

# RELATIONSHIPS BETWEEN BODY IMAGE SUBSCALE (BIS) VERSUS BIOLOGICAL MATURATION, BODY MASS INDEX (BMI), WEIGHT CONTROL BEHAVIOUR AND PHYSICAL ACTIVITY (PA) IN FINNISH AND HUNGARIAN ADOLESCENTS

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## INTRODUCTION

- Body image as a part of self-perception and self-evaluation may have an impact on mental health and health-related behaviours, especially during adolescence. Thus it is urgent to explore and understand the role of body image in young people's life in wide context.
- The aim of this preliminary analysis was to present some basic data of Finnish and Hungarian young people on their body image using a new body image scale in the HBSC study. This subscale is a part of the Body Investment Scale (Orbach and Mikulincer 1998).
- It was also the aim to reveal some relationships between body image measured by this scale and obesity, weight control behaviour, physical activity and sexual maturation type.

## RESULTS

### DESCRIPTIVES (Finland in blue, Hungary in red)

#### BIS-scores

Group	N	Cronbach- $\alpha$	M	SD	Two-way ANOVAs:	Model: F=94.192*** F=65.942***
13-yr-old boys	747	0.848	21.92	4.01	Gender: F=274.264*** F=185.093***	
15-yr-old boys	546	0.746	24.11	4.12		
13-yr-old girls	838	0.893	18.99	5.01	Age: F=7.940** F=10.564**	
15-yr-old girls	591	0.844	21.46	5.03		
					Gender*Age: F=0.764 F=0.024	
					Adj R <sup>2</sup> =0.082 Adj R <sup>2</sup> =0.079	

#### Basic distribution of independent variables (%)

Group	Obesity categories		Current attempt to loose weight	MVPA		Maturation type	
	Pre-obese	Obese		0-2 days	Meet guidelines	Early	Late
13-yr-old boys	14.3	2.9	4.9	14.2	55.6	-	-
15-yr-old boys	16.4	3.7	5.9	27.3	43.1	-	-
13-yr-old girls	10.4	1.5	13.3	20.1	44.0	-	-
15-yr-old girls	10.7	1.6	14.2	28.4	36.0	17.7	17.1
	9.0	2.2	30.5	45.4	25.0	13.4	19.0

### RESULTS II.

#### CORRELATIONS

(Finland in blue, Hungary in red)

#### Spearman's r

Group	BIS vs BMI	BIS vs MVPA
13-yr-old boys	-0.108**	0.149***
15-yr-old boys	-0.157**	0.139**
13-yr-old girls	-0.231***	0.143***
15-yr-old girls	-0.157***	0.074*
	-0.204**	0.114**

## MATERIAL AND METHODS

- HBSC 2005/06 survey:** representative sample from Finland and Hungary
- 13-15-year-old students** (Finland: N=3142, Hungary: N=2277)
- Anonym self-administered questionnaire**
- Variables:** - gender, age  
- BMI (body weight(kg)/body height (m)<sup>2</sup>)  
- Obesity categories (normal, pre-obese, obese according to Cole et al 2000)  
- physically active days per week (MVPA)  
- MVPA categories (low, medium, high)  
- Current attempt to loose weight (yes, no)  
- Maturation type only for 15-yr-old-girls (early, on-time, late)  
- BIS (items: I am frustrated with my physical appearance  
I am satisfied with my appearance  
I hate my body  
I feel comfortable with my body  
I feel anger toward my body  
I like my appearance in spite of its imperfections)

response categories for the six items : 5 points ranging from „do not agree at all” to „strongly agree”  
scale-range: 6-30, higher score indicates a better body image

- BIS categories (low, medium, high)

