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DEVELOPMENTS IN CONTEMPORARY PEDAGOGY.
IMPACT ON SCHOOL CURRICULUM

VASILE CHIŞ[*]

ABSTRACT. The content of this article is focused on several contemporary debates on developments in contemporary pedagogy and its impact on school curriculum. Here we included six topics which we founded as being very relevant for today debates: 1. From "Analytical Pedagogies" to the Synthesis in Sciences of Education" 2.Curriculum between concept and application; 3. The need for conceptual clarification; 4. Trends and guidelines for curriculum conceptualization; 5.Types of curricula and their relevance to contemporary education and 6. Pedagogy of curriculum: conceptual framework and application.

Keywords: *contemporary pedagogy, analytical pedagogies, synthesis in the educational sciences, curriculum, types of curriculum, curriculum as classes of inclusion*

Contents:

I. From pedagogies to synthesis in the sciences of education

Pedagogy has affirmed itself as a science of education ever since mid-15 century, simultaneously to the apparition of the Czech pedagogue Jan Amos Comenius. At its origin, pedagogy presented itself as a unitary, global science but in time, since its emergence to the present, the analysis of the dynamics of pedagogy reveals two contrasting and complementary tendencies:

(1). The development of pedagogy based on the analytical course in science; the multiplication of the fields of study and the apparition of numerous branches of pedagogy.
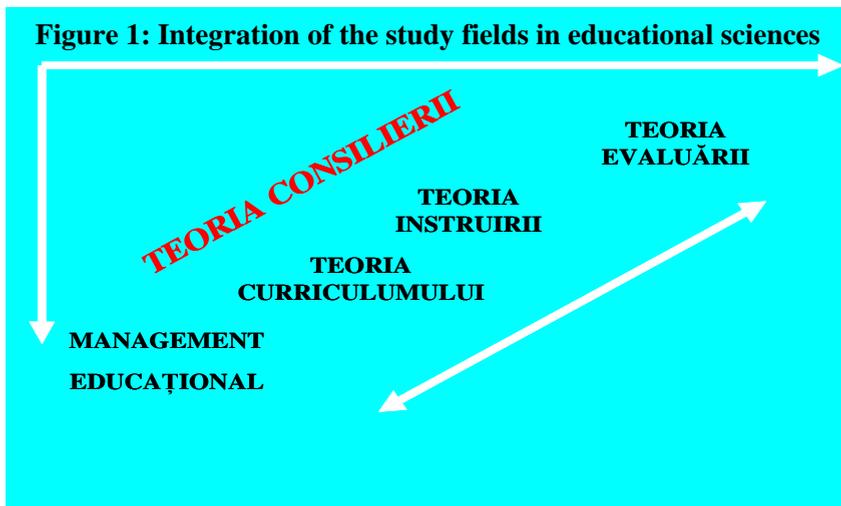
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(2). The development of pedagogy based on the syntheses, reorganization and thematic integration and the outlining of Educational sciences.

We will render a brief presentation of these tendencies in the development of contemporary pedagogy but we will focus more on the problems of the curriculum.

(1). Based on the analytical undertaking, the existing pedagogies of the end of the 20th century reveal that their apparition was due to the new reference points in the educational practice and theory. Thus, *General pedagogy* has been reorganized in two branches: *Educational theory* and *Theory and teaching methodology* (Didactics). Seen the needs to adapt the pedagogical undertaking to the age of the subjects of the education there appears the *Pedagogy of ages* (Preschool pedagogy, School pedagogy, University pedagogy, Adult pedagogy). A new pedagogy claims the status of science in the field of education of children with disabilities (handicapped, in traditional language, i.e. the children with special educational needs in current expression). This is the *Special psychopedagogy* that in turn will lead to various branches: *Oligofrenology* (Pedagogy of the mentally disabled), *Tiflology* (Pedagogy of the visually impaired), *Surdology* (Pedagogy of the hearing impaired), *Logopedics* (Pedagogy of the speech challenged), etc. Finally, we observe the apparition of interdisciplinary branches such as *Education psychology, Education philosophy, Education sociology, Education economics* et al.

(2). The continuous fragmentation of the domains of reflection and application until the exhaustion of the undertake opens opportunities for new organizations, synthesis in Pedagogy and the assuming of a new integrating concept – *Education sciences*. We consider that until the present there are 5 pillars or dimensions of synthesis in Educational sciences. We render in figure 1 below the dimensions of thematic integration in educational sciences according to the studies we carried out in this field.

Figure 1: Integration of the study fields in educational sciences

TEORIA CONSILIERII

TEORIA EVALUĂRII

TEORIA INSTRUIRII

TEORIA CURRICULUMULUI

MANAGEMENT EDUCAȚIONAL

The theory of the curriculum belongs to the educational sciences and this thematic and applicative dimension is one of the most dynamic and of course contemporarily interesting.

II. Curriculum between concept and applications

According to certain bibliographic references, the curriculum is a term used for a long time, ever since the 16th century (University of Leiden, 1582) and the 17th century (University of Glasgow, 1633). Nevertheless, between the first publications on the topic of curriculum there are mentioned works that appeared later, such as the book of Bobbitt John Franklin (1918) *The Curriculum,* Boston, Houghton Mifflin.

II.1. The need for conceptual clarifications

The concept of *curriculum* represents a class, a category of educational components very varied and structured according to many criteria. In our view, the curriculum is a very vast *conceptual network* and to support this approach we mention the systematic preoccupation with *curriculum cartography, curriculum mapping* as they are presented in numerous examples of cartography on the website *www.curriculummapping101.com.*

The map of concepts consists in the elaboration of graphic representations for the organization of diverse structures (Novak & Gowin, 1984). The conceptual structures are deployed in multi-dimensional networks, revealing the meaning and relations within them.

We currently witness the accumulation of a large fan of terms placed in the *curriculum category* or its proximity. Many works and opinions are published, with different focus on what curriculum is, its projections and applications in the education of the third millennium. Without any systematic or pertinent organizations to the curriculum, the risk of derisory applications or which are on the contrary too complicated. Furthermore, because of its role as *main organizer of the contemporary education components*, errors or fragmented approaches within the curriculum could lead to malfunctions in other segments of education.

The message decanted by contemporary research on the curriculum is direct and simple: the requirement to always report the curriculum to *the space called school.* Also worth considering are the four key factors in the optimal organization of the curriculum:

- schedule, time for school work, short- and long-term
- manner, modalities of organization of the individual and group activities
- allotting the teaching staff according to activities, classes and groups
- using the education space available

The curriculum is *an integrating concept* (Fogarty, R., Stoehr, J., 1991). We consider that curricular integration of the pedagogical components envisages at

least two levels: a). the articulation of all the components in the learning process such as objectives, content, methods and training means, etc. and b). integration of the thematic and/or curricular areas, integrating disciplines in various models of integrated (trans-disciplinary) teaching.

Given the vast and multifaceted thematic of the school curriculum, it is necessary in this field to clarify and continuously develop the *conceptual horizon* or *the conceptual network* of the term. Punctual inquiries are useful for orienting the research of the conceptual network, network in which the curriculum is the generator of inclusive categories.

- How is the curriculum defined etymologically?
- How is the curriculum defined in Pedagogy/Educational sciences in the world?
- What are the defining notes of the curriculum with potential of relaunching of the reform in Romania?

II.2. Tendencies and orientations in the conceptualization of the curriculum. Definitions and interpretations

II.2.1. Etymological definitions

The Oxford English Dictionaries, 2010 renders the following definitions:

Curriculum: pronunciation / kʌˈrɪkjʊləm /, noun (pl. Curricula/curriculum).
Meaning: *The subjects comprising a course of study in a school or college.*
Derivates: curricular, adjective.
Note: the plural for curriculum can be *curricula* (Latin) or *curriculums* (English).
Origin: *curricle* (Latin), term used with two meanings: *race, running, action* or *trait, mobile, modality, means of action.*

Arthur K. Ellis (2004) emphasizes the following characteristics of the term *curriculum*: A *curricle* was, at the beginning of the 19th century a means of transportation (coach) for the *driver and passengers*. This *curricle* had a well placed *chair* for the driver. *Curricle* – coach for driver and passengers was very popular in Europe at the beginning of the 19th century, these names and activities have their origin in the Latin term *curriculum* with the meaning race, running.

In the etymological definition of Arthur Ellis there are two complementary meanings of *curriculum*. The initial meaning, from *currere*, of action, experience (running), is often quoted by the pedagogical resources but there is also a new meaning, *means of the action, mobile*, meaning less present in the pedagogical literature.

It is useful to report the curriculum in its state as pedagogical category to its etymological meanings since we thus obtain the range of meanings advanced by the concept, from the origin to the present.

II.2.2. Contemporary senses

According to John Franklin Bobbitt (1918), quoted as first author of the publications on the school curriculum, the concept of curriculum has two defining

characteristics: a). *it is a field of social engineering* and its elaboration does not require a high degree of expertise, b). defines *the useful experiences of the students in their development for adulthood.*

According to Kelly, A.V. (1989), the definition of the curriculum incorporates two other complementary components: a certain number of courses, *study disciplines* of which the student chooses the study topics and *an articulate teaching, learning and evaluation program*, a training program specific to the subjects, courses chosen.

Curtis C. McKnight (2001) brought forward a model of tridimensional analysis of the curriculum: *intentional dimension*, program or study plan; *applicative dimension*, action, implementation of the curriculum and *experiential dimension*, going through, learning. Most of the contemporary studies stop at two of these dimensions above: a). indicated curriculum, proposed curriculum and b). completed curriculum, accomplished curriculum.

a).Indicated curriculum, proposed curriculum. Curriculum as a program/plan of study (prescriptive documents). The prescriptive sense of the term places the debate on curriculum on the intentional level, the level of work plan, expert opinion on what should be incorporated in a study program. The prescriptive sense defines the curriculum as orientation, perspective, future possible action. The experts indicate a curriculum but the teachers are the ones that decide what needs to be put into practice.

The prescriptive character of the curriculum is expressed in various definitions, thus: *"a body of knowledge that needs to be communicated"*; *"a study plan meant to satisfy the needs of the community"*; *"a learning program"*, etc.

Hence, the indicated/proposed curriculum is a completed document, outlined and ready to use. There are numerous documents that incorporate the indicated curriculum: national curriculum, local or regional curriculum, frameworks, syllabi, manuals, guidelines, etc.

b). Completed curriculum, accomplished curriculum. The curriculum as an ensemble of learning experiences achieved by the students and teachers.

The curriculum defined as learning experiences commutes the accent from the state of project or indication to the state of process, implementation: how does a curriculum project *works* in class and in school.

The stages of the curriculum *a – plan, program* and *b – learning experiences* are always complementary not in opposition. Ronald Doll (1996) proposed an integrated definition of the two perspectives, thus: the curriculum represents the formal and informal contents such as the processes through which the students learn and understand, acquire skills under the guidance of the school.

Marsh, C. J. and Willis, G. (2003) elaborate a synthesis of the most frequent definitions given to the curriculum in pedagogical literature. The cited authors propose reflection upon the following definitions:

- **Curriculum as a group of subjects**

Curriculum represents the subjects of study such as grammar, lecture, logics, rhetoric, mathematics, meaning those disciplines that best incorporate essential knowledge.

- **Curriculum as a group of useful topics**

Curriculum as the most useful topics for the experience of humans in the contemporary society.

- **Curriculum as planned learning**

Curriculum as planned sequences of learning for the completion of which school is responsible.

- **Curriculum as learning experiences**

Curriculum represents the sum of learning experiences that students receive under the guidance of the school.

- **Curriculum as means of acquiring knowledge and skills**

Curriculum is the sum of the learning experiences offered to the students so that they can acquire general skills and knowledge through various learning situations.

- **Curriculum as computer assisted learning**

Curriculum is what the students build through the computer activities and using the diverse networks such as the internet.

- **Curriculum as investigation and interrogation**

Curriculum is the interrogation and investigation of the perceptions on diverse human situations.

- **Curriculum as life experiences**

Curriculum represents all the experiences that the subjects gather in their lifetime.

We deem a curriculum project with optimal chances for use in education articulately borrows complementary defining characteristics.

III. Types of curriculum and their relevance in contemporary education

Based on the analysis of the definitions, names and classifications met in present in the pedagogical literature on the curriculum *(Curriculum pedagogy)*, we have grouped the terms according to the inclusion classes indentified. We present below *the conceptual inclusion classes* of *the curriculum category* under the generic definition:

Curriculum is the conceptual network with numerous inclusion classes.

1. Levels of stratification

- core curriculum/ trunk curriculum
- local/regional curriculum (curriculum for regional development, school decision curriculum)
- individual curriculum (optional)
- differentiated curriculum
- adapted curriculum
- accelerated curriculum
- enriched curriculum

2. Elaboration – implementation
- indicated curriculum (projected, formal)
- taught curriculum (completed)
- learned curriculum (accomplished)
- evaluated, tested curriculum

3. Typology - taxonomy according to various criteria
- explicit/written curriculum
- societal curriculum (Cortes, 1981)
- covered/hidden curriculum (Shane, 1993)
- null curriculum (Eisner, 1994)
- phantom curriculum
- simultaneous curriculum
- rhetoric curriculum
- internal curriculum
- electronic curriculum

4. Documents – support materials
- national curriculum
- framework programs
- school programs
- manuals
- guides
- application workbooks

5. Curricular areas (examples)
- Language and communication
- Mathematics and natural sciences
- Human and society
- Arts
- Physical education and sports
- Technologies
- Counseling and guiding

6. School subjects such as: mother tongues, mathematics, physics, history, geography, information and communication technology, physical education, plastic arts, drawing, etc.

7. Curricular cycles such as the ones mentioned in the Framework program of the curriculum reform in our country, e.g. Fundamental acquiring; Development; Observation and orientation; Advancements; Specialization

IV. Curriculum pedagogy: conceptual constants and variable applications

Contemporary curriculum pedagogy accentuates the flexible character of the study programs/experiences of school learning. In the primary and gymnasium education the flexibility of the curriculum is ensured by its stratification in three independent yet complementary categories. These three curriculum categories can be constantly found in the majority of the educational systems even though their names vary from one system to another.

- **Core curriculum**

The core curriculum incorporates the learning experiences necessary to all the students enrolled in a certain study cycle or with a certain study profile. Usually, the core curriculum is established by the national authorities in education and it concerns particularly the primary and gymnasium cycles. There are though universities that decide to provide students with a list of common courses in a specialization field.

