

Health behaviours as mediators of relationships between the actual image and real and ideal images of one's own body

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A Study Design
B Data Collection
C Statistical Analysis
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abstract

Background: Health behaviours are consolidated and modified throughout human life; however, adolescence is a significant stage in the process of acquiring them. One of the identifiers of the represented health behaviours is a proper level of body fat influenced by self-assessment of own image.

Material/Methods: The authors considered relationships between the real image, health behaviours and self-assessment of own appearance; these were analysed using a sample of randomly selected 830 adolescents. The body composition analysis was conducted by means of bioelectrical impedance, assessment of self-image was done with Stunkard's Figure Rating Scale, and assessment of health behaviours was done with Juczyński's Health Behaviour Inventory.

Results: The mediatory role of health behaviours between the actual body outline and the self-assessment of body image as well as the desired body was not observed; nonetheless, most of the respondents wanted a slimmer body.

Conclusions: The observed difference between self-assessment of the real and the desired body and the related consequences for physical and psychological health encourage one to include promotion of a positive body image itself to stabilize high body self-esteem.

Key words: body mass, health behaviours, body image, mediators.

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INTRODUCTION

Defining the concept of “health behaviours” is not easy, as the issue itself has long been a subject of discussion to many scientists specialising in different fields of study. With regard to specific, and often different, approach of a particular scientific domain to the research subject, there have been different classifications and concepts for defining health behaviours [1].

It should be emphasised that these behaviours do not form a uniform construct which could be defined or operationalised in a form of “a positive lifestyle”. Admittedly, in its specific sense, health behaviours are limited only to health-promoting activities which are used by an individual to protect, maintain and multiply values of health; however, in the broader perspective, their clearly subjective nature is emphasised and considerable significance of psychological mechanisms in these behaviours is indicated. The approach represented by Gochman goes beyond the area of evident activities, taking the influence of our beliefs, expectations, fixed ideas and emotions on health into consideration [2]. Actions taken by individuals result from the particular attitude towards health; and within the scope of health practices, these, among others, concern controlling body mass and following dietary recommendations, limiting the use of stimulants, participating in physical activities, coping with stress and negative emotions, and prophylactic behaviours [3] aimed at health promotion and limiting the risk of untimely death [4]. What is important, achieving these results is possible regardless of the initial value of the body mass index [5]. The latter, apart from body composition, was considered by the authors in order to assess the actual appearance. However, in the light of the latest research published in the *International Journal of Obesity*, the fact that maintaining the body mass index within the normal range should not be the main goal of good health condition is worth emphasising here [6]. Still, one cannot deny that body fatness and body mass and weight proportion indices determined by lifestyle, including health behaviours, may be treated as identifiers of health-promoting quality of the represented lifestyle [7].

The actual body image, which is measured with a level of fatness or other anthropometric indices (e.g. WHtR, WC), not necessarily and not always corresponds with a psychological representation of one's own somatic self. Among these representations, that is, different kinds of mental images as, for instance, body schema or integrated perceptive image of the somatic self, considering gender and the attributes of womanhood or manhood, one may also find the assessment of somatic self most of all concerning the assessment of own looks [8]. The body image is the notion coined by Schilder and it means the image of our own body which is created in our mind and it is the image of our body for us; this is a kind of self-perception developed and moulded with many factors: interpersonal, environmental and temporal one. According to Slide and Russel, the body image is a sensorial image of body shapes and sizes accompanied with feelings related to the whole body or body parts [9]. The significance of a body to psychological functioning of a human being is tremendous, as a body image constitutes one of the most significant components of self-image, the most representative part of Self. According to Higgins' theory, Self is a component of personal knowledge of an individual, a cognitive structure which is focused on experience related to own self [10].

The states of Self are described through two dimensions: objective (contents creating the particular state of Self) and subjective (the perspective used to determine the contents of a particular state of Self, the point of view used to observe one's self).

