

# Properties of the Italian version of the Body Weight Image and Self-Esteem (B-WISE) in a non-clinical sample

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## Abstract

*This study aims at assessing psychometric properties of the Italian version of the Body Weight Image and Self-Esteem (B-WISE) originally developed by Awad and Voruganti (2004) with psychiatric patients.*

*The subjects were 1,033 non-clinical Italians with an average chronological age of 27.49 years ( $SD = 8.91$ ). With regard to gender, there were 547 females and 491 males. Participants were administered self-report instruments: the B-WISE Questionnaire (Awad and Voruganti, 2004) and the Rosenberg Self-Esteem Scale (1965).*

*The exploratory factor analysis revealed the existence of 3 factors explaining the 48.03% of total variance. With regard to internal consistency, our study showed a not satisfactory internal consistency of B-WISE by obtaining weak values of  $\alpha$  ranging from .43 to .45.*

*We found significant differences on body image between males and females. Males showed a higher body satisfaction. Moreover they revealed positive significant associations between body-image and self-esteem.*

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*Results encouraged the use of the B-WISE questionnaire and highlighted the need for this measure to be employed in order to compare clinical and non-clinical samples. In particular, the B-WISE could be used as an instrument of screening useful in the early identification of high body dissatisfaction cases.*

**Keywords:** Body Image; Self-Esteem; Psychometric Properties.

## 1. Introduction

Considerable research has documented the key role of body image satisfaction for mental and physical health as well as for a better quality of life (Wilson, Latner, & Hayashi, 2013).

Body image is a issue historically investigated by clinical psychologists and psychiatrists because of its relevance to eating disorders as well as in weight gains associated with consumption of medicines in psychiatric diseases. Nevertheless, developmental and educational psychologists have recently taken interest in self-concept and self-esteem associated with body image in the light of clinical emergencies concerning children's obesity and subsequent attention given towards the psychological well-being of overweight children (Donnellan, Trzesniewski, Conger, & Conger, 2007; Alesi & Pepi, 2013).

Body image represents a multi-dimensional construct describing personal perceptions concerning one's own body. Consequently it involves cognitive, affective and behavioral components. As Cash (2004) stated in his editorial article introducing the new scientific journal, *Body Image: An International Journal of Research*, "body image is body images" (p. 1). The author argues that our everyday experiences are largely influenced by multiple beliefs on personal appearance. Individuals affirm the source of their attention on the body on the basis of their individual differences, such as thoughts, feelings and behavior, as well as on the basis of psychosocial constraints such as socio-cultural pressures of media and peers.

Individual perceptions of body image are assumed to change throughout life span in conjunction with growth and gender differences (Young-Hyman, Schlundt, Herman-Wenderoth, & Bozylinski, 2003; Pepi, Faria, & Alesi, 2006; Gaspar, Amaral, Oliveira, & Borges, 2011)

Body image beliefs develop from early childhood when children evaluate their appearance by comparing with their peer group their performance on a variety of tasks (Donnellan *et al.*, 2007). Children establish from ages 6 to 11 the link between body mass index (B.M.I.) and body image and associate the higher B.M.I. to the more negative body image (Xanthopoulos, Borradaile, Hayes, Sherman, Veur, Grundy *et al.*, 2011). Judgements and feelings of personal worth appear from early developmental phases when the child is required to verify the evaluation of himself by comparison with actual performance on a variety of tasks including motor, physical, social and learning tasks (Alesi, Rappo, & Pepi, 2012). Children with an adequate level of physical self-esteem are more likely to accept their perceived body

