

PSYCHOSTIMULATION THROUGH EXTRACURRICULAR ACTIVITIES OF THE COMPETENCE FOR RECOGNIZING AND DIFFERENTIATING EMOTIONS IN STUDENTS AGED 10-11

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Abstract

The aim of the study is to identify the degree of determination of psychostimulation through extracurricular activities on the competence for recognizing and differentiating emotions.

The study sample consists of 107 subjects (N=58 girls and N=49 boys). The experimental design exposed the experimental group (N=43) to the psychostimulant treatment, while the control group (N=64) served to control the effect of relevant variables within the psychostimulant variability. The competence for recognizing and differentiating emotions from bodily and physiological indicators was assessed through the Test on the Competence for Recognizing and Differentiating Emotions (TKNJDE).

The results suggest the existence of the effect of psychostimulation on the criterion variable. Paired correlations show that the competence for recognizing and differentiating the emotions of happiness, anger, sadness and fear increases in a linear relationship with the effect of psychostimulation through extracurricular activities. Differential analysis of the degree of manifestation of the competence in question for the four basic emotions in particular suggests that there is a difference in the effect for recognizing and differentiating the emotions of happiness, sadness and anger but not for the emotion of fear.

It is recommended to develop psychological psychostimulation strategies that follow the course of extracurricular activities and which aim to develop knowledge about the bodily indicators of emotions, as well as to plan interventions for the management of supplementary and additional learning based on psychostimulation.

Keywords: Recognition and differentiation of emotions, bodily and physiological indicators, psychostimulation, extracurricular activities.

1. Introduction

Recognizing and identifying emotions is defined as the key to adequate functioning, helping people to form and maintain relationships with others in everyday life. Recognizing emotions requires the activation of attention and focus on verbal and nonverbal expressions that people around them manifest. Cognitive bodily and physiological differentiation of emotions implies the identification and distinction of positive and negative emotions through physiological changes that occur during the experience of the same (Kreibig, 2010). It is a well-known fact that during the experience of emotions, physiological changes occur in individuals, this fact results from early literature, where James Lange (Carl, 1885-1922) emphasizes that emotions are often assumed to be judgments about a situation that cause feelings and physiological changes. In 1884, psychologist and philosopher William James proposed that physiological changes actually precede emotions, which are equivalent to our subjective experience of physiological changes, and are experienced as feelings (Carl, 1885-1922).

Recent models of emotion recognition suggest that when people perceive an emotional expression, they partially activate the corresponding emotion in themselves, providing a basis for recognizing that emotion (Paddy Ross, 2020). Simulation theory posits that human beings are able to use the resources of their minds to simulate the psychological causes of the behavior

of others, usually by making decisions within a “pretended” context. Simulation is sometimes equated with role-taking, or “putting oneself in the shoes of another.” However, it is often taken to involve simply “projection,” or reliance on a shared world of facts and emotional and motivational charges, without adjustments in the imagination; e.g., where there is no need to put oneself in the shoes of another, since one is, in all relevant respects, already there (Gordon, 1986). It is sometimes taken to also include automatic responses such as subliminal mimicry of facial expressions and body movements. Certain sensorimotor simulations are defined in the literature as ‘emotional attachment’, experiencing the feeling of another through observation (Hatfield, 1993). Emotional attachment is a higher-level cognitive phenomenon that can involve not only synchronisations of facial expressions, but also vocalisations, postures and movements of another person (Hatfield, 1993).

Existing literature consistently emphasizes the role and positive effect of interventions and treatments of a psycho-educational nature. The social learning theory by Albert Bandura (1977) emphasizes that vicarious learning, cognitive mediation processes and exposure to modeling contribute to the development of interpersonal and social skills. Reciprocal determinism is central to this theory, highlighting a two-way cause-effect path between each individual and their environment, where based on the model (cause) behaviors are produced through imitation. A large number of studies emphasize that psychological interventions result in a consistently positive effect, and this result is verified in both clinical and non-clinical populations (Revilla, et al., 2025). Psychostimulating activities, which aim to simulate the recognition and identification of emotions (2020), enable through situational stimuli of emotions, and through the accumulation of life experience, the ability to obtain contextual data around them, comparing them with the information they know about possible triggers, and to use this information in combination with signals from someone's face/voice/body - helping them know what someone else is feeling.

