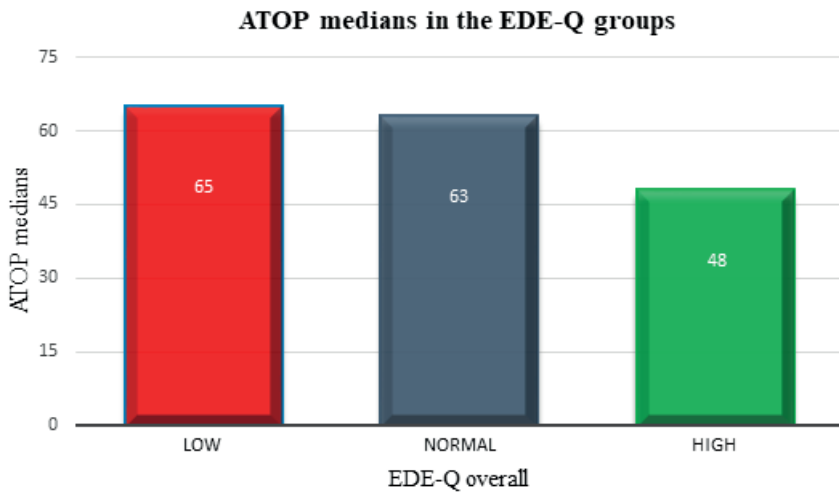


Fig. 1. ATOP medians in the low, normal and high EDE-Q groups. Groups with increasing EDE-Q scores show increasingly negative attitudes towards overweight people (as indicated by decreasing ATOP medians).

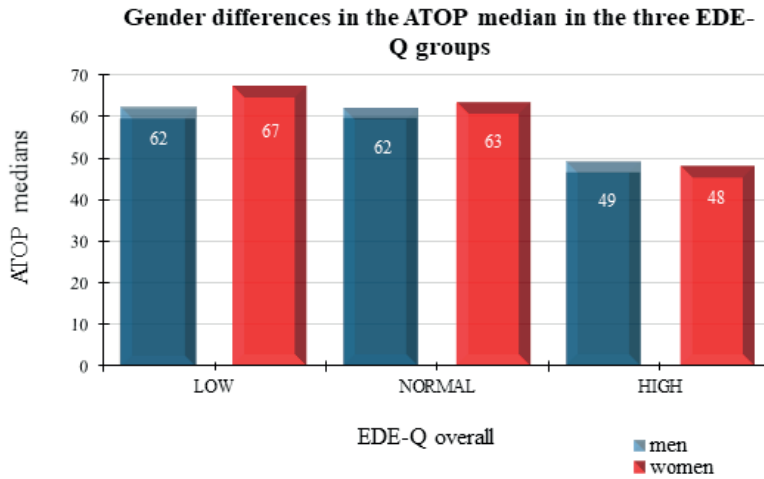


Fig. 2. Gender differences in the ATOP median in the low, normal and high EDE-Q groups. Female groups with increasing EDE-Q scores show increasingly negative attitudes towards overweight people (as indicated by decreasing ATOP medians). Regarding male participants, only the high EDE-Q group showed a decreased ATOP median as compared to the other two groups.

Hypothesis 3 predicted that those showing severer symptoms of eating disorders would be more likely to attribute changes in body weight to controllable factors. A Shapiro-Wilk test revealed that the involved variables (overall EDE-Q score and BAOP score) did not have normal distribution ($p < .05$), therefore their correlation was examined with Spearman's rank correlation coefficient. Although the two variables showed a significant negative correlation as expected, the observed relationship was weak ($r(498) = -.234, p < .001$). A Kruskal-Wallis test was conducted with BAOP as the dependent variable and the previously defined low, normal and high EDE-Q groups as the grouping variable. The three groups showed significantly different BAOP medians (low EDE-Q = 12.5, normal EDE-Q = 10, high EDE-Q = 8; $H(2) = 18.9, p < .001$; see *Table 2*). A gender difference was also found: while female participants' BAOP and EDE-Q scores showed the expected significant negative correlation ($r(434) = -.233, p < .001$), male participants' data did not confirm the hypothesis ($r(62) = -.048, p = .709$).

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EDE-Q	BAOP						
	Group	n	M	SD	Median	Min.	Max.
LOW		84	12,93	6,03	12,5	0	31
NORMAL		331	11,78	7	10	0	34
HIGH		85	8,93	7,1	8	0	30

Table 2. Descriptive data of the BAOP scale in the three EDE-Q groups.