image and less dependent upon external contingencies regarding appearance or social acceptance. This sensitivity increases by age and becomes more evident during adolescence when concerns about weight and shape are given considerable importance with possible negative consequences of body image (Wertheim & Paxton, 2011). Specifically, girls tend to prefer the stereotype of thin body and boys adopt the muscular stereotype for the body (Shiver, Harrist, Page, Hubbs-Tait, Moulton, & Topham, 2013). These gender differences are consistent with the “objectification theory”; girls show a higher level of body dissatisfaction than boys. Young women are generally considered more dissatisfied with their bodies, worrying about their appearance and looks and commonly showing lower self-esteem than men (Mellor, Fuller-Tyszkiewicz, McCabe, & Ricciardelli, 2010). However, Forbes, Adams-Curtis, Rade and Jaberg (2001) emphasize the generalization of this phenomenon extended to whole populations and identify a different kind of body dissatisfaction for women and men; for women dissatisfaction concerns the body shape and could have severe clinical consequences such as eating disorders, while for men it concerns the pervasive use of anabolic steroids. Cultural and social symbols for ideal body images are differentiated: for females the standard is the thin figure considered more attractive and for males the standard is a muscular and mesomorphic body representing power and success (Mellor *et al.*, 2010). Parents, peers and media tend to support the ideal of thinness for girls and often associate it with success in employment and romantic relationships (Murnen, 2011). However, over the last years men, too, attribute an increasing relevance to their appearance as shown by the growth in the beauty market for men (Griffin & Kirby, 2007; Grossbard, Lee, Neighbors, & Larimer, 2009).

Body image concerns both for women and men are closely related to B.M.I. A great amount of research confirms the role of B.M.I. in influencing body image and reveals a negative correlation between higher B.M.I and elevated body dissatisfaction with higher rates of association in non-clinical samples (Milligan & Pritchard, 2006).

B.M.I. revealed to be a significant risk factor for body dissatisfaction; overweight individuals were found to be more likely to develop body image worries being perceived as less attractive than thin individuals (Neumark-Sztainer, Wall, Larson, Eisenberg, & Loth, 2011).

### *1.1. The Assessment of Body Image*

This increasing research interest raises some methodological issues regarding the availability of instruments able to measure body satisfaction in a non-clinical population during life-span.

A broad range of instruments and methods is now available to measure body image in clinical conditions. This methodological variety stems from the terminological overlapping which characterizes the definition of body image; Thompson (2004) e.g. identified 14 terms to label different dimensions of the construct. Consequently, a large number and variety of measures have been developed.

Therefore three main categories of measures can be identified: 1) Self-report questionnaires; 2) Figure rating scales; 3) Computer based techniques (See Tab. 1).

First, self-report questionnaires and interviews measure the subjective perception of body image. Examples are: the Eating Disorders Inventory (Gardner, Taylor, & Polivy, 1983), the Body Attitude Test (Probst, Van Coppenolle, & Vandereycken, 1997), the Body Uneasiness Test (Cuzzolaro, Vetrone, Marano, & Battacchi, 1999), the Body Shape Questionnaire (Cooper, Taylor, Cooper, & Fairburn, 1987), the Body Cathexis Scale (Orlandi, Covezzi, Galeazzi, & Guaraldi, 2006).

Second, the method of Figure Rating Scale was originally developed by Stunkard, Sorenson and Schulsinger (1983). It consists of nine black and white body size silhouettes ranging from very thin to very obese. Participants are asked to choose the figure representing what they think to be their actual body size, their ideal body size and the body size they believe to be able to maintain over a prolonged period of time.

Finally, computer based techniques are built on image distortion of the whole body or body parts. Subjects are showed a human shape and are asked to modify its size until it corresponds to his/her view of his/her body size. Examples are: Body Image Assessment Software or BIAS (Letosa-Porta, Ferrer-Garcia, & Gutierrez-Maldonado, 2005), Anamorphic Micro (Shafran & Fairburn, 2002).

Table 1 - *The three main categories of measures with advantages and disadvantages*