The importance of implementing interventions through older adults who have accumulated greater life experience is emphasized by the sociocultural theory of cognitive development. Learning in this theory is seen as a natural social process in which we depend on others to help us understand the world (Sociocultural Theory of Cognitive Development: A Guide to Vygotsky’s Theory of Learning, 2022). One of the most important concepts of this theory is the zone of proximal development, which refers to the skills that a student is “close” to mastering, representing the difference between what a student can do without help and what he or she can do with guidance and encouragement from a capable partner. The zone of proximal development includes tasks that are beyond the student’s current abilities, but are achievable with the help and guidance of another more knowledgeable person. Challenging tasks in this zone promote maximum cognitive growth, helping students expand their current abilities with appropriate support (McLeud, 2025).

Piaget (2019) on the other hand, with the concept of assimilation and accommodation in cognitive schemes, reflects the importance of psychoeducational interventions, but at the same time, in his theory of crucial importance in children's cognitive development, it is emphasized to be symbolic and practical play. Symbolic or pretend play involves children using objects, gestures or ideas to represent other objects, actions or ideas. It is essentially the art of using symbols. For example, a child may use a banana as a telephone, engaging in imaginary conversations with imaginary friends or 'calling' family members. This play is fundamental for the development of abstract thinking.

2. Methodology

The study problem is defined as the tendency to articulate the study through the question of whether there is an effect of psychostimulation through extracurricular activities on the

competence of students aged 10-11 to recognize and differentiate emotions based on bodily and physiological indicators, and at the same time determining the degree of effect for each emotion in particular.

2.1. Objectives and Hypothesis: This research aims to examine the effect of psychostimulation on the competence to recognize and differentiate emotions based on bodily and physiological indicators. The specific goals of the research are conceptualized as follows:

P1. To examine the relationship between psychostimulation and the competence for emotional recognition and differentiation through bodily and physiological indicators.

P2. To examine the degree of determination of psychostimulation through extracurricular activities against the competence for emotional recognition and differentiation through physical and physiological indicators of students aged 10-11.

The following research hypotheses emerged from the stated purpose:

H1. There is a significant and positive correlation between the averages obtained before and after psychostimulation of the competence for emotional recognition and differentiation through bodily and physiological indicators in students aged 10-11.

H2. Exposure to psychostimulation significantly increases the competence for emotional recognition and differentiation through bodily and physiological indicators, compared to students who are not exposed to the effects of psychostimulant treatment.

2.2. Subjects: The research design included primary school students from Tetovo (from the fourth grade). The selection of the study sample was carried out using a combined sample. The experimental group was selected through partial randomization, while the selection of the control group was done through purposive, convenient sampling, where two municipal schools in the Tetovo region were selected, defining one municipal school in a rural area and one in an urban area, based on the research criteria. Data were collected from students from several primary schools (N = 87). Of the total number of participants, 50.6% were female (N = 47) and 49.4% (N = 40) were male, aged 10 to 11 years.

2.3. Measuring instruments: The recognition and physiological differentiation of emotions with bipolar valence was assessed through the 19-item Recognition and Physiological Differentiation of Emotions Test, which aims to measure knowledge about emotions based on physiological and anatomical changes, where the “Bodily Awareness of Emotions” subscale of the Emotion Awareness Questionnaire (Rieffe, 2008), which aims to measure bodily awareness of emotions in children and adolescents, was used as the conceptual basis for the structure of the test. The reliability of the measuring instrument is 0.72.

