

Do patients with severe obesity overestimate or underestimate their body size?

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Background

- obesity is a world wide public health problem (1)
- obesity has important physical consequences :
metabolic syndrome, arthrosis (2)
- obesity has important psychological consequences:
depression, anxiety, low self-esteem, poor quality of
life and negative body image (3)

A decorative graphic consisting of overlapping colored squares (yellow, red, blue) and a black crosshair.

Body image

- body image refers to a mental image that people have of the physical appearance of their body (4)
- dissatisfaction with body image erects emotional barriers which lead to increased eating and depression (5)
- improved body image is one of the main reasons for post-surgical psychological improvement, better social integration, and enhanced quality of life (6)

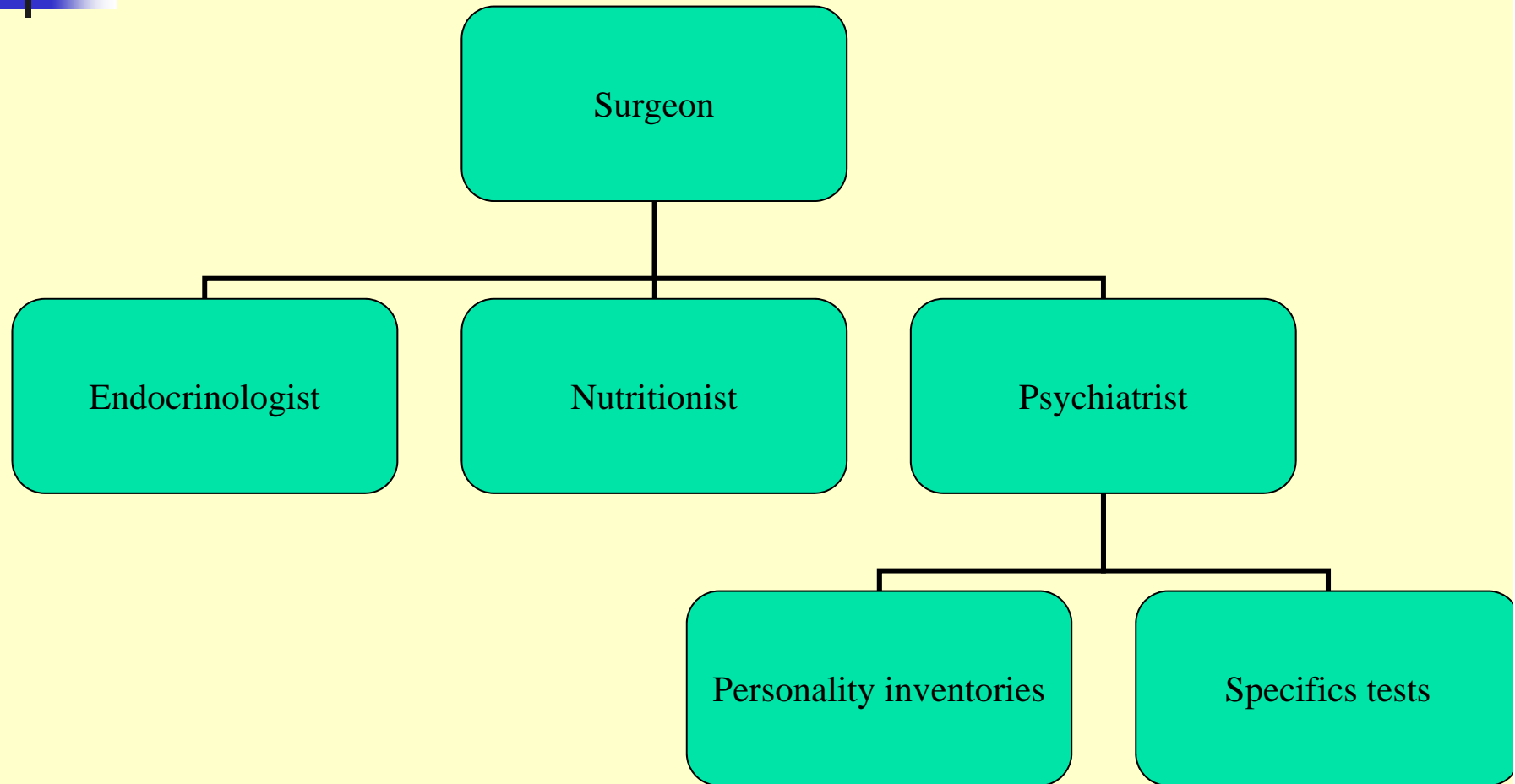
Body image and body size perception

- the data on body image perception in obese subjects are inconsistent. obese individuals overestimate, underestimate, or are accurate regarding body size estimation (7).
- the inconsistency may be due to different measurement methods and varying sample sizes (7).