	Measures	Advantages	Disadvantages
Self-report questionnaires	<ul style="list-style-type: none"> <li>• Eating Disorders Inventory (Gardner, Taylor, &amp; Polivy, 1983);</li> <li>• Body Attitude Test (Probst, Van Coppenolle, &amp; Vandereycken, 1997);</li> <li>• Body Uneasiness Test (Cuzzolaro, Vetrone, Marano, &amp; Battacchi, 1999);</li> <li>• Body Shape Questionnaire (Cooper, Taylor, Cooper, &amp; Fairburn, 1987);</li> <li>• Body Cathexis Scale (Orlandi, Covezzi, Galeazzi, &amp; Guaraldi, 2006).</li> </ul>	<ul style="list-style-type: none"> <li>• Description of own perspective.</li> <li>• Easy and quick administration to large samples.</li> <li>• Responses are easily quantifiable and analizable</li> </ul>	<ul style="list-style-type: none"> <li>• Subjective perceptions and feelings.</li> <li>• Memory bias.</li> <li>• Social desirability bias.</li> <li>• Qualitative measure</li> <li>• Validity problems</li> </ul>
Figure rating scales	<ul style="list-style-type: none"> <li>• Figure Rating Scale (Stunkard, Sorenson, &amp; Schulsinger, 1983).</li> </ul>	<ul style="list-style-type: none"> <li>• Simple and enjoyable measure</li> </ul>	<ul style="list-style-type: none"> <li>• Validity and reliability problems</li> <li>• Learning bias</li> </ul>
Computer based techniques	<ul style="list-style-type: none"> <li>• Body Image Assessment Software or BIAS (Letosa-Porta, Ferrer-Garcia, &amp; Gutierrez-Maldonado, 2005);</li> <li>• Anamorphic Micro (Shafran &amp; Fairburn, 2002).</li> </ul>	<ul style="list-style-type: none"> <li>• Richness of interface</li> <li>• Simple and enjoyable measure</li> <li>• Online scoring</li> </ul>	<ul style="list-style-type: none"> <li>• Validity and reliability problems</li> </ul>

This broad variety of instruments generates often the difficulty for researchers and clinicians to select and utilize suitable measures. For example, in Italy few instruments evaluate the influence of sociocultural factors on body image in non-clinical samples (Stefanile, Matera, Nerini, & Pisani, 2011). The majority of tools is employed for clinical goals.

Consequently, the present study aims to translate to the Italian context and validate the Body Weight Image and Self-Esteem (Awad & Voruganti, 2004) which presents the main advantage to tap socio-cultural influences on individual perception of the body.

Awad and Voruganti (2004) have developed and validated a questionnaire called the Body Weight Image and Self-Esteem, originally abbreviated B-WISE, to measure the psychosocial impact of weight gains in psychiatric populations. The researched issues concerned the impaired quality of life aspects, such as bad self-image and lower levels of self-esteem, lower general functioning, social stigmatization, discrimination, associated with the weight changes. It was articulated in 12 items and had an acceptable internal consistency ( $\alpha = .79$ ). This instrument had two main benefits: it was short, quick and easy to administer. Recently Al-Halabi, Garcia-Portilla, Saiz, Fonseca, Bobes-Bascaran, Galvàn and colleagues (2012) evaluated the psychometric properties of the Spanish version of the B-WISE in patients with psychiatric disorders. Their factor analysis revealed 3 factors explaining 50.93% of the total variance. The internal consistency ranged from .55 to .73. Moreover, Probst, Davy, Raepsaet, Knapen, Simons and De Hert (2010) enlarged the population and verified the psychometric properties of the B-WISE both in clinical ( $N = 412$ ) and non-clinical samples ( $N = 800$ ). Their findings confirmed a tri-factor structure of the questionnaire. On the whole, the psychometric properties were less satisfactory in the non-clinical group.

Given these theoretical premises, this study aims to extend the analysis of the psychometric properties of the B-WISE in a large non-clinical sample. We choose to investigate this questionnaire for three main reasons: 1) to replicate first trial to widen its utilization to include non-clinical populations (Probst *et al.*, 2010); 2) for its focus on socio-cultural factors influencing personal perception of the body; 3) for its inherent characteristics to result easy and quick to complete.

In particular, our goal is to investigate its factor structure through the exploratory analysis factor and analyze consistency and validity of the questionnaire by employing variables such as gender, B.M.I. and Self-esteem.

Following hypotheses were tested in this research:

H 1. The B-Wise maintains the tri-factor structure found in previous research (Probst *et al.*, 2010; Al-Halabi *et al.*, 2012).

H 2. Body image is better in women because individual perceptions are shaped by gender differences, as demonstrated in most literature (Murnen, 2011; Wertheim & Paxton, 2011; Flament, Hill, & Buchholz, 2012).