2.4. Procedure: The application of the instruments was carried out in the second half of the 2024/2025 school year. The start of the survey procedure was preceded by the provision of the necessary permits, technical preparation, organizational administration, etc. The survey was conducted in groups, where students filled out the questionnaires anonymously during the psychostimulation development class. Filling out the questionnaires took about 60 minutes. The survey procedure was carried out in accordance with Research ethics: research with children and young people (2025). Active psychostimulation as an independent variable was operationalized through presence-absence manipulation and quality manipulation (Osmani, 2020). The manipulation of the independent variable was developed by inventing two levels of psychostimulation, namely:

1. Presence of active psychostimulation – exposure only to subjects in the experimental group,

2. Absence of active psychostimulation – the level of absence of psychostimulation determined for subjects in the two control groups.

3. Results

The main goal of the research in question was to examine the effect of psychostimulation through extracurricular activities on the criterion variable, as well as to identify the degree of effect of psychostimulation on the competence to recognize and differentiate for each emotion in particular.

The effect of psychostimulation on the competence to recognize and differentiate emotions

Table 1. Paired samples correlations matrix between the competence for recognizing and differentiating emotions in two measurements: before and after psychostimulation.

Paired correlation for averages		Correlation	Sig.
Pair 1	PRE test for the emotion of happiness & POST test for the emotion of happiness	0.764	0.000
Pair 2	PRE test for the emotion of fear & POST test for the emotion of fear	0.590	0.000
Pair 3	PRE test for the emotion of anger & POST test for the emotion of anger	0.717	0.000
Pair 4	PRE test for the emotion of sadness & POST test for the emotion of sadness	0.665	0.000

Table 1 shows the extent of the effect of psychostimulation on the competence to recognize and differentiate emotions based on bodily and physiological indicators of emotions. Paired correlations show that the means from the two measurements in the context of the competence to recognize and differentiate emotions through bodily and physiological indicators are statistically significantly and positively correlated. Correlation analysis shows that the paired correlations for each emotion in particular are high ($r=0.764$; $p<0.01$ for the emotion of happiness, $r=0.717$; $p<0.01$ for the emotion of anger and $r=0.665$; $p<0.01$ for the emotion of sadness) except for the emotion of fear $r=0.590$; $p<0.01$ where we have an average correlation. The competence to recognize and differentiate emotions increases in linear proportion to the effect of psychostimulation through extracurricular activities. According to the above results, the first hypothesis is fully confirmed.

Recognition and differentiation of emotions through bodily/physiological indicators in PRE and POST events

Table 2. T-test on paired differences in pre and post means of the experimental group on the competence for recognizing and differentiating emotions.

competence recognition and differentiation of	PRE test		POST test		t	Sig. (2-tailed).
	Mean	Std. Deviation	Mean	Std. Deviation		
emotion happiness	3.4301	1.37839	3.7000	1.25931	-2.706	.008
emotion fear	2.8925	1.24641	3.1000	1.36700	-1.461	.147

emotion anger	2.2796	1.10695	2.5900	1.08334	-3.379	.001
emotion sadness	2.4086	1.30415	2.8800	1.43041	-4.043	.000

The t-test results presented in Table 2 suggest that there are statistically significant differences in the degree of manifestation of the competence for recognizing and differentiating emotions, in the pre-test and post-test for three basic emotions, namely: $t(41)=-2.706$; $p<0.01$ for recognizing and differentiation for the emotion happiness, for the emotion anger $t(41)=-3.379$; $p<0.01$ and for the emotion sadness $t(41)=-4.043$; $p<0.01$.