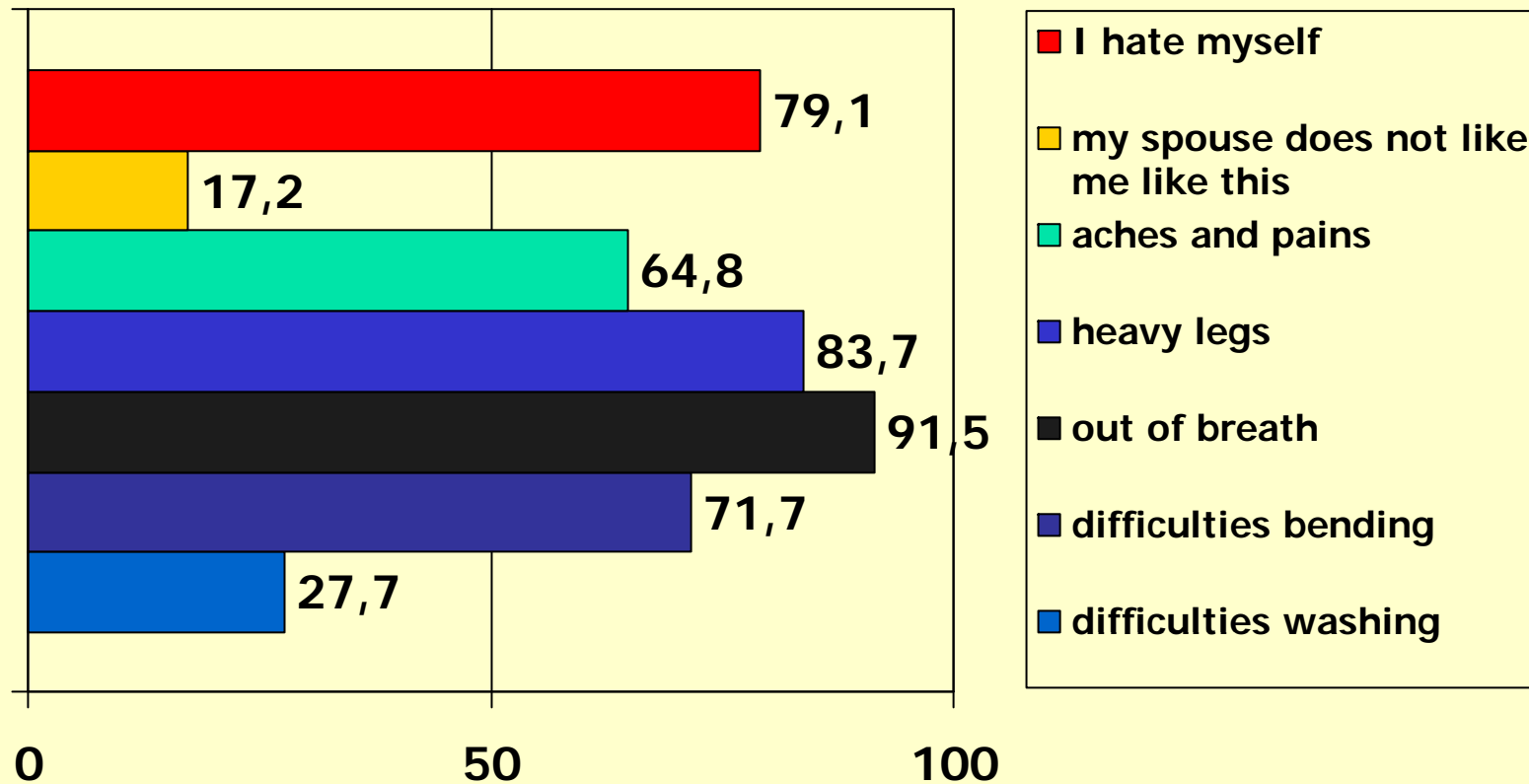
Body size perception using virtual reality

- there is a need for better tools to assess body size perception
- virtual reality can be used as an assessment instrument for body image in obesity. Through the use of immersive virtual reality environments, it is possible to induce a controlled sensory rearrangement that facilitates the correction of biased body image (8).
- novel digital morphing tools have shown that obese subjects display poorer body perception than their lean counterparts and overestimate their actual body size (9).