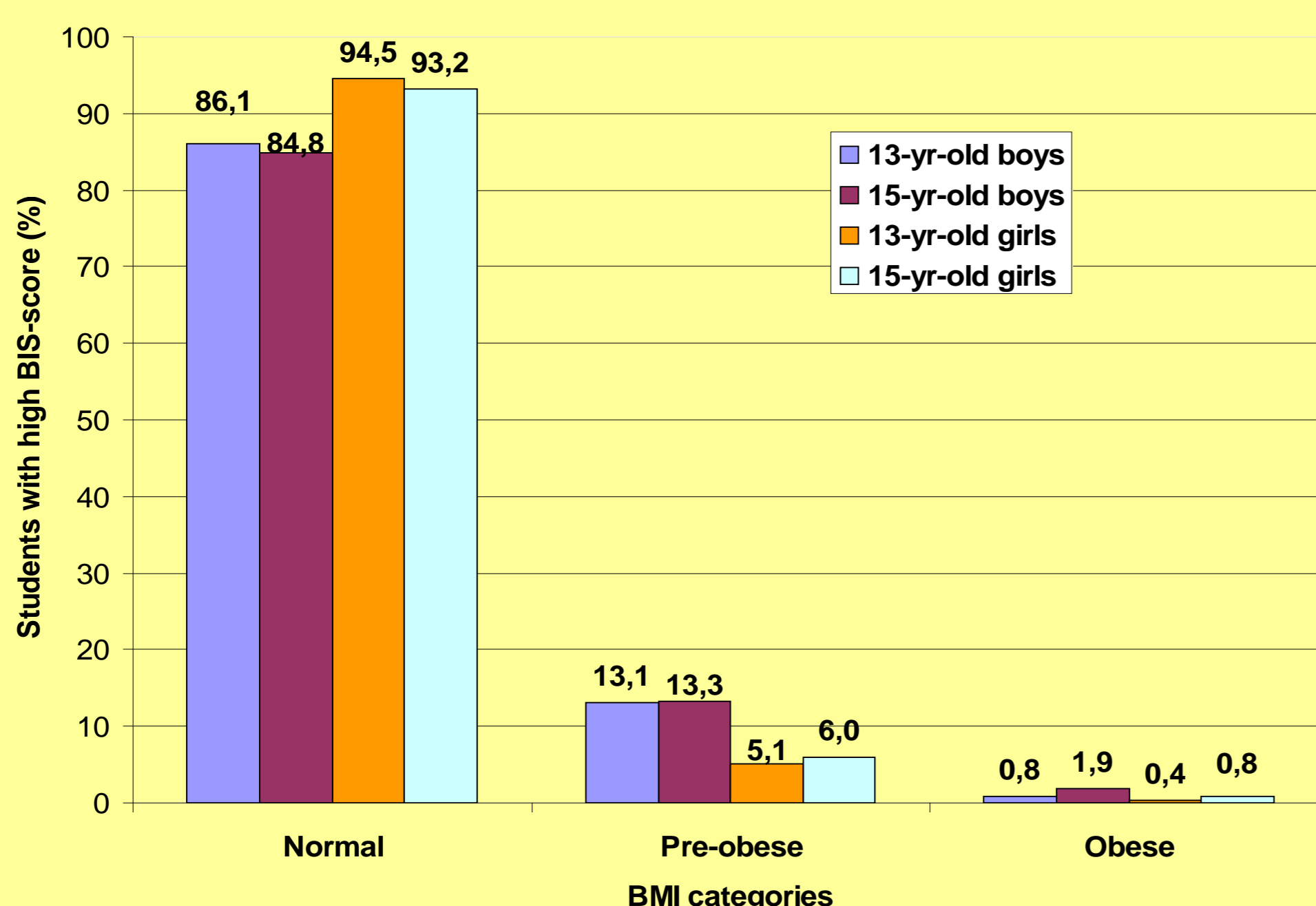
- MVPA and BIS categorical variables were created according to the distribution of data. The conception was to divide subsamples three quasi equal portions (tertiles). Thus there are small differences among categories, depending on age, gender and country (Finland in blue Hungary in red):

Variable	Boys		Girls	
	13-yr-olds	15-yr-olds	13-yr-olds	15-yr-olds
BIS:	low	score 6-20 6-22	score 6-20 6-21	score 6-17 6-19
	medium	score 21-23 23-26	score 21-24 22-25	score 18-21 20-23
	high	score 24-30 27-30	score 25-30 26-30	score 22-30 24-30
MVPA:	low	days 0-3 0-3	days 0-2 0-2	days 0-3 0-2
	medium	days 4-5 4-5	days 3-4 3-4	days 4-5 3-4
	high	days 6-7 6-7	days 5-7 5-7	days 6-7 5-7