- **Local or regional curriculum**

The local curriculum is composed of learning contents and experiences specific to the community (social and economic environment) where the school is located. The learning experiences proposed facilitate for the students the knowledge of the existing places, values, traditions, practices in the community and thus ensure that the youth have increased chances of economic and social integration as well as belonging to the community.

- **Individual curriculum**

The individual curriculum is a personalized curriculum based on two main characters of the students as individuals: their educational needs and possibilities. As the students advance to the higher steps of education, the importance of the local and individual curriculum enhances.

The integration of the three curriculum categories in a comprehensive project is a complicated operation for at least two reasons:

(1). the conceptual map of the curriculum is dense and large, thus there intervene inclusive or correlated curricular structures that force the trial and validation of diverse combinations.

(2). Focusing on certain types of curriculum can alter the fundamental principles of curricular construction, such principles as *equal chances, education for all, inclusive education, education for the overweight people, school projected curriculum versus skills-focused curriculum, etc.*

We present in Figure 2 a parallel between the stratification of the curriculum comparatively to its stratification in the educational systems of Europe.
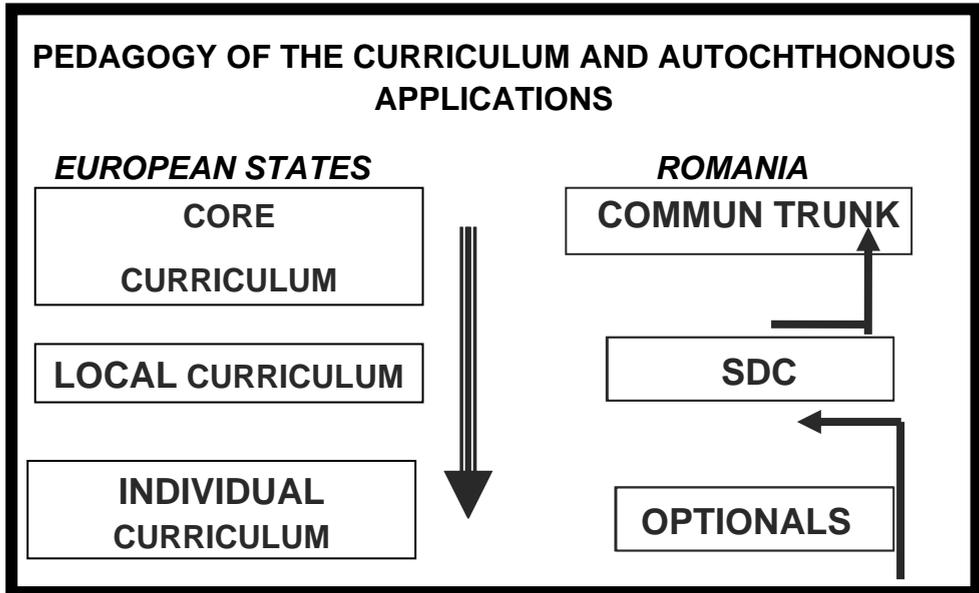
The central role of the curriculum in the educational systems in the world is to render more flexible the study programs, to allow the passage in education from the old paradigm – *the student must adapt to school* to the modern paradigm – *school needs to adapt to the student.* Consequently, the curriculum becomes the main operator in the modernization of the educational systems as the curriculum proposes various study itineraries, of group and personalized instead of the old study programs, common and compulsory, incorporated in *the contents of education.*

Situational analyses in our school allow the observation of a curriculum stratification that is mainly a formal activity and the applications *per se* frequently remain anchored in the old undertaking of the common and compulsory programs.

School decided curriculum (SDC) is not the equivalent of *Local or regional curriculum* nor of the *School curriculum.* SPC frequently consists of *extensions or advancements of the common trunk.* In fact, it is more comfortable for the school to assume extensions or advancements from the common trunk. A so-called new SDC is marked by the numerous red tape administrative and even pedagogical difficulties. Hence, SDC is practically integrated in a common trunk, thus the two stratifications *common trunk* and *school decided curriculum* come together in the common trunk.

The optionals, expression of the individualized or personalized curriculum are in our country included in the SDC. Consequently, the school decides on the student and family options. They have thus become the famous *compulsory optionals* in our schools.

The conclusion is a simple one: *the optional* is assimilated into the SDC, *SDC* is assimilated into the common trunk, *the common trunk* becomes the main segment of the "curriculum", not a curriculum pedagogically speaking. We can directly say that in present the education in Romania does not work based on a curriculum. There is no curriculum, pedagogically, despite all the worthy undertakes of curriculum projection and implementation in the Romanian school.

V. Concepts mentioned in the Romanian Education Law

The national curriculum represents the coherent ensemble of the education frameworks and of the study programs in pre-university education (Ch. IV, art. 64.2).

The education frameworks consist of the disciplines, fields of study, respectively the compulsory and optional training modules as well as a minimum and maximum number of allotted hours (IV.65.1).

The common trunk is constituted of the compulsory disciplines/domains of study/training modules and the school decided curriculum is formed of the optional disciplines/domains of study/training modules (IV.65.2).

School programs establish that for each discipline/domain of study/training module I the education plan the finalities envisaged and highlight the fundamental theoretical, experimental and applicative contents offering general methodological approaches for their achievement and assessment (IV.65.3).

The school frameworks and programs for the compulsory disciplines/domains of study/training modules in the pre-university education are elaborated by the institutions and organisms authorized by the Ministry of Education, research, youth and Sports (IV.65.4).

School decided curriculum consists of optional disciplinary packages offered nationally, regionally or locally and of optional disciplinary packages for the education unit (IV.65.5).

School programs for the optional disciplines/domains of study/training modules are elaborated by the schools (IV.65.6).

Regarding the educational alternatives, the frameworks and study programs are elaborated as projects by their representatives and approved by the Ministry of Education, Research, Youth and Sports (IV.65.7).

The number of hours allotted to the disciplines in the education framework is of maximum 20 hours per week in primary education, 25 hours per week gymnasium education and 30 hours per week in high-school education (IV.66.1).

Within the National curriculum, the compulsory disciplines have a percentage of 80 in the frameworks of the compulsory education and 70% in the high school level (IV.66.3.).

Within the National curriculum, optional disciplines represent 20% in the compulsory education frameworks and 30% in high school ones (IV.66.4).

Depending on the student characteristics and their school strategy, the teacher decides if the percentage of 25 of the time allotted to the discipline/domain

of study is used for remedial learning, in the case of special needs children, for the consolidation of knowledge or for the stimulation of the students capable of higher achievements according to the individual study plans elaborated for each student (IV.66.5).

The national curriculum for early education is focused on physical, cognitive, emotional, and social development of the children, respectively on the early remediation of the possible development deficiencies (IV.67.1).

The national curriculum for primary and gymnasium education is oriented towards 8 domains of key-competencies that determine the development profile of the student (IV.68.1).

The curriculum for preparatory classes aims at physical, socio-emotional, cognitive, language and communication development as well as the one of learning skills and aptitudes, ensuring at the same time the bridges for developing the other 8 key-competences (IV.68.14).

In public or private education units the manuals used will be the school and auxiliary ones approved by the Ministry of Education, Research, Youth and Sports (IV.69.1).

Ministry of Education, Research, Youth and Sports regulates the elaboration of alternate school manuals (IV.69.2).

Curricular auxiliaries are constituted of methodological guides that through their content are in conformity with the legal provisions in force and which the teachers can select and use in class, based on the professional initiative liberty and with a view to improving the quality of the educational process (Iv.68.5).

School libraries and documentation and information centers are organized and function based on a regulation elaborated by the Ministry of Education, Research, Youth and Sports (IV.70.1).

The creation of the **Virtual School Library and the E-learning school platform** that include the school programs, samples of lessons for all topics in the school programs, methodological guides, evaluation sample tests (IV.70.2).

The children and youth capable of high performance, regardless of age, benefit from education programs that respect their particularities in learning and performance orientation. These programs are for advanced study, skill grouping, and curriculum enrichment with new fields, tutoring and knowledge transfer, acceleration of the promotion according to the individual study rhythm (III.5).

(98.2.e) proposes the administration board the school disposed curriculum.

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COMMON SOURCES FOR TEACHING CHOICE: KEY MOTIVATIONAL FACTORS AND BELIEFS ABOUT TEACHING

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ABSTRACT. The present study investigated future teachers' motivation for teaching, their beliefs about teaching as a career and beliefs about teaching and learning in general. Participants in this study were undergraduate students, following a traditional teacher education program in a large research university in the United States.

This mixed-methods study used quantitative (surveys) and qualitative (interviews) data, collected over one academic year. This study was conducted in two phases: in the first phase of the study participants completed a survey about their motivations (reasons) for teaching and their beliefs about teaching, followed by in-depth interviews (the second phase), with a selected number of participants.

Overall, quantitative results show that six factors related to motivation for teaching were identified through a factor analysis, and further additional 5 factors related to their beliefs about teaching were identified. Correlational analysis showed a strong relationship between prospective teachers' motivations for teaching and their teaching beliefs. Further, the qualitative data from interviews revealed more in-depth the connection between motivations and beliefs of prospective teachers. Findings from this study are discussed further in relationship with teacher education and implication for research and practice in this field.

Keywords: motivation, beliefs, mixed-methods study, teacher education

1. Introduction and purpose

Recent research in teacher education focused intensively on teacher education programs' quality, teaching performance and teachers' satisfaction with the teaching profession. Much of the impetus for the research on this area has come from a concern of severe teacher attrition recently encountered in many countries, including the United States. A considerable number of analyses of the U.S. national data show that schools across the state are confronting with lack of teachers and lack of quality teaching and that teacher preparation is therefore essential for having qualified teaching workforce in schools (Darling-Hammond, 1998; Darling-Hammond & Sykes, 2003; Fernandez, 1996). In the light of such research it is thus crucial to investigate

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future teachers' professional goal development, including their initial motivations for teaching, their perception of the profession and their understanding of the teaching and learning process. How future teacher candidates understand their motivation for teaching, their conceptions about what teaching means and how they perceive their professional goals, play an important role in shaping their identities as teachers, and their future classroom practices.

Most recent research in the field of teacher education refers to reasons for teaching as intrinsic reasons, extrinsic reasons, and altruistic reasons (i.e., Kyriacou & Coutlhard, 2000; Saban, 2003; Watt & Richardson, 2008). Covington and Mueller (2001) propose a model of understanding different types of reasons as a unidimensional model of motivation. The model suggests that both intrinsic and extrinsic tendencies blend within the same individual so that everyone can be placed somewhere along a single continuum, ranging from a high intrinsic orientation at one end of the dimension to a dominantly extrinsic orientation at the other (Covington and Mueller, 2001). From this perspective, the present study analyzed the interplay among different elements as influential sources in prospective teachers' professional goal development. The study therefore, investigated motivations (reasons) for teaching and how beliefs interrelate with motivations in the context of teaching goal development.

Motivation therefore, is understood in this study in relationship with goals and reasons for engaging in an activity or task. Classical motivational theories and cognitive approaches of motivation (i.e., Deci, & Ryan, 2000; Pintrich and Schunk, 2002) state that development goals may be unclear for some individuals and may change with experience, but it is certain that individuals have some tasks in mind that they are trying to accomplish. Goals are defined in this study as *core goals*, or *life task goals,* and they are subjective representations playing an important role in organizing processes for thinking, acting, and emoting (Schutz, Crowder, & White, 2001; Schutz, White, & Lanehart, 2000). These theoretical perspectives were taken into consideration in the present study. Prospective teachers' motivation for teaching was explored as a system, interconnected with beliefs about teaching in the context of candidates' understanding of their teaching goal development. Specifically, the purpose of this study was to investigate future teachers' motivations for teaching, and their beliefs about teaching, namely, beliefs about the teaching profession and beliefs about teaching and learning. From this perspective, this study sought to explore initial motivations of prospective teachers for entering the teaching career, and their beliefs about teaching (i.e., beliefs about the teaching profession and beliefs about teaching and learning); additionally, correlations between motivations and beliefs about teaching were investigated. Particular research questions addressed by the present study were:

1.What specific motivations can be identified most and least influential among future teachers' candidates?

2. What specific beliefs about teaching such as beliefs about the teaching profession and beliefs about teaching and learning activity can be identified among future teachers' candidates?

2. What are the relationships in general between motivations for teaching and beliefs about teaching among future teachers' candidates?

3. What were the common motivations and beliefs about teaching and how were these expressed by future teachers' candidates in their interviews?

2. Methodology

Study design and samples

This mixed-methods study using quantitative (survey) and qualitative (interviews) data was conducted in two phases. In the first phase of the study, all participants (*N*=215) completed the survey in which demographic data, motivations (reasons) for entering teaching, and beliefs about teaching were collected. Further, we randomly recruited a selected number of participants (*N*=25) for the second phase of the study, an in-depth interview. The purpose of the interview was to explore further prospective teachers' beliefs about teaching and their understanding of the goal to become a teacher. All participants in this study were undergraduate students, prospective teachers enrolled in education courses within the College of Education in a major university in the United States.

Data sources and procedures

Instruments. The survey instrument, administrated in the first phase of the study to all participants contained four distinctive questionnaires collecting data about participants' demographics, motivations for teaching and beliefs about teaching, as follows: *Demographic Questionnaire*, *Reasons for Teaching Scale*, *School Metaphors Scale* and the *Career Statement Scale* adapted from Saban (2003). Participants were asked to rate on a scale 1 to 5 (1 = "not important at all" and 5 = "extremely important") the importance of specific *motivations* (*reasons)* when choosing teaching as a career, and also to rate each statement for the *teaching beliefs* on a scale 1 to 4 (1 = "strongly disagree" and 4 = "strongly agree") to indicate their level of their agreement with these survey teaching and learning statements.

Overall, the purpose of the survey was to collect demographic data from participants, to investigate what reasons were most influential or not in one's decision for entering the teaching career, specific beliefs about teaching and learning, and beliefs about the teaching career. An additional purpose of the survey is to select participants for the second phase of the study, the interview.

Interviews. Interview participants in the second phase of study were randomly selected from the pool of surveyed participants who indicated in their questionnaire that they were willing to take part in a face-to-face interview. Semi-structured interview were conducted for an in-depth exploration of prospective teachers' teaching goal understanding with respect to their motivations and beliefs about teaching. This

qualitative investigations' purpose was to provide a more in-depth analysis of the candidates' teaching goal development with respect to motivations and beliefs about teaching. Interviews were recorded and later transcribed, and the transcribed interviews were the primary data for qualitative analysis. The qualitative data analysis followed the procedures outlined by Corbin and Strauss (1990) and Creswell (2007) for thematic analysis and grounded theory. Following the guidelines for qualitative data analysis (Creswell, 2007) three types of coding were used throughout the entire data analysis process, namely *open, selective* and *axial* coding. A coding scheme was built by three researches which coded data, and gradually revised and tested the coding scheme until 100% agreement of the coders was reached.