Multidisciplinary assessment of candidates for bariatric operations in the Centre Hospitalier de Luxembourg



Reasons for wanting to loose weight



Aim of the present study

- to assess body size perception in obese patients seeking bariatric surgery
- to examine possible relationships between body size perception and degree of obesity, quality of life, depression, anxiety and eating disorders

Methods

- **Subjects:** All consecutive patients with severe obesity seeking bariatric surgery from September 2008 to August 2009 were assessed.
- **Anthropometry:** Weight was measured in kilograms and height in meters to calculate BMI.

Methods

Assessments

- **Depression:** Beck Depression Inventory 2
- **Anxiety:** Beck Anxiety Inventory
- **Quality of life:** Impact of Weight on Quality of Life-Lite (IWQOL-Lite) 0=good quality of life, 100=very bad quality of life)
- **Self-esteem:** Rosenberg self-esteem questionnaire
- **Body dissatisfaction and binge eating:** Eating Disorder Inventory (EDI).

Methods

Assessment of body size perception using virtual reality

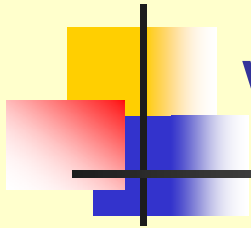
Assessment in three steps, using a virtual reality program called "Virtual & Body" (PREVI)

PREVI (PSYCHOLOGY AND VIRTUAL REALITY, Inc.) is a company that was created as a spin-off associated with
University Jaume I (C. Botella)
University of Valencia (R.M. Banos, C.Perpena)

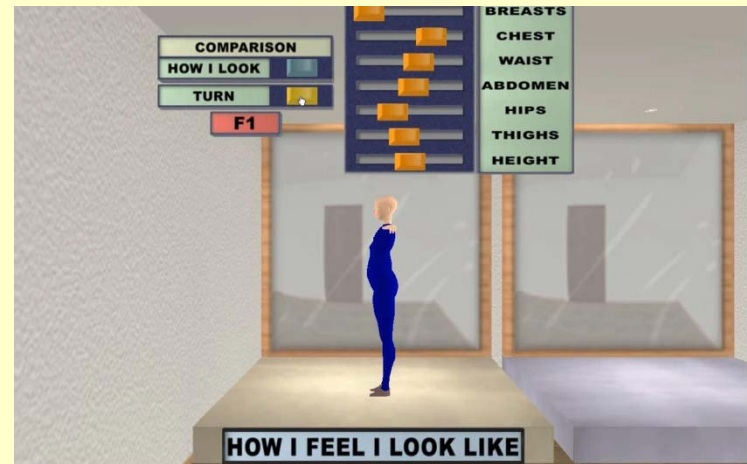
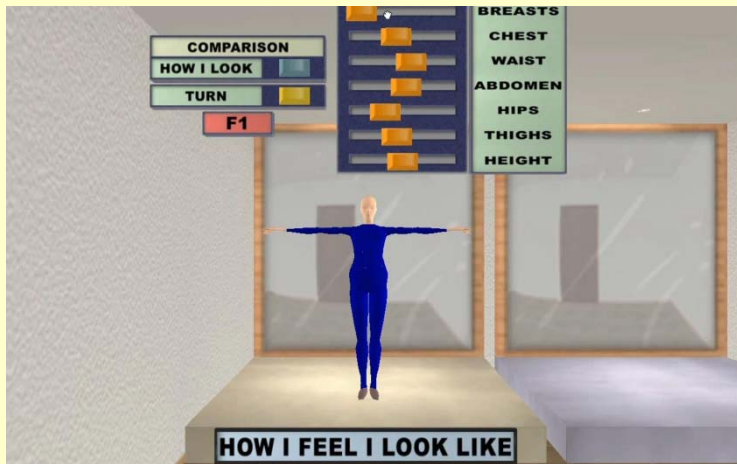
Methods