This article focuses on the objective dimension of Self. The theory distinguishes three components of Self. These represent the current, ideal and duty-imposing qualities which are perceived as standards or orientations of Self. The system of Self is a relation construct and that means that its functioning is dependent on relations/differences occurring between the mentioned, particular areas of Self, and this is within the interest of Higgins' self-discrepancy theory. By pursuing the ideal concept of self (ideal Self), the individual aims at obtaining positive results; on the other hand, by fulfilling obligations included in duty-imposing Self, he avoids negative results. The authors of this article found the relationships between the actual image, health behaviours and self-assessment of looks interesting; therefore, the research objective is an attempt at determining whether health behaviours constitute a variable intervening between the actual and the real and the ideal image of one's own figure in the group of adolescents in their late adolescence years.

MATERIAL AND METHODS

The questionnaire survey was carried out in 2014 among 830 people (girls, women, boys, men) with the use of a diagnostic survey. Selection of the sample was random and the respondents were from 16 to 24 years old. As Trempała suggested, it was assumed that adolescence is a period from 10/12 years of age to 20/23 years of age and it includes two stages: early adolescence (10-16 years) and late adolescence (17-20/23 years). The boundaries of this period are conventional since these are determined by a specific character of biological development (puberty) and completion of the period of education [11]. The research was conducted by means of the auditory method, observing the anonymity principle. The authors of the study used the method of the diagnostic survey using the audit survey technique. The basic study tool was a questionnaire and a pictorial test of silhouettes. The research study used the standardised tools, among others: 1) Figure Rating Scale (FRS) [12] and 2) Health Behaviour Inventory [2].

Furthermore, anthropometric measurements were taken according to the standards and the respondents' body composition was analysed.

The assessment of self-image/body image was conducted by means of the Figure Rating Scale (FRS) test. This test shows ten figures diversified with regard to body mass, arranged from very thin (1) to obese (9). The respondents selected which figure is the most similar to their figure (defining the current figure) and which one is the most desired (defining the ideal figure). The bigger the observed discrepancy between the selected perceived body image and the idealised body image, the bigger dissatisfaction with one's own body. The particular figures had their estimated reflections in the ranges of values of the body mass index (BMI) and their interpretations. According to these, numbers 1,2 correspond with underweight; 3,4,5,6 correspond with body mass within the range of normal weight and 7,8,9 with overweight [13]. The effectiveness of this method has been confirmed in the previous observations of other authors [12, 14, 15].

The assessment of normality with regard to body mass was carried out on the basis of the body composition analysis. Body composition analysis is a quantitative diagnosis of components of human body composition using bioimpedance technology (BIA). On the basis of the conducted anthropometric analysis (these measurements were taken with the use of Martin's technique and tools) [16] of height and weight using SECA 217 stadiometer and TANITA SC 330 S body composition analyser, BMI index was calculated, which is the body mass (kg) divided by the square of the body height in metres [17]. According to the guidelines [18] of the World Health Organisation (WHO), the recommended value of this index should be 18.5–24.9 kg/m². For respondents under 18 years of age, BMI index thresholds were used (which are equivalent to 18.5, 25 and 30 BMI values for adults), determined for underweight and overweight depending on the respondent's gender and age, developed by the International Obesity Task Force (IOTF) and published by Cole et al. [19, 20]. What is more, taking advantage of bioelectrical impedance (BIA) in Tanita SC 330 S analyser enabled calculating the respondents' body composition. The research consisted in measuring electrical resistance including soft tissue resistance and reactance passing electric current of low intensity through this tissue. By means of the BIA, the body mass, fat mass and lean tissue mass including the total body water (TBW) were measured in the respondents. The analyses were conducted according to the standard protocol on the basis of the manufacturer's recommendations [21].