H 3. Body image, body weight and self-esteem are related, as widely showed by previous research (Mellor *et al.*, 2010; Smolak, 2011).

## 2. Method

### 2.1. Sample

The subjects in this study were 1,033 Italians with an average chronological age of 27.49 years ( $SD = 8.91$ ; range 15-46 years), of which 49.5% were students. With regard to gender, there were 547 females and 491 males.

The medium socio-economic level was predominant, based on parameters such as family size, parents' academic careers and jobs.

### 2.2. Instruments and procedure

Participants were previously provided all information to assure the correct compilation and confidentiality and anonymity being guaranteed.

At the beginning of the sampling phase participants were given a Questionnaire articulated in two sections: 1) The socio-demographic section aimed at analyzing socio-cultural background by evaluating parameters such as family size, academic history and jobs, hobbies in free time; 2) The anthropometric section aimed at investigating self-reported body weight (BW) and height to calculate the B.M.I.

Then all participants were administered a self-report instruments battery that included the B-WISE Questionnaire (Awad & Voruganti, 2004) and the Rosenberg Self-Esteem Scale (Rosenberg, 1965).

The B-WISE or Body Weight, Image and Self-Esteem Evaluation Questionnaire (Awad & Voruganti, 2004) consisted of twelve items related both to the feelings and thoughts concerning body weight and psychosocial adjustments in the preceding 2 weeks. Six items were expressed in a positive way (*I am upset with my present weight; Generally, I am feeling good about myself*) and the other six in a negative way (*I dislike the way I look; I am avoiding friends and relatives because I am out of shape*). We employed the Italian version of B-WISE obtained by previous translation from English to Italian and then by back-translation from Italian into English to ensure



maximum linguistic and cultural coherence between the two versions (Van de Vijver & Hambleton, 1996). The original administration procedure was used. Subjects were asked to read each sentence carefully and answer these questions as it applied to them at the present time by choosing between the options *Never*, *Sometimes* and *Most of Time*. Scores were from 3 to 1 points for each positive item and from 1 to 3 point for each negative item; the maximum score (3) indicated a higher positive perception of body image. Total score ranged from 12 to 36 with higher scores revealing higher satisfaction.

The Self-Esteem Scale (Rosenberg, 1965) consisted of ten items related to the way people feel about themselves. Five items were expressed in a positive way (*I am satisfied with myself; I feel I have a certain number of qualities*) and the other five in a negative way (*Sometimes I think I'm worthless; I feel I have few things to be proud of*). Subjects were asked to express their degree of agreement, and responses to each item were made on a scale from 1 (*Totally agree*) to 6 (*Totally disagree*). The scoring parameters of the evaluation were from 6 points to 1 point for each positive item and from 1 point to 6 points for each negative item. Higher global scores revealed a higher level of self-esteem. The internal consistency of the scale yielded alpha coefficient of .77. We used a previous Italian adaptation (Pepi *et al.*, 2006). The above-mentioned 6 points were reduced to 3 points when utilizing the statistical factoring.

Instruments were collectively administered and the task did not last more than 20 minutes.

### 3. Data Analysis

#### 3.1. Descriptive Statistics and Item Analyses

Means and standard deviations for each item of the B-WISE and the total score are given in Table 2. Values are reported both for the whole sample and for the two groups differentiated on the basis of the gender. The mean total B-WISE score was 27.33 ( $SD = 2.92$ ) with significant differences between males and females ( $t = 5.78$ ;  $p < .001$ ). Specifically males ( $M = 27.92$ ;  $SD = 2.84$ ) manifested higher body image level than women ( $M = 26.88$ ;  $SD = 2.91$ ). The comparison of mean scores revealed significant differences between boys and girls on the following items: n. 1 *I am upset with my present weight* ( $t = 4.29$ ;  $p < .01$ ), n. 2 *I feel active and energetic* ( $t = 2.45$ ;  $p < .001$ ), n. 5 *I dislike the way I look* ( $t = 5.23$ ;  $p < .001$ ), n. 6 *I*

*am self-conscious in the company of others because of my weight* ( $t = 1.52$ ;  $p < .05$ ), n. 7 *I am reminded of my body shape and appearance during the day* ( $t = - 1.73$ ;  $p < .05$ ). Only in the item n. 7, women scored higher than men.