Assessment of body size perception using virtual reality

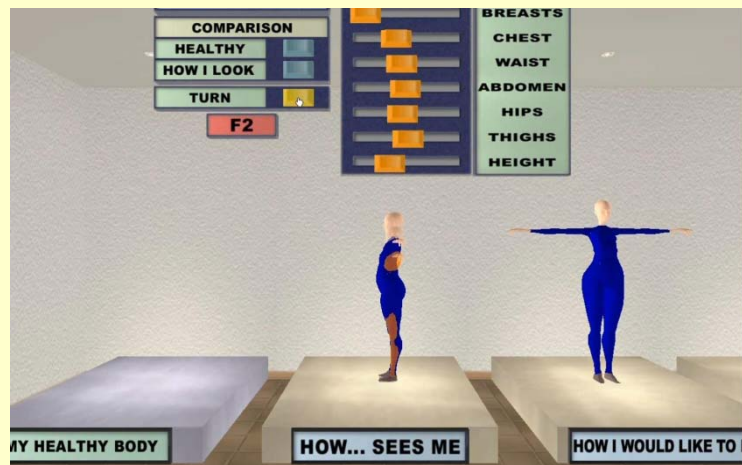
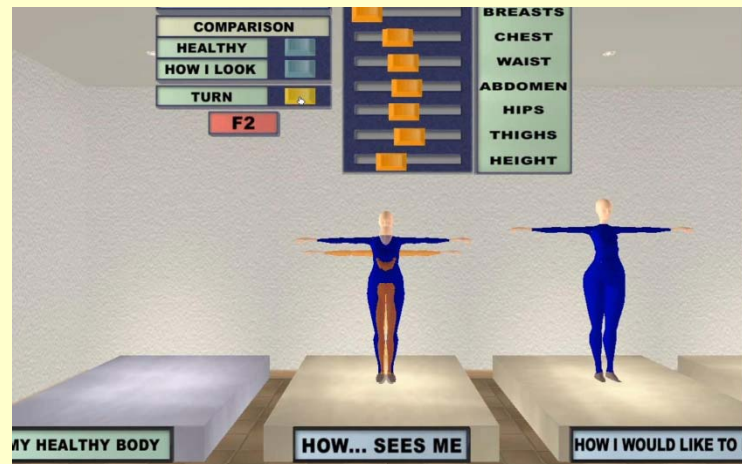
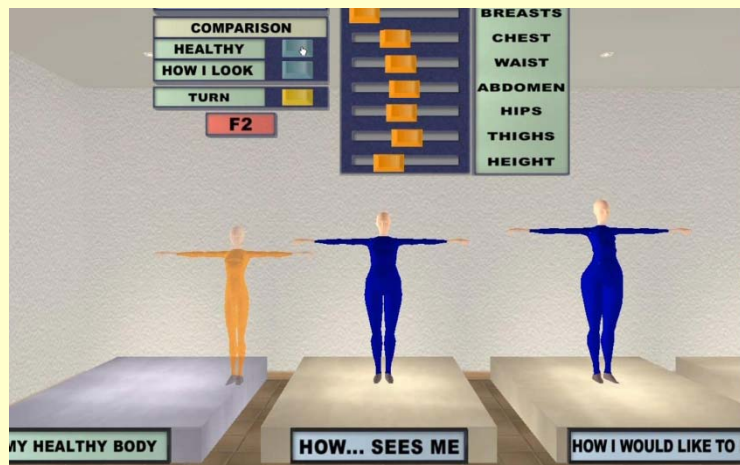
- In the first step, an external observer draws an “objective” image of the patient’s body form
- In the second step, the patient “draws” his/her body as he/she sees it. In drawing his/her image, the patient can change each part of the virtual body
- In a third step, his/her image is compared with the image drawn by the external observer



Virtual & Body



Virtual & Body



Statistical analyses

- Comparisons were done using the Mann-Whitney test.
- Correlations were done using Spearman's Rho coefficient.
- All statistical analyses were done with PASW 18.