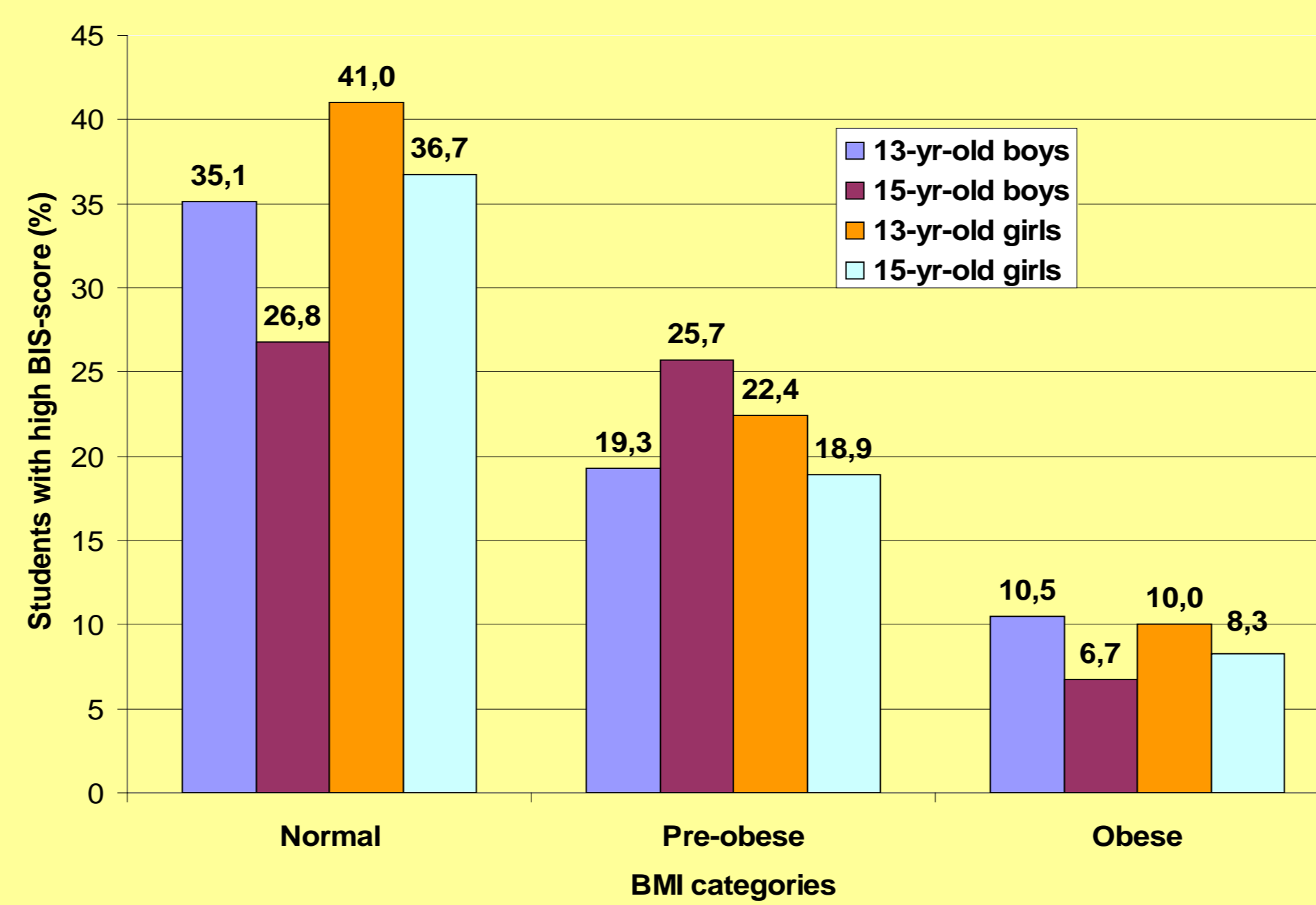
Statistical analysis: descriptives, two-way ANOVAs, Bivariate correlations, Chi-square tests

