



## Preliminary insights on the mental representation of the body in italians

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### Abstract

In order to start a data collection on body image (BI) in Italians involved in different sporting disciplines (on the basis of the criteria sex, age and level of performance), a reference data collection was undertaken in a sample of both sexes and differently aged Italians. BI was assessed on 371 subjects using a figurine test, a body part satisfaction scale, and a projective test. Results show that, in the whole sample, subjects desire a thinner figure with respect of their own, and that a substantial conformity between the figure they desired for themselves and the one believed to be liked by the other gender exists. Women, in general, imagine that males prefer slimmer women than they are; while males think that women prefer a more muscular male. Source of dissatisfaction were mostly weight, abdomen, legs and muscular tone, while those of greater satisfaction were eyes, mouth, ears, and chin. In both sexes the body ideal is maintained with the increase of age, and not many differences exist regarding the body parts, but they occur in the different age-classes. Age and gender differences were found in the projective test, mostly due to the different introjection of the sexual aspect. The body mental representation found in the sample appears to be strongly conditioned by age and gender, and also by experience and the inner world, confirming the multidimensional of the BI construct.

**Keywords:** Body image, body dissatisfaction, athletes, Italians.

### Introduction

The aim of the present study is to refer on the preliminary results of a data collection on body image (BI) and body dissatisfaction (BD) carried out on a group of North Italians

of different ages, in order to acquire some raw data useful for future comparisons and to collect insights on how the body is perceived during the life span. In a close future, the main author is planning to collect BI and BD

data in different cohorts of athletes involved in different disciplines, under the criteria: age, gender and level of performance. BI refers to the ways in which an individual sees her/himself, and in turn, how others see s/he. It is a complex and multidimensional construct in which several components (perceptive, cognitive, attitudinal, affective) converge, creating an image of one's body. As demonstrated by Gallagher (2005), it differs from body schema, being the latter a system of sensorimotor characteristics working without the need of perceptual monitoring. BI research is important in the athletic milieu, as every sporting activity has a "body ideal" needed to reach excellence, therefore the subjects undertaking a particular sporting activity in order to reach peak performance, must take into account not only the hegemonic social ideal for the body, but also the "athletic BI" (ABI) inside a peculiar discipline. Greenleaf (2006) described ABI as being the internal image an individual has of her/his own body and the evaluation of that image within an athletic context. Even in normal life what a person thinks and feels about her/his body can lead to unhealthy behaviors, impacting on well-being and health, because several social situations require a particular "body ideal". The point is that lot of messages convey the idea that a body should be thin (rather than healthy), and this affects mostly adolescents (with males tending to adopt strategies with both losing weight and gaining a more muscular body, especially in its upper part), and girls mainly focused on losing weight. The problem is that all the times that a lack of satisfaction with appearance exists, body dissatisfaction (BD) takes place. This is a complex phenomenon connected to the fact that it is difficult for people to modify their actual body shape and appearance, as there are some bodily aspects that are almost impossible to be changed, such as the frame size and height that, outside of surgery, are unable to be altered, being genetically determined. BD is a health

concern difficult to define (shortly: a distortion of perception, behavior or cognition related to shape or weight - Marçal Pimenta et al 2009) and to be reduced, as a lot of factors are influencing the development of BD, ranging from personality traits, the culture/sub-culture individuals belong to, influences on body size concerns, and so on. Some of them have been thoroughly analyzed, for example the personality traits that can help BD development. One of them is the need for perfectionism, as there are individuals more prone to view themselves in the way other people view them. For example the athletes, who are only satisfied with the highest standards, so their tendency to compare themselves with others is more accentuated. Age (adolescents are more prone to BD), gender (girls are more ready than boys to internalize external standards and they try to conform to these more than their counterpart) are other factors playing an important role. For instance, a recent research review on the role of peers and friends on BD in adolescents (Webb & Zimmer-Gembeck 2013), showed that in the last three lustri, appearance teasing and perceived pressure for leanness were more and more linked to BD, followed by talks with coetaneous friends on appearance models, dieting behaviors, and perceived attitudes of friends and peers on outward appearance. BD is under the umbrella of BI disturbances (BID), whose nature and extent have not been, unfortunately, precisely identified. However, in order to cope with its possible reduction, some psychologists applied the so called 'self-affirmation theory', whose starting point is the maintenance of the integrity of the self: In fact, every time a threatening information arrives to an individual, her/his defensive mechanisms create a sort of shield to oppose to it. So, there is an active search for mechanisms able to bolster some self aspects useful for intervention programs. Bucchianeri & Corning (2012), par exemple, recently found that self-affirmed women had not only a low

BD, but were more prone to assume information about the dangerous aspects of it. Studies on BID are various, and they considered perceptive, developmental and socio-cultural aspects. In the first case cortical deficits, adaptive failure and artifact theories were till now mainly considered; in the second case other aspects such as early/delayed maturation and teasing; in the third case points of view related to gender roles, socio-culturally mediated/driven ideals, cross-cultural differences and so on. Relevant literature reports association between BID and depression (Dunkey & Grilo, 2007), anorexia (Jansen et al 2006), bulimia (Hrabosky & Grilo 2006), and body dysmorphia (Veale, 2003). The fact is that having a “correct” BI is important from early ages. For adolescent boys, BI is weighty for their emotional and social normative inclusion in their societies: Relevant literature for westernized countries has found that the two main factors affecting boys BI concerns are the role of sport and the fact that they interpret messages and other socio-cultural influences in a more positive way than girls (Ricciardelli & McCabe, 2001), even if the main focus is obtaining a lean muscular body. For girls, longitudinal research has found the relative stability of BI after early adolescence, with repercussions on well-being (Paxton et al, 1999). The point is that, during the last quarter of a century, there has been an explosion of research on BI in children and adolescents, in the idea that BD during younger ages, connected to a poor BI, could create risk for BID, eating disturbances and also depression in adulthood. The problem is that research differs methodologically and has remained mainly descriptive. Another obstacle is that body dysmorphic disorder (or the excessive preoccupation with imagined or slight defects in appearance regarding some body areas, that can create socialization problems, unnecessary cosmetic surgery, and even to commit suicide), goes under-diagnosed in clinical settings, although the European