Results

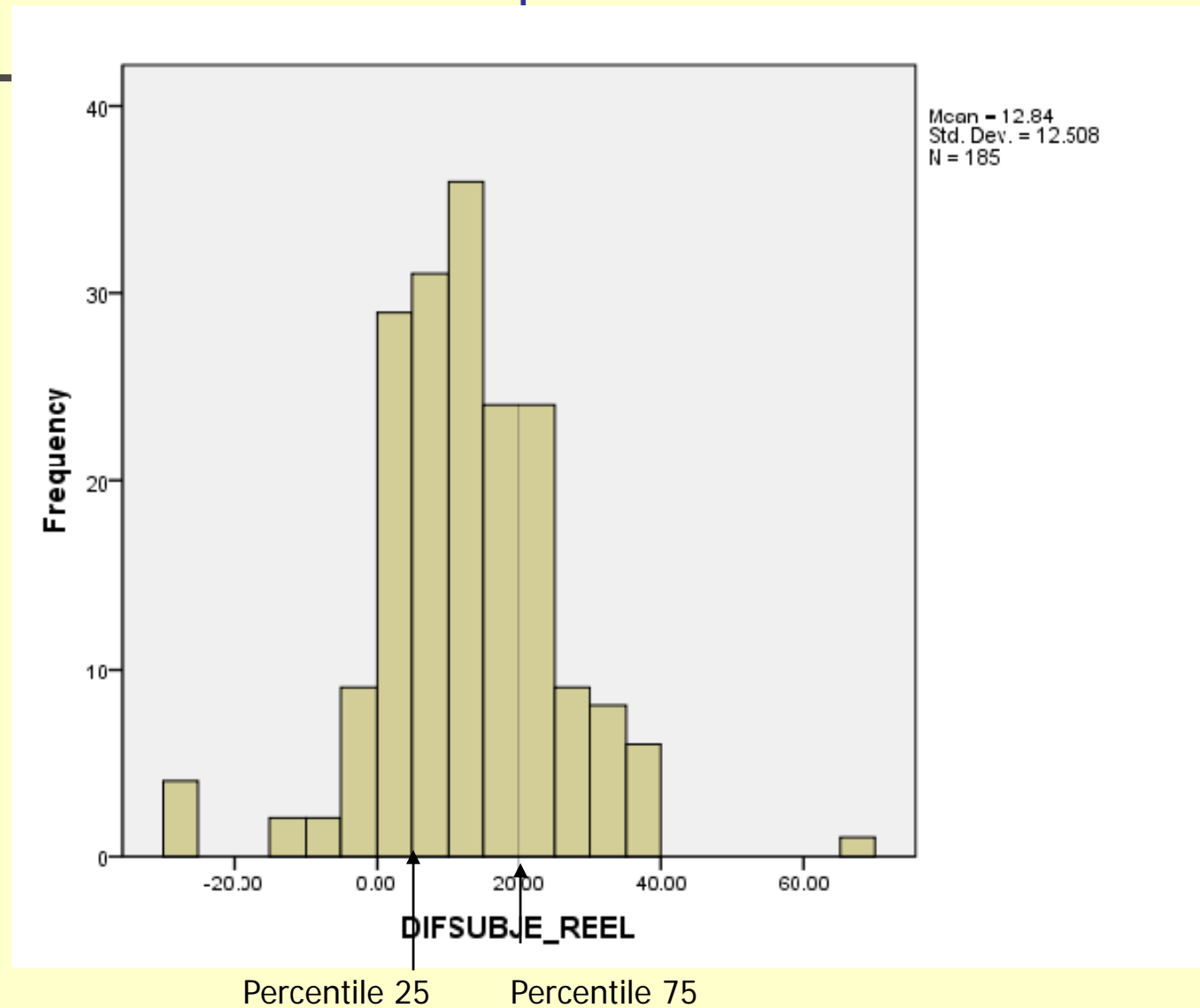
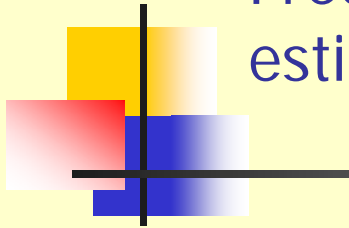
- 185 patients
- seeking surgical treatment for obesity
- 132 women (71,4%) and 53 men (28,6%),
- aged 18- 67
- mean BMI= 42

Results

- 3.2% of the patients underestimated their body size
- and 58.4% overestimated their body size
by more than 10% in comparison with the assessment of an external observer

BS estimation by patients was $12,8 \% \pm 12,5$ higher than BS estimation by an external observer

Frequency of distribution on patient's body size estimation in relationship with observer's estimation