## RESULTS III.

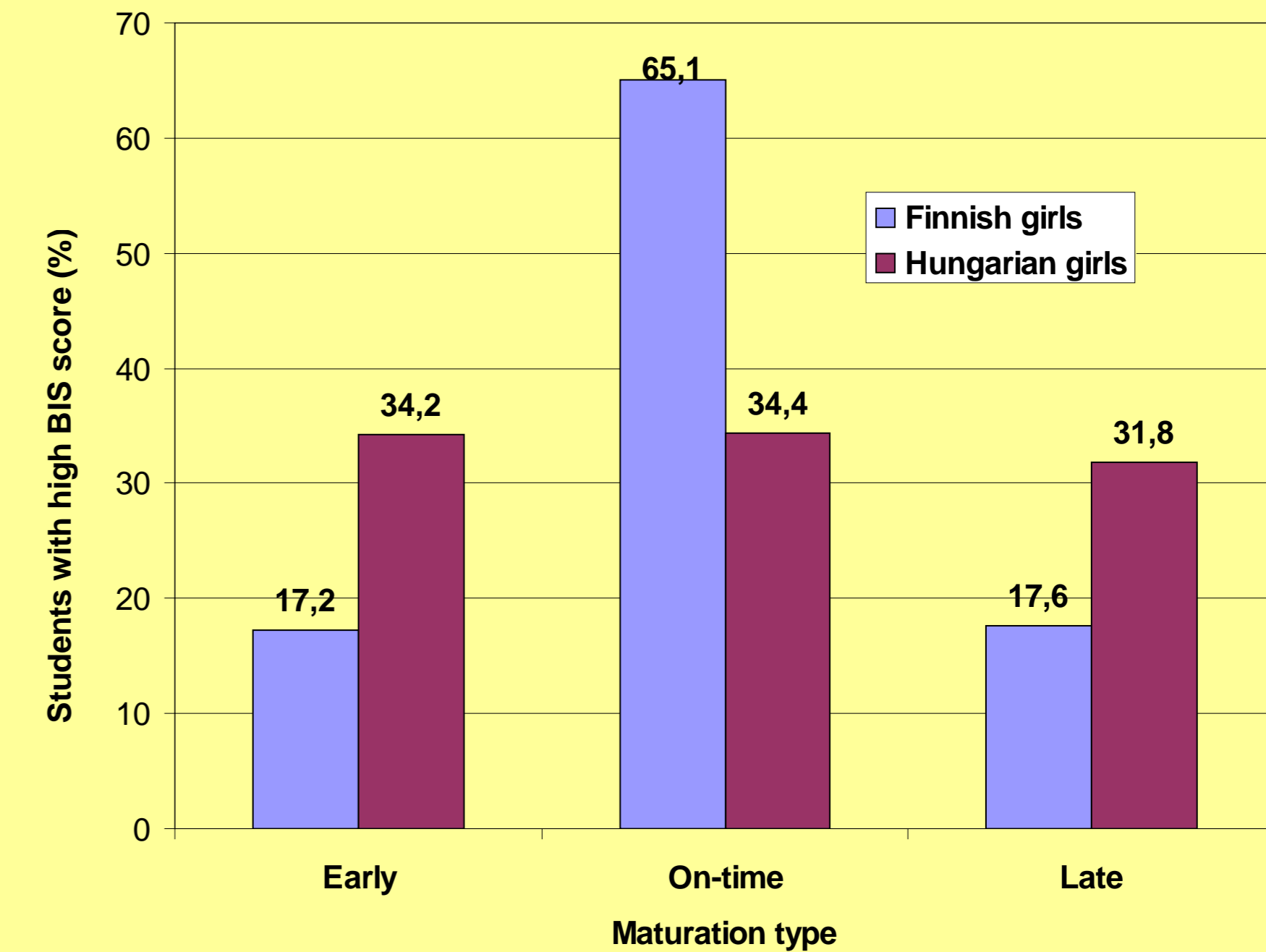
### Relationship between BIS and BMI among Finnish students