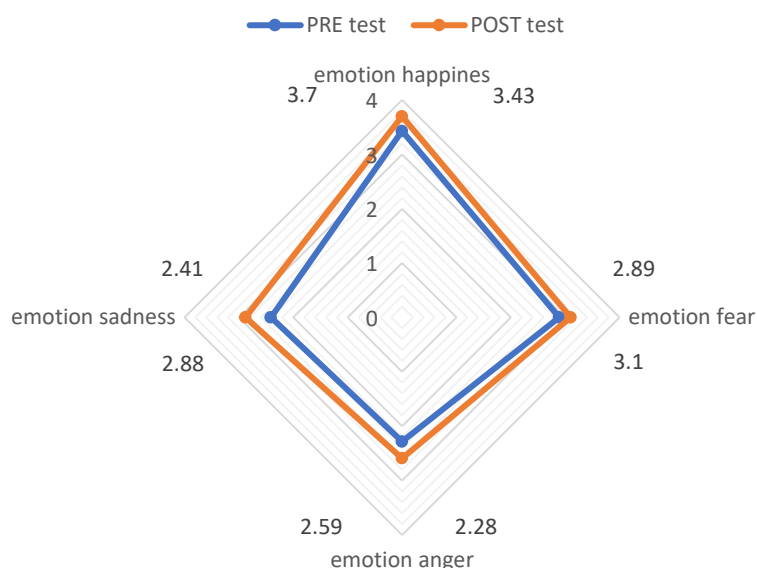


Figure 1. Pre- and post-test difference in emotional recognition and differentiation competence for the four basic emotions.

The difference between the two arithmetic means in favor of the post-test values compared to the pre-test values allows us to conclude that the performance of bodily and physiological differentiation for emotions increases significantly after exposure to psychostimulant treatment. Differential analysis on the effect of psychostimulant for each emotion, out of the 4 basic emotions, suggests that the effect of psychostimulant significantly increases the competence for recognition and differentiation of the emotions of sadness and anger, while lower for the emotion of happiness.

Differentiation and bodily/physiological recognition of addictive emotions in the experimental and control groups

Table 3. Homogeneity of variance between the experimental and control groups for bodily and physiological recognition and differentiation of emotions.

	Levene statistics	df1	df2	Sig.
Bodily/physiological recognition and differentiation of emotions.	0.121	2	97	0.886

Levene's test reflected in Table 3 suggests that the variance between groups for bodily/physiological recognition and differentiation of emotions is homogeneous $p>0.05$. This result consists in fulfilling the prerequisite for comparison of means through classical ANOVA analysis.

Table 4. Analysis of variance (ANOVA) for bodily/physiological recognition and differentiation of emotions according to the experimental and control groups.

	Sum of squares	df	The mean of squares	F	Sig.
Between Groups	381.13	2	190.57	18.32	0.000
Within Groups	1009.03	97	10.40		
Total	1390.16	99			

The data presented in Table 4 suggest that there are statistically significant differences between the experimental and control groups for the means of bodily and physiological differentiation of emotions $F(99)=18.32$; $p<0.05$.

Table 5. Post Hoc analysis for the experimental and control groups on achievements in bodily/physiological recognition and differentiation of emotions.

(I) Research groups	M	DS	(J) Research groups	Average Difference (I-J)	Sig.
Experimental group	14.49	3.02	Quoted control	3.13*	0.004
			Unquoted control	4.18*	0.000
Quoted control	11.35	3.35	Experimental group	-3.13*	0.004
			Unquoted control	1.05	0.532
Unquoted control	10.30	3.38	Experimental group	-4.18*	0.000
			Quoted control	-1.05	0.532

The data in Table 5 suggest that the average of the bodily/physiological recognition and differentiation of emotions in the experimental group $M=14.49$ is higher than the average of both control groups, while the average of the quoted control group $M=11.35$ and the unquoted control group $M=10.30$ are approximately similar.

Statistically significant differences are verified between the experimental and quoted control groups for the bodily and physiological recognition and differentiation of emotions $p<0.05$, where it is observed that in the experimental group there is a higher average in the recognition of emotions from the bodily and physiological aspect. Also, by comparing the experimental and unquoted control group, significant differences are evidenced in the bodily and physiological recognition and differentiation of emotions, where in the experimental group we have a higher performance of the bodily and physiological differentiation of emotions. On the other hand, between the quoted control group and the unquoted control group, no statistically significant differences $p>0.05$ are evident.

