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OBESITY AND EMOTIONAL AROUSAL AND CONTROL IN CHILDREN AGED 8 TO 11 YEARS

Case
Study

Keywords
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Emotional arousal,
Emotional control,
Overweight,
Obese

Abstract

The purpose of this study is to present the results obtained in the base of the opinion of 95 children from general schools of Sibiu city in Romania, collected during a survey regarding emotional reactivity (arousal) and regulatory capacity (control) in early adolescence. Data were stratified by BMI in order to analyze the relationship between obesity and emotional arousal and control in case of young adolescents. A 30-item self-reporting multidimensional instrument HIF (How I Feel) created by Walden, Harris & Carton in 2003 was used. The questionnaire items refer to five different emotions: happy, sad, excited, scared and mad. Significant differences between the three subgroups (normal weight, overweight and obese) were observed for the following questionnaire items: happy and excited from position emotions subscale; sad, mad from negative emotion subscale. In case of emotion control subscale no significant differences between subgroups have been identified althow higher values were observed in the case of overweight and obese (compared to normal weight) for almost all of the subscale items. The use of HIF instrument in conjunction with other measures could provide a more comprehensive assessment of emotional functioning and different disorders in children and adolescents.

INTRODUCTION

Emotion is defined as: (a) a strong feeling deriving from one's circumstances, mood, or relationships with others, (b) any strong agitation of the feelings actuated by experiencing love, hate, fear, etc., and usually accompanied by certain physiological changes as increased heart beat or respiration, and often over manifestation as crying or shaking (www.dictionary.com), (c) a strong feeling such as love or anger, or strong feelings in general (dictionary.cambridge.org). As the definition suggests but also studies from literature, the emotional functioning can cause different disorders to children (Cole et al, 2008; Zeman et al 2002; Luby et al, 2006; National Academies of Sciences, Engineering, and Medicine, 2015). HIF (How I Feel) can be a useful tool in understanding the interaction between excitation and control in a socio-emotional context in children (Walden, 2003).

Childhood obesity is a multifactorial (genetic and non-genetic) condition with important negative health, social, psychological ramification. Aspects regarding obesity and emotional reactivity and regulatory capacity were analyzed in the present study.

In this study, a descriptive analysis was made to assess measurement of emotion among children aged 8 to 11 years in the context of childhood obesity.

MATERIALS AND METHODS

Study population

The subjects are 95 children, 8 to 11 years of age, from general schools from Sibiu city in Romania, during November 2017. During the sports class they were weight one by one on a digital scale without shoes, and were measured on a straight wall. We made individual evidence papers with all 95 children. The BMI was calculated by dividing the body weight to height (kg/m^2) and obesity was defined as BMI greater than the 95th percentile for age and gender. Data were stratified by BMI.

Emotional arousal and control questionnaire

A 30-item self-reporting multidimensional instrument named HIF (How I Feel) created by Walden, Harris & Carton in 2003 (Luby et al, 2006; Popa et al, 2007)) was administrated. The questionnaire items refers to five different emotions: happy, sad, excited, scared and mad, and consists in three subscales: negative emotions (items 2, 5, 7, 8, 10, 13, 17, 20, 22, 23, 25, 28), positive emotions (items 1, 4, 11, 14, 16, 19, 26, 29) and emotional control (items 3, 6, 9, 12, 15, 18, 21, 24, 27, 30). The answers to these questions

were coded on a 5-point Likert scale, with values 1- not at all true of me, 2- a little true of me, 3- somewhat true of me, 4- pretty true of me and 5- very true of me. A score was obtained as sum of all items for each subscale.

Data analysis

Data analysis and graphical representations were done using IBM SPSS Statistics v20 and Microsoft Office Excel v13 programs (Mocan, 2005). For each item graphical representation boxplot were presented, both for the whole group and for the three subgroups. For BMI stratified subgroups comparison, ANOVA test was used considering significance level 0.05 or 0.01 (Maniu, 2014).