literature had colorfully described it for more than a century (Phillips 1991, 2004). However, data suggest that children report their desires of thinness, to weigh less, and dieting attempts, as young as 8 years old (Rolland et al 1997). This because BI development starts during pre-school years, as very young girls (4-6 years) showed anti-fat bias, while dieting and BD was found in elementary school girls (Smolak 2004). BD increases with age for all children, with girls reporting a higher degree of dissatisfaction (Phares et al, 2004), even if gender differences start at about age 8. Most children, however, demonstrate high levels of body satisfaction (Lowes & Tiggemann, 2003). During adolescence, boys are about equally divided between wanting to lose weight and increasing weight, but not many studies have examined a desire for increased muscle size; while males, in adulthood, show a strong desire to lose weight as they get older. Another important issue regards the social messages (those “immediate” compelled by parents, coaches and peers) and the cultural ones, due to the proliferation of mass media tidings that can contain manufactured and unhealthy advices, some of them good and some others pernicious, but very difficult to be recognized. Another aspect is stereotypes assumption, that starts early: 7 years old children reported that lean peers were more likable, friendlier, and even polite than obese children, the latter described as being lazier, with few friends, and lesser attractive (Kostanski & Gullone 1999). Therefore it is not surprising that overweight and obese school-aged children are more likely to be the victims and perpetrators of bullying behaviors than their normal-weighting peers, and this could hinder the short- and long-term social and psychological development of “fatty” youth. These stereotypes are maintained in adulthood. For example, Zambon, (2013) recently investigated in her thesis graduation (supervised by Viviani), 26 temp agencies employees (10 males and 16 females), aged

24-42 years old, belonging to the North-eastern part of Italy. Using a figurine test they were asked to identify the body size of candidates having: a) little and greater chances of hiring for a managerial position and, b) for a place open to the public. Preliminary results show a gender discrepancy, as for a prominent female role position normally weighing women were preferred, while extremely thin women first and then obese women, were excluded. Concerning males, pivotal roles were offered mostly to normal weighing or overweight probable applicants. With respect to the positions open to the public, lean subjects were preferred for females while, in males, very lean candidates were penalized versus overweight and obese subjects. This was the only significant difference ( $p < .01$ ) emerged on the basis of the employees' gender. The fact is that the so called "weight stigma" is found in multiple settings and in a wide range of individuals. Overweight employees, for example, are ascribed multiple negative stereotypes including being sloppy, disagreeable, lazy, less competent, lacking in self-discipline, less conscientious, and poor role models (Roehling 1999). In medical settings, biased attitudes toward obese patients can affect judgment among physicians, medical students, dieticians, nurses, psychologists, and include perceptions that obese patients are unpleasant, unsuccessful, unintelligent, weak-willed, overindulgent, and lazy (Schwartz et al 2003). In school settings overweight students not only could stand over against harassment

from peers, but can face negative attitudes from their teachers and, at college level in the USA, especially female overweight applicants are less likely to be accepted to college (Puhl & Brownell 2001).

### BI and sport

Regarding sport practice and sport participation, especially in young people, their importance is often emphasized, because it not only stimulates skill acquisition, improves posture and coordination, can help to acquire a behavioral control, but fosters children's development of: self-discipline and self-confidence, cooperation, competitiveness, sportsmanship, leadership, to cope better in adversity. It permits an individual to feel better with her/himself (enhancing positive self-perception), induces a positive mood, and augments psychological well-being - lowering anxiety and, finally, it improves self-esteem from childhood. Last but not least, it reduces the risk of cardiovascular disease, osteoporosis, overweight/obesity, and other chronic diseases (Bortoli et al 1995; Greguol et al 2013; Viviani et al 1995; Viviani et al 1996; Varnes et al 2013). In the athletic milieu this is important, as an athlete is somehow obliged to take on board both the social standards of beauty and the ABI, judging her/himself inside these frames of reference. Because of the emphasis on a lean physique and/or the request for low body weight (as fat is believed to raise inertias), some sporting activities are more conducive than others to create BI distortions and BD.

| <b>Judged sports</b>  | <b>Endurance sports</b> | <b>Weight category sports</b> |
|-----------------------|-------------------------|-------------------------------|
| Ballet/dance          | Distance running        | Karate                        |
| Gymnastics            | Cross-country skiing    | Boxing                        |
| Synchronized swimming | Swimming                | Rowing                        |
| Figure skating        |                         | Wrestling                     |
| Diving                |                         | Power lifting                 |

**Table 1.** Sports emphasizing a lean physique believed to offer competitive advantages (adapted from: Coaching Association of Canada, <http://www.coach.ca>).

Table 1 depicts some of them.