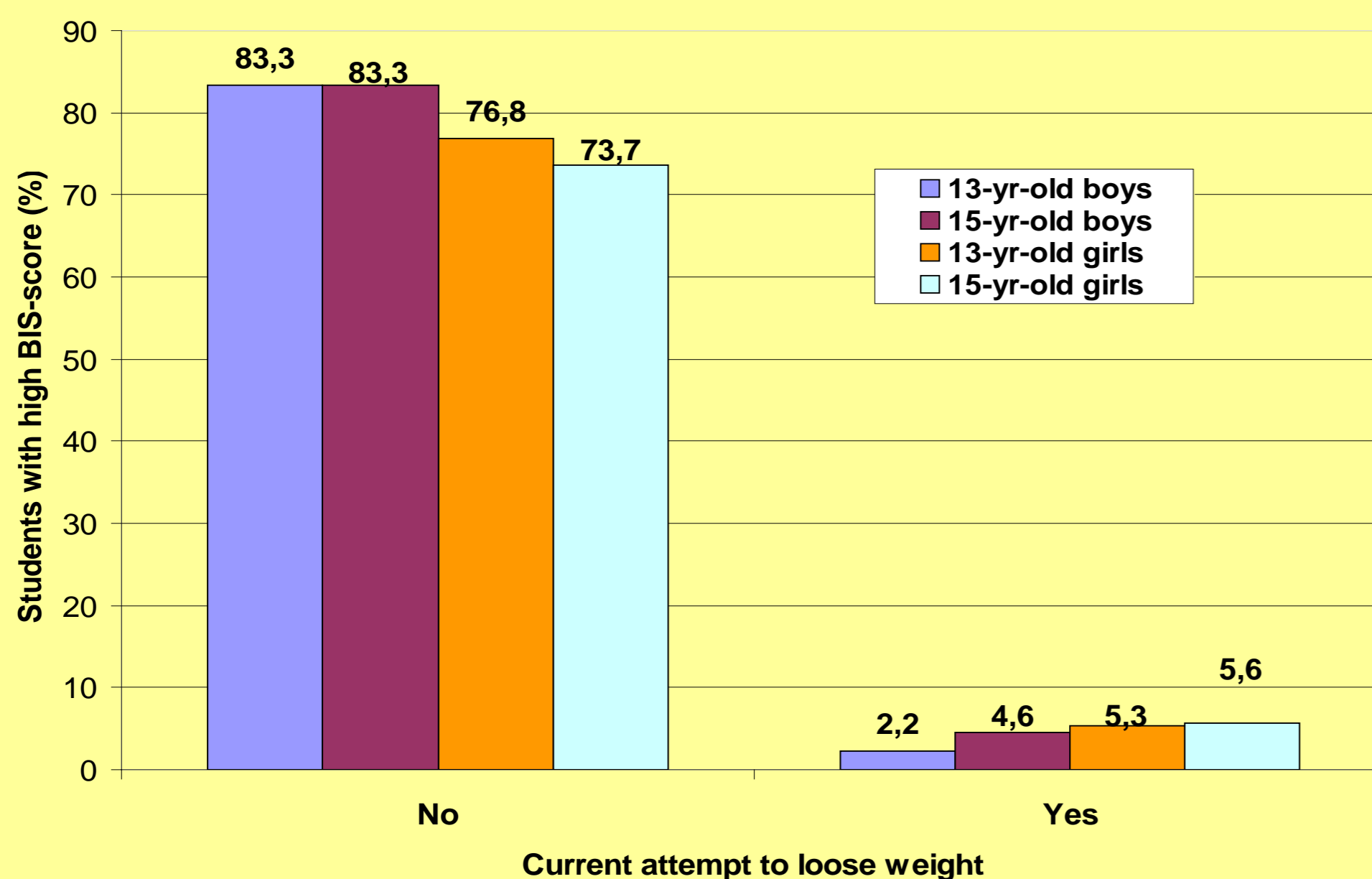
### Relationship between BIS and BMI among Hungarian students