RESULTS

Overall results

For the whole group, the mean and standard deviation for each indicator in each of the three subscales were determine. The hierarchy of items on subscale concerning position emotions was the following: excited frequency (often: M=2.82, SD=1.12, all the time: M=2.86, SD=0.99), happy frequency (often: M=2.86, SD=0.95, all the time: M=2.89, SD=1.15), happy intensity (powerful: M=2.87, SD=1.08, strong: M=2.93, SD=1.15), excited intensity (powerful: M=2.96, SD=0.98, strong: M=3.07, SD=1.19) (figure 1).

In case of negative emotion subscale there were variation of responses for the item subscale, in case of: mad frequency (often: M=2.64, SD=1.19, all the time: M=2.82, SD=1.05), scared frequency (often: M=2.57, SD=1.20, all the time: M=2.74, SD=1.28), sad intensity (powerful: M=2.96, SD=0.98, strong: M=2.80, SD=0.81), mad intensity (powerful: M=2.96, SD=0.98, strong: M=2.85, SD=1.01). The items sad frequency (often: M=2.74, SD=1.03, all the time: M=2.81, SD=1.10) and scared intensity (powerful: M=2.69, SD=1.11, strong: M=2.71, SD=1.22) were more stabele (figure 2)

From the emotion control point of view, the hierarchy in case of emotion intensity control was: scared (M=2.77, SD=0.86), excited (M=2.79, SD=1.09), mad (M=2.87, SD=1.19), happy (M=3.04, SD=1.03), sad (M=3.04, SD=1.06), while in case of emotion intensity control the hierarchy was: sad (M=2.76, SD=1.08), exited (M=2.79, SD=1.09), mad (M=2.79, SD=0.91), happy (M=2.85, SD=1.11), scared (M=2.98, SD=1.12) (figure 3)

BMI stratification results

In the next phase, for the three subgroups of children (BMI stratification: normal, overweight, obese), the mean and standard deviation for each indicator in each of the three subscales were determined.

On subscale concerning position emotions, significant differences between subgroups have been identified for items happy often (normal M=2.76, SD=1.03, overweight M=3.35, SD=0.88, obese M=2.59, SD=0.66, p=0.014) and excited powerful (normal M=2.76, SD=0.94, overweight M=3.43, SD=1.16, obese M=2.91, SD=0.68, p=0.021) (figure 4).

Concerning negative emotions subscale, significant differences between subgroups have been identified for items: sad often (normal M=2.51, SD=1.10, overweight M=3.09, SD=0.99, obese M=2.91, SD=0.81, p=0.060), mad all the time (normal M=2.57, SD=1.02, overweight M=3.26, SD=1.09, obese M=2.91, SD=0.97, p=0.031), sad strong (normal M=2.65, SD=0.83, overweight M=3.13, SD=0.86, obese M=2.77, SD=0.61, p=0.064) and mad powerful (normal M=2.94, SD=1.06, overweight M=2.61, SD=0.89, obese M=3.36, SD=0.72, p=0.034) (figure 5).

From the emotion control point of view, no significant differences between subgroups have been identified for none of the items. However, higher values were observed in the case of overweight and obese (compared to normal weight) for the items: happy frequency (normal M=2.65, SD=1.23, overweight M=3.04, SD=1.02, obese M=3.09, SD=0.86, p=0.199), excited frequency (normal M=2.69, SD=1.15, overweight M=2.78, SD=1.16, obese M=3.00, SD=0.87, p=0.558), happy intensity (normal M=2.94, SD=1.18, overweight M=3.13, SD=0.81, obese M=3.18, SD=0.90, p=0.595), excited intensity (normal M=2.67, SD=1.00, overweight M=2.83, SD=1.33, obese M=3.00, SD=1.02, p=0.505), mad frequency (normal M=2.65, SD=0.83, overweight M=2.91, SD=1.08, obese M=2.95, SD=0.89, p=0.332), scared frequency (normal M=2.80, SD=1.20, overweight M=3.39, SD=1.07, obese M=2.95, SD=0.89, p=0.111), scared intensity (normal M=2.65, SD=0.85, overweight M=3.04, SD=1.06, obese M=2.73, SD=0.55, p=0.195) (figure 6).