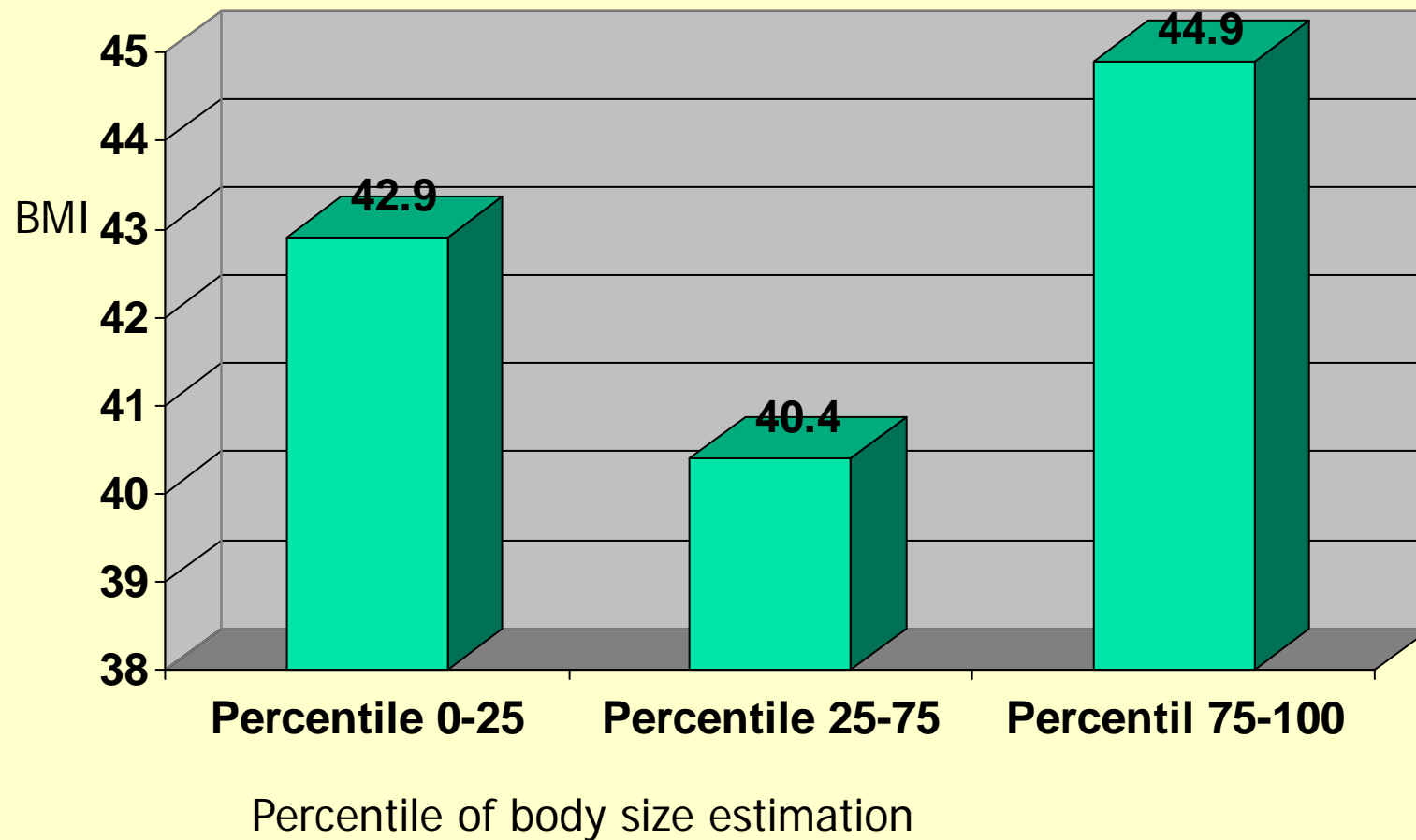


Results

Differences of mean of psychological variables in three groups of percentile of body overestimation (test Mann-Whitney)