Female athletes have been studied more accurately than males. Women can engage exercise to acquire a more “feminine ideal body”, or to reduce their weight and body fat, or to acquire a better muscular tone, even if the pursuit to acquire a better muscular tone overwhelms the search for good health. Women at risk of eating disorders and unhealthy exercise patterns are those fixed of self-presentation. Unfortunately, many coaches define a good athlete an individual obsessively exercising to increase performance, prone to the coach requests and pursuing perfection. Athletes facing these pressures are more at risk, and this is valid also for males (de Bruin et al 2011). Social comparison has a powerful importance and can lead to BD (Thompson et al 1999), that in turn can contribute to disturbances such as disordered eating in athletes. This is a topic with a lot of findings, sometimes conflicting among them: in effect for some authors BID played a role in eating disorders in athletes (Byrne & McLean 2002), while for others athletes tended to diet even if relatively satisfied with their bodies (Smolak et al 2000). The fact is that the connection sport and BI has positive and negative sides. Apart the already mentioned positive aspects, the desire of perfection can lead to dysmorphic and eating disorders, to assume drugs, or to become intensely dedicated to a peculiar activity in order to get the “perfect body” required by a specific sporting activity, that could in turn become a source of deep stress (Berry & Howe, 2000, Beals 2004). Two sporting environments where a pressure to conform to a particular body shape are: aerobic exercise classes and competitive sport settings (Baum, 2006). In females, to the drive to thinness and tonicity maintenance, it can be added the need to avoid a too muscular body, the contrary for males. The point is that the physique and the physiology of some young athletes are similar to that of anorexic

individuals. Bale et al (1996) found in elite female runners and gymnasts that the lean body mass relative to the total mass was not significantly different from that of 9-16 years old recovering anorexics. The female athlete triad (conducive to energy deficit/disordered eating, amenorrhea/oligomenorrhea and osteoporosis/osteopenia), was recently connected to BI distortions by the IOC Commission of the Olympic Committee (see videos in “<http://www.olympic.org/hbi>”). A wide body of research before the year 2001 highlighted the fact that athletes experienced a better BI than non-athletes, practically with no differences among the different sporting activities. In studies regarding athletic amenorrhea, for instance, a strong relationship with the body mass density decrease was found (Fruth & Worrell 1995).

However, the etiology of menstrual dysfunctions/irregularities in athletes is multifactorial and complex, and the different factors implied are difficult to assess. For example, in a cohort of Italian top gymnasts, who started their commitment at 7.5 years of age, they were chosen, according to their coaches, on the basis of the girls’ body minuteness, agility, speed and motor intelligence. Clearly, a sharp-eyed coach could have chosen them because those particular characteristics were predictors of a “late mature” subject (Viviani 1993), and in fact, the top level gymnasts’ age at menarche resulted to be three years delayed with respect to another sample of 579 non elite athletes belonging to different sporting activities (Viviani & Principi 1992), and around two years when compared to non “top” other Italian gymnasts (Brasili et al 2002/3). Clearly, as previously reported, preoccupations about physique can start early in life. What is important, however, is the fact that for some sporting activities losing weight could become a performance enhancer, because if an athlete loses (or in other cases gains) weight s/he is somehow forced to

going on in that direction, as her/his self-esteem if boosted. Coaches and athletes should be encouraged to know what are the risks connected to dropping below the minimal body fat values (5% for males and 12-14% for females), to be aware of the “healthy” body fat values, and the ranges commonly accepted for specific sports (Heyward & Wagner 2003). At present, and especially for females, even if sport participation provides some protection from BI disturbances, this appears to be attenuated in gymnasts and in “top” level athletes, due to agents unrelated to sport participation that should be identified (Varnes et al 2013). The role of factors such as coaches, sport exigencies about weight, and other pressures regarding appearance and performance, appear to play a role (Reel et al 2013) in preventing eating disorders in athletes, strictly connected to the BI ideal for sport, the perceived performance improvements, and the socio-cultural pressures for thinness or other factors regarding body size and shape, the ratio power-to weight (in sports utilizing weight categories) (Sundgot-Borgen & Torstveit, 2010). Of course, other agents than dieting, such as personality, urges to lose weight, injuries, overtraining, “yo-yo diets”, perfectionism, and coaching behaviors, can enhance the risks. It is outside the scope of this paper to present the great array of data regarding eating disorders in athletes, as in relevant literature conflicting data are found regarding the fact that athletics may be a protective/risk factor in the development of these disorders (Forsberg & Lock 2006). The Diehl et al’s meta-analysis (2012) showed that, despite the differences among the investigations carried out in various countries, the studies’ tendency was to report, in high-involved athletes: higher consumption of alcohol, and steroids; but a lesser smoking and recreational drug use versus non-athletes. Vaquero-Cristòbal et al (2013) found conflicting results on the relationship existing between sport practice and BI, and they

emphasized the need of developing tools to design intervention programs. The fact is that studies on physical activity in young people show that boys are more active than girls, who face a higher rate of withdrawal with sporting activities in peri-pubertal ages. This is ascribed to several reasons (i.e.: availability of sporting options and facilities, gender role expectations, BID and stereotypes, mostly connected to “femininity appearance anxiety” - Slater & Tiggermann 2011). Trentin and Viviani (2002) found a decade ago in a 4676 Italian adolescent sample, that the critical ages for sport dropout were 10-11 and 13-14 years, life periods in which not only bodily but also social rearrangements occur (e.g. the passages from elementary/junior-high/high schools). Girls were more prone to change sporting activity than boys, who – inter alia - preferred a more autocratic coaching style, and declared in 10% of the cases that the reasons for withdrawal were unspecified “affective” motives (versus 2% of the boys), casting suspicion on appearance problems.