Hypothesis 4(a) predicted that those who showed severer symptoms of eating disorders would be more likely to adapt their views on the causes of overweight to information received from an external source. In this case, the independent variables were the overall EDE-Q score (low, normal and high groups) and the experimental condition (information on the controllability versus uncontrollability of overweight), while the dependent variable was the BAOP score. The difference between the two experimental groups in their views was predicted to be the largest in the high EDE-Q group and the smallest in the low EDE-Q group, with participants in the “uncontrollability” condition showing lower BAOP scores within each EDE-Q group. In the high EDE-Q group, the medians in the two experimental conditions significantly differed in the expected direction ($U = 880.5, Z = -0.227, p = .82$), that is, those presented with the text focusing on uncontrollable factors perceived overweight as less controllable. However, no significant difference was found between the two experimental conditions in the normal and low EDE-Q groups ($U = 11713, Z = -1.279, p = .20$; and $U = 664.5, Z = -2.431, p = .015$, respectively; see *Table 3* and *Fig. 3*).

EDE-Q	Group	Condition	BAOP					
			n	M	SD	Median	Min.	Max.
LOW		1.	49	12.92	6.44	12	0	31
		2.	35	12.94	5.51	13	5	25
NORMAL		1.	172	12.48	7.7	11	0	34
		2.	159	11.01	6.1	10	0	30
HIGH		1.	34	10.91	7.41	10	0	26
		2.	51	7.61	6.61	6	0	30

Table 3. Descriptive data of the BAOP scale broken down by EDE-Q groups and experimental conditions

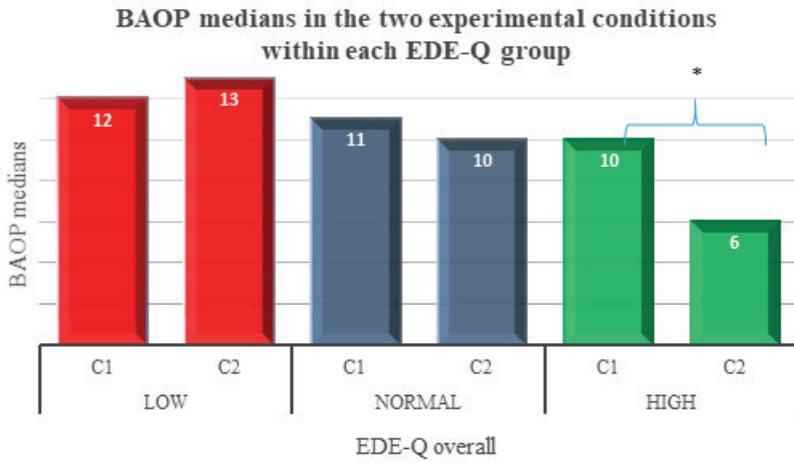


Fig. 3. BAOP medians in the two experimental conditions within the low, normal and high EDE-Q group. No significant difference was found between the two experimental conditions in the normal and low EDE-Q groups. In the high EDE-Q group, the BAOP medians in the two experimental conditions significantly differed in the expected direction.

* $p = .015$

Hypothesis 4(b) predicted that those who showed severer symptoms of eating disorders would be more likely to change their attitudes towards overweight people in response to external information focusing on the controllability versus uncontrollability of overweight. The independent variables were the overall EDE-Q score (low, normal and high groups) and the experimental condition (information on the controllability versus uncontrollability of overweight), while the dependent variable was the ATOP score. The obtained results did not confirm the hypothesis, that is, the experimental manipulation had no effect on participants' attitudes in any of the three EDE-Q groups (Group 1 (medians: 66, 65): $U = 867$, $Z = -0.345$, $p = .73$; Group 2 (medians: 62, 63): $U = 12751$, $Z = -0.021$, $p = .984$; Group 3 (medians: 48, 48): $U = 923$, $Z = -0.26$, $p = .795$).

Hypothesis 5 predicted that having a relatively high BMI would not exclude discrimination against overweight people as measured by the ATOP scale. The hypothesis was tested with Spearman's rank correlation coefficient and a Kruskal-Wallis test. No significant correlation was found between the two variables ($r(496) = .003$, $p = .948$). The Kruskal-Wallis test revealed that the seven BMI groups showed significantly different ATOP medians ($H(6) = 26.287$, $p < .001$), but higher BMI values were not systematically accompanied by more positive attitudes. The most positive attitudes were expressed by those having normal body weight. In sum, the results confirmed the hypothesis (see *Table 4*).