3. Results and interpretations

Motivational factors

Quantitative analysis using an exploratory factor analysis of survey data about prospective teachers' motivations for teaching indicated a great variability among motivation for entering the teaching profession. An exploratory factor analysis was used to establish main factors as reasons for teaching of prospective teachers. Cronbach's alpha reliability obtained score for the 21 items of the *Reasons for Teaching Scale* was $\alpha = .79$ which indicates a fairly high reliability. Results from the factor analysis indicated six categories of reasons (i.e., factors) candidates expressed as influential (or less influential) in their decision to become a teacher. These main motivational factors are presented in Table 1 below indicating the most influential factors and least influential factors in prospective teachers' decisions.

Table 1.

Influential motivational factors (means, standard deviations)

Motivational Factors	Mean (SD)
Altruistic reasons (e.g., wanting to help children learn, help society develop)	4.41 (.72)
Intrinsic reasons (e.g., enjoyment of teaching, love for their subject matter taught)	4.32 (.60)
Professional identity (e.g., identity issues, personality fit)	4.14 (.61)
Extrinsic reasons (e.g., salary, job benefits, vacations)	3.71 (.69)
Professional opportunities (e.g., wanting to develop professionally through teaching, take leadership roles)	3.15 (.79)
Social reasons (e.g., family, friends, former teachers' influence)	3.02 (.84)

Teaching beliefs factors

Beliefs about the teaching career. Further, prospective teachers' beliefs about the teaching career were explored via an exploratory factor analysis. The *Career Statements Scale,* consisting of 10 items explored prospective teachers' perception of teaching as a profession. The instrument purpose was to investigate some aspects of the teaching profession without organizing the questionnaire items into specific subcategories. More exactly, specific beliefs, or clusters of beliefs about teaching as a profession that prospective teachers' hold were explored regarding their understanding of career *commitment* (i.e. "For me teaching is a lifelong career"); perception of *professional roles* (i.e., " I believe one of the most important role as a teacher is to foster students' emotional growth"); or *learning approach* (i.e.," I believe students learn best through direct instruction"). The Cronbach's alpha coefficient obtained for internal reliability was α = .83, which indicates a fairly high reliability.

Beliefs about the teaching and learning activity. Next, beliefs of prospective teachers about teaching and learning were investigated .Therefore, data from the 15 items of the *School Metaphors Scale* factors' analysis indicated two distinct categories (i.e., factors) as follows:

Direct instruction (focus on transmission of knowledge) and *Constructivist instruction* (focus on learning facilitation). The Cronbach's alpha coefficient obtained for internal reliability of the scale was α = .76, which indicates a fairly high reliability. Table 2 below summarizes the teaching beliefs factors.

Table 2.

Summary of factors for teaching beliefs (means, standard deviation)

Teaching Beliefs Factors	Mean (SD)
Career commitment (e.g., lifelong engagement in teaching)	3.28 (.61)
Professional role (e.g., academic learning, moral and social support for student development)	3.29 (.50)
Learning approach (e.g., interactive learning approach)	3.46 (.40)
Direct instruction (e.g., teacher-oriented instructional approach)	2.07 (.54)
Constructivist instruction (e.g., student-oriented approach)	3.13 (.51)

Interconnectivity: Motivations and belief about teaching

Correlational analysis. Additionally, correlations between major study variables such as motivations for teaching and beliefs about teaching showed overall

interesting significant differences. Positive significant correlations were found between altruistic reasons for teaching and intrinsic reasons, professional identity, professional opportunities, social reasons, constructivist approach in teaching and commitment to teaching, showing that individuals who are motivated for teaching with respect to altruism, love for teaching, relationships, and professional opportunities are also taking a constructivist approach in teaching (student-oriented), and plan to remain in teaching for longer times, thus are fully committed to teaching.

Table 3 below presents a summary of correlations between major variables and their significance level.

Table 3.

Summary of Correlational analysis between motivational and beliefs factors

	Factors	1	2	3	4	5	6	7	8	9	10	11
	Altruistic reasons	1	.33**	.35**	.23**	.44**	.22**	-.15*	.13*	.30**	.24*	.33*
	Intrinsic reasons		1	.25**	.30*	.26*	.52*	.07	.02	.08	.18*	.04
	Professional identity			1	.35**	.35*	.19*	.09	.22*	.35**	.36*	.36*
	Extrinsic reasons				1	.24*	.27*	.19*	.19*	.21**	.19*	.23*
	Professional opportunities					1	.12	-.14*	.07	.29**	.32*	.41*
	Social reason						1	.10	.02	-.11	.14*	-.00
	Direct instruction							1	.33*	.06	.03	.08
	Constructivist								1	.30**	.22*	.19*
	Commitment									1	.33*	.40*
0	Professional role										1	.40*
1	Learning approach											1

Note: *$p < .05$,   ** $p < .01$ (2-tailed)

Overall, quantitative results showed that there is a multitude of factors that influence the teaching career choice, and different beliefs about what teaching means and how to best instruct students. Generally, results indicated that the there is a close interconnection between one's motivation and beliefs about teaching.

Interview results: common motivations and beliefs about teaching across sample

In the second phase of the study, 25 prospective teachers' participated in a face-to-face, audio-taped interview. Participants for the interview were selected among the survey respondents who indicated that they were willing to participate in a face-to-face interview. The purpose of the interview was to explore in-depth future teachers' candidates understanding of their goals to become teachers with respect to their reasons for teaching and beliefs about teaching.

Interview data was analyzed using the principles of grounded theory (Creswell, 1989, 2007; Marshal & Rossman, 1989, Strauss & Corbin, 1990, 1998). Grounded theory is a qualitative analysis approach that involves descriptive as well as analytic features. Through microanalysis, questioning, and constant comparisons, researchers are able to examine specifics of the data in a descriptive and analytic sense and to constantly ask abstract, theoretical questions that are relevant to the details of the data.

The thematic analysis was based on grounded theory principles and was developed through a cross-case analysis, uncovering the most common categories regarding the nature of teaching goal development for the interviewed prospective teachers. Most common categories present in prospective teachers' interviews were related to types of motivations for teaching they had, types of perceptions about the teaching they had, environment /or contextual factors that influenced their teaching decisions, and their perceived commitment to teaching (willing to stay in the profession for a long or short period of time).

Major categories referred to different types of motivations individuals expressed in their interviews such as intrinsic motivations, altruistic motivations, social and extrinsic motivations; also different beliefs about teaching they expressed through the interviews such as a constructivist approach in teaching or direct instruction approach. Additionally, participants expressed in their interviews how they came to their decisions to become teachers as related to a particular context, or environment (for instance if certain social relationships were influential for them, such as family members, friends, former teachers), or how certain feelings (emotions) were influential in their decisions (fear, anxiety, enthusiasm etc). Extremely important to notice from participants interviews were also their statements about career commitment, rather they said that they would remain in teaching for longer periods of time (full commitment to teaching), or for a shorter, maybe undefined time (temporary commitment or lack of commitment to teaching).

Table 4 below presents these identified major categories via a thematic analysis, common across all interviewed samples with respect to their motivations for teaching and their teaching beliefs (beliefs about teaching as a profession and beliefs about teaching and learning activity) . These common categories were the results of interviews coding, reflecting the major categories found and established as common categories to all participants in the interview.

Table 4.

Major common motivational and beliefs categories

Categories	Subcategories	Description/Examples
Motivations	Intrinsic motivations	Their enjoyment of teaching activity and content
	Altruistic motivations	Desire to help children learn and progress
	Social motivations	Social relationships such as family members, friends, former teachers being more or less of an influence in their decisions to become teachers
	Extrinsic motivations	Job benefits, vacations, salary or time as more or less influential in their decisions for teaching
Perceptions	Constructive instructional approach	Student-oriented approach (dominated by students 'needs as central to instruction)
	Direct instructional approach	Teacher-oriented approach (dominated by direct instruction and teacher needs as central to instruction)
	Teaching advantages and disadvantage	Teaching perceived as having both advantages and disadvantage. Beliefs about career related to job benefits, job security, employment availability
	Quality teaching	Quality teaching perceived as imposed by internal (i.e., teachers' responsibility) and/or external factors (i.e., administration, tests)
Environment	School experiences	Previous school experiences & teachers' models as influential factors in teaching
	Emotions	Emotions associated with teaching experiences. Negative (i.e., fear, anxiety), or positive (i.e., excitement, love), or mixed emotions about teaching expressed by prospective teachers.
Commitment	Full commitment	Permanently willing to stay in teaching K-12 students (full commitment to teaching).
	Temporary commitment	Temporary willing to stay in K-12 teaching (temporary or lack of commitment to teaching).

Overall, qualitative data from the interviews revealed that prospective teacher' motivations and beliefs about teaching are interconnected and influence each other. These motives and beliefs played an important role in their career decisions and their understanding of the goal to become a teacher. The interview data showed that similar sources of teaching goal development were found across

samples, but in the same time particularities for each individual in their goal development understanding were present.

4. Discussions and conclusion

Findings from the present study results indicated a variety of reasons for teaching and beliefs about teaching that were expressed by the participants in their survey- and interview-responses. Further, results from both the quantitative and qualitative analysis indicated that specific reasons were relevant all participants in their teaching career choices. Quantitative results indicated that altruistic reasons were the most influential for all participants, followed by the intrinsic reasons and professional identity. There is no surprise to find out that most participants were motivated to teach because of altruistic and intrinsic reasons, most research in the field support such findings (Richardson, & Watt, 2005; Kyriacou, Hultgren, & Stephens, 1999). Additionally with respect to beliefs about teaching, constructivist approaches were chosen by participants more often comparing to direct instructional approaches, such findings are in line with effective teaching practices recommended in the literature (Minor, Onwuegbuzie, & Witcher, 2002).

On the other hand, less influential factors for teaching decisions were found to be the extrinsic reasons (reasons related to job benefits, salary), professional opportunities offered through teaching, and social reasons (family, friends or others influencing their teaching decisions). These findings are different than similar studies in the field that show a more pragmatic approach to teaching and beliefs more aligned in the traditional style in teaching (Papanastasiou, & Papanastasiou, 1998; Shen, & Hsieh, 1999). Further, findings from the qualitative analyses added more information to explain how participants understood their goal development with respect to their reasons for teaching and their beliefs about teaching. The interview results specifically provided more depth to how their specific motivators for teaching, beliefs about teaching, and prospective teachers' actions are interrelating in a comprehensive structural model with common motivational and teaching beliefs factors. These findings bring new insights and contribution to the teaching practical domain, and also to our empirical knowledge about how individuals conceptualize their teaching goal development.

To sum up, the study results showed that different combination of reasons were relevant for the choice of teaching as a career, but at the same time common sources of influence were found for all participants. The interplay of different types of reasons was unique for each individual related to specific life contexts, types of motives and personal beliefs about teaching. Findings from this research can bring a significant contribution to understanding individuals' beliefs in connection with their reasons for teaching as related to their attitudes toward teaching. Also major implications for understanding motivational aspects for continuing teaching, job satisfaction and indirectly teacher attrition are underpinned.

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RELATIONSHIPS AND INTERDEPENDENCES BETWEEN THE FUNCTIONAL VARIABLES OF THE EDUCATIONAL ORGANIZATION

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ABSTRACT. Relationships and Interdependences between the Functional Variables of the Educational Organization. The paper aims at analyzing the school culture and climate as distinct organizational variables, but which are nevertheless in a dependence rapport and also interconnected with organizational behavior. Both culture and climate - as objective and subjective dimensions of school - are reflected in school participants' behaviors. The two variables are considered from the perspective of their interdependence rapport and, on the one hand, the paper focuses on the impact of this rapport on the teachers' professional satisfaction and the students' learning performance, and, on the other hand, it deals with the school manager's role in the culture – climate rapport. Moreover, the relationship between these two organizational variables is analyzed from the viewpoint of a new concept called *Person-Organization Fit*, which refers to the congruence between the organizational and individual characteristics.

Keywords: school culture, school climate, organizational behavior, culture-climate rapport, teachers' satisfaction, students' learning performance, school manager's role, person – organization fit

1. The culture and climate of the educational organization – variables of organizational behavior

In the studies on organization, culture and climate are the most discussed facets of organizational life. The research often lingers on the role and influence of each of the two variables in organization and leaves aside the analysis of the extant relationship between the culture and organizational climate, which, in our opinion, cannot be conceived one in the absence of the other.

However, the field literature contains several attempts to clarify the relation between the organization's culture and climate. The researchers' perspectives delineate between two orientations: on the one hand, they sustain that there is a difference and independence between organizational culture and climate because of the special features that distinguish the two variables and, on the other hand, the researchers state that the variables of culture and climate totally or partially overlap and even that culture incorporates the organization's climate.

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The first orientation corresponds to the oldest model of analysis of culture-climate relationship (Denison, 1996; Meyerson, 1991; Schneider and Snyder, 1975). This thinking distinguishes culture from climate. Whereas the climate consists in the organization members' assessment of the work environment, which includes structures, processes and events, the culture represents the subjective description of the fundamental values of an organization. This difference between the two concepts shows the separate development of the two variables: climate is a concept derived from organizational psychology and organizational culture originates in anthropology and sociology.

The second orientation fits a newer model of analysis, which has been generated by the emergence of management as a distinct science and research field. According to this model, the culture is considered an overarching concept, which engulfs the concept of climate as well. In this perspective, the organizational culture is viewed as made up of several distinct levels (Hofstede, 2003; Schein, 2004). In essence, these levels distinguish between *values* and *practices*. On the one hand, *values* are basic and often subconscious modes of understanding and assessing the world. On the other hand, *practices* are tangible, observable behaviors that occur in organization.

In the latter model of analysis, the climate equals the way individuals describe and assess the organization's practices. Thus, *climate* represents a subset of culture similar to values that are considered a subset of culture. Therefore, climate overlaps with the organizational practices or behaviors, which are subsets of culture.

In our opinion, climate is rather a consequence or an effect of organizational practices, which the participants to the organizational life filter through their own subjectivity and transform into behaviors. Moreover, the organization's values guide the behaviors of the organization's members. Therefore, climate will be the direct result of the organizational behaviors and the indirect consequence of the values that underlie these behaviors.