### **Material and methods**

This is a preliminary data collection on BI in a sample of Italians aged 12-89 years old, carried out on 371 both gender subjects arbitrarily subdivided into 5 age classes. An Italian version of the Fallon & Rozin’s Test (Fallon & Rozin 1985; Rozin & Fallon 1988), using a version modified by Casagrande, Viviani & Grassivaro Gallo (1997) on the basis of the suggestions furnished by Stunkart, Sørensen & Schlusinger (1980) was administered first. The figurine test consisted in 7 line-drawings of men and women’s bodies, arranged from very slender to very heavy, each of them accompanied by numerical values (10=very thin; 90=very heavy). Subjects were asked to select the number below the figure which best illustrated their response to the following questions: 1) How do you currently look (CUR)? 2) How would you like to look

(LIKE)? 3) Which figure is the most attractive to the other sex (ATT)? 4) Which figure of the other sex is more attractive for you (AT-OT)? The test was chosen because, despite the variations in the test-retest reliability found in different studies, the results were fairly consistent (Cohane & Pope 2001). Then, the Body Part Satisfaction Scale (BPSS – Berscheid, Walster & Bohrnstedt 1973) was added. It is a very popular 22-item questionnaire asking to evaluate in a 6-levels Likert-type scale (from very satisfied to very unsatisfied) judgments regarding the single parts of the subject's body. Interviewed were also asked to report in a dichotomized way (yes/no) the importance they attributed to the single body part mentioned in the BPSS. The test has been chosen because it appears to be face valid, as individuals directly rate their degree of satisfaction with the various body parts (Petrie et al 2002). Finally, the subjects were asked to draw a human figure, one male and one female in two A4 sheets (the Machover test, 1985). This is a projective test useful to derive from the drawings how the illustrator perceives the male and female human figure, as this is clearly correlated with some characteristics of the author, such as impulses, anxieties, conflicts and compensations. It also permits to understand

the defense mechanisms (identification, projection and introjections – Weiner & Greene, 2008). All the comments eventually made during the test were recorded. Subjects were also requested to report their height and weight, in order to estimate their Body Mass Index. Even if self-reports for height and weight can be conducive of errors (as for weight they are directly related to a person's overweight status, increasing with the magnitude of overweight – Rowland 1990), they are however valid for identifying relationships in epidemiological studies (Spencer 2002). The Body Mass Index (BMI), or the body mass divided by the square of height ( $\text{Kg/m}^2$ ) was then calculated.

### Results

Table 2 shows the composition of the sample and the main self-reported anthropometric results.

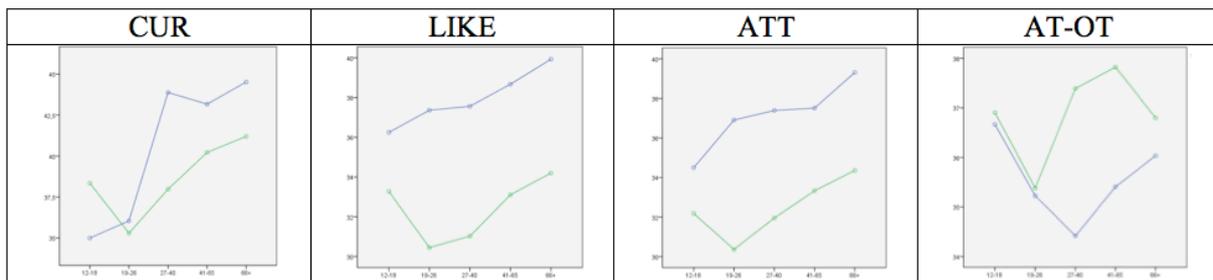
In the whole sample the “normal” subjects, or those around the average for BMI (between 18.5 and 24.9) were 221 (59.6% of the whole sample), those underweight were 40 (10.8% of the sample, mostly adolescents), 92 (24.8%) were the overweighing subjects, and those obese were 18 (4.9%).

| Age-classes | Gender  | Number | Age    | Height     | Weight    | BMI       |
|-------------|---------|--------|--------|------------|-----------|-----------|
| 12-18       | Males   | 12     | 16±2.5 | 172.3±8.6  | 61.9±9.1  | 20.8±2.0  |
|             | Females | 32     | 17±1.9 | 162.4±6.1  | 57.3±10.6 | 21.7±3.3  |
| 19-26       | Males   | 46     | 21±1.6 | 172.9±8.6  | 66.2±13.7 | 20.1±3.7  |
|             | Females | 47     | 22±1.6 | 164.4±7.2  | 54.5±9.1  | 20.1±3.5  |
| 27-40       | Males   | 41     | 33±4.9 | 175.2±9.1  | 78.4±15.4 | 25.4±3.7  |
|             | Females | 46     | 33±5.1 | 165.5±6.8  | 57.9±9.7  | 21.1±3.0  |
| 41-65       | Males   | 49     | 52±6.5 | 174.7±7.5  | 76.4±15.1 | 24.9±4.0  |
|             | Females | 45     | 51±6.0 | 163.9±6.4  | 62.0±12.8 | 23.1±5.0  |
| > 66        | Males   | 29     | 75±6.3 | 170.6±18.5 | 79.7±8.3  | 29.8±18.7 |
|             | Females | 25     | 76±6.9 | 162.5±7.5  | 65.4±11.0 | 24.9±3.9  |