CONCLUSION AND DISCUSSION

Five different emotions (happy, sad, excited, scared and mad) were considered for data preprocessing and analysis (Maniu, 2015; Maniu et al, 2017). For the whole group the mean values ranged between 2.82 – 3.07 for position emotions subscale, between 2.57 – 2.96 for negative emotions subscale and between 2.76 – 3.04 in case of emotion control. Considering BMI stratification (normal, overweight, obese) the results indicated significant differences between subgroups for items happy (frequency: often) and excited (intensity: powerful) in case of position emotions subscale; for items sad (frequency: often), mad (frequency: all the time), sad (intensity: strong) and mad (intensity:

powerful) in case of negative emotion subscale while in case of emotion control no significant differences between subgroups have been identified.

An obstacle to emotional functioning research during early childhood period is the lake of comprehensive in this age-specific (developmental, temperamental, maturational, social, etc.) framework.

New research direction should integrate study of emotional development and clinical evidences of diferent disorders in young children. In addition, use of HIF instrument in conjunction with other measures of emotions (Gratz & Roemer, 2004; MacDermott et al, 2010, Weinberg & Klonsky, 2009) could provide a more comprehensive assessment of emotional functioning in children and adolescents.

In this context, as a continuation of the study, we consider the determination of the children profile from dental disorders point of view, respectively the analysis of the association between the emotional arousal and regulation state, dental disorders profile and BMI stratification.

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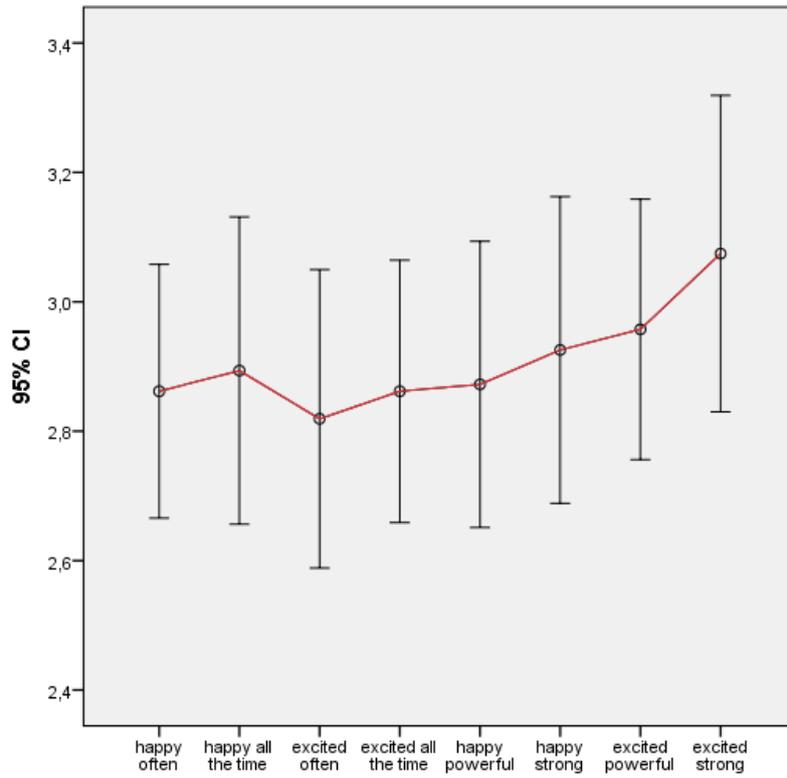
ANNEXES