This view on the nature of the relationship between culture and climate is represented in the diagram below.

Fig.1. *Diagram of the relationship between culture and climate*
(in Hofstede, 2003; Schein, 2004)

The issue of the culture – climate rapport remains still open. The difference between angles of analysis is often caused by the researcher's subjective view and perceptions upon the intricacy of organizational life. The same multitude of perspectives appears when it comes to the relationship between the organizational variables of culture and climate in school.

Thus, Anderson (1982) considers that school climate is "the step child of organizational culture" (in Freiberg, 1999, p. 35), statement that acknowledges a subordinate relation, but also a difference between the two variables. On the other hand, Owens (1987) supports the similarity between culture and climate, but also the latter's dependence on the former and considers that the individuals' perceptions reflect the values and the beliefs specific to the organizational environment.

Another perspective of analysis suggests that climate be considered from a behavioral angle and the culture as a collection of values and norms that are subsets of the school climate (Hoy, 1990). The difference in thinking can be noticed from an author to another, what once again confirms the subjectivity that underlies the hypotheses formulated in connection to the relationship between culture and climate in school.

We consider that culture and climate are two different and separate concepts. Though they are distinct organizational variables, culture and climate are in a dependence relation, which also includes organizational behavior. According to Emil Păun (1997, p. 9-10) the culture and climate are subordinated to organizational behavior, which also consist of organizational goals, ethos and efficacy. Thus, culture and climate represent variables of organizational behavior.

Culture influences the maintenance and development of organizational climate, because the organization's members' perceptions on the sort of behavior they should adopt in their groups reflect subjectively the features of organizational culture.

The following opinion is in consistence with the earlier argumentation that stated that climate reflects the organizational culture: "[...] climate is an expression of culture. It expresses the personnel's predominant morale, a reflection of culture and the organization's development [...]" (Ş. Stanciu and M.A. Ionescu, 2005, p. 64). The same authors support the dependence of climate on organization's cultural features and state that the improvement of climate can be accomplished via organizational culture strategies.

Undoubtedly, culture is distinct from climate and the two concepts do not overlap. Yet, as variables of organizational behavior, culture and climate enter a dependence rapport. According to Ashforth (1985) "culture consists in the shared assumptions and ideologies, whereas climate is defined by the shared perceptions on how members of an organization should behave" (in Hoy, Tarter and Kottkamp, 1999, p.6).

Another opinion that belongs to Hoy, Tarter and Kottkamp (1991) suggests that organizational climate should be analyzed from a psychological perspective, whereas culture should be discussed from an anthropological point of view, what would allow the identification of the differences and subordination between the

two organizational variables. In his turn, Emil Păun (1999) stresses this difference and posits culture's predominant objective character, though the author does not deny the subjective facets of culture, and the subjective nature of the school climate. It should be noted that both culture and climate as objective and subjective school dimensions are reflected in people's behaviors.

Diagram 2 shows our synthetic conception about the relationship between culture and climate as variables of organizational behavior and reflects the interdependence between these three dimensions of an organization.
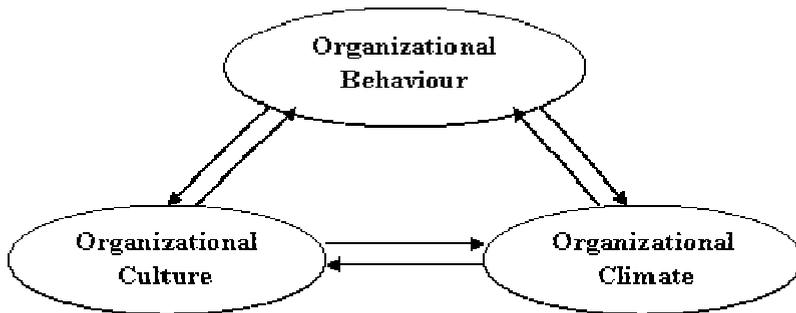
Fig.2. *Diagram of the interdependence relations between organizational culture, behavior and climate*

The climate man have positive or negative valences due to multiple influential factors such as: socio-cultural factors, interpersonal relations, quality of communication, managerial style features, specific field of activity and work conditions, organization's size and structure, but also the outer environment influences. All these factors contribute to the formation of organizational climate, which affects individuals' attitudes and behaviors. On the other hand, culture, which consists of values, beliefs, organizational norms and practices, is converted into behavioral patterns by the organization's human resource; differently put, it acquires concrete outline or it is reified within the social interactions that occur in the organization.

Therefore, climate and culture may be considered the two facets of organizational behavior since neither of the two exists in a void, but is directly dependent on the human factor of an organization as a condition of their own manifestation.

2. The impact of the culture – climate relationship on school's pedagogical dimension

It is worth analyzing how the culture – climate rapport in school reflects on its pedagogical dimension and what the effects of this rapport on the actors involved in the school's educative and instructive activity are.

2.1. The relationship between culture, climate and teachers' satisfaction

The concept of *job satisfaction* or *professional satisfaction* is defined as "a general feeling about people's activity in school in terms of rewards, autonomy, outcomes, work conditions etc." (D. Ion Barbu, 2009, p. 137).

The most important factors that have been associated with professional satisfaction are: high performance, positive interpersonal relations, participative managerial style, positive organizational climate, sufficient resources of an organization. Moreover, the professional satisfaction is tightly connected with personnel's organizational commitment. Thus, Bateman and Strasser (1984) give an operational definition of organizational commitment, which states that this is "multidimensional and depends on the employees' loyalty to organization, their availability to work for the benefit of the organization and the congruence between their own and the organization's values and goals, as well as their desire to stay in the organization" (p.95).

Therefore, it can be concluded that the teachers' professional satisfaction is directly proportional with their commitment to their schools. When teachers feel dissatisfied in schools, they are less committed and this leads to a reduced organizational performance. When such a situation occurs, the pedagogical activity turns into routine and teachers are less involved because the motivating drives no longer work.

It was previously shown that culture determines behavior of all organization members, including both the managerial behavior as a concrete manifestation of the manager's leadership style and the other school members' behavior. Moreover, it was stated that there is a dependence relationship between organizational culture and climate. The latter constitutes as a result of the extant cultural features practiced in an organization and expressed in terms of values and organizational behaviors (leadership style included). Undoubtedly, school climate will impact on the way teachers and students perceive organizational life and the organization itself. These perceptions will also be reflected in the teachers' professional satisfaction and the students' performance.

From this viewpoint, the role of organizational culture and of the leadership style adopted in schools is essential. That is why a democratic, participative, cooperative, communicative and team-work based management is needed so that positive values and behavioral norms should be instilled to all members of the school community.

2.2. The relationship between culture, climate and learning performance

Learning performance or students' learning outcomes is a concept that has been linked to the quality of school climate. It designates "the observable outcome of learning, the students' use of declarative or procedural knowledge in different learning contexts" (D. Sălăvăstru, 2004, p. 81).

Following the previous series of arguments that support the extant connection between school's culture and climate in terms of the latter organizational variable's

dependence on the former, it can be concluded that the culture – climate rapport has also effects on students' learning performance. Whether the organizational culture levels consisting of the values and behaviors shared by all members of an organization (Schein, 2004) have consequences on the general atmosphere of an organization, then this "morale" called organizational climate will impact on the students' learning outcomes as it impacts on the teachers' professional satisfaction.

The research focused on school as an organization has shown that the openness of school climate is in a cause – effect rapport with certain characteristics of the organization, which include the teachers' commitment, loyalty and satisfaction. On the other hand, an open school climate is associated with more engaged students and, implicitly, with a higher learning performance.

The scientific arguments suggest that an open, healthy, collegiality-based, highly professional and academic performance-oriented climate functions as a motivator of teachers and generates collective efficiency norms, which impact on school environment and shapes teachers' behaviors. When teachers feel that they can organize and perform their teaching successfully so as to boost students' performance, in other words, when there is a supportive school climate, the teachers are more engaged and responsible, they have more initiative and are motivated to enhance students' learning performance.

Therefore, the specific nature of the school climate is accountable for the teachers' behavioral features. Their behaviors influence the teaching and learning processes in classroom. The obvious conclusion that arises is that the teachers' professional satisfaction is a determining factor in the maintenance and improvement of students' learning performance.

3. The role of the managerial dimension of school in the culture – climate rapport

Following the analysis of several studies, Schneider and Smith (2004) posit the existence of a dependence relationship between individuals' personality and organizational culture. The analyzed studies revealed two aspects: on the one hand, the probability that groups of individuals with similar personalities are members of the same organization, and on the other hand, the joint differences in personalities are reflected in the organizational culture.

The authors show that the idea of a relationship between the individual personality and the organizational culture has its origins in Lewin's, Argyris's and McGregor's studies from 1939, 1957 and 1960. Lewin and his collaborators stated that the leader's behavior generates a social climate defined by the employees' reactions to the leader and their colleagues and also by their general behavior. A later version of the research initiated by Lewin and Stringer in 1968 shows that the leaders who adopt one of the leadership styles oriented on accomplishment, power or affiliation trigger in their employees the need to take on a similar behavior.

Similarly, Argyris concludes that the way the managers relate to their employees is consequently reflected in the employees' behaviors. Moreover, McGregor who adopts the same way of thinking and shows that the managers' behaviors towards their employees generate either a climate of trust and equity or a climate devoid of these features. The climate thus created has further effects on the way the employees behave in organizations.

Therefore, these authors indirectly state that the manager's behavior is a function of his personality. But, as McGregor stated, among other features the manager's personality reflects cultural characteristics: "I have analyzed a series of variables which greatly impact on the manager's behavior: his beliefs about the human nature and the cause – effect relationship of the human behavior (its cosmology), his perceptions about professional role pressures, his personal values, needs and perceptions about his own abilities" (in Schneider and Smith, 2004, p. 360).

Argyris was much more explicit in his interpretation of the cultural consequences of management. Argyris's research conclusions show: the characteristics of an organization's management (the author included formal organizations in his analysis) se impact on the employees' behavior and, implicitly, on organization's climate. Formal organizations seem to impose on their employees expectations which are inconsistent with adult personalities (dependence, subordination, indifference etc.) and these bring about negative effects on organizational climate: frustration, failure, conflicts. Therefore, the manager's personality, his assumptions about human nature, the values and behavioral norms that he adopts in organization are further echoed in the individuals' conduct and are also essential factors that contribute to the formation of organizational climate. Schneider and Smith (2004, p. 360) formulate the hypothesis according to which not all managers behave similarly, what leads to a further idea that organizations are characterized by distinctive features precisely because managers have different personalities.

3.1. The analysis of the culture – climate relationship from the perspective of *Person – Organization Fit*

The research has shown that the compatibility between the organizational culture and the individuals' values and expectations is desirable since the high degree of congruence between the individual and organizational values is directly responsible for the degree of the commitment of the individuals and also for the quality of organizational climate (Ch. A. O'Reilly, J. Chatman, and D. F. Caldwell, 1991).

The concept of *Person – Organization Fit* is part of the broader concept of *Person-Environment Fit*, where *the environment* is in fact the organizational context. This is a complex and encompassing concept that includes various types of fit that are mentioned in the field literature as: Person – Organization Fit, Person – Profession Fit, Person – Job Fit, or Person – Vocation Fit, Person – Person Fit and Person – Group Fit. We will further submit to analysis the concept of Person –

Organization Fit as it constitutes the object of our interest. *Person-Organization Fit* is generally defined as the compatibility between individuals and organizations. In the research focused on personnel selection, person – organization fit has been conceptualized as the match between potential employees and organizational features.

The research on person – organization fit has its origins in Schneider's (1987) *Attraction-Selection-Attrition* model. According to Schneider individuals are not randomly assigned to situations, but they are rather looking for circumstances that are more attractive to them. Eventually, individuals will be selected to become part of that situation and will contribute to the occurrence of that circumstance once they remain there. This model has been applied by Schneider to organizations. Organizations represent that kind of situation people are attracted to or are selected to become part of and where they choose to stay if they fit or which they leave if they do not.

In the foreign literature of the field the *fit between the organizational and individual cultures* that is the congruence between individual's and organization's values is dependant on several organizational variables such as professional satisfaction, personnel's commitment and performance. All these impact greatly on organizational climate. The concept of *person – organization fit* is broadly defined as the match between the individual and organization, the degree of similarity between individual and organizational features. The operational definitions of the concept take into consideration the following aspects (T. Sekiguchi, 2004, p. 182): the fit between individual and organizational values; the match between the leaders' and the organization members' goals; the congruence between the individuals' and organization's needs; the coincidence between individuals' personality features or behaviors and the organizational climate (viewed as the organization's personality).

As it can be easily noticed that the concept of *person – organization fit* brings together individual and organizational values, which should ideally be transformed into a similar behavior of both organization and its members and they should thus generate a positive climate.

In other words, the extent the individual adheres to the organizational values and goals will produce a certain kind of behavior in individuals and this behavior will further impact on organizational climate. The higher the degree of fit between the person and the organization, the more congruent the individuals' behavior and the more positive the organizational climate will be.

From this point of view, the school manager will play a very important role as a bearer of organizational culture. In performing his role, the educational manager develops a personal managerial style, which is imprinted by his personality and character features and also the values, assumptions and expectations connected with school. Thus, in his interpersonal relations with the other school participants, teachers and students, the school manager has to use all the instruments of school culture so as to guide school members to the accomplishment of school's mission and goals and to maintain the personnel's psychosocial balance, commitment and satisfaction.

In conclusion, the school manager's leadership style as the product of the osmosis between his own personality and organizational values and practices will greatly impact on the quality of school climate.

Conclusions

Although independent organizational variables made up of distinct features, culture and climate are major components of an organization and the former of the two has a determining influence on the latter. Thus, culture represents the subjective dimension of an organization, which consists of values, norms, assumptions and rules shared by all members of an organization. All these constitute the organization's identity. Climate, on the other hand, is the result of the personnel's subjective perceptions on the organization's culture, which are expressed in terms of attitudes and behaviors. Therefore, organizational culture plays an essential role in the development and maintenance of school climate.

As a subjective dimension of an organization which plays the role of an intermediate variable between the organizational and individuals' characteristics, climate develops within the system of interactions that occur between members of an organization and between these and the organization itself as a carrier of collective values and norms. The main characteristic of school climate is that it may affect and alter the personnel's behavior. That is why school culture may be either a strong motivator that leads to positive outcomes or a disturbing factor that inherently generates negative effects in organization.

