


**MOVEMENT CREATIVITY:  
THE IMPORTANCE OF PERFORMING ARTS IN EDUCATIONAL SETTINGS**

**MOVIMENTO CREATIVO:  
L'IMPORTANZA DELLE ARTI PERFORMATIVE NEGLI AMBIENTI EDUCATIVI**


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**ABSTRACT**

In recent years, from a concept of creativity identified as a mental construct we have moved on to an embodied view of creativity. The body takes on a key role as a tool for exploring the environment, as a generator of ideas and mental abilities. This work aims to analyse the effects of a creative dance workshop experience on mental and creative abilities in school age. Dance is suggested as an integrative approach to traditional teaching.

Negli ultimi anni, da un concetto di creatività identificato come costruito mentale si è passati a una visione incarnata della creatività. Il corpo assume un ruolo fondamentale come strumento di esplorazione dell'ambiente, come generatore di idee e capacità mentali. Questo lavoro si propone di analizzare gli effetti di un'esperienza di laboratorio di danza creativa sulle capacità mentali e creative in età scolare. La danza è proposta come approccio integrativo all'insegnamento tradizionale.

**KEYWORDS**

Creativity, Movement, Performative art, Sonification, Dance  
Creatività, Movimento, Arte performativa, Sonificazione, Danza

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## 1. Introduction

Humans, in the course of their lives, are subject to constant changes in the world at different levels and adaptation to these changes is determined by problem-solving skills. To explore different solutions to problems, a fundamental skill that makes a difference is creativity. Creativity is a term commonly used to refer to the expression of ideas and the development of innovative solutions to problems (Guilford, 1956). Creativity has always taken on meaning associated with the set of cognitive processes underlying perception, intuition, innovation, association of ideas, finding solutions to a specific problem, and reworking thinking critically. An extensive literature shows that creativity involves not only the cognitive and metacognitive aspects, but also the emotional and affective aspects (Beaty et al., 2016; Demarin & Bedekovi, s.d.). However, the concept of creativity has taken on a different meaning over time. Indeed, in line with the paradigm of embodied cognition (Adams, 2010), scientific evidence shows that creativity is strongly associated with bodily experience (Frith et al., 2019; Oppici et al., 2020; Vaisvaser, 2021).

The relationship between creativity and movement has been the object of study of several researches, through which the concept of embodied creativity, understood as the ability to create and express creativity through the body, has become widespread. Within the framework of embodied creativity, the body and its movement assume a key role in the development of creative thoughts (Stanciu, 2015). In this view, from a top-down conceptualization of creativity, to be understood as a cognitive process that first arises in the mind and then expresses itself through behaviour, we move to a bottom-up conceptualization, according to which mind and body are closely associated and creativity is embodied since it arises from the body, its relationship with the environment and is expressed through the body, giving rise to creative movement. The perception of self and body in the environment provides the opportunity to explore different alternatives to solve a problem, therefore the promotion of creative movement contributes to the development of creative ideas.

To this end, the framework of creative movement is proposed in this study to explore and understand the development of creative, imaginative and different mental abilities in developmental age. Sense-motor experience enables the planning of useful strategies for understanding and living effectively in one's surroundings, which enables the generation of new ideas and the acquisition of skill (Frith et al., 2019; Serra et al., 2021). This denotes how relevant is the study of the

development of creativity, in a formative and educational dimension, through the body in developmental age.

The aim of this paper is to propose an integrative approach to traditional didactics, to foster the development of creative and mental skills in school environments through creative movement. Therefore, the effects of a creative dance workshop experience are analysed.

### **1.1 The background of cognitive creativity**

The term creativity can be expressed through multiple definitions, it is generally assumed to be a process useful for the generation of a product, i.e. an idea or a thought or a new and useful cognitive construct, whose purpose is the improvement of the individual's quality of life. Creativity has always been understood as a cognitive and mental process, generated from internal inputs following a process of focusing thoughts inward and independent of external inputs (Demarin & Bedekovi, s.d.).