The assessment of health behaviours (HB) was carried out by means of the Health Behaviour Inventory [2], which is a tool of self-description including 24 statements concerning different kinds of health behaviours. The possible answers included 5 categories: almost never, seldom, from time to time, often, almost always and points from 1 to 5 were attributed to these categories. The obtained points were summed up. The total health behaviour intensity index measured with the HBI scale, falls within 24–120 points. The higher the score, the higher intensity of the declared health behaviours. The obtained number of points was recalculated according to gender for sten scores and interpreted according to the categories of low (1–4 stens), average (5–6 stens) and high scores (7–10 stens). The article used the general assessment of the index of intensity of health-promoting behaviours and the index is derived from four categories of health behaviors: correct eating habits, preventive behaviors, positive mental attitudes and health practices.

STATISTICAL METHODS

The statistical analysis was carried out on the basis of SPSS software (Statistical Package for Social Science). In order to answer the question which indices of the actual body figure enable one to significantly predict the real and the ideal image, the analysis was conducted with the use of the generalised least-squares method (GLS). To estimate the mediatory influence of the postulated factors, the significance test for indirect and direct effects in the model of regression by the least-squares method with the estimation of 95% bootstrap confidence interval for estimators was applied.

RESULTS

Within the analysed population, most of the respondents showed low and average level of health behaviours; 11.8% reached the declared high level of these behaviours. A detailed distribution is shown in Table 1.

The vast majority of respondents were characterised by the proper value of body mass index (Table 2) and body fatness (Table 3).

Table 1. Assessment of the respondents' health behaviours

Assessment of health behaviour	N	%	Cumulative %
Low	420	50.6	50.6
Average	312	37.6	88.2
High	98	11.8	100.0
Total	830	100.0	-

Table 2. Assessment of the value of the respondents body mass index (BMI)

BMI value interpretation	N	%	Cumulative %
Underweight	96	11.6	11.6
Normal weight	623	75.1	86.6
Overweight	81	9.8	96.4
Obesity	30	3.6	100.0
Total	830	100.0	-

Table 3. Assessment of the respondents' fatness level

Fatness level interpretation	N	%	Cumulative %
Unacceptable	112	13.5	13.5
Improper	79	9.5	23.0
Moderate	145	17.5	40.5
Recommended	351	42.3	82.8
Proper	143	17.2	100.0
Total	830	100.0	-

The analysis showed discrepancies between the ideal and the real concept of self. The desire of most of the respondents was to have a slim body. The percentage distribution of the respondents according to their category of figures, respectively, of underweight, normal weight and overweight, is presented in Tables 4 and 5.

The results of the conducted analysis showed that the general result of the measurement of health behaviours is not a significant mediator of relationships between any of the indices of the actual figure and the ideal or real image. There is a significant relationship between the BMI ($\beta=.26$) and the TBW percentage ($\beta=.12$) and the health behaviours; however, it turns out that the relationship between health behaviours and the real or ideal image of own figure is insignificant ($\beta=.00$). Thus the conclusion that the general result of health behaviours does not play the role of mediator between the actual and real and ideal image of one's own figure (Fig. 1).

Table 4. The results of Stunkard's Figure Rating Scale for real somatic Self of the respondents

Real figure (no. of figure type)	N	%	Cumulative %
1	12	1.4	1.4
2	92	11.1	12.5
3	236	28.4	41.0
4	311	37.5	78.4
5	124	14.9	93.4
6	36	4.3	97.7
7	13	1.6	99.3
8	2	0.2	99.5
9	4	0.5	100.0
Total	830	100.0	-

Table 5. The results of Stunkard's Figure Rating Scale for ideal somatic Self of the respondents

Desired figure (no. of figure type)	N	%	Cumulative %
1	28	3.4	3.4
2	222	26.7	30.1
3	336	40.5	70.6
4	200	24.1	94.7
5	34	4.1	98.8
6	3	0.4	99.2
7	2	0.2	99.4
8	1	0.1	99.5
9	4	0.5	100.0
Total	830	100.0	-