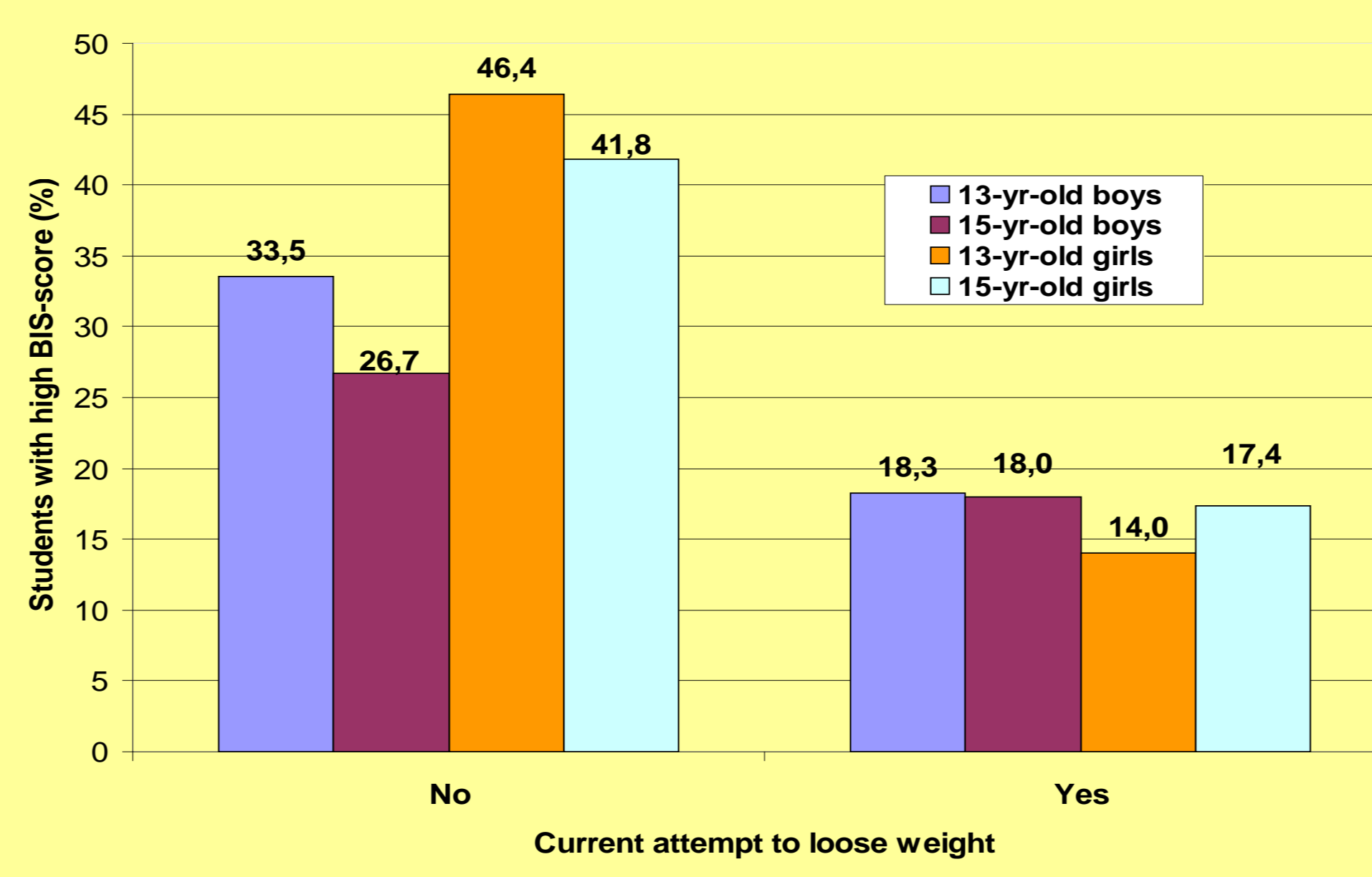
### Relationship between BIS and maturation type among 15-yr-old Finnish and Hungarian Girls (Hungarian results are not significant)