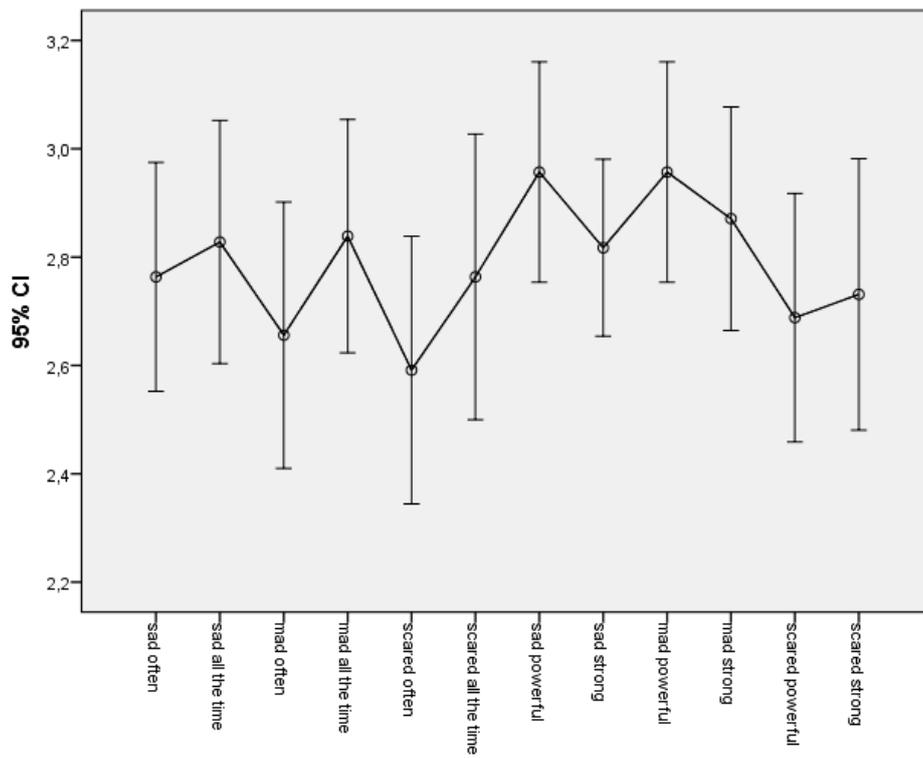*Figure No.1* Positive emotions, overall results

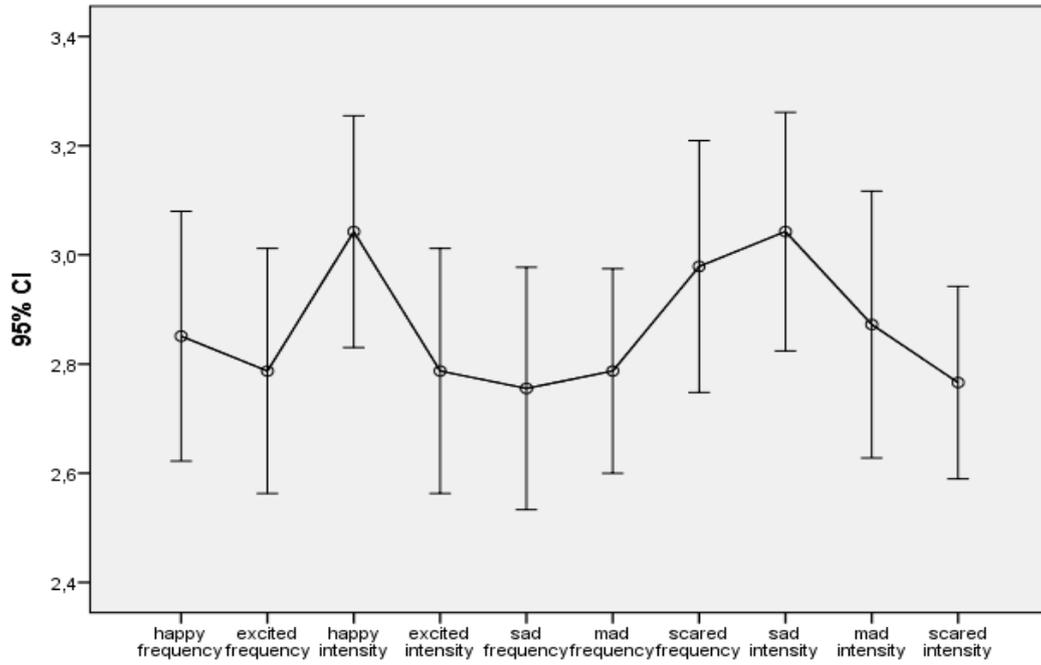*Figure No.2* Negative emotions, overall results