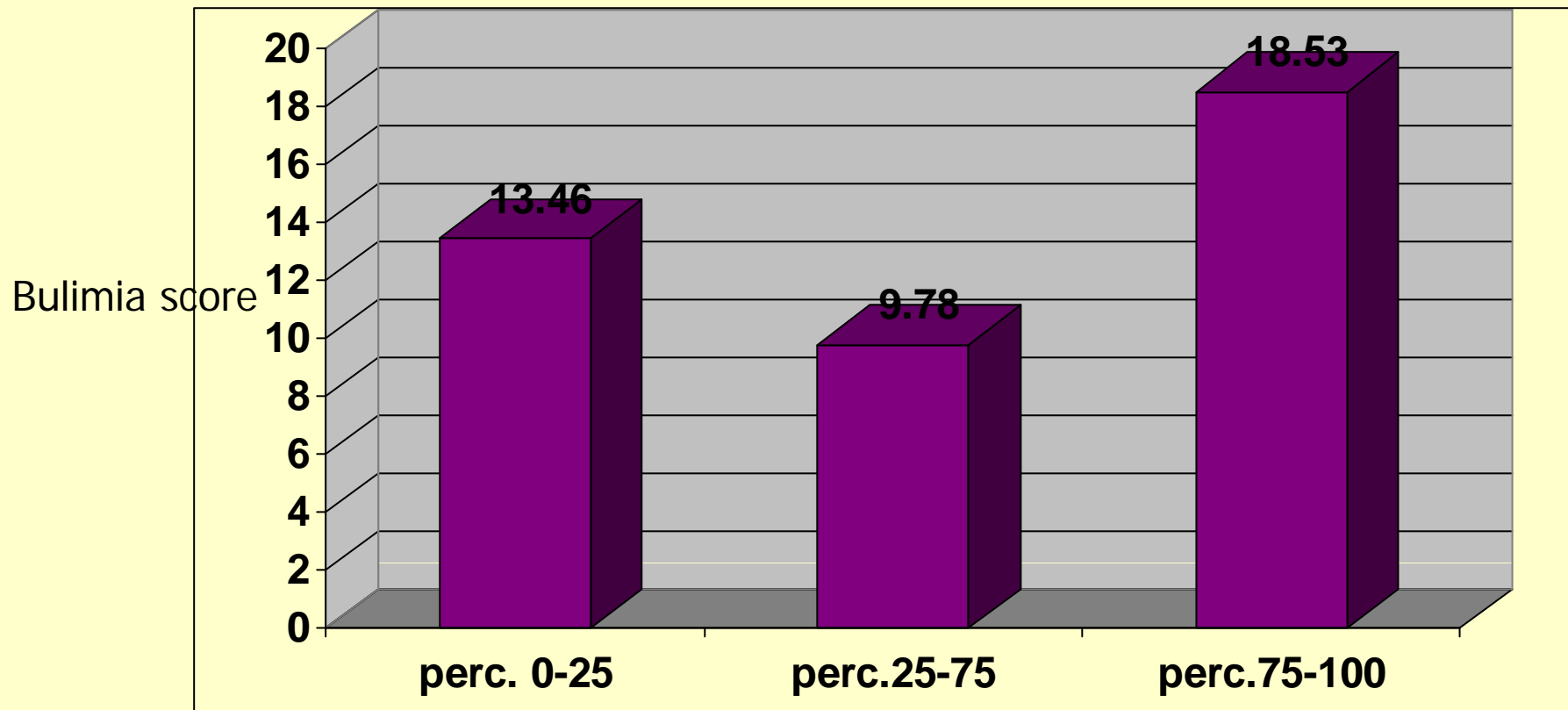
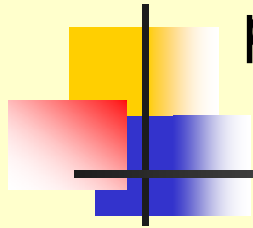
Test	Percentile 0-25 (n=46) Mean \pm S.D.	Percentile 25-75 (n=93) Mean \pm S.D.	Percentile 75-100 (n=46) Mean \pm S.D.	P value
BMI	42.9 \pm 5.5	40.4 \pm 0.5	44.9 \pm 7.2	*<0.001
Depression	12.2 \pm 8.8	14.5 \pm 10.4	17.3 \pm 12.3	0.093
Anxiety	12.5 \pm 10.5	13.5 \pm 11.8	14.5 \pm 11.3	0.722
Self-esteem	20.3 \pm 5.7	19.0 \pm 5.8	18.5 \pm 6.2	0.372
Drive for thinness	0.4 \pm 0.2	0.4 \pm 0.2	0.5 \pm 0.2	0.504
Bulimia	0.1 \pm 0.2	0.1 \pm 0.2	0.2 \pm 0.2	*0.011
Body dissatisfaction	0.7 \pm 0.3	0.7 \pm 0.2	0.7 \pm 0.2	0.576
Quality of life	40.8 \pm 19.4	42.6 \pm 21.1	51.4 \pm 22.8	*0.045

Differences of mean of BMI in three groups of percentile of body overestimation (test Mann-Whitney)