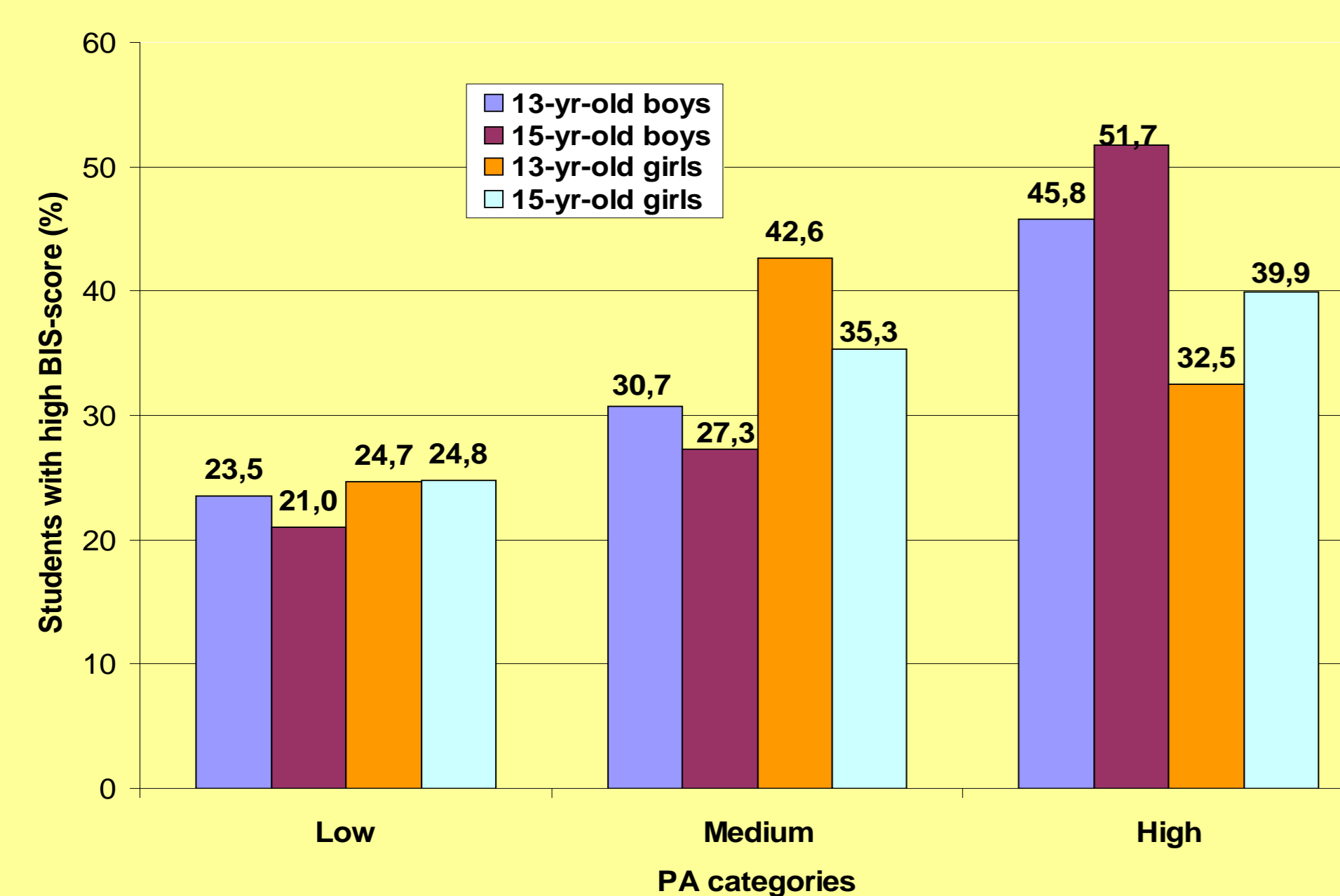
### Relationship between BIS and attempt to loose weight among Finnish students