Therefore, the organizational behavior consists in the attitudes and actions the organization's members choose to adopt in their interactions with the organizational environment as mere individuals or as representatives of certain groups. The understanding of organizational behavior as an important variable of organization is directly dependent on the individuals that are at the core of organizational life. If the behavior people adopt in organizations is a reflection of organizational cultures, then the climate is the outcome of the personnel's attitudes and behaviors or the psychosocial environment these generate.

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EVALUATION MODALITIES FOR ACADEMIC PERFORMANCE

DANA JUCAN[*]

ABSTRACT. The present study aims to identify which is the evaluation modalities applied in the measurement of academic performance. In order to discover them, we applied a semi structured interview to the students of Mathematics – Informatics Faculty, Mathematics department, a contingent of 72 interviewed subjects. The interview contains 10 questions about the evaluation modalities of academic performance. Therefore we present and analyse 5 questions from our interview. An analyse of the answers given by students highlight the fact that the most frequent form of evaluation is written exams, during half-yearly periods of examination. The students consider this form of evaluation as the most objective one due to the fact that it reflects with accuracy the knowledge and abilities level.

Keywords: evaluation, evaluation strategies, evaluation modalities, evaluation standards.

ZUSAMMENFASSUNG. In dieser Studie wollen wir die Methoden der Evaluation verwendet werden, um Studenten die akademischen Leistung zu beurteilen identifizieren. Für diese haben wir mit einer semi-strukturierten Interviews Studenten aus der Fakultät für Mathematik und Informatik, Fachbereich Mathematik, insgesamt 72 Personen. Das Interview umfasste 10 Fragen zu Evaluationsmethoden in der Universität eingesetzt. Zur Illustration präsentieren und analysieren wir die Antworten auf 5 der Interview-Fragen. Die Analyse der studentischen Antworten zeigen, dass die meisten oft von Auswerteverfahren, meinung Tests, in der Sitzung beurteilt. Studenten betrachten diese Methode der Beurteilung so objektiv wie genau messen die Kenntnisse und Fähigkeiten erwirbt.

Stichworte: Auswertung, Beurteilung Strategien, Evaluationsmethoden, Evaluations-Standards.

As component of the educational process, evaluation means to verify, to measure, to note and to contend the academic results, reporting them to the initial objectives, in order to decide the best strategy for the following stage of educational activity. During the evaluation process, professors are continually using evaluation standards, which express in a concise and coherent form a desired and optimum level for the cognitive and behavioural abilities of the students, in order to accomplish

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very specific educational objectives. Evaluation standard have a normative component and represent patterns for professors in order to exactly establish the level of the students' knowledge. It also offers to the professor a core element for relative objective valuing and comparison of the students' academic activity. Aiming to establish a reference between the real and the desired results of the educational process, **evaluation strategies** represent a component of the educational process that validates, confirms or disprove acquirement of educational results. Evaluation modalities are methods and instruments used by evaluators in order to obtain information regarding the academic efficiency of the students, their performances and knowledge and abilities level, thoroughly reporting them to pre-established objectives and scientific contents.

The present study aims to identify which is the evaluation modalities applied in the measurement of academic performance. In order to discover them, we applied a semi structured interview to the students of Mathematics – Informatics Faculty, Mathematics department, a contingent of 72 interviewed subjects. The interview contains 10 questions about the evaluation modalities of academic performance. Therefore we present and analyse 5 questions from our interview.

Question 1
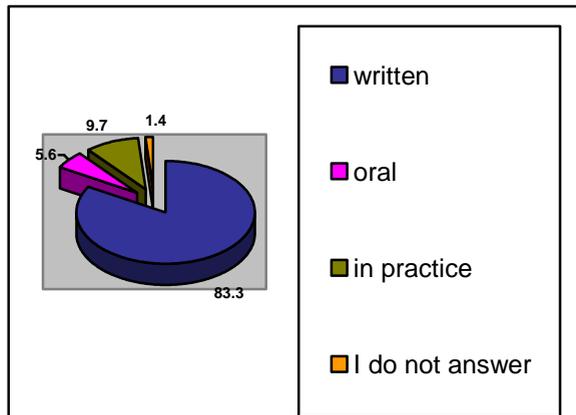
Which are the most frequent modalities for your evaluation?	Answers (%)
written	83.3
in practice	9.7
oral	5.6
I do not answer	1.4

We observe that the most frequent evaluation modality used by professors is the written evaluation, 83.3% of the students' answers; evaluation in practice is used in percentage of 9.7; the oral evaluation is has a 5.6% in usage. The written

evaluation is preferred by professor possibly due to the numerous students of a department or faculty.

Question 2
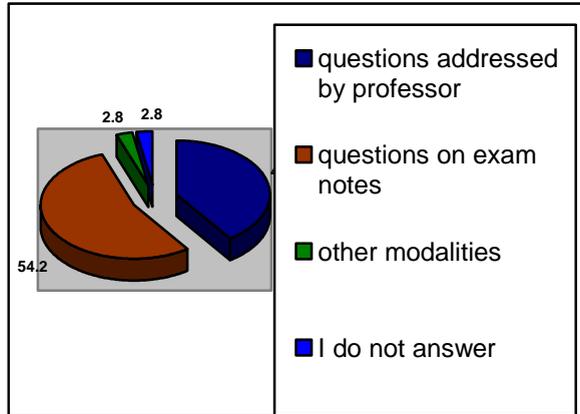
Which are the most frequent modalities of oral evaluations?	Answers (%)
questions on exam notes	54.2
questions addressed by professor	40.3
other modalities	2.8
I do not answer	2.8

The oral evaluation mostly concretizes in exam notes (54.2%) and questions addressed by professors (40.3%).

Question 3
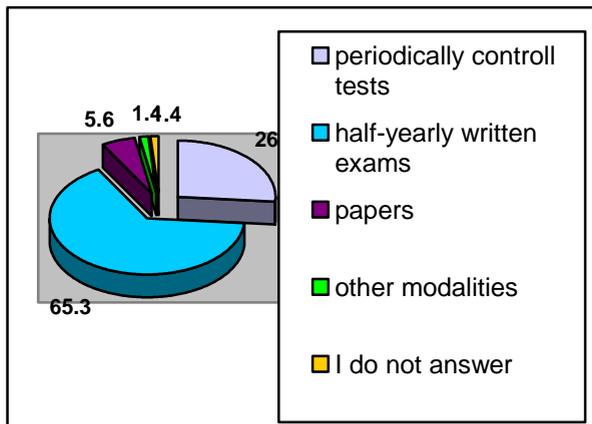
Which are the most frequent modalities of written evaluation?	Answers (%)
half-yearly written exams	65.3
periodical control tests	26.4
papers	5.6
other modalities	1.4
I do not answer	1.4

The students are most frequently written evaluated through half-yearly written exams (65.3%) periodical control tests (26.4%)and papers (5,6%).

Question 4
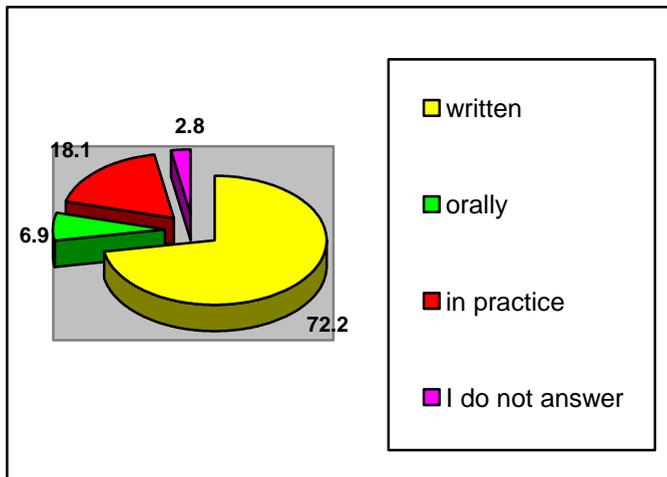
Which evaluation modality do you consider as most objective?	Answers (%)
written	72.2
in practice	18.1
oral	6.9
I do not answer	2.8

Students consider that the written evaluation modality is the most objective (72.2%), oral and in practice evaluation being less objective (6.9% and 18.1%).

Question 5
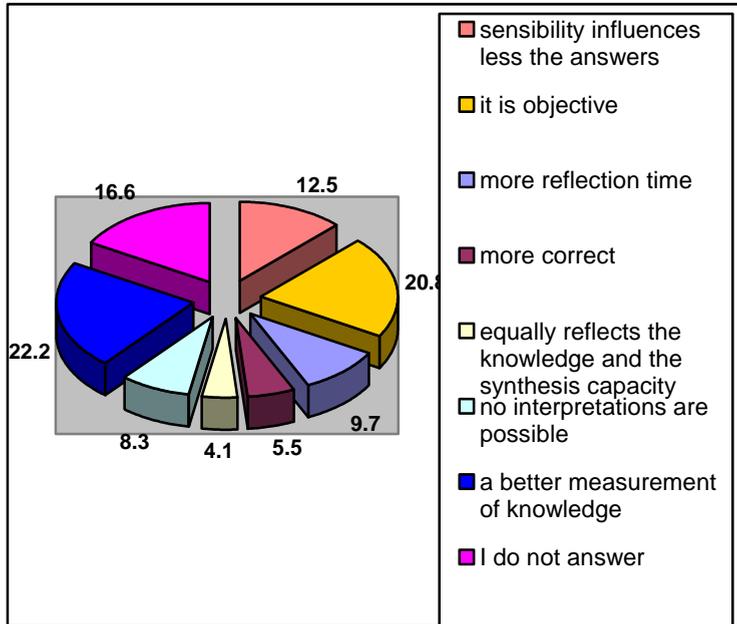
Contend your answer to the previous item	Answers (%)
a better measurement of knowledge	22.2
it is objective	20.8
I do not answer	16.6
sensibility influences less the answers	12.5
more reflection time	9.7
no interpretations are possible	8.3
it is more correct	5.5
equally reflects knowledge and synthesis capacity	4.1

Students consider that written evaluation is objective because it is a better measurement of knowledge (22.2%), professors are not subjective (20%), the students' answers are not influenced by sensibility, the reflection time is longer etc.

The students' answers highlight the fact that the students are the most frequent written evaluated, during half-yearly exams. The students consider this evaluation modality as the most objective due to the fact that it offers an exact evaluation of knowledge and abilities.

We plead instead for a continuous evaluation, during the entire semester, not just in half-yearly exams. We appreciate that our proposal has the capacity of eluding paradox situations, the grades becoming a mirror of the quality and academic knowledge level. The students may also have the opportunity and impulse to better

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dose their learning effort, reducing the postponement between the knowledge from the teaching process and the knowledge from the learning process. Evaluation process must stand, in our opinion, on the development of the students' thinking capacity, soliciting contended, logical answers and transforming evaluation into a formative content. **A rhythmic evaluation** of the students ensures active participation to courses and seminars, a total involvement into the teaching – learning process. **Rhythmicity of the evaluation** contributes to the enhancement of the working style of the students and gives a clearer image upon the students' and professors' activity. Evaluation contribution to the educational process has to be analysed in its all and various aspects, because evaluation is reaching its aim only applying the principles of the modern didactics, based on the unity between the students working capacity and their efforts.

We consider as important for a better academic evaluation:

✓ An exact and rigorous formulation of the educational process, followed up by evaluation; a rigorous formulations of the minimum accepted level of knowledge, also the criteria of the academic evaluation;

✓ A combination of evaluation modalities (written, oral, practice etc.) to appreciate the same educational objective, doubled by informing the students upon their deficiencies observed during each evaluation;

✓ A combination of internal evaluation (applied by the teaching professor of the discipline) and external evaluation (applied by other specialised professors), also informing the students upon the results of the combined evaluation;

✓ Using the method of grouped comparative appreciation;

✓ Using the half-time technique, meaning the split of the test into two parts, equal as relevance and difficulty, evaluating each part separately and finally combining and establishing correspondences between the evaluation of the two parts of the test;

✓ Using detailed evaluation grids, characterized as unitary but splitting the evaluated item into sub-items, with separate evaluation scores, according to a pre-established convention

✓ Using docimologic tests consisting of sets of questions or themes relevantly covering the entire tested area and permitting the construction and the usage of a score;

✓ Planning for each discipline evaluation referential (general systems from which are deriving and to which are reported criteria) and performance descriptors (operational indicators, directly observable into the academic performance and into the results and products of the academic activity);

We recommend the practice of *a formative academic evaluation, sustaining the learning process*, ensuring each student information about his/her educational evolution and offering the opportunity of self-monitoring the learning process and consciously constructing the knowledge progression, *where the regulation of the activity is very important and has priority for the educational strategies of the professor.*

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COMMUNICATION SYSTEMS USED IN THE EDUCATION FOR THE DEAF AND HARD OF HEARING STUDENTS

MARIA ANCA[*], IOANA MUREŞAN[**]

ABSTRACT. There are different communication systems that coexist in the Romanian teaching system and many educational experiments have been undertaken in search for solutions to increasing the efficiency of the teaching-learning process. Teachers working with deaf students have been questioned in this study to find out the communication systems they consider to be efficient and the ones they use in their teaching activity and in communicating with deaf and hard of hearing students.

Keywords: communication systems, sign language, total communication, bilingualism

ZUSAMMENFASSUNG. Effektive Kommunikations-Systeme verwendet in der Ausbildung von Schülern mit Hörproblemen: In dem rumänischen Bildungssystem findet man viele Kommunikations-Systeme nebeneinander und es werden eine Reihe von pädagogischen Experimenten geöffnet, die Lösungen suchen, um die Effizienz des Lehrens und Lernens bei Schülern mit Hörproblemen zu verbessern. In dieser Studie werden Lehrer über Kommunikationssysteme gefragt, die sie als effektiver erkennen und die sie sowohl in der Lehre wie in der Kommunikation mit Hörgeschädigten Schülern benutzen.

Schlüsselwörter: Kommunikations-Systeme, mimisch-gestische Sprache, gesamte Kommunikation, Bilingualität

1. Conceptual foundations

1.1 Teaching communication systems

The efforts towards a better inclusion of the deaf and hard of hearing students have been materialized in time into a series of undertakings that helped implement programs that promoted verbal communication, signing, total communication and bilingual communication systems. Romanian or Hungarian are used for teaching in the Romanian schools for the deaf, and sign language is used as an instrument of support for delivering contents for different subjects.