Figure No.3 Emotions control, overall results

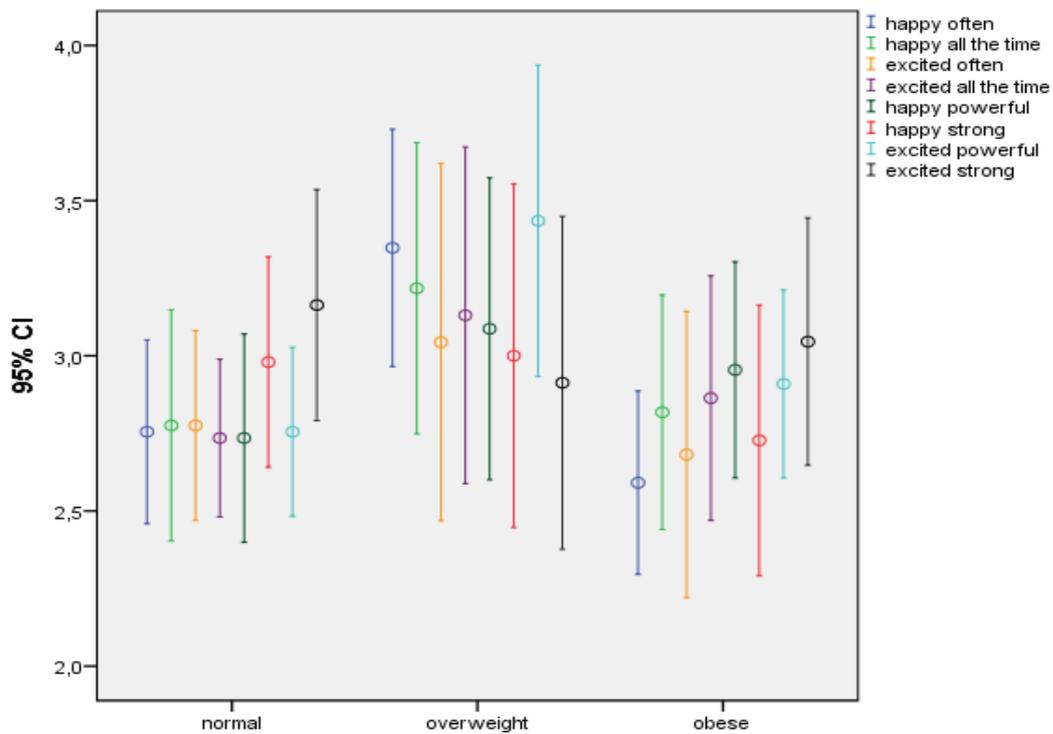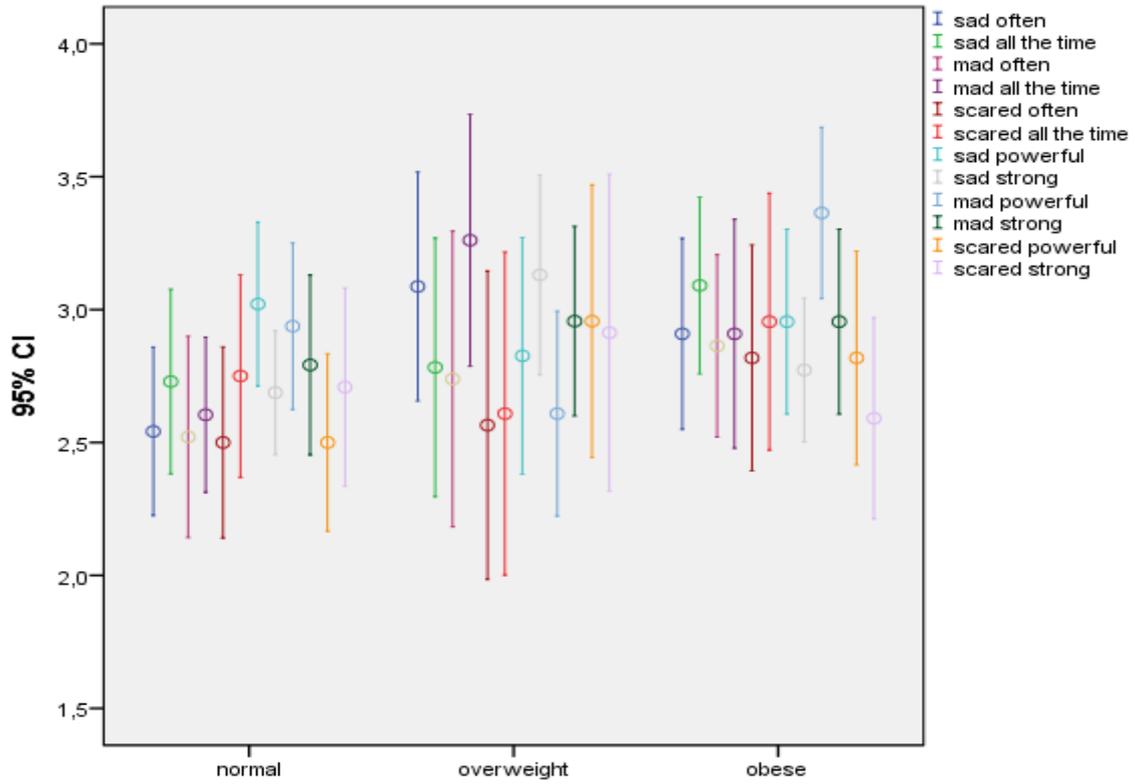*Figure No.4* Positive emotions, BMI stratification