Several neuroscientific studies have focused on understanding the underlying neurophysiological basis of the creativity process. Over the years, inferences related to the specialisation of the cerebral hemispheres have been proposed, for example, although there is no scientific evidence for this, the right hemisphere is recognised as the hemisphere related to creativity and art, however, this speculation is based on the hypothesis that the right hemisphere is involved in visuo-spatial processes and artists are endowed with visuo-spatial abilities (Zaidel, 2013). Furthermore, art, which is the product of creativity, identified as a non-verbal ability, could not be attributed to the left hemisphere, which is responsible for the control and processing of language. All this makes us realise how difficult it is to study the genesis of creativity. However, current neuroscience is investigating the association between creative thinking and the associated structural and functional changes in the brain, and two networks are mainly being investigated: the default network and the control network (Beaty et al., 2016; McMillan et al., 2013). The default network is associated with spontaneous thinking and autobiographical retrieval. In contrast, the control network is associated with cognitive processes that require externally directed attention, including working memory and task resolution. Although scientific evidence demonstrates an antagonistic activity of the two networks, both have also shown cooperation during various cognitive processes, particularly on the top-down modulation of self-generated information. Thus, creative thinking can benefit from the dynamic

interactions of the networks and probably this interaction depends on the involvement of similar neural mechanisms. In particular, neuroimaging studies have investigated the association between the two networks by examining the effects of music, writing and viewing works of art, showing that the two networks cooperate to exploit both top-down and bottom-up processes during creative cognition.

## **1.2 From cognitive creativity to embodied creativity**

The notion of creativity leads one to think that it is only related to the generation of innovative ideas, as if it were only a mental process that has nothing in common with the body and experience. Action, movement and bodily experience of the environment is understood simply as the expression of the mental creative process(Vaisvaser, 2021).

On the basis of studies about embodied cognition, the concept of embodied creativity and movement creativity is gaining ground. According to which ideas are not generated exclusively by a cognitive system but are generated by and through the body and its movement. Creativity is no longer understood as a cognitive construct but becomes innovative and functional action. In this perspective, the body becomes a tool for exploring space(Orth et al., 2017).

The role of movement in the development of mental abilities in childhood is widely recognised. Scientific evidence shows that movement-based educational programmes promote learning in early childhood compared to sedentary approaches, improving the way creative ideas are generated(Frith et al., 2019; Serra et al., 2021). According to a dynamic ecological approach, movement generates from the continuous interaction of perception, cognition and action. however, one must consider that creative movement emerges from the exploration of new actions. Therefore, the more an environment is enriched, the greater the possibilities for an individual to experience new actions.

Although the link between movement and cognitive creativity is a relatively recent topic, within the framework of embodied creativity one should emphasise the importance of designing environments that offer new possibilities and allow individuals to explore how they can effectively generate creative movement. Considering the importance of creativity in various contexts, e.g. sport, this approach could have a positive impact not only on the physical aspect but also on creative cognition.

## **2. Methods**

### **2.1 Population**

The experimental protocol consisted of evaluating the effects of performing arts, and in particular creative dance, on the development of mental and creative skills. Twenty school children aged between 8 and 15 years were involved, 10 children were involved in the extracurricular project (experimental group) and 10 children, who were not involved in any activities other than school, were recruited as a control group.

### **2.2 Experimental protocol**

The extra-curricular project was developed in 12 one-hour sessions, during which the children in the experimental group were performed the creative dance workshops. Before starting the project, we ensured that the children in the experimental group did not engage in any extracurricular activities other than the workshop. At the end of the project, the children underwent an assessment of their mental abilities by means of the Mental Ability Questionnaire version 2 (QuAM 2). The children in the control group were also asked to perform the QuAM 2 tests. In order to assess the possible workshop-induced effects on mental abilities, the results of the questionnaires performed by the children in the experimental group were compared with the results of the children in the control group.

### **2.3 Questionnaire**

The Questionnaire on Mental Abilities second version (QuAM 2), a test examining 8 different constructs: self-esteem as an athlete, management of competitive anxiety, ability to pay attention, imaginative ability, degree of motivation for sporting activity, degree of assertiveness or aggressiveness, stress management and the presence of goals to be pursued in competition. The Mental Skills Questionnaire consists of 48 items and the total filling-in time is around 15 to 20 minutes.

### **2.4 Statistical analysis**

After collecting the data from the QUAM 2 test of both recruited groups, the mean, standard deviation, median and minimum and maximum value of the factors assessed in the QUAM test were calculated with their respective ratings. We then

compared the averages of the various sub-scales, using a t-test and imposing a significance level  $p < 0.05$ .