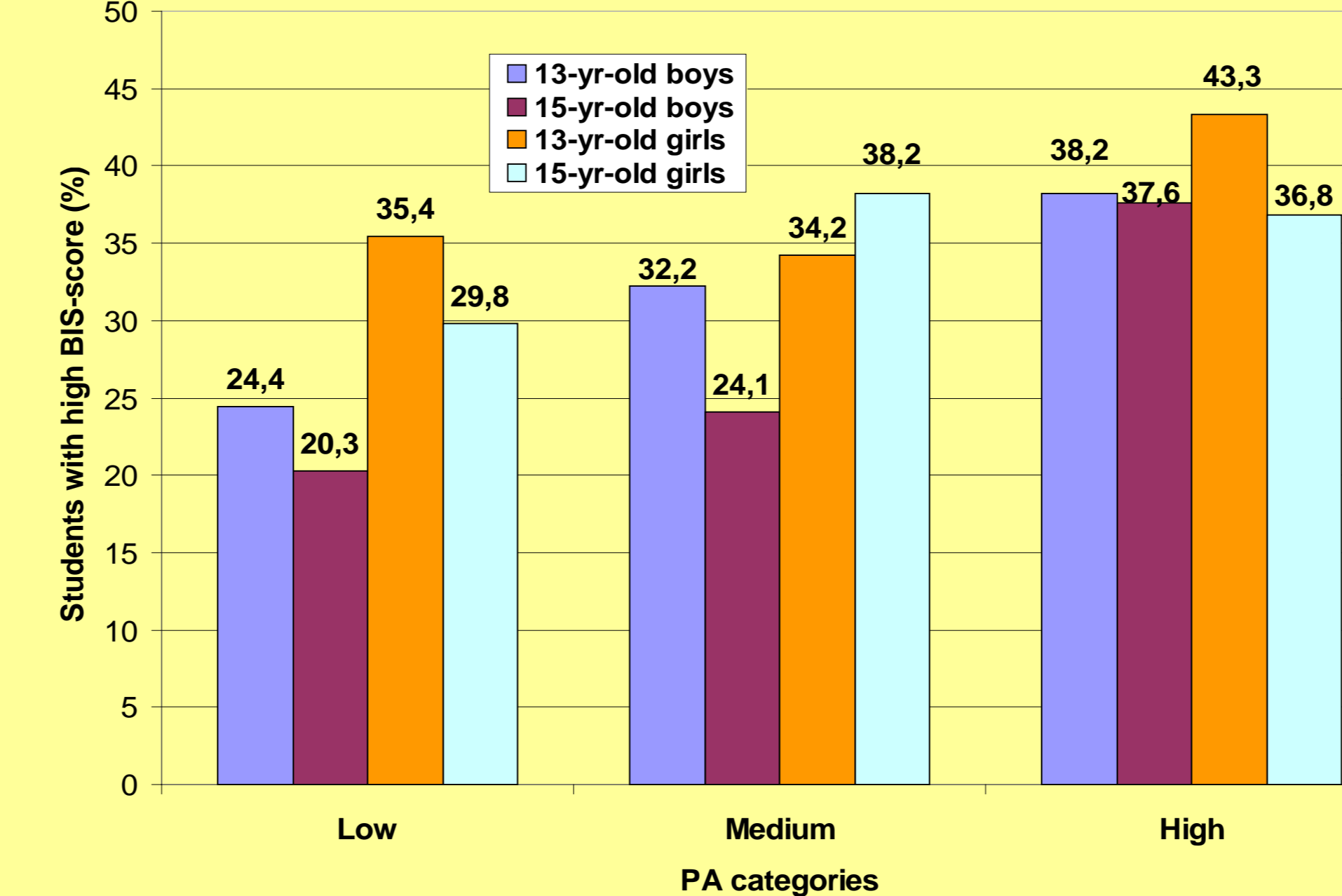
### Relationship between BIS and attempt to loose weight among Hungarian students



### Relationship between BIS and PA among Finnish students



### Relationship between BIS and PA among Hungarian students (among girls there are no significant differences)



## RESULTS IV.

## CONCLUSIONS

- In general Finnish young people have poorer body image than Hungarian ones, but the formers are more active physically than the latter, especially among girls. Obesity data do not differ very much in the two countries, however, much more young people are engaged in weight reduction practices in Hungary than in Finland.
- Gender and age differences in body image are typical in Hungary as it is known from the literature (e.g. Mulvihill et al. 2004), but in Finland older children have better BIS-scores than younger ones.
- Though relationships between body image and obesity as well as behaviours are similar in the two countries, there are marked differences too. In general children with normal weight, without weight reduction practices and with high level of physical activity have higher BIS scores. However, among Finnish young people differences are much more than among Hungarians.
- Maturation type has significant impact on body image only among Finnish girls.
- As positive body image may result in good subjective well-being and self-esteem, its improvement may have beneficial results.
- Though this analysis did not reveal causal relationships, results may suggest that positive body image may prevent young people from health-compromising behaviours.
- Results may suggest also that physical activity may have positive influence on young people's life in a multiple way. For instance, active adolescents can reach or maintain not only a healthy body weight but a positive body image, too.

## REFERENCES

- Cole TJ., Bellizzi MC, Flegal KM., Dietz WH. (2000): Establishing a standard definition for child overweight and obesity worldwide: international survey. *BMJ*, 320:1240-1243.
- Mulvihill, C., Németh, Á., Vereecken, C. (2004): Body image, weight control and body weight. In: Currie et al (Eds): *Young people's health in context. Health Behaviour in School-aged Children Study (HBSC): international report from the 2001/02 survey*. WHO. 120-129.
- Orbach I, Mikulincer, M. (1998): Body investment scale: Construction and validation of a body experience scale. *Psychological Assessment*, 10: 415-25.