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But what happens with the deaf and hard of hearing students which come from hearing families and don't have sign language as their maternal (native) language? We can talk about bilingualism in the case of deaf children that have sign language as the maternal language and Romanian as the second language. Instead, the ones that do not have sign language as their native language, the linguistic barrier is even higher and so are the risks to retard the acquisitions of school contents.

The hearing community in our country has little information on the deaf culture and language, and that is another barrier that prevents the deaf and hard of hearing person's inclusion.

1.2 Sign language

Both outsiders in the linguistic field and some linguists often consider sign language as being inferior to phonic languages. Thus, even Saussure, the founder of contemporary linguistics, traces a line between spoken language and other symbolic systems, including the language of the deaf, placing those systems at an inferior level. The oral character of language requires a successive time order of the signifier *elements* and allows the developement of a chain with an essential linear structure (Saussure, 1916, quoted by Benoit Virole, 2000, pg. 164), and that is discordant with the particularities of signed communication. The distinction between the linear structure and simultaneity is one of the conditions that make the difference between native users of sign language and the one that are bilingual or tardy (late) sign language users. Those differences are reflected in the phonological processing tasks of lexical, semnatic, syntactic contents, such as the ones used at the discipline of Romanian language and literature, or other disciplines.

Sign language has gaind over time the status of a language on its own right, with official recognition in different countries from different continents. Also, the psycholinguistic and psyho pedagocical studies have demonstrated the values and possibilities of sign language, aspects that plead to its status of maternal language for the minority represented by the deaf community.

Dictionaries are some useful instruments used to promote and ensure access to sign language. Along the publications in our speciality field, such as the *Romanian Sign Language Dictionary* (2003), published by the "Bodgan" Foundation with the help of the Cluj-Napoca City Council and Cluj City Hall, we need to mention the on-line Romanian Sign Language Dictionary (www.dlmg.ro). The dictionary was elaborated withing a pilot project and had educational models from UE (the sign language dicitonary with graphic images form Italy - *Immaginario. Immagini per un abbecedario. Comunicare coni segni, 2003, Osmannoro, Italia*) and from USA (*Signs for instruction. Reference manual of preferred South Carolina Signs*, 1987, South Carolina - a dictionary of great succes in the american social and educational field, elaborated by Innez Moore Tenenbaum).

1.3 The manual alphabet

Experts in this field know that the manual alphabet reflects the characteristics of verbal systems and especially the written systems, phonografologic alphabets (Perier, 1987 apud Lepot-Froment, C., Clerbaut, N., 1996). Although many Romanian and foreign authors emphasize the difference between the manual alphabet and sign language, including the ones regarding the implications on cognitive development and, obviously, on reading and writing aquisition and on all other school aquisitions, confusions regarding the particularities of the manual alphabet and sign language still persist. For example, according to Pufan (1982), the manual alphabet is an aid in the development of notional verbal cognition, while sign language is related to visual thinking. One of the effects with great impact on phonological awarness is the contribution in reproducing the phonemic and syllabic structure of the word, by keeping the number of these structures and their sequence.

Users of sign language use manual alphabets when there are no conventional signs for particular words, where the signs are obscure or unknown (Marschark, Lang, Albertini 2002).

1.4 Total communication

The total communication method is considered by some specialists as a connecting bridge between oral and manual methods. It also allows the combination of different communication systems that have a complementary role. One problem is that in order to be efficient, total communication needs a systematic implementation. This is something that does not happen in a lot of educational contexts, thus affecting the school acquisitions and the communication situation. Therefore, this approach is http://hallo.ro/search.do?l=ro&d=en&query=tocriticized and many schools are reticent in using it. One critical attitude might be resumed by the expression „total communication or total confusion". (Ogden, Paul W. (1996). *The Silent Garden*. Washington DC: Gallaudet University Press.)

Lepot-Froment şi Clerebaut (1996) offered one synthetic and functional definition: *each deaf child must be helped in developing the communication modalities that are the most convenient for him and that are suitable for the exigencies of his living environment*.

Marshark (1993) makes the difference between *simultaneous communication*, which refers to the simultaneous production of speech and signs, and *total communcation*.

1.5 Bilingualism

In the case of deaf children education, the bilingual approach means to accept the sign language as the first language and the language of that country as the second language, especially its written form.

Some authors think that the bilingual approach attempts to address shortcomings of total communication. In the bilingual approach sign language is used for school and social purposes and represents the linguistic support to learning the second language. There are educational programs that have adopted bilingualism as the approach system for deaf education. Among these we mention the case of Indiana School for the Deaf, USA (Joseph David Geeslin, 2007) and the Swedish and Danish schools. They report successful educational experiments in the field of deaf education, especially due to the systematic introduction of bilingual programs (Mahshie, Shan, 1995).

We consider this to be a very productive direction because it would allow deaf and hard of hearing students to acquire the linguistic competencies of different levels in sign language and verbal language (oral and written). The latest will no longer be the only modality used to teach content for different disciplines, and its level will no longer hinder the learning process.

Bimodality, the simultaneous presentation of the oral and gestural elements, might be one viable option for the hearing parents of deaf children who want to succeed early in communicating with their children.

2. Methodology

The present study is part of a more ample study, which has the following general objectives:

1. To inform the hearing population on Romanian sign language and culture of the minority represented by the deaf community.

2. To facilitate the communication between hearing community members (employees of public local and regional institutions, parents of deaf and hard of hearing children, families) and the deaf community.

3. To ensure acces to information to deaf community members by interpreting some TV shows in romanian sign language.

4. To select some linguistic structures from different professional environments of public institution, interpreting this structures in sign language and posting them on the web site.

5. To enrich the active vocabulary of the deaf population (words and phrases useful in different communicational contexts, specific to different professional environments)

In the present study we wanted to radiograph the opinions and attitudes of teachers for the deaf and hard of hearing students who work in a specialized school institution. A questionnaire has been developed for teachers. It contains 14 questions with closed answers, the number of possible answers varying between three and six. In some cases, the items contain both closed and open- ended answers.

According to the directions targeted by the contents of the questions, these might be grouped as follows:

a) informations regarding the nature and level of studies of the teachers that work with deaf and hard of hearing students, and their experience in the field;

b) the communication systems used with deaf and hard of hearing students in curricular and extracurricular activities, and in different communicational contexts;

c) material and procedural resources used in the process of teaching and learning sign language; the age and identity of possible sign language users and the ways that these users might have access to this communication system.

The content of the questions coresponds to the specific objective of this study.

Specific objectives:

1. To identify the communication systems used by teachers who are specialized in teaching deaf and hard of hearing students (oral communication, signing, bilingualism, fingerspelling) and the communication situations in which they are involved.

2. To identify the modalities used in acquiring sign language and the systems used by teachers to support the communication with the deaf students.

Participants

Fourty six teachers who work with deaf and hard of hearing students, teaching elementary, middle and highschool levels, answered the questionnaire.

Results

The data collected was compiled in a data base and was statistically processed with SPSS.

17. Descriptive statistics have been used and the Pearson correlation has been applied. We will mention some of the most relevant results.

Regarding the methods considered to be efficient in communicating with deaf students, the most predominant answer was total communication, no matter the seniority in deaf education. Sign language and oral method were next, as *Table 1* will show.

Seniority and communication methods used in the teaching process
$seniority*$methods_teaching Crosstabulation

			Communication methods[a]					Total
			LMG (sign lang.)	oral	bilingualism	total com.	finger spelling	
Seniority. d.a[a]	0-5 years	Count	6	5	2	19	3	22
		% of Total	13,6%	11,4%	4,5%	43,2%	6,8%	50,0%
	5-10 years	Count	3	3	0	6	2	7
		% of Total	6,8%	6,8%	,0%	13,6%	4,5%	15,9%
	over 10 years	Count	5	8	1	13	2	17
		% of Total	11,4%	18,2%	2,3%	29,5%	4,5%	38,6%
Total		Count	12	14	3	37	6	46
		% of Total	27,3%	31,8%	6,8%	84,1%	13,6%	100,0%

The correlation coefficient is $r = .664$, $p < 0.01$, which indicates the need of the teachers to combine the oral method used in communication with sign language. A negative correlation emerged in the case of the bilingual approach and total communication, on one hand because the ones that choose total communication exclude or limit the use of other communication systems, and on the other hand because of the persisting confusion related to the two systems mentioned above ($r = -.673$ la $p < .01$). In the same train of thought, the manual alphabet is associated both with the use of sign language ($r = .556$, $p < .01$) and oral communication ($r = .532$ la $p < .01$).

We can find significant correlations between the methods and communication systems used in the teaching process and in the communication situations with deaf students, not just in the formal and curricular activities, but also in the extracurricular activities and daily teacher-student interaction situations.

Teachers who extensively use sign language declare that they use it both in the teaching process ($r = .059$ la $p < .01$) and in the daily communication situations, outside the classes, which indicates that the ones with good sign language skills prefer this communication system both in the informal and formal situation, thus facilitating and intensifying the information exchange.

We need to mention the fact that the teachers who use the oral method outside the classes, also use it in the teaching process ($r = .055$ la $p < .01$), but along with sign language ($r = .758$ la $p < .01$). The manual alphabet is widely used by teachers in different communication situations, but also in the teaching process at all school levels. This is illustrated by the positive correlation at significance threshold $p < .01$. This shows that the use of manual alphabet is extended beyond the first four years of schooling, when it is used in association with graphemes, and that deaf and hard of hearing students from middle and highschool also use fingerspelling

in communicating with their teachers, both during class time and outside of class time. We consider this situation to show the need of a supporting system that might be used to complete the oral method and communication system, and also the sign language. In Romania, there aren't any supporting systems similar to Language parle complete (LPC), ansamble de kineme assistee (AKA), both associated with French, or Cued Speech associated with English.

These acknowledgements might indicate a new research direction regarding the use of the manual alphabet in school situations, to point out the effects on reading tasks. Many studies have been undertaken in the romanian pshycho pedagogy which demonstrated that the use of the manual alphabet in reading after fourth grade has negative influences over its fluency (Pufan, 1982). One explanatory hypotesis is that fingerspelling has a negative impact on the comprehension of the reading material due to its analytic character given by the association phoneme-grapheme-manual letter, which results in an excesive fragmentation of thought.

Question 9 asked teachers to express their opinion on the necessity of using sign language in deaf education. Only one person considers sign language unnecessary, the rest of the repondents (97,8%) consider sign language as being not only useful, but also necessary. There is also a consensus in opinions regarding the age at which sign language should be introduced to deaf children, most teachers consider that it is necessary to introduce sign language at an early age. The distribution of the answers is illustrated in *Figure 1*.
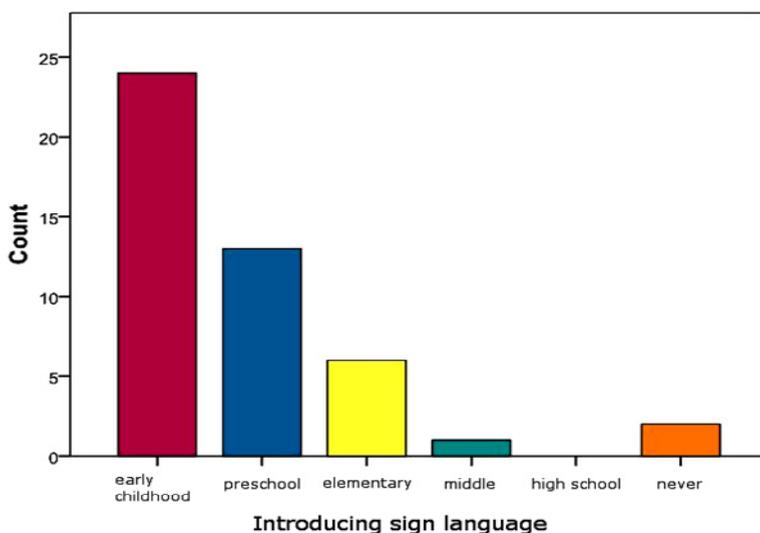
Figure 1. *The age sign language should be introduced*

javascript:void(null)The positive and significant correlation (r =.436 la p< .01) that has been made between the statement of some of the teachers who declare that

they did not graduate special education training modules and also do not know any instruments that would assist them in learning sign language, must be a warning signal both for the persons who train teachers and their employers.

The graduates of Special Psycho Pedagogy, bachelor and masteral level, declare that they use instruments that assist them in learning sign language, as *Figure 2* shows. Regarding the instruments used, these are very diverse and express a certain preference for a particular type, as *Table 2* will illustrate.
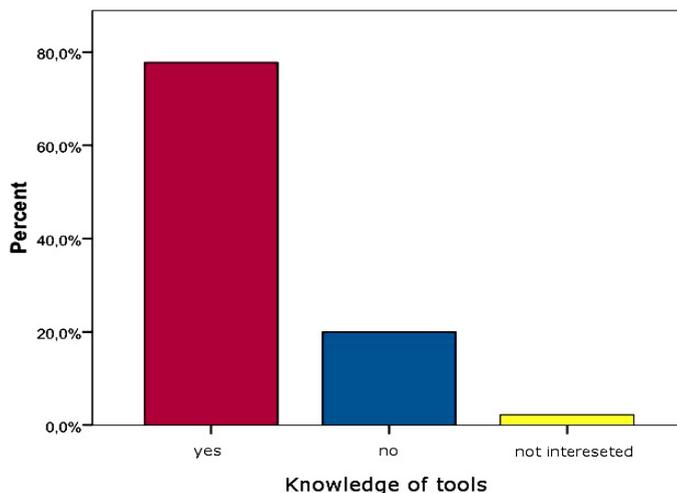
Figure 2. *Knowledge of tools*

Table 2.

Tools used in learning sign language

$the use Frequencies

		Responses	
		N	Percent
Tools[a]	dictionaries	19	24,1%
	manuals	16	20,3%
	classes	7	8,9%
	DVD/CD	27	34,2%
	I do not use	10	12,7%
Total		79	100,0%

Conclusions and perspectives

Total communation is a system that combines elements from the other communication systems: sign language, oral communication, manual alphabet, etc., and which can be used in proportions that differ from one person to another, according to the child's needs and posibilities, but also to the experience of the user. If the information on total communcation were correct, if the teaching experiences in which it is used were positive, then the repondents would have excluded the other methods (which are already included in total communication) or they would have given more specific answers at the open questions regarding the degree in which these are used. We intend to clarify the conceptual foundations regarding the communication systems known by the teachers and to make available for them the elements that would help differentiate between the different methods and communication systems used in deaf education.

The identified need for a supporting communication system might be the starting point for experimental studies whereby try to elaborate such systems, associated to Romanian. Furthure on we will also investigate the difficulties deaf and hard of hearing students have accessing different communication systems used by teachers, and also their preferences for one or the other of these systems in different communication contexts.