### 3. Results

From the analysis of the data, we obtained statistically significant differences in the mental abilities, assessed by means of the QUAM test, of the experimental group compared to the control group. Specifically, Table 1 shows the data of the children in the experimental group.

**Table 1.** Quam test of the children in the experimental group

ITEM	sog. 1	sog. 2	sog. 3	sog. 4	sog. 5	sog. 6	sog. 7	sog. 8	sog. 9	sog. 10
Autostima	25	29	20	28	26	18	30	24	14	21
Gestione ansia	22	16	21	20	16	17	25	17	24	20
Attenzione	26	23	21	25	22	14	26	25	21	24
Immaginazione	29	25	22	21	25	13	22	30	13	18
Motivazione	30	29	26	30	27	19	29	27	22	23
Assertività	25	24	20	18	22	16	26	16	19	18
Gestione dello stress	26	22	26	19	22	15	30	27	25	24
Obiettivi	29	30	20	28	22	17	24	23	7	22

Table 2 shows the mean, standard deviation, median and minimum and maximum values of the factors assessed in the QUAM test, with the respective ratings of the experimental group.

**Table 2.** Values and evaluations of the QUAM test of the experimental group

ITEM	media	dev stan	mediana	min	max	valutazione
Autostima	24	5.2	25	14	30	buono
Gestione ansia	20	3.3	20	16	25	discreto
Attenzione	23	3.6	24	14	26	buono
Immaginazione	22	5.9	22	13	30	buono
Motivazione	26	3.7	27	19	30	ottimo
Assertività	20	3.7	20	16	26	discreto
Gestione dello stress	24	4.3	25	15	30	buono
Obiettivi	22	6.7	23	7	30	buono

We point out that a result between 6 and 10 is a rather low value, between 11 and 15 is relatively low, between 16 and 20 is fair, between 21 and 25 is good, and between 26 and 30 is excellent. Taking these indications into account, we can observe that the sub-scale with the highest score is the motivational level (26) which we can define as very good. Reaching a good level is the ability to handle stress well (24), followed by the ability to focus on oneself (23), self-esteem as an athlete (22) and the ability to achieve goals (22). The score on anxiety management

(20) is more than fair, followed by the score on being assertive (20). Table 3 shows the data of the children in the control group.

**Table 3.** Quam test of the control group children

ITEM	sog. 1	sog. 2	sog. 3	sog. 4	sog. 5	sog. 6	sog. 7	sog. 8	sog. 9	sog. 10
Autostima	16	7	11	10	10	9	14	8	15	10
Gestione ansia	18	20	19	22	22	18	21	24	17	22
Attenzione	22	18	21	22	22	18	21	18	16	22
Immaginazione	9	7	9	6	6	7	13	9	14	6
Motivazione	14	9	12	6	8	9	16	15	14	6
Assertività	16	18	16	22	23	22	24	20	22	22
Gestione dello stress	28	29	25	30	30	28	28	23	21	30
Obiettivi	11	6	8	6	6	7	10	10	14	6

Table 4 shows the mean, standard deviation, median and minimum and maximum values of the factors assessed in the QUAM test, with the respective ratings of the control group.

**Table 4.** Values and evaluations of the QUAM test of the control group.

ITEM	media	dev stan	mediana	min	max	valutazione
Autostima	11	3.0	10	7	16	relativamente basso
Gestione ansia	20	2.3	21	17	24	discreto
Attenzione	20	2.3	21	16	22	discreto
Immaginazione	9	2.9	8	6	14	piuttosto basso
Motivazione	11	3.8	11	6	16	relativamente basso
Assertività	21	2.9	22	16	24	buono
Gestione dello stress	27	3.2	28	21	30	ottimo
Obiettivi	8	2.8	8	6	14	piuttosto basso

Considering the above-mentioned indications, we can observe that the sub-scale with the highest score is stress management (27), which we can define as very good. Assertiveness (21) reaches a good level. Reaching a more than fair level is the score for the ability to concentrate on oneself (20) followed by anxiety management (20). On the other hand, the scores for self-esteem (11) and motivation (11) are relatively low. Levels described as rather low can be attributed to imaginative capacity (9) and the ability to achieve goals (8).