BMI	ATOP					
	Group	n	M	SD	Median	Min.
1	2	55	14.14	55	45	65
2	26	43.15	19.16	27	27	82
3	234	62.68	13.67	64	27	95
4	130	61.6	15.53	62	20	110
5	62	60	14.1	58	21	99
6	23	59.26	15.16	63	12	92
7	18	57.9	17.54	54.5	24	98

Table 4. Descriptive data of the ATOP scale in the seven BMI groups.

DISCUSSION

Hypothesis 1 was confirmed by the relevant findings: body image dissatisfaction is one of the most important factors contributing to the development of pathological eating patterns and, as a consequence, eating disorders. As Saules and colleagues (2009) point out objective and perceived overweight are two different and often unrelated phenomena. BMI, that is objective body weight is a less important moderating factor of pathological eating behaviours. It is a risk factor of course, but obesity in itself is not an eating disorder (Darby et al., 2009). Of the 500 participants of the present study, 308 were completely or rather dissatisfied with their body weight, 128 were neither dissatisfied nor satisfied, and only 64 were rather or completely satisfied. That is more than 60% of the participants were dissatisfied with their weight whereas only 46.6% were classified as overweight or obese (class I, II, III) according to their BMI values.

Hypothesis 2 predicted that participants showing severer symptoms of eating disorders would express more negative explicit attitudes towards overweight people. This hypothesis was based on the consideration that people suffering from eating disorders would internalize weight-related norms, which would negatively affect their perception and judgment of others' weight as well as of their own (Tiggemann & Wilson-Barrett, 1998). The obtained results confirmed the hypothesis, since a significant albeit weak relationship was found between the involved variables. However, a marked gender difference further refined this finding: no significant correlation was observed among male participants. Since pathological eating behaviours are more prevalent among women, they may endorse harsher stigmatizing views on obese people, although there are several empirical findings that do not support this explanation (e.g. Crandall, 1994; Hilbert, Rief, & Braehler, 2008; Latner, Stunkard & Wilson, 2005). In this study, no gender difference was found in participants' attitudes.

Vartanian and colleagues (2005) point out that most people express implicit attitudes towards overweight irrespective of whether or not they show any pathological eating pattern or restraint. Those who consciously restrict food intake also express explicit negative attitudes. A possible explanation is that healthy, non-restricting people implicitly express but not internalize attitudes based on social norms, thus these attitudes are not expressed explicitly. A methodological limitation of the present study is that it did not tackle possible social desirability biases, which could be circumvented by using implicit measures (e.g. IAT, SST).

Hypothesis 3 was based on that proposed by Hansson and Rasmussen (2014) predicting that the more controllable one considered changes in body weight, the more negative explicit attitude one would hold towards obese people. Furthermore, we followed the rationale behind Hypothesis 2 in predicting that those showing severer symptoms of eating disorders would express more negative explicit attitudes. In sum, those reporting severer symptoms of eating disorders were expected to primarily attribute changes in body weight to controllable factors and to hold overweight people responsible for their physical state. Perceived controllability and pathological eating patterns showed a weak but significant relationship. This relationship was only observed among women and not among men. This finding suggests that women tend to assign responsibility for one's weight and shape to the individual including themselves as well. This is consistent with the internalization of expectations and prejudicial views which in turn largely contributes to the emergence of eating disorders.

Hypothesis 4 concerned media effects on individuals' attitudes, beliefs and behaviour (Strasburger, Jordan & Donnerstein, 2010). More specifically the study focused on the possible impact of pathological eating patterns on individuals' responsiveness to such effects. This hypothesis was based on several previous findings suggesting that those more dissatisfied with their body image would take a less critical approach to media contents related to body weight and shape (Holmqvist & Frisé, 2012; Wood-Barcalow, Tylka, & Augustus-Horvath, 2010). *Hypothesis 4(a)* predicted that those who showed severer symptoms of eating disorders would be more responsive to manipulation targeted at influencing their weight-related attributions. This hypothesis was confirmed by the expected difference of views observed in the subsample showing the severest symptoms, whereas no such difference was found in the other two subsamples showing less severe symptoms.