**Table 2.** Composition and main anthropometric characteristics in the different age-classes

For the figurine test, in the whole sample subjects desired a thinner figure with respect to their own, and a substantial conformity was found between the figure they desired for themselves (LIKE) and the one believed to be liked by the other gender. Positive correlations emerged between CUR and LIKE ( $r=0.60$ ,  $p<.001$ ), CUR and ATT ( $r=0.35$ ,  $p<.001$ ), LIKE and ATT ( $r=0.66$ ,  $p<.001$ ), and between AT-OT and CUR ( $r=0.36$ ,  $p<.001$ ), as well as AT-OT and LIKE ( $r=0.33$ ,  $p<.001$ ), and besides AT-OT and ATT ( $r=0.29$ ,  $p<.001$ ). Interesting to note also the significant differences emerged between BMI

and CUR ( $r=0.48$ ,  $p<.001$ ), BMI and LIKE ( $r=0.33$ ,  $p<.001$ ), and BMI and ATT ( $r=0.22$ ,  $p<.001$ ). Low, but still significant, turned out to be the correlation between BMI and AT-OT ( $r=0.12$ ,  $p<.05$ ). Women, in general, imagined that males preferred slimmer women than they were; while males believed that women preferred a more muscular/"chubby" male. For the figurine test, figure 1 depicts the tendencies found with age by sex (the blue line represents males, the green one female).

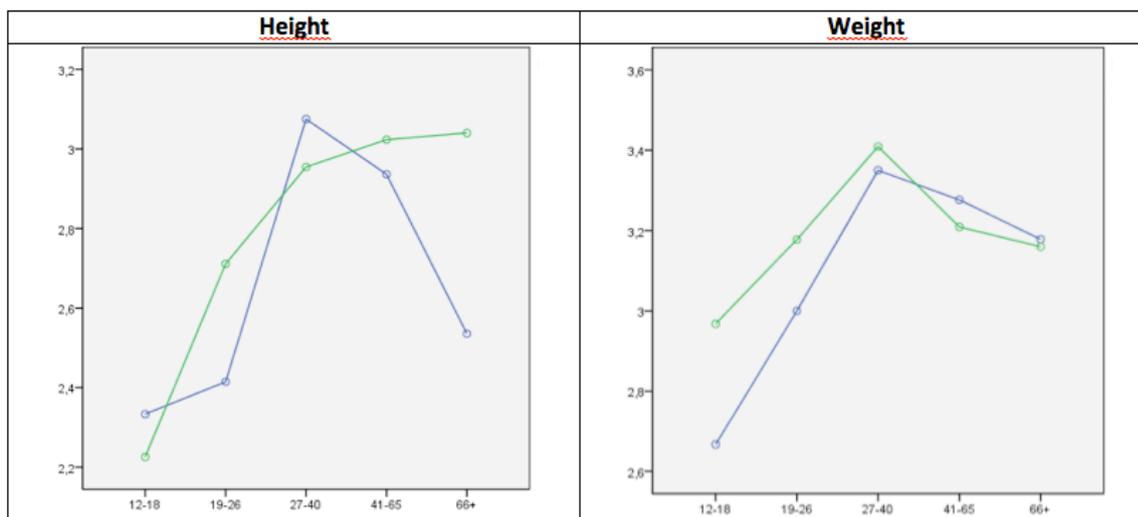


**Fig. 1.** Tendencies found with age in males (blue) and females (green) for current: (CUR), desired look (LIKE), attractive look of the same (ATT) and of the opposite gender (AT-OT). In this and in fig. 3, 4 and 5, the age-classes are represented in the x-axis, while the obtained average scores are represented in the y-axis.

For the “actual” figure (CUR), during age the perception of subjects’ own body changes. In pre-pubertal/adolescent ages girls represent themselves with a body mass higher than that of the succeeding class, the only one in which subjects perceive themselves very lean. In the following ages, in fact, there is an increment. Males, in the first age class, perceived themselves as being slender, with a slight increase in the second age cohort, followed by a peak in the subsequent age-classes. In all subjects a good correspondence between the Body Mass Index and the average value of self-attributed BI was found. Regarding the desired body size (LIKE, for both sexes and in all age classes, subjects tended to preferred to possess a leaner figure than the actual, with females with a more marked ideal of thinness. In the first age class girls desired a leaner body with respect to their male counterpart, and this was more marked in young adulthood. However, as the trend is somehow similar to the one shown in CUR, it is possible to affirm that what subjects had in mind was a “possible” ideal body, in line with the bodily morphological modifications occurring with age. For ATT males believed, increasing with age, that women preferred a “robust man”. Only young boys would have liked to possess a stronger body (36.3), even if they imagined that girls preferred an average score of 36.5. In the whole sample females do not change their attitudes with respect to CUR and LIKE, as the trend is similar: at the beginning the score is quite high, then it decreases (19-26 years of age) to progressively increase with age. The graph AT-OT shows that a correspondence between

what women presumed was more preferred by males and what really men liked exists, and vice-versa. In general, women made a greater blunder than males, under-estimating their body appearance. In all age classes, in fact, women believed that males’ preference was for a thin body for women, while these liked a more “curvaceous” body. Males assumed that they had been more attractive if more corpulent. Significant differences emerged when ANOVA was applied among the various age classes for CUR ( $F_{4,366}=8.0$ ,  $p<.000$ ), LIKE ( $F_{4,366}=3.3$ ,  $p<.05$ ), ATT ( $F_{4,365}=3.7$ ,  $p<.01$ ). The Newman-Keuls *post-hoc* test showed that a demarcation existed between young and older subjects for CUR, and that differences endured between those younger and older than 40 years of age for LIKE and ATT.