The average QUAM test scores were compared between the two recruited groups in order to highlight the effects of the activity performed (table 5).

**Table 5.** Comparison of QUAM test scores between the two recruited groups

ITEM	p-value < 0.05
Autostima	3.4E-06
Gestione ansia	0.695
Attenzione	0.059
Immaginazione	5.1E-06
Motivazione	3.5E-08
Assertività	0.947
Gestione dello stress	4.7E-02
Obiettivi	1.1E-05

As can be seen from table 5, the items that show the significant difference are self-esteem, imagination, motivation, ability to handle stress and ability to pursue goals. These characteristics are better in the experimental group than in the control group.

## Discussion

Inspired by the concept of embodied cognition and embodied creativity, in this work we wanted to analyze the effects of performing arts and in particular of creative dance on the mental abilities of school-age children. Our goal is to propose an alternative method to traditional teaching, capable of promoting the development of fundamental skills for carrying out daily life.

Bringing out creativity through the body and movement is not an easy task, as social patterns or rules are often followed and it is difficult to get out of one's comfort zone. However, creativity is born precisely from the experience of new possibilities, for this reason it is essential that the environments in which to move are enriched and that through the sensory-motor experience we ourselves can enrich ourselves with content (Serra et al., 2021).

This is particularly important in educational contexts, such as school, since children explore the environment around them through their bodies, and this exploration allows them to acquire not only physical but also mental skills and at the same time allows them to train creativity by exploring new opportunities.

To teach a child to be creative, it is necessary to create learning environments that offer a wide range of possibilities in which the child feels safe and able to always explore new solutions. The teachers' skills play a fundamental role in this sense, as they must be able to design experiential places and laboratories that positively influence the pupils' intention to explore different and new movement solutions. This safe environment and the non-judgmental attitude of the teacher can foster the acquisition of creative skills.

What environmental enrichment strategies can be used to foster creativity? There are different strategies, surely the winning one is to offer performing arts workshops (Dyer et al., 2017).

The performing arts (Helbo, 1987) are a set of activities ranging from dance to opera, from theater to music, which allow through the action and use of the body to experience the environment, the stimuli and to acquire skills creative. Music and dance are the two predominantly used performing arts. Indeed, movement sonification is an excellent environmental enrichment strategy that promotes learning and the development of creativity in movement (Dyer et al., 2017; Oppici et al., 2020). The link between sound and movement allows for enhanced perception, action and creativity. Dance, as a performative art, also plays a fundamental role in the formation and acquisition of creative skills (Teixeira-Machado et al., 2019) as evidenced by the results obtained.

In fact, in the present study it emerges that the children who participated in the creative dance project had an improvement in mental abilities compared to the children in the control group. The results of the comparison highlight the beneficial effects induced by physical exercise on specific mental abilities, namely: self-esteem, imagination, motivation, the ability to manage stress and the ability to pursue goals.

These results support the hypothesis that creative dance is not only able to determine beneficial effects from a physical point of view, but has a fundamental role in the development and maintenance of specific mental abilities.

Although the data analyzed are interesting, a clarification should be made, the data were collected on a small sample of participants and were compared only with a group of people who do not practice physical activity. Furthermore, to verify the real impact of physical exercise on the tests analysed, it would be advisable to compare the data with a sample of people who practice other activities. Although these data are preliminary, the mind-body relationship that characterizes dance makes it possible to improve various aspects related to the person, who explores

the environment through the body. The body becomes an instrument of communication between the self and the surrounding environment and acquires the connotation of a lived body through which to create. In this sense, the performing arts become fundamental educational and training moments in school contexts, providing an educational perspective of the body and movement through which it is possible to promote the development of an artistic and creative dimension of the body.

## Conclusion

In conclusion, this is a reflection in support of the embodied approach applied to creativity, which emphasises the important relationship between body and mind in the development of creativity. Creativity is a process that develops through the body, for this reason it is considered important to emphasise the role of the creative movement in school environments. Embodied creativity allows one to learn and explore an enriched environment through the body that becomes an instrument for processing and expressing creative thought. All this highlights the importance to promote in educational and formative settings, such as schools, processes of embodied creativity through the use of effective formative strategies, such as proposals for performing arts workshops.

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