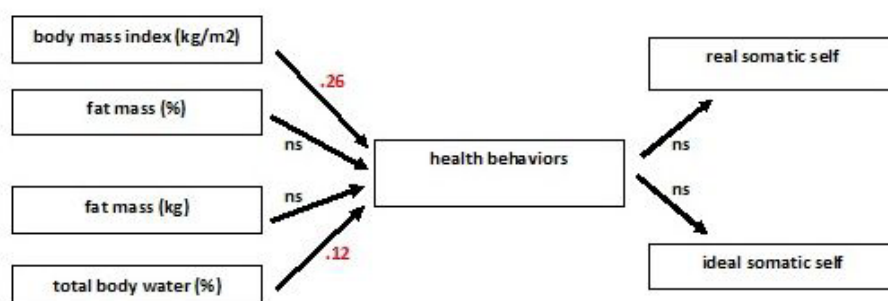


Fig. 1. The resultant diagram of relationships for estimation of the mediatory effect of the general result of HBI for moulding of relationships between the actual figure and its ideal and real image

DISCUSSION

The analysis presented in the research results did not confirm the mediatory role of health behaviours between the actual figure, determined with the body mass composition and the BMI body mass and weight proportion, and the real and ideal image of one's own figure in the analysed group. The period of adolescence and early adulthood seemed especially interesting to the authors, most of all, due to the fact that, according to the literature on the subject, it is crucial to the development of own body image. As it turned out, the general self-assessment, therefore, the one including body self-assessment, decreases in adolescence, and the especially significant gender differences are noticed in the period of early adolescence when girls are characterised with its significantly lower level in relation to boys [11]. This does not have to mean though that these differences will also occur during late adolescence. Body self-assessment is a significant element of creating own identity for both boys and girls as well as young women and men [22]. Simultaneously, it is worth mentioning that the level of body self-assessment in adolescents is conditioned by numerous factors, including social, cultural and physical [23] and personality-based factors as, for instance, the sense of coherence [24].

In the analysed group, most of the respondents showed a strong willingness to have slim, thin figure. Therefore, the discrepancy between the current assessment of their own bodies and the image of the one they were willing to have is considerable. According to Higgin's theory, the existence of this discrepancy constitutes a cognitive structure and creates a certain kind of negative psychological situation related to emotional and motivational consequences [25]. The majority of respondents wanted a slim body which confirms the general trend and is not surprising as a slim body (desired, by the way, from an early age [26]) seems to be a cultural requirement which is, nowadays, the perspective for people who use it to perceive themselves and others (these are times of liquid modernity, when, according to Bauman, among many quantifiers, people mention the duty of being fit, healthy, young or slim [27], and obesity is socially disapproved and associated with a lack of self-control, laziness, apathy, etc. [28]). The symptoms of this phenomenon can be observed, among others, at schools, where stigmatisation of people with excessive body mass often takes the form of psychological abuse and is connected with humiliation, derision, abusive gestures associated with one's overweight.

A similar situation can occur in the workplace where obese people experience different forms of prejudice and discrimination [29]. The stigma of obesity may mould interpersonal relations and be the source of negative life experiences. However, it should be emphasised that in the light of research studies this is not a rule, and the example here can be the analysis represented by Michoń [30]. The research studies using the figure rating scale test have shown that both women and men whose real somatic self is bigger than the ideal are less satisfied with their image. On the other hand, it is well known that regardless of the body size, its positive image brings about many health advantages, both those concerning physical and psychological health [31]. Promotion of the positive image of own bodiliness should be incorporated into all interventions related to modification of health behaviours. To men, the ideal of bodiliness is a muscular body [32] and to women, the ideal figure they wish to have is a slim body [33]. According to Walijewska [34] (after: Starzomska & Cywlik, 2013), "women and men are dragged by the media and advertisement into the game with no chances to win; being full of despair, passion and obsession,

they search for ways to realise ideals and cultural standards and become anorexic or bulimic instead – a tragic parody of youthfulness and beauty symbolised by a slim body, and, in the case of men - bigorexia”. The research studies have shown that low body self-esteem in the early adulthood may be related to an increase in BMI index in adolescence [35].