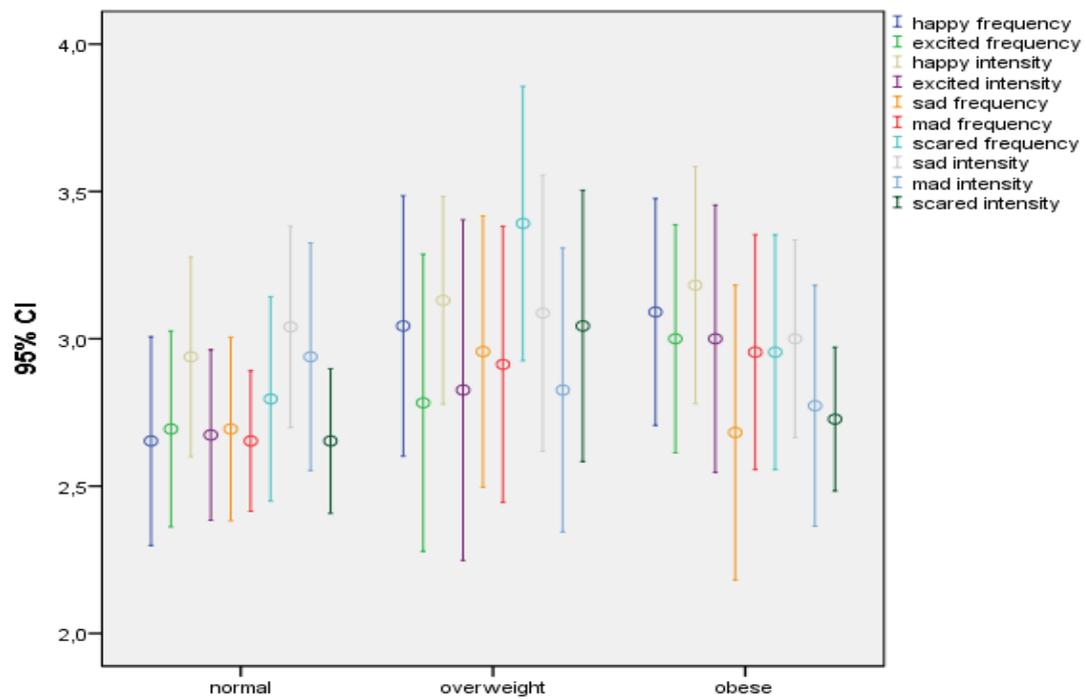
Figure No.5 Negative emotions, BMI stratification

Figure No.6 Emotions control, BMI stratifiction