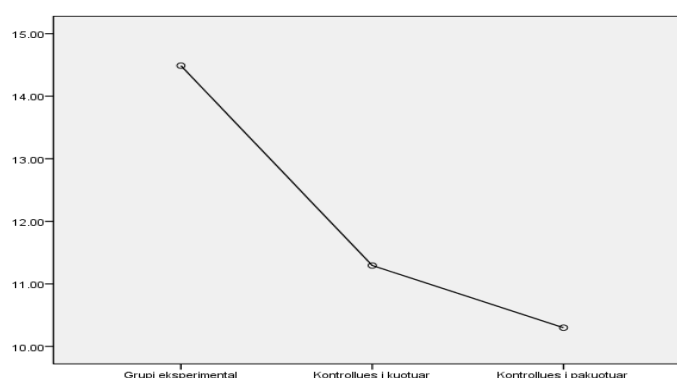


Figure 2. Average competence for recognizing and differentiating emotions through bodily and physiological indicators of emotions.

Figure 2 shows that the average of bodily and physiological differentiation of emotions in the experimental group is significantly higher compared to the control groups (quoted/unquoted), as an effect of active psychostimulation.

4. Conclusions

The current study identified a statistically significant positive relationship between the bodily and physiological recognition and differentiation of emotions from nonverbal emotional expressions, more specifically from bodily and fascial expressions. This relationship is also verified by the existing literature of James-Lange (1885-1922), in which it is emphasized that emotions are the product of our judgments on the physiological changes that occur as a result of different situations. More specifically, it is expected that with the increase in the differentiation and recognition of bodily and physiological changes (heart rate, respiratory rate, sweating) during the experience of emotions, the ability to decode emotions from nonverbal emotional language indicators, from fascial and bodily signals, will also increase, since these appear to be channels for the activation of similar neurophysiological mechanisms in the mirror neuron system (Iacoboni, 2009).

Recognizing and understanding emotions, especially through nonverbal language indicators, requires the activation of higher cognitive parts. An obvious explanation of the effect of psychostimulation on the criterion variable may be the simulation theory (Paddy Ross, 2020). Therefore, recognizing and identifying emotions through nonverbal expressions, and physiological changes, as well as the tendency to understand what others around us are feeling, occurs not only as a result of analyzing their emotions, but also as a result of the brain stimulating the same feeling/emotion as a state that we ourselves experience. This type of stimulation activates the psychomotor, sensory and bodily networks associated with that emotion (Hawk, 2012).

The findings on the effectiveness of psychostimulation through extracurricular activities for the experimental group, as well as comparing the same with the control groups, on their performance in the bodily and physiological differentiation of emotions, are in the same spirit as psychosocial theories, where the activist approach emphasizes that if children are placed in active interactions with adults (Vygotsky, 1978), they assimilate and accommodate new experiences in their cognitive schemes (Piaget, 1951). The design and organization of psychostimulation activities in the form of various games, in order to adapt them to the age and developmental stage of children, as well as the implementation of symbolic entertainment activities, as concluded by Freud, presents effects in improving and advancing the ability to differentiate and recognize emotions through the bodily and physiological changes that occur.

Psychostimulant activities have followed the course of key concepts of the sociocultural theory of cognitive development (2022), where activities are implemented and designed by psychologists, who are considered “knowledgeable adults”, and based on the literature of developmental psychology, game-like activities have been applied, which are based on the child’s capacities located in the zone of proximal development, i.e. partly children possess the ability to acquire skills and knowledge, and partly adults encourage, encourage and stimulate them.

The existing literature constantly underlines the importance of psychological stimulation, which is in advantage of our findings, because it emphasizes that stimulation plays a crucial role in the growth and development of a child’s brain. The child’s brain can grow and develop optimally only through interaction, emphasizing the importance of understanding by parents and adults how stimulation affects brain development (Shannon, 2013). We propose the development and platforming of stimulative programs that are based on the development of

cognitive-affective and socio-behavioral competencies, because the results of this study suggest that they have positive effects on socio-emotional competencies (Idrizi and Osmani 2025).

Limitations and implications

The results of this research provide the importance of implementing well-planned extracurricular psychostimulation in the educational practices of educational and professional staff (psychologist, pedagogue).

For future research, it is proposed to expand the study to other cities and include students of other age groups, with different ethnic and religious affiliations, all with the aim of testing the validity of the findings. Also, longitudinal studies would provide a clearer picture of the long-term impacts of psychostimulation on bodily/physiological recognition and differentiation of emotions.

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