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PERSPECTIVES ON THE PREVENTION OF LEARNING DIFFICULTIES RELATED TO LANGUAGE STRUCTURE

CAROLINA HAȚEGAN∗, ADELA GÂLGĂU∗∗

ABSTRACT. Through this research is emphasized the value of MLU-morphemes (Mean Length of Utterance), MLU-words and of the number of morphemes and words collected based on the procedure of calculating MLU (50 statements collected from child`s spontaneous speech), in relation with children`s performance in Reversal Test, in order to identify the predictive value of these tasks for lexical-graphical abilities structuring. The obtained results prove MLU-morphemes and the identified number of morphemes predictive values, compared with the performance obtained in Reversal Test.

Keywords: *mean length of utterance, reading-writing abilities, learning difficulties, morphological competence, speech complexity, Reversal Test.*

ZUSAMMENFASSUNG. In dieser Studie "**Morpholigische Verarbeitung-prädiktiver Faktor für Lernschwierigkeiten"** ist das Wert der mittlere Länge der Äußerung MLU (Mean Length of Utterance)- Morpheme, MLU- Wörter und die Anzahl der quantifizierten Wörter und Morpheme auf Basis der Verfahren zur Feststellung der MLU (50 Äußerungen aus der Spontansprache derKinder) in Bezug auf der Leistung der Kinder in der Umkehrungstest (Reversal Test), der prädiktive Wert dieser Proben zur Strukturierung lexikalisch-grafische Fähigkeiten zu erkennen. Die Ergebnisse zeigen, den prädiktiven Wert von MLU-Morpheme, und die Anzahl der Morpheme identifiziert, in Bezug auf dem Reversal Test.

Schlüsselwörter: *mittlere Länge der Äußerung, lese-schriftliche Fähigkeiten, Lernschwierigkeiten, morphologische Kompetenz, Sprechkomplexität, Umkehrungstest (reversal test)*

I. Theoretical background

1. Mean Length of Utterance – MLU (La mesure de la longueur moyenne de production verbale - LMPV) indicates the level of morph-syntactic development, specifying the level of language proficiency with the implications in both oral and written language therapy. This assessment is used in the Francophone and in the

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Anglophone space, for people ordinary developed or people with cognitive disabilities. Brown, (1973); Rondal, (1978); Lambert and Sohier, (1979); Lambert, (1981), Betty Hart, (1996) are few of the researchers who used this assessment of developing language (apud Popovici, 1994).

2. Ways for Mean Length of Utterance inventory

For establishing the complexity of the utterance, there are two distinguished perspectives of computing MLU in literature (Paul, 2007), correlated with the number of the new distinct words that can be identified at the level of the analyzed utterances. (Hategan, 2009)

2.1.MLU in Morphemes

Mean length of utterance calculated upon the basis of the morphemes belonging to the utterances, represents a generalized technique in the foreign specialized literature beginning with 1973, when Brown distinguishes it as a method of evaluating the complexity of the verbal productions.

The advantages of using this method are given by the fact it represents a better prediction instrument than age, for establishing the morphological and syntactical complexity of the children's utterances. Brown (1973 apud Hickey, 1991) emphasized a greater variety in the development of the complexity of the utterances from a syntactic point of view, compared to age, identifying MLU in morphemes as an element with a greater prediction value in identifying the learning difficulties. 2.2.MLU in Words

The lexical unities that have been collected are divided according to the utterances taken into account. In order to emphasize the prediction capacity of the MLU-words, by comparison to the MLU-morphemes – regarding learning difficulties (studies meant to underline the fact that the two quantification methods represent in fact two facets of the same phenomenon) correspondences between the two identified values have been calculated. In the majority of studies that have been made, correspondences between MLU-morphemes and MLU-words were numerous. (Hickey, 1991; Hart, 1996; Rosenthal-Rollins; Snow; Willett, 1996; Arif; Bol, 2008). These results highlight the fact that these two procedures represent in fact two ways of materialization of the same psycho-pedagogical dimension, which is the morphological and syntactic complexity of the verbal productions.

Also, the values that have been obtained by computing of the MLU-words have been compared to the ones obtained by the application of some specialized tests meant to underline the morphological complexity. Following the same idea, we can mention the study coordinated by Hickey (1991), in which the researcher compared the morphological performance of the children – by computing MLU-morphemes, MLU-words and by applying the LARSP test, adapted to native Irish speaking population (LARSP-*Language Assessment, Remediation and Screening Procedure*, test which can determine the phases of the morphological development). The comparisons have indicated the fact that the level of development of the morphological

abilities and the complexity level of the verbal productivity are established in a similar way by the three psycho-pedagogical methods that were used.

Thus, we can highlight the fact that MLU-words – a less complex procedure from the point of view of the necessity of adapting it to the specific of every historical language, can be used as a reliable and functional alternative for tests – oriented on the grammatical dimension of the language- as well as the MLU-morphemes method. In the following study we shall try to emphasize the same aspect – for Romanian language.

3. The relationship between the morphological analysis, phonological processing and the acquiring of the writing-reading skills.

The relationship between the morphological processing and other types of processing, having in view highlighting of the importance of the morphological process and of its screening value in the domain of learning difficulties, is emphasized by a series of studies and researches. (Hategan, 2009)

Carlise and Nomanbhoy, (1993) gave more importance to two aspects concerning morphological awareness. The first aspect refers to the relationship between the phonological analysis and the morphological analysis, to the way in which the performance related to the phonological analysis explains the performance in the context of morphological analysis. The second aspect has in view the determination of the degree, up to which the capacity of phonological analysis and morphological analysis correlate to the lexical ability. The evaluation type of the morphological awareness includes production tasks and comprehension tasks, as well. The results have shown that the phonological awareness tests contribute in a significant way to the registration of some greater performances in the case of the morphological awareness tests. Moreover, the children who register high results at phonological analysis tasks, obtain better results in the more complex word production tasks (from a morphological point of view), compared to those whose results at the phonological analysis tasks place them at the lowest level.

The phonological awareness and the morphological awareness contribute in a significant way to the structuring of the lexical abilities. The morphological awareness offers a significant advantage in the processing of various contexts, in the case of a word.

In another study, Carlise, (1995) evaluated the prediction dimension of the phonological awareness and of the morphological awareness correlated to the level of the reading abilities, acquired by children in their first year of school, or in the second year of school. The results demonstrate the hypothesis according to which the morphological awareness is directly involved in the lexical act, especially at the level of comprehension.

Elbro; Armback, (1996) highlight the fact that in the same way that the phonological awareness plays an important role in treating the reading "by letters", the morphological awareness has an important role in understanding the construction of the words.

In a longitudinal study, the same authors (Elbro; Arnback) emitted the hypothesis according to which dyslexia consists of a low capacity of meta-morphological processing. The morphological awareness manifests entirely most of the time at the level of morphemes with flexion. Thus, it is compared the performance of the dyslexic pupils – with an age between 1, 7 – 17,3 years old, with the one of the ordinary developed subjects, through several tests: counting of the words in a phrase; construction of the flexions, derived forms and the construction of pseudo-words; inversion of the morphemes in a compound word; morphological synthesis; morphological completion. In the case of counting, inversion and completion tasks, Elbro; Arnback, (1996) identify differences between dyslexic children and ordinary developed readers of the same age, in the acquisition of lexical abilities, the identified differences being situated at the level of morphological awareness, the diagnostic of the dyslexic children being established on the basis of the measurements made at the morphological level.

Leong, (1989) has studied the lexical performances of the poor readers in relation to their abilities of morphological analysis. The task was the completion of phrases and its aim was the insertion of complex words from a morphological point of view in adequate communication contexts. The subjects had to read on a screen incomplete phrases which they had to fill in with flexions of a given root or by derivation from the lexical base. It has been registered the answering time and the results have been analyzed according to the modifications between the root and the derived form.

Two aspects have been revealed: the first refers to the fact that the speed of reaction varies depending on the phonological and/or the spelling modifications between the root and the derived word; the second aspect points out distinct subcategories among poor readers, the inter-individual differences being obvious.

Taking into consideration the fact that the studies presented above highlight the importance of the morphological processing related to the phonological and lexical processing, in the following study we will try to reinforce the prediction dimension of the morphological processing, put in relationship with the proofs that investigate visual-spatial perception abilities, more precisely the Reversal test, whose prediction role in identifying at a young age the learning difficulties, has been demonstrated (Oltea Laura Ban, 1997).

II. The Design of the Research

4. Objectives

- Emphasizing the relationship between the number of words and the number of morphemes by the application of the MLU (Mean Length of Utterance) in the context of the Romanian language;
- Establishing the relationship between MLU - in words and MLU – in morphemes in the context of the Romanian language;

- Emphasizing the relationship between "The Mean Length of the Verbal Production" and "The Reversal Test".

5. Hypothesis

- between the number of words and the number of morphemes there are significant differences in Romanian language (from a statistic point of view)
- between MLU-in words and MLU-in morphemes there are significant differences in Romanian language (from a statistic point of view)
- there is a significant correlation, from a statistic point of view, between the results obtained at MLU-morphemes and MLU-words and the Reversal Test, which demonstrates the prediction value of the MLU in the case of the learning difficulties.

6. Participants

There have been selected 30 children, for the study, from the "Dumbrava Minunata" Kindergarden from Zalau. The children are between 6.6 – 7 years old, and at the moment of the test they were at the end of the preparatory class (in June, 2011). Thus, the main criterion of selection is the level of education (and implicitly, the age) given the fact that the morphological abilities may constitute a reliable indicator, with a screening value concerning learning difficulties related to the structuring of the language (Lecocq, 1996; Elbro, 1996; Catts est al., 2000; Carlisle, 2004; Paul, 2007), as well as the application of the Reversal Test.

7. Means that have been used

There have been collected for the study, a number of fifty utterances from the spontaneous speech of the participants and it was calculated the number of words, morphemes as well as the MLU, having in view the number of morphemes (MLU- morphemes) and the number of words (MLU-words).

It has been applied, as well, the Reversal Test, and it has been quantified the number of errors and the number of correct answers. This test has been used in order to demonstrate the utility of computing MLU – which has a prediction value for the acquiring of the reading-writing skills. The common point of the two tests: MLU and Reversal is given by the fact that both investigate facets of the pre-acquisitions needed in the structure of the spoken and written language.

8. Results and discussions

Due to the fact that Romanian language is a more analytical language compared with English, proving a greater number of morphemes, there can be identified significant differences between the identified number of morphemes and words, as well as between MLU-morphemes and MLU-words. In order to assess

this research hypothesis t parametric test for paired samples was used as the results obtained are characterized by homogeneity.

Table 1.

T test for paired samples morphemes-words; MLU-words-MLU-morphemes

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	words - morphemes	-55,53333	28,14339	5,13826	-66,04225	-45,02442	-10,808	29	,000
Pair 2	mluwords - mlumorph	-1,10067	,41110	,07506	-1,25418	-,94716	-14,664	29	,000

The results prove the fact that our first two hypothesis from this research are confirmed, the differences being significant in p<.01(Sig. (2-tailed)=.000). Thus, in the case of the words and morphemes t test value is t=-10,808 (p<.01), and in the case of MLU-morphemes and MLU-words t test value is t=-14,664 (p<.01). T test has negative value as the number of words and MLU-words is smaller than the number of morphemes and MLU-morphemes.

Taking into consideration these results in Romanian language for assessing utterance complexity, there can be delimitated two different directions, one of lexical, even semantic nature, and the other one of morphologic nature. Thus, in Romanian language the two ways of assessing can be associated with two subtypes of language impairments, impairments based on morphologic deficit and impairments based on lexical deficits. This perspective fits in the neuro-linguistic approach, this differentiating between the two subtypes of language impairments (Van der Lely, Stollwerck, 1996; Bishop et al., 2000 apud Hațegan, 2010).

Even if specialized literature (Hickey, 1991; Hart, 1996; Rosenthal-Rollins; Snow; Willett, 1996; Arif; Bol, 2008) considers MLU-words as a easier to use version of MLU-morphemes assessment tool, through this research we promote the assumption that MLU-words and MLU-morphemes are two different assessing tools that offer us the possibility of a more complex assessment of linguistic abilities, predictor factor for acquiring lexical-graphical abilities.

For confirming the tight relation between morphological and lexical processing and for supporting the implementation of MLU-words and MLU-morphemes procedures, considering them as two ways of operationalizing of the

same psycho-pedagogical construct, fallowing two distinct dimensions, we appealed to a correlation study. Thus, there were calculated correlations among MLU-morphemes and MLU-words, as well as between the number of morphemes and the number of words collected by applying MLU-principles. The correlation between morphemes and words was calculated in order to prove the fact that MLU procedure is valuable one, it offering us different possibilities for using it with psycho-pedagogical value.

Table 2.

Corelations between MLU-words and MLU-morphemes

		mluwords	Mlumorph
mluwords	Pearson Correlation	1	,910[**]
	Sig. (2-tailed)		,000
	N	30	30
mlumorph	Pearson Correlation	,910[**]	1
	Sig. (2-tailed)	,000	
	N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3.

Correlations between words and morhemes

		mluwords	Mlumorph
Words	Pearson Correlation	1	,823[**]
	Sig. (2-tailed)		,000
	N	30	30
morphemes	Pearson Correlation	,823[**]	1
	Sig. (2-tailed)	,000	
	N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

Both correlation as statistically significant r=.910 between MLU-words and MLU-morphemes (p<.01) and r value, calculated between the number of words and the number of morphemes being r=.823 (p<.01). By identifying a strong correlation between MLU-morphemes and MLU-words we can state that in Romanian language results are similar with the one obtained in international specialized literature regarding this problem, aspect that offer us the possibility to recommend using MLU-words as valid alternative for MLU-morphemes, despite the fact that between MLU-words and MLU-morphemes we registered significant differences.

In this research we also calculated correlations between MLU-words and the results obtained in Reversal test, between MLU-morphemes and Reversal, as well as between the number of words and Reversal, and the number of morphemes and Reversal.

Table 4.