Table 2 - Means of the B-WISE scores in the total sample, in the men group and in the women group

Items	Total sample N = 1,033		Men N = 491		Women N = 547	
	M	SD	M	SD	M	SD
1. <i>I am upset with my present weight</i>	2.27	(.69)	2.35	(.68)	2.17	(.68)
2. <i>I feel active and energetic</i>	2.64	(.54)	2.68	(.51)	2.60	(.56)
3. <i>I am going out to enjoy myself more often</i>	2.32	(.68)	2.39	(.67)	2.26	(.66)
4. <i>I am not able to control my hunger and craving for food</i>	2.32	(.75)	2.38	(.74)	2.24	(.76)
5. <i>I dislike the way I look</i>	2.26	(.63)	2.36	(.63)	2.16	(.62)
6. <i>I am self-conscious in the company of the others because of my weight</i>	2.72	(.54)	2.75	(.54)	2.70	(.54)
7. <i>I am reminded of my body shape and appearance during the day</i>	1.87	(.64)	1.84	(.64)	1.91	(.63)
8. <i>I am avoiding friends and relatives because I am out of shape</i>	2.93	(.27)	2.94	(.28)	2.93	(.27)
9. <i>I know why I put on weight, and I know how to lose it</i>	2.18	(.83)	2.20	(.82)	2.17	(.84)
10. <i>I believe that excess weight is not good for my general health</i>	1.37	(.56)	1.38	(.57)	1.36	(.56)
11. <i>I am taking steps to control my weight</i>	1.98	(.71)	2.00	(.71)	1.98	(.70)
12. <i>Generally, I am feeling good about myself</i>	2.60	(.56)	2.69	(.50)	2.52	(.59)

Tables 3, 4 and 5 show the discriminant power of the 12 items by the choices of answer alternatives. Globally we can observe that items 1, 4, 9 and 11 show minor rate of differences between the choices. More clearly the items 1 and 4 present similar rates of choice for the opposite alternatives of answer *Never* and *Most of Time*. The item 9 shows similar rates of choice for the alternatives of answer *Most of Time* and *Sometimes*. The item 11 shows similar rates of choice for the alternatives of answer *Never* and *Sometimes*. This distribution of answer alternatives is similar among the total sample, the both men's and women's groups.

Table 3 - Choices of answer alternatives in the total sample

Items	<i>Sometimes</i>	<i>Most of Time</i>	<i>Never</i>
1	14.1%	45.3%	40.7%
2	3%	29.7%	67.3%
3	12%	44.2%	43.7%
4	17.4%	33.5%	48.9%
5	10.4%	52.8%	36.5%
6	4.4%	19%	76.5%
7	27.6%	57.8%	14.5%
8	.7%	5.1%	94%
9	27%	27.1%	45.3%
10	67.5%	28.3%	4.2%
11	26%	49.9%	24.2%
12	3.6%	32.5%	63.9%

Table 4 - Choices of answer alternatives in the men group

Items	<i>Sometimes</i>	<i>Most of Time</i>	<i>Never</i>
1	11.8%	40.1%	48.1%
2	2%	27.3%	70.7%
3	11%	39.1%	49.9%
4	15.7%	30.5%	53.8%
5	8%	47.1%	44.9%
6	4.9%	15.3%	79.8%
7	30.3%	56%	13.6%
8	.8%	4.7%	94.5%
9	26.1%	28.5%	45.4%
10	66.9%	28.8%	4.3%
11	26.1%	49.3%	24.6%
12	2%	26.5%	71.5%

Table 5 - Choices of answer alternatives in the women group

Items	<i>Sometimes</i>	<i>Most of Time</i>	<i>Never</i>
1	16.1%	49.9%	34%
2	3.9%	31.8%	64.3%
3	13%	48.9%	38.1%
4	19.1%	36.3%	44.6%
5	12.6%	58.3%	29.1%
6	3.9%	22.4%	73.7%
7	25.2%	59.4%	15.4%
8	.6%	5.6%	93.9%
9	28.4%	26.4%	45.2%
10	68.1%	27.8%	4.1%
11	25.9%	50.4%	23.7%
12	5%	38%	57%