The overview of the literature indicates the fact of inadequateness of body figure's perception by adolescents and young adults compared to the actual state, expressed with the value of body mass index. Simultaneously, with regard to health-harming activities connected with controlling the body mass, the need of educating young people in the ability of assessing own body mass is mentioned [36]. The relationships between the real body mass (body fatness indices) and body image (real somatic Self) are significant because of their impact on health behaviours. The negative interactions between BMI and the body image can be the reason for a lack of physical activity or eating disorders. In the analysed group, there were no considerable discrepancies between the figure self-assessment (real somatic Self) and the actual figure, assessed on the basis of the objective anthropometric indices, observed. On the other hand, there was, typical of this age group, difference in the scope of health behaviours; however, most of the respondents were characterised by their low or average level, and the high level was obtained only by 11.8%. The results received by the authors of this article are concurrent with the observations of other authors [37, 38, 39]. According to the overview of the literature on the subject, health is high in the hierarchy of values of adolescents and young adults (university students) and their knowledge of the rules of the so-called healthy lifestyle is quite extensive; however, this is not directly reflected in taking health-promoting actions [40]. It should be emphasised here that the influence of health behaviours on health indices is unquestionable [41, 42]; what is more, adolescents' health and their health behaviours have a direct bearing on their school performance and may constitute a prognostic factor of continuing education at a higher level [43, 44].

The results of own research showed a relationship between health behaviours and the height and weight index as well as fatness index; nonetheless, the relationship between the health behaviours and the ideal somatic Self or the real somatic self was insignificant. This suggests the interpretation that the awareness within the scope of the necessity of taking health-promoting actions and the need of considering different kinds of areas related to healthy habits, healthy diet and the proper amount of physical activity, sleep and relaxation remain outside the respondents interests due to their young age. What is more, some research studies show that adolescents often take actions to maintain or reduce weight which are not necessarily health-promoting, e.g. restrictive diets consisting in reducing a number of meals [45]. Important aspects of taking health-promoting actions are individual's beliefs in this scope [46]. However, healthy beliefs themselves are not enough since, according to the recommendations of social psychologists, one of the significant determinants of taking new actions are expectations regarding the effects of the future change, that is, the expected gains and losses. These may concern both health and social functioning and the assessment of Self [47]. The issues discussed by the authors revealed relationships between the represented health behaviours and body sizes, which, according to the literature on the subject, may be a positive or negative measure of health [48]. In the health behaviours – real somatic Self - ideal somatic Self relation there is no such dependence and

this inclines the authors to continue the research in this scope. A future longitudinal research study taking the process of modifying health behaviours into consideration seems to be justified here.

Including adolescents and young adults in the research and leaving out other possible research groups causes the impossibility of generalizing the results for the whole population. In the future, one should broaden the research work concerning this subject to other age groups as well as the groups diversified sociodemographically, cognitively, psychologically, situationally or somatically. Considering the depths of the rooting of gender stereotypes in taking health-related actions, the direction of further research should be the assessment of the mediatory role of these actions in women and men separately.

CONCLUSIONS

Getting to know the mutual relationships between health behaviours, body mass, its self-assessment and our desires concerning body looks is a challenge for preventive health care and health promotion. The authors of this article did not observe the mediatory role of health behaviours. A possible relationship between the process of modification of health behaviours and the discrepancy between the real somatic Self and the ideal somatic Self seems to be interesting and this provides a direction for further research. The observed discrepancy between self-assessment of the real and the desired figure and the related possible consequences for psychological and physical health incline one to include the promotion of a positive body image identified with a stable high body self-esteem.

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