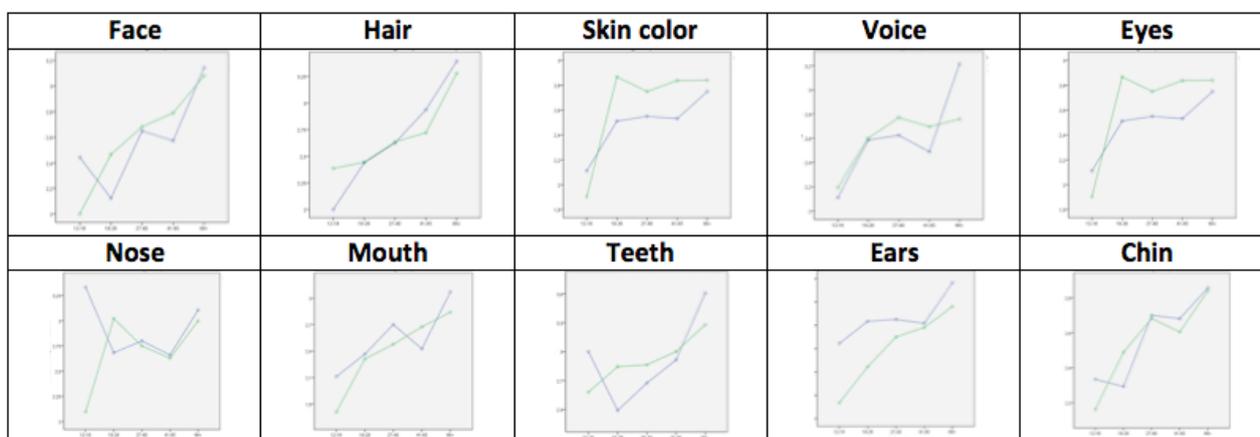
Regarding the BPSS test, in the whole sample results are as follows: The body parts inducing dissatisfaction were: Weight, abdomen, legs, and muscular tone. Those of a greater satisfaction were: Eyes, mouth, ears, chin (incidentally, the body parts that don’t store fat). Between genders, the only significant difference regarded the item hair [ $F(365)=.04$ ,  $p<.05$ ], source of greater dissatisfaction for males. The single body parts’ degree of dissatisfaction can be summarized as follows. For height, it increased with age for females while in males a peak was found in the age class 27-40, then the degree of dissatisfaction decreased. Weight: The degree was constant with age, decreasing in middle aged. Fig. 2 depicts the trend with age.



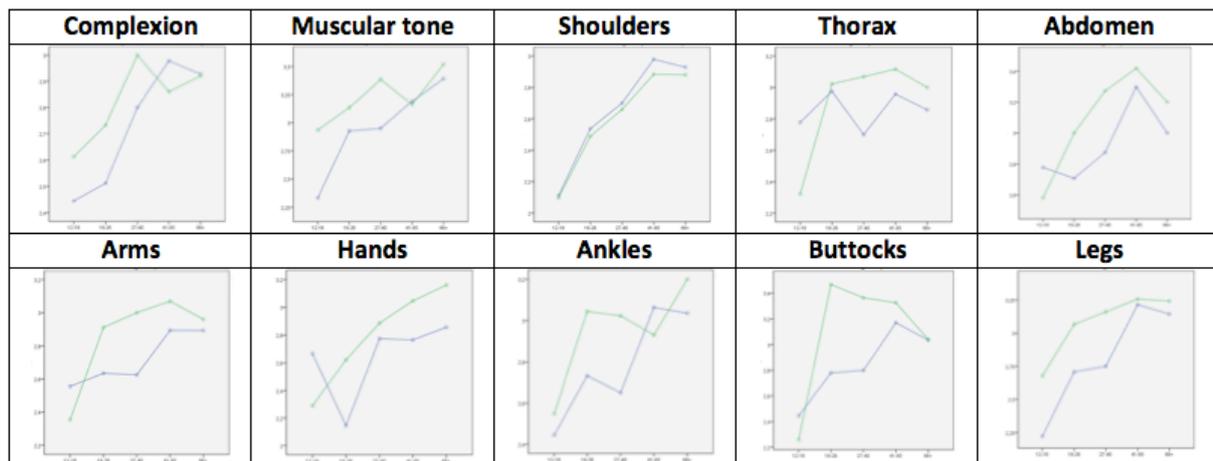
**Fig. 2** Trends observed by age in males (blue line) and in women (green line) for height (left) and weight (right).

The graphs summarizing some head and face components are shown in fig. 3, while those regarding the other body parts in fig. 4. Findings can be summarized as follows: Face and hand. In women the degree of dissatisfaction was steady, in males it decreased with age for the former and in adulthood for the latter aspect. For hair, frustration intensified with age in both sexes, for eyes and ears it augmented, but with a plateau from 27 to 65 years. The nose was

source of discontent during adolescence in males, then in adulthood it decreased; the contrary happened to women. The degree of dissatisfaction for the voice reached a plateau in adulthood, to increase in the elderly. Progressive dissatisfaction with age was found, in both sexes for: chin, mouth, shoulders, arms, buttocks, abdomen, hips, legs, muscular tone, and the complexion (general appearance), and teeth in women (males showing a decrease in early adulthood and an increase later on).