$p < 0.001$

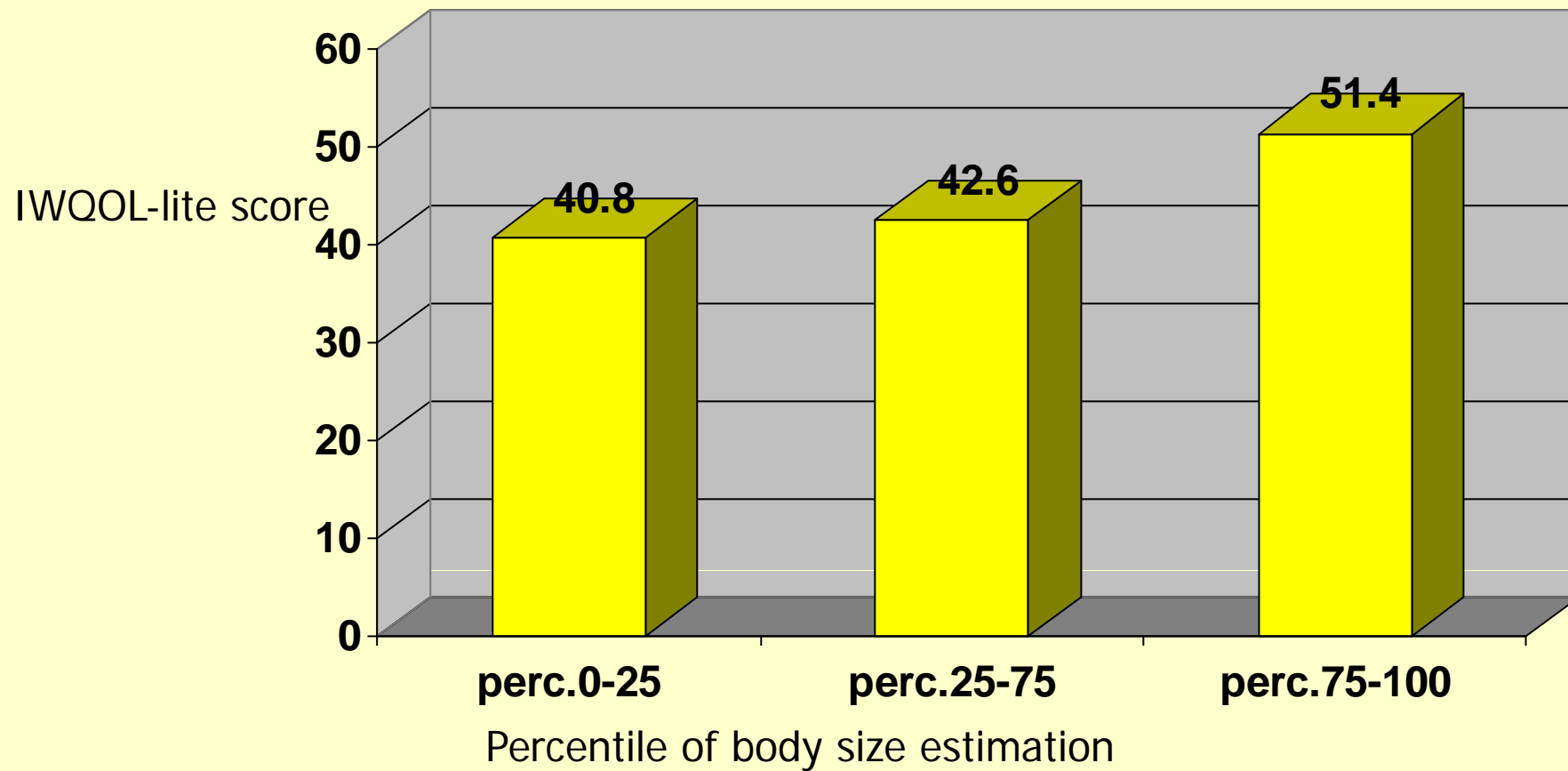
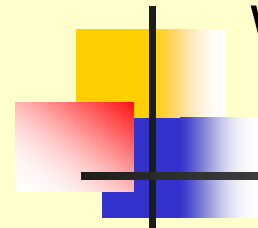
Differences of mean of bulimia score in three groups of percentile of body overestimation (test Mann-Whitney)



P=0.001

Percentile of body size estimation

Differences of mean of worse quality of life in three groups of percentile of body overestimation (test Mann-Whitney)



Conclusions

- Most candidates for bariatric surgery overestimate their body size.
 - Patients who overestimate their body size have higher BMIs
decreased quality of life
more binge eating
- in comparison with patients who do not overestimate their weight.

Conclusions

- Body size perception can be assessed using virtual reality
- Patients can better assess their body image , including body size perception
- This is an advantage in relationship to traditional methods of body image assessment
- This virtual reality program has some limits, for instance, it is difficult to assess patients with extreme obesity (BMI >50).

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LABORATORY OF EMOTIONAL DISORDERS

thank you for your attention

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