### 3.2. Internal structure

To identify dimensions underlying the B-WISE among Italian participants, Exploratory Factor Analysis was performed using SPSS 20. Criteria for evaluating the adequacy of each factor extracted included the following: (1) eigenvalues  $> 1$ ; (2) examination of the scree plot; (3) item loadings  $> .30$ . Oblimin rotation was used because dimensions were expected to be related to one another. The Principal Component Analysis identified 3 factors that explain the 48.03% of the variance (Tab. 6). The mean sampling adequacy (Bartlett's test) was 2047.91 ( $p < .001$ ) and the Kaiser-Meyer-Olkin (KMO) was .597. The three factors had eigenvalues of 2.49, 1.78 and 1.50 respectively. The first component, Body Image Distress, had 6 items and accounted for 20.73% of the total variance. The second component, Well-being and activity, had 3 items and explained 14.82% of the variance. The third component, named Weight control, had 3 items and accounted for 12.48% of the variance.

Table 6 - *Principal component analysis, oblimin rotation (n = 1,030)*

Items	I Component	II Component	III Component
2	.70		
12	.67		
3	.61		
4	.60		
1	.49		
5	.48		
9		.83	
11		.70	
10		-.53	
8			-.67
6			-.65
7			.59

### 3.3. Internal consistency

The Italian version of B-WISE demonstrated a moderate internal consistency. Cronbach's Alpha was of .45 for the whole sample, of .43 for the men group and of .44 for women group. The average inter-item correlation was of .19 for the total sample, of .13 for the men group and of .20 for women group. The Guttman Split-Half Coefficient was of .14 for the whole sample, of .17 for the men group and of .09 for the women group. Finally in the total group the item-total correlations were all significant ( $p < .001$ ) ranging from .11 to .57; in the men group the item-total

correlations were all significant ( $p < .001$ ) ranging from .14 to .57, in the women group the item-total correlations were all significant ( $p < .001$ ) ranging from .27 to .61.

### 3.4. Convergent Validity

To assess the convergent validity, correlations between B-WISE, B.M.I. (Body Mass Index) and Self-Esteem Scale were calculated. In the total sample (Tab. 7) we found a positive significant correlation ( $p < .01$ ) between B-WISE and Self-esteem ( $r = .31$ ); in the men group (Tab. 8) we found a positive significant ( $p < .01$ ) correlation between B-WISE and Self-esteem ( $r = .27$ ) and a negative significant correlation between B-WISE and B.M.I ( $r = -.11$ ). Finally in the women group (Tab. 9) we found a positive correlation ( $p < .01$ ) only between B-WISE and Self-esteem ( $r = .33$ )

Table 7 - *Correlations between B-WISE, B.M.I. and Self-esteem in the total sample*

	(1)	(2)	(3)
(1) B-WISE	1		
(2) B.M.I.	-.00	1	
(3) Self-esteem	.31**	-.04	1

\*\*  $p < .01$

Table 8 - *Correlations between B-WISE, B.M.I. and Self-esteem in the men group*

	(1)	(2)	(3)
(1) B-WISE	1		
(2) B.M.I.	-.11**	1	
(3) Self-esteem	.20**	-.08	1

\*\*  $p < .01$

Table 9 - *Correlations between B-WISE, B.M.I. and Self-esteem in the women group*

	(1)	(2)	(3)
(1) B-WISE	1		
(2) B.M.I.	.00	1	
(3) Self-esteem	.33**	-.05	1

\*\*  $p < .01$

## 4. Discussion

The aim of this study was to assess the psychometric properties of the Italian version of the Body Weight Image and Self-Esteem (B-WISE) originally developed by Awad and Voruganti (2004). Our study differs mainly from previous research using B-WISE (Awad & Voruganti, 2004; Probst *et al.*, 2010; Al-Halabi *et al.*, 2012) in the sampling. We involved only non-clinical patients and our sample was more large being composed of 1,030 subjects subdivided into two groups, men and women.