**Fig. 3.** Trends with age observed for some face parts in both genders.



**Fig. 4.** Trends found in both genders for some body parts.

In the various age cohorts the subjects assigned different importance to the body parts. In fact, apart the skin color, significant

differences emerged for all the items considered. Table 3 summarizes the results.

| Body parts | N. of subjects | X <sup>2</sup> | P    |
|------------|----------------|----------------|------|
| Height     | 367            | 29.5           | .001 |
| Weight     | 366            | 19.6           | .01  |
| Hair       | 367            | 16.2           | .01  |
| Eyes       | 367            | 24.5           | .001 |
| Ears       | 368            | 54.8           | .001 |
| Nose       | 367            | 48.9           | .001 |
| Mouth      | 367            | 17.7           | .001 |
| Teeth      | 367            | 10.5           | .01  |
| Voice      | 367            | 11.7           | .01  |
| Chin       | 367            | 17.4           | .01  |
| Skin color | 367            | 2.8            | N.S. |
| Face       | 367            | 12.7           | .01  |
| Shoulders  | 367            | 36.1           | .001 |
| Thorax     | 367            | 21.7           | .001 |
| Arms       | 367            | 23.5           | .001 |
| Hands      | 367            | 18.0           | .01  |
| Abdomen    | 367            | 17.4           | .01  |
| Buttocks   | 367            | 12.0           | .05  |
| Ankles     | 367            | 14.4           | .01  |
| Legs       | 367            | 14.1           | .01  |
| Complexion | 363            | 43.1           | .001 |

**Table 3.** Importance assigned to the various body parts: differences found among the different age-classes.

It is interesting to note, in this case, that gender differences emerged for few parameters: eyes ( $\chi^2=10.1$ ,  $df=1$ ,  $p<.000$ ), arms ( $\chi^2=7.9$ ,  $df=1$ ,  $p<.001$ ), buttocks ( $\chi^2=20.3$ ,  $df=1$ ,  $p<.000$ ), and ankles ( $\chi^2=5.8$ ,  $df=1$ ,  $p<.05$ ). All these parameters are connected to seduction, an aspect clearly differently introjected by the two genders. Regarding the Machover test, the main results are as follows: In the whole sample all the represented bodies were in general ageless, so the temporal dimension was totally excluded. All the figures were proportioned and represented in the frontal plan, revealing a good self-awareness, even dimensionally. The differences in details and the representation styles reflected the personal history, but the main discrepancy that emerged among the age-classes was the sexual component, high in

both genders during adolescence, but represented in a symbolic way, as genitals were absent, whereas naked bodies were drawn or, alternatively, they were dressed but with detailed adornments (perhaps attributable to the adolescents homologation need). In the following age-class this component was expressed differently between genders, as the males' tendency was to outline this aspect, as they represented naked bodies or even dressed, but expressing sexuality through the dimensions. In the following age-classes sexy bodies were not represented: masculinity/femininity is foreseen by clothing or hair, with females more secretive with respect to sexuality. The over 66 year's old subjects did not judge themselves on an aesthetical basis. The following table summarizes the most noteworthy results by age-class.

| Age classes | Females drawing females   | Females drawing males   | Males drawing females   | Males drawing males   |
|-------------|---|---|---|---|
| 12-18       | Strong sexual references, desire of social affirmation, retreat from social interest. Exhibitionism, egocentrism. No ideal for thinness found.  | Male well outlined figures, oriented in the central part of the sheet, with sexual references. "Ideal" drawn bodies instead of actual.  | Poorly accentuated breasts, but with a lot of clothing details; repressed aggressiveness (marked pencil strokes).   | Marked pencil strokes. <u>Well marked</u> representations, in proportion to the sheet.<br><br>Traits, noses well outlined (sexual recall).                                      |
| 19-26       | Rigorously dressed female drawings, neutral (lack of sex appeal). Figures marginal to the sheet (self-attributed marginal importance). No ideal for thinness found.                     | Completely dressed male figures, located in the upper part of the sheet, usually oriented towards its left part. No muscles or chiseled figures, sometimes very small drawings. | Figures charged with sexual components (in plain view big/pointy breasts and noses), with essential clothing. No eyelashes and eyebrows. Hands absent or backward (shyness/insecurity maybe depression?). | Chiefly undressed representations with omitted genitals, but with every body part well illustrated. No signs of biological maturation (whiskers, <u>hirsutism</u> , and so on). |
| 27-40       | Similar way as above, but with bodies loaded with femininity. No ideal for thinness found.  | Similar way as above, with the sexual and erotic component absolutely marginal.   | Figures charged with sexual components. Hands omitted or backward.  | Figures drawn in the same style of females, with a sketchy dressed but well delineated body. Ageless faces and bodies.  |
| 41-65       | Two groups emerged: one not differing from the above and another in which the time roll by is clearly recognizable. Femininity expressed through clothing and not through bodily forms. | The same as above.  | Sexual symbols re-surface (well outlined breasts). Penciled drawings representing buxom and robust bodies.  | A resurgence of "primitive" and stylized body was found. Illustrators appear to stand off from the body, as it is incomplete and poorly defined.                                |