Hypothesis 4(b) focused on the possible impact of pathological eating patterns on changes in explicit attitudes towards overweight people in response to external information. The underlying consideration was that attribution would be the most important factor influencing attitudes towards obese people and that attitudes would be primarily influenced by controllable factors contributing to overweight (Crandall, 1994; Hilbert, Rief & Braehler, 2008). It has to be noted, however, that the related studies obtained inconsistent findings, which suggests that uncontrollable

factors have some importance as well (Danielsdottir, O'Brien & Ciao, 2010; Persky & Eccleston, 2011). For this reason, the first experimental condition in the present study was based on the so-called "addiction theory" which accounts for overweight as a consequence of addictive craving for food particularly high in carbohydrates and fat (Gearhardt, Corbin & Brownell, 2009). Latner and colleagues (2014) found that less negative explicit attitudes were reported by those whose attention was previously drawn to such uncontrollable factors. This raises the prospect that promoting the addiction theory could mitigate the stigmatization of obese people at the societal level (Danielsdottir et al., 2010). The obtained results did not confirm Hypothesis 4(b), that is the experimental manipulation did not have a stronger effect on the explicit attitudes of participants with severer symptoms of eating disorders than on those of other participants.

Hypothesis 5 predicted that having a relatively high BMI would not exclude the expression of negative explicit attitudes towards overweight people. This hypothesis is not unrelated to the social identity theory (Tajfel & Turner, 1979) and the related findings obtained by Tajfel and colleagues (1971) in the minimal group paradigm which point out that people tend to evaluate their ingroup more positively than outgroups in order to maintain a positively distinctive social identity. However, several empirical findings suggest that this tendency does not apply to overweight people (e.g. Crandall, 1994). A possible explanation for this observation is that overweight as a group membership is not as determined and unchangeable as other group memberships such as race or even sexual identity (Tiggemann & Anesbury, 2000). Major, Eliezer and Rieck (2012) note that there are people who internalize social stigmata and attitudes before they themselves become overweight and their new group membership has no impact on these stigmata and attitudes. In consistence with Hypothesis 5, no relationship was found between participants' BMI and their negative explicit attitudes towards overweight people. Although the attitudes of participants sorted into different BMI ranges did show differences, higher BMI values were not systematically accompanied by more positive attitudes towards overweight people. The most positive attitudes were expressed by those having normal body weight.

A serious limitation of the study is that it was conducted with a non-representative sample in which the proportion of female participants was 87.2%. This highly unbalanced gender distribution might distort the findings both on the overall sample and on men specifically. Participants were involved on a voluntary basis and women presumably were more interested in the subject, hence the much higher proportion of female participants in the sample. A further limitation of the study is that participants recorded weight and height were based on self-reported data, which might in some cases deviate from factual data. For this reason, participants' body weight and height should be objectively measured in subsequent studies. It has to be noted, however, that while BMI is an important indicator of obesity, it does not indicate body fat percentage

(Neovius, Linné, Barkeling & Rossner, 2004). Therefore it is possible that some of the participants were erroneously classified as overweight or obese due to their high muscle mass.

Body image dissatisfaction was assessed with one item specifically designed for this purpose (Hansson & Rasmussen, 2014). Since this is an essential factor closely related to other variables examined in the present study, a more sophisticated multidimensional measure should be used in subsequent studies.

Many of the participants (around 60% of the overall sample) pursued a fitness lifestyle essentially requiring a healthy diet and regular physical activity. This presumably explains why scores on the global EDE-Q scale and on its subscales reached levels much above the normal, healthy range. The low, normal and high EDE-Q ranges used in the present study were solely based on the distribution of participants' responses, no account was taken of the standard ranges. For this reason, the obtained findings may only be generalized to the normal population with restrictions. Furthermore, characteristics of the sample raise questions concerning the forms and extent of pathological eating patterns occurring among those pursuing a "healthy fitness lifestyle". More specifically, the question is whether a lifestyle intended to be healthy may lead to eating disorders as a result of excessively restrictive behaviour. As Túry and colleagues (2010) point out, current social trends and norms result in new forms of eating disorders closely related to the fitness lifestyle such as orthorexia nervosa, muscle dysmorphia, bodybuilding-related eating disorder, and exercise addiction. These issues point to the need for empirical research specifically focusing on individuals following fitness norms.

The findings of the present study suggest that one's beliefs about one's own body have more importance than objective reality in both women's and men's eating behaviour which means that eating disorders are related to distorted perception rather than to overweight in itself. This circular process may in turn lead to the internalization of negative attitudes extending to others' physical appearance beyond one's own body and this generalized perception results in the highly negative judgment of overweight people.

Taking a critical approach to media contents related to body weight and shape may reduce the influence of such information, since it enables individuals to protect themselves from internalizing beauty ideals communicated by the media (McLean, Paxton & Wertheim, 2016), and this may eventually mitigate the resulting negative health outcomes (Austin, Chen & Grube, 2006).

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