First, significant differences in body image between males and females were revealed showing higher positive body perception among males. This is consistent with other research findings obtained in previous studies on gender differences which have generally associated the highest self-image to boys. In particular, the boys' satisfaction is documented to be higher, less inclined to temporal fluctuations and seems to be more influenced by the social ideal emphasizing a stereotyped body related to powerness and muscularity. While the girls' body-image is more closely defined by thinness (Mellor *et al.*, 2010; Flament, Hill, & Buchholz, 2012). Research in this field has looked at gender stereotypes from the school age (Pepi *et al.*, 2006).

With concern to internal structure, we decided to use exploratory factor analysis because we have only one previous study which tried to use the B-WISE with non-clinical participants. Results obtained in this study revealed a tri-factor internal structure which explained the 48.03% of total variance. This value could be considered acceptable. This structure was similar to that previously obtained by Al-Halabi *et al.* (2012). These three factors named Body Image Distress and Awareness, Well-being and activity and Weight, involved emotional, cognitive and behavioral components of body image.

With regard to internal consistency, our study confirmed results obtained by Probst and colleagues (2010), which showed a not satisfactory internal consistency of the B-WISE. Specifically we obtained weak values of  $\alpha$  ranging from .43 to .45, given the Cronbach's Alpha reliability is within an acceptable range around .70. This internal consistency was lower than the value obtained in previous studies involving psychiatric patients. We agree with Probst and colleagues (2010) that it could be attributed to a different variability between clinical and non-clinical samples. With concern the validity, we correlated B-WISE with B.M.I. and Self-esteem scores obtained by Rosenberg questionnaire (1965). We found significant associations between body-image and self-esteem: the subject who declared himself

satisfied with his own body showed positive self-worth. This corroborated results previously obtained which had found that individuals with higher level of self-esteem showed higher level of body image. Only in the males group we found a negative correlation between B-WISE and B.M.I revealing that the higher B.M.I. is associated to lower level of body satisfaction. This association confirms the influence of cultural and models aimed at generalizing the “objectification theory” to males (Mellor *et al.*, 2010).

To conclude, the results obtained encourage the utilization of the B-WISE questionnaire, but highlight the need to discuss limitations of the study. The first source of weakness in this study is the similarity between the items of the B-WISE and the Rosenberg self-esteem questionnaire regarding self-esteem which could have caused theoretical overlappings and the consequent problems of internal validity. Another source of weakness is the self-report approach in which respondents may not respond truthfully because they are not able to evaluate their body perception or because they tend to present themselves in a more socially acceptable manner. Nevertheless, B-WISE could be used as an instrument of screening for its main benefits, to be short, quick and easy to administer and for its nature of “state measure” aimed at assessing the body perception at the present specific point in time. In this way, it could be useful in the early identification of the cases of high body dissatisfaction to be further analyzed by the use of more sophisticated measures. Analyses of previous studies suggest to us the need to compare the psychometric properties of the investigated instrument between clinical and non-clinical samples. It’s necessary now to verify our results with the hypothesis that its relatively modest properties are due to the typical composition of our sample and not to the translation from the American to the Italian version. B-WISE was originally intended for schizophrenic patients and it’s worth further analyzing the nature of the body image in psychiatric populations. This brings to mind the need for a deeper discussion concerning the nature of the “body image” as a multidimensional construct involving perceptual, cognitive and emotional dimensions. The effect could be the “(mis)measurement of body image”. In these terms it may be the case to quote the ten strategies suggested by Thompson (2004) in order to improve body image assessment for applied and research purposes: 1. To specify the label of dimension of body image of interest; 2. To employ multiple measures of body image; 3. to select instruments on the basis of their reliability and validity; 4. to use instruments with appropriate samples; 5.

assess reliability and validity in the involved sample; 6. to adapt instruments for one's own purposes; 7. to determine the need of a state or trait measure; 8. to plan carefully the instructional protocol; 9. to analyse data by participants characteristics; 10. to consider differences of clinical and statistical significance.

Finally is important to acknowledge that future research is needed to build on this study. The main goal is to provide a richer and more complete understanding of how the body image develops across the ages.

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