## Discussion and conclusions

The mental representation of the body is complex and multidimensional, as the body carries out different roles; therefore it assumes a different centrality on the basis of age, gender, and its use. This modifies the parameters with whom a body is judged. Apart the infant/early childhood phase, mostly connected to the relationship mother/child and in more general terms, to the parents/offspring interrelations, it is during adolescence that BI becomes problematic, as a teen is obliged to elaborate the grief of her/his infantile body loss and to rework her/his BI, integrating in it the under completion/mature genitals (Laufer & Laufer 1984). And in our survey the sexual dimension consistently emerged (Machover test), as it appeared to be the cornerstone around which self-representation takes place. Adolescents, in the figurine test, evidenced some coherence between the self-attributed body and BMI. Girls desired a slimmer body and this wish will remain quite stable during life, with a peak between 19 and 16 years of age. The desire “to make an impression” instead of “being” may be conducive to eating disorders, compulsive cosmetics use and/or even surgery. Boys, and later on young and grown men, would like to be more “stout” in respect to their self-perception and this may contribute to lower self-esteem about the body, the possible use of anabolic-androgenic-steroids, and so on (van den Berg et al, 2007). The point is how the body is interiorized, ascribed and represented in our mind: Really a conundrum. Among the many circulating hypothesis, Ferrari (1998) released an interesting one, trying to describe the incessant interaction existing between body and mind, where the former conditions the latter, and vice versa. For the author, an innate primigenial nucleus of somatic functions is articulated with the primary mental functions of containment. Therefore we will have a body carrying out essential mental functions and a mind emerging from the body, but

remaining intrinsic to corporeality, rising the continual feed-back loop. Of course, the discoveries of neuroscience and those of cognitive science could, one day, elucidate the problem; for the moment two selective brain areas appear to play a role: the extrastriate body area (occipital cortex) and the fusiform area in the fusiform gyrus (Peelen & Dowing, 2007). Interesting to note that Takahashi et al (2010), deepening the management of schizophrenia by means of exercise and sports, have found that the impairments of schizophrenic patients in simulating, learning and in the execution of actions, can be due to the diminished activation of the extrastriate body area. As mentioned above, this is a preliminary research, part of a wider one aiming to collect more useful data on different Italian samples. It is interesting because some tendencies emerged. In both sexes the body ideal is maintained with the increase of age, and not many differences exist regarding the body parts (but they occur in the different age-classes). In this sample women prefer a male body well-delineated and not excessively muscular, while males think that their gender counterpart prefers a more stout body. Women believe that males want an ectomorph woman, while men’s predilection is for a more curvaceous woman than that outwardly beautiful and “à la mode feminine” currently shown by slicks and media in general. With age, the parameters with whom the subjects judge their degree of satisfaction/dissatisfaction change, and this emerged from the verbalizations recorded. Younger subjects judge themselves in function of the other people’s viewpoint, adult subject did not verbalized, therefore they presumably judge themselves through the way in which they see themselves, while the over 66 years old subjects, on the basis of the partner’s judgment and /or the functionality of their inner organs. Concluding, the body mental representation is strongly conditioned by age and gender but, also, by experience and the inner world, confirming the

multidimensional of the BI construct. At the end, a reflection. BI studies' tendency is to describe the various BI aspects as a system characterized by a typical configuration of actors and activities, a configuration useful in every situation. This tendency accentuated in the last twenty years and reflects elements of cultural homogenization that perhaps preceded globalization. In the need to solve problems like the so called "obesity epidemics" that is striking worldwide, we are spectators of a sort of pervasive "International Agenda for Well-Being", with globally-structured programs strongly influenced by the neo-liberalism tendencies working worldwide, and affecting economy, politics and culture. So the body, the main depository of our well-being, becomes at the same time the repository/depository of a process mainly functional to competition, which does not take into account the anthropological differences existing among the various populations of the globe. When people is dissatisfied with their body, or simply when people makes mistakes about what the other gender finds to be "attractive", this implies a subtle violence. Violence is not only to hurt or to kill, but to deprive the individual of his/her continuity, for example when somebody is obliged to play a part that is not her/his own (Lévinas 1961). Therefore more reflection on BI is needed, taking into account the anthropological issues, in order to start processes of "decolonization" of a body imagery that is probably not in tune with our deep needs.

### **Limits of the study**

In this preliminary study there are some methodological limitations to be considered in a future. First of all, even if the subjects took part voluntarily and anonymously in the survey, they were recruited on an opportunistic basis (mainly asking whether they would have liked to participate in the study or not), so they may have been subject to selection bias: Subjects uncomfortable with

their appearance might have been less likely to participate. In a future subjects will be chosen only randomly. Secondly, the figurine test, even if it has proven a good reliability in different studies, has been criticized for its poor ecological validity (Swami & Tovée 2007). The main problem, to be solved in a future, regards the fact that subjects furnish a uni-dimensional measure, unable to distinguish whether the increase of the body figurines dimensions is due to fat or to muscularity, so a figurine can be chosen as a sort of "compromise", as it cannot reveal the actual differences existing between the possessed and the ideal body (Cohane & Pope 2001). Hence, a more reliable test is requested for BI studies in athletes, and suggestions will be welcome. Thirdly, another weak point is the Machover test, a kind of inquire that is very popular despite the fact of continuous criticisms (mainly lack of scientific evidence - Schultz & Schultz, 2000). It faces the so called "projective paradox" typical of the tests whose contents are analyzed for meaning instead of presumptions about signification. Despite this dearth, the Machover test was chosen "to sense the *Zeitgeist*" of contemporary Italians regarding to body. Finally, the BMI, a crude index of obesity, has been chosen because it is widely used in surveys of health and nutritional status, as it is well correlated with total body fat and percentage fat, even if it is probably more of an indicator of heaviness or lightness, and only indirectly of high or low levels of body fat, respectively. Its interpretation as an indicator of fatness has limitations in adolescents and young adults (as the amount of body fat changes with age and differs from girls and boys, so the interpretation should be age- and sex-specific, whereas in adults it is interpreted through categories that do not depend on sex or age). Women's tend to underestimate weight, so happens for heavier individuals, and accuracy is not associated to weight satisfaction (Gunnare et al 2013) and supposedly, in athletes BMI is probably

mostly an index of heaviness or lightness and not fatness.

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