Correlations between Reversal and words and Reversal and morphemes

		Words	Morphemes
revcorrect	Pearson Correlation	,283	,525[**]
	Sig. (2-tailed)	,130	,003
	N	30	30
reverrors	Pearson Correlation	-,283	-,525[**]
	Sig. (2-tailed)	,130	,003
	N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

Significant correlations, from a statistical point of view, were established between the number of morphemes and the performance in Reversal test, r=.525 (p<.01). There is a positive association between the number of morphemes and the number of correct differentiated images in Reversal test, while there is a negative correlation between the number of morphemes and the number of errors registered in solving Reversal test, thus the fewer errors are identified, the greater the number of morphemes is (r=-.525 (p<.01). this aspect proves the fact that this research approach is a valid one, Reversal test, as well as calculating the number of morphemes based on MLU procedure, can be used as psycho-pedagogical tools with predictive value for learning difficulties. Oltea Laura Ban, (1997) underlined the importance of using Reversal test and its predictive value in order to ensure an early identification of the children that are to develop lexical-graphical learning difficulties later on.

Between the number of words and the performance in Reversal test are calculated correlations insignificant from a statistical point of view, proving the fact that morphologic structuring has a more sure predictive value for learning difficulties, this being associated with the performance in Reversal test. An explanatory hypothesis can be that the incidence of learning difficulties that are caused by deficits in pre-acquisitions (phonological processing, morphological processing, and visual-spatial processing) is bigger than of the learning difficulties that are caused by deficits in lexical processing, this offering us the possibility to conclude that lexical processing are not pre-acquisitions with predictive value for writing-reading abilities structuring.

Table 5.

Correlations between Reversal and MLU-words and between Reversal and MLU-morphemes

		Mluwords	Mlumorphemes
revcorrect	Pearson Correlation	,283	,492[**]
	Sig. (2-tailed)	,130	,006
	N	30	30

		Mluwords	Mlumorphemes
reverrors	Pearson Correlation	-,283	-,492[**]
	Sig. (2-tailed)	,130	,006
	N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

Significant correlations are calculated between MLU-morphemes and the performance in Reversal test r =.492 (p<.01). These results allow us to underline the fact that there is a tight relation between morphological processing and the ability to distinguish between the symmetric and the identical in visual-spatial representations.

There are not registered significant statistical correlations between MLU-words and the results in Reversal test. An important aspect is the one that between the number of words and the performance in Reversal test was calculated the same value in Person test as it was calculated between MLU-words and the performance in Reversal test, aspect that proves a very stable value of this procedure used for identifying lexical abilities structuring (r =.283 (p<.01). A less stable value, but with greater predictive valences for lexical-graphical abilities structuring is registered by calculating the number of morphemes and MLU-morphemes.

9. Conclusions and new research directions

An important aspect that results from the researched above described is that morphological processing can constitute in a very functional predicting factor for lexical-graphical abilities structuring, aspect confirmed by the correlation calculated between the morphologic data and the performance in Reversal test.

As international researches from language area, as well as from speech and language therapy focuses on MLU-morphemes as being an important an important coordinator in establishing the diagnose, projecting the intervention strategy and the speech and language therapy, as a new research perspective can be underlined the need to calculate a predictive value of MLU-morphemes in Romanian language for speech and language area, based on Romanian language features and peculiarities.

A new direction for research can be the one of using MLU-words with predictive value for verbal comprehension abilities structuring. Regarding this aspect, the research approach should be completed with data which facilitate comparisons among MLU-words, the number of words collected applying MLU procedure in 50 words, as well as the performance in Comprehension assessment tools (Crichton for instance).

A deeper investigation of the relation between psycho-motricity, phonological awareness and developing writing-reading abilities, for initiating intervention and early prevention programs can constitute another way for valorizing this research results. The final impact of these researches should be the implementation of specific

curricular contents regarding developing and improving perceptual-motor structures, as well as morphologic and phonologic processing.

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THEORETICAL ACCOUNTS OF SENTENCE PROCESSING

ALINA PREDA[∗]

ABSTRACT. Psycholinguistic investigations into such matters as sentence processing and discourse processing aimed to first identify whether during these processes the focus is on the deep or on the surface structure of sentences. Therefore, in order to formulate sound principles of sentence processing, psycholinguists studied the ways in which people process various instances of syntactic ambiguity and, especially, temporary ambiguity. Psycholinguistic theoretical accounts of sentence processing have been, until recently, dominated by two separate trends: the **structure-based models** and the *constraint-based models*. These have lately come under scrutiny and new models have been devised in an attempt to more accurately describe the sentence comprehension techniques employed by language users.

Keywords: sentence processing, structure-based models, constraint-based models, syntactic ambiguity, lexical clues, semantic clues, contextual clues.

ZUSAMMENFASSUNG. Die psycholinguistischen Nachforschungen in was die Satz- und Diskursverarbeitung betrifft, zielten darauf zu identifizieren ob bei diesen Prozessen der Schwerpunkt auf der tiefen oder oberflächigen Struktur liegt. Deswegen, um solide Grundsätze für die Satzverarbeitung formulieren zu können, analysierten die Psycholinguisten die verschiedenen Weisen in denen die Menschen unterschiedliche Situationen von syntaktischer und insbesondere von vorübergehender Ambiguität behandeln. Die theoretischen psycholinguistischen Berichte über Satzverarbeitung waren bis neulich von zwei unterschiedlichen Richtungen dominiert: die strukturbasierte Modelle und die einschränkungbasierte Modelle. Diese sind in der letzten Zeit auf den Prüfstand geraten, während neue Modelle entwickelt worden sind, um die von Sprachenanwender benützten Satzverständnistechniken besser beschreiben zu können.

Schlüsselwörter: Satzverarbeitung, strukturbasierte Modelle, einschränkungbasierte Modelle, syntaktische Ambiguität, lexikalische Hinweise, semantische Hinweise, kontexuelle Hinweise.

Psycholinguistic modelling theoretical accounts of sentence processing have been, until recently, dominated by two separate trends: **serial parsing** – the **structure-based models** or the **modular** ones and *parallel parsing* – the *constraint-based models* or the ***interactive*** ones. Researchers following the former

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trend, also known as **the "two-stage" model**, argue that syntactic information is processed at first, semantic information and other types of clues being taken into consideration at a later stage. Those favouring the latter trend, also called *the "one-stage" model*, claim that whenever there are various sources of information, different in nature, they are processed simultaneously, all being equally important constraints.

Advocates of **serial parsing** explain that syntactic structure is the stepping-stone of sentence processing because the constituents of the sentence are separated before any semantic interpretation may interfere. Some psycholinguists contend that during the first stage of analysis the listener/reader focuses on six of the sentence's words at a time, trying to classify them as different parts of speech, and then groups them together into phrases as accurately as working memory capacity allows (see Frazier, 1987, 1979; Ford, Bresnan & Kaplan, 1982; Frazier & Rayner, 1982; Rayner, Carlson & Frazier, 1983; Ferreira & Clifton 1986; Ferreira & Henderson, 1990). Others argue that thematic role information is used during this initial stage (Abney, 1989; Clifton, Speer & Abney, 1991; Pritchett, 1992; Crocker, 1995). The second stage involves reaching a coherent syntactic structure for the sentence as a whole, using these structured phrasal building-blocks. However, the "short-sightedness" of the first stage may trigger errors in the second, causing a misreading. Moreover, in the case of sentences marked by temporary syntactic ambiguity, reframing is required. Consequently, all two-stage models state that, if the initial analysis does not match the data gathered in the second stage, a reanalysis is performed.

The most notable **serial parsing** model is Frazier's **garden-path theory**: due to working memory constraints, language users make the initial decision based on the most minimal grammatical analysis, in order to avoid committing unanalysed items to memory, and then employ thematic information before finalising sentence processing. Processing difficulty arises from possible inconsistencies between the information accessed during the first and, respectively, the second stage of analysis. If parsers extract the primary syntactic structure of a sentence on the basis of the words' grammatical categories rather than their meaning, all the sentences built on the same syntactic pattern should be processed in the same way. Still, other researchers discovered significant context effects that seem to contradict this theory (Altman & Steedman, 1988; Altman, Garnham & Dennis, 1992, Britt, Perfetti, Garrod & Rayner, 1992; Trueswell, Tanenhaus & Kello, 1993; Trueswell, Tanenhaus & Garnsey, 1994; Britt, 1994; Altman, Garnham & Henstra, 1994; Trueswell, 1996; Garnsey, Pearlmutter, Myers & Lotocky, 1997).

Proponents of *parallel parsing* models present a theory of sentence comprehension that relies on multiple strands of information (syntactic and also non-syntactic information – pertaining to plausibility, frequency and situationality or context) coming into effect almost simultaneously. Thus, a number of possible interpretations coexist, until one is validated, based on the number and strength of the constraints supporting it. However, in the case of ambiguous sentences processing difficulty does arise, because two (or more) competing analyses become (or remain)

activated, since they are equally supported by two (or more) parallel analyses (see Tyler & Marslen-Wilson, 1977; Taraban & McClelland, 1988; Trueswell, Tanenhaus & Kello, 1993; MacDonald, 1994; MacDonald, Pearlmutter & Seidenberg, 1994; Trueswell, Tanenhaus & Garnsey, 1994; Spivey-Knowlton & Sedivy, 1995; Trueswell, 1996; McRae, Spivey-Knowlton & Tanenhaus, 1998).

Competition is said to arise in examples such as ***The legal advisor of the CEO that had been arrested at the meeting spent the night in his cell.*** which can be assigned four different interpretations:

1. The person who got arrested was one of the CEO's legal advisors and it was this particular advisor that had to spend the night in his prison-cell.

2. The person who got arrested was one of the CEO's legal advisors and this particular advisor spent the night in the CEO's prison-cell (who had been previously arrested).

3. The person who got arrested was the CEO and the CEO's legal advisor spent the night in the CEO's prison-cell (keeping him company, presumably).

4. The person who got arrested was the CEO and the CEO's legal advisor spent the night in his own prison-cell (where he was, presumably, sent by the judge for contempt of court).

Taking into account the source of processing difficulty, Van Gompel, Pickering and Traxler (2001: 226-232) elaborate a different classification of psycholinguistic theoretical accounts of sentence processing: **reanalysis models** and *competition models* are the two broad categories.

Reanalysis models include **fixed-choice two-stage models** such as Frazier's **garden-path theory** (GP), which operates under the assumption that human parsers are invariably guided in their analyses by the structural principles of minimal attachment and late closure. Abney's **thematic account** favours argument attachment analysis as the initial step, whereas **referential theories**, previously classified as *parallel*, not **serial** models, rely on a very quick selection (from the various parallel possibilities entertained) of the analysis that entails the lowest number of unsatisfied presuppositions. While GP claims to be able to predict resolution paths for all types of syntactic ambiguity, the other two do not. The number of **variable-choice two-stage models** is reduced, only two having been clearly articulated. The **tuning hypothesis** states that the frequency effect dominates the initial stage in sentence processing, as language users tend to favour the structures most frequently encountered in the language ((Mitchell, Cuetos, Corley & Brysbaert, 1995). Although the speakers' exposure to various syntactic structures is bound to differ, "any given person will have a fixed preference for a particular sentence type" (Van Gompel, Pickering and Traxler , 2001: 227). According to the **unrestricted race model** "the initial analysis of a syntactic ambiguity is affected both by individual differences (as in the tuning hypothesis) and by syntactic and nonsyntactic characteristics of the sentences" (Van Gompel, Pickering and Traxler, 2001: 227). **Construal theory** (Frazier & Clifton, 1996) is a reanalysis model used in order to avoid generalisation in ambiguity

resolution. Thus, it distinguishes between the sentence processing techniques adopted in the case of argument ambiguities (or primary phrases) and those employed in the case of adjunct ambiguities (or non-primary phrases). **This theory works like a fixed-choice model with regard to argument ambiguities** and predicts that for sentences in which ambiguities arise between two structures involving primary relations the simplest analysis based on the structural principles of minimal attachment and late closure will always be adopted. Additionally, for sentences where ambiguity arises between a primary and a non-primary relation it is the primary relation that will always be favoured. However, **with regard to adjunct ambiguities construal theory works like a variable-choice model**, predicting that, in such cases, **the principle of construal** is used for ambiguity resolution: non-primary relations are "associated with all possible attachment sites within the current thematic domain (defined in terms of the most recent theta assigner), and the final choice of attachment is made between these different sites in an unrestricted manner" (see Van Gompel, Pickering and Traxler, 2001: 227-228).

Competition models are also known as *constraint-based lexicalist models* because they were designed under the assumption that there is an inextricable link between syntactic and lexical ambiguity resolution. Whereas advocates of **reanalysis models** acknowledge the presence of competition in the case of lexical ambiguity resolution, as word meanings are accessed concurrently (or in parallel), but argue that syntactic ambiguity resolution is achieved as a result of serial parsing, promoters of *competition models* claim competition also arises in the case of syntactic ambiguity resolution, this being due to the role of context-related and frequency-related constraints likely to determine the activation of opposing alternatives and to support several different interpretations causing them to remain activated until the analysis reaches a uniqueness point and competition is resolved. Thus, Spivey-Knowlton and Sedivy (1995: 260) point out that elevated reading times should be regarded not as the result of the realisation that the initial analysis was incorrect but as the manifestation of competition between equally supported antagonistic interpretations: "Near equal activation levels will result in lengthy competition, hence greatly slowed reading times at the point of ambiguity". Van Gompel, Pickering and Traxler (2001: 229-230) mention that long-lasting competition also characterises some computational accounts, such as *the competition-integration model* of McRae, Spivey and Tanenhaus (1998) or that of Tabor and Tanenhaus (1999). Neither the former model nor the latter ones, however, clearly specify *the time course of competition*, though the latter models postulate that competition progressively decreases as the parser advances from one word to the next (see Van Gompel, Pickering and Traxler, 2001: 230). Nevertheless, as Van Gompel, Pickering and Traxler (2001: 230) explain, "none of these theories claim that the nonpreferred analysis is abandoned completely. In all theories, multiple analyses remain activated in parallel (though perhaps only weakly) at least as long as the sentence is ambiguous […] Hence, they assume that competition is long-lasting."

Psycholinguistic modelling theoretical accounts of sentence processing take into consideration the properties of the human mind as well as the structure of the language, and focus on the analysis of the processes taking place in the human brain during the production and reception of both spoken and written discourse. Psycholinguistic investigations into such matters as sentence processing and discourse processing aimed to first identify whether during these processes the focus is on the deep or on the surface structure of sentences. Therefore, in order to formulate sound principles of sentence processing, psycholinguists studied the way in which people process various instances of syntactic ambiguity and, especially, temporary ambiguity. Proponents of various models have attempted to identify the strategies used by the human parsing system in order to show how people make decisions about syntactic structures when dealing with uncertainty or incomplete information and, consequently, with more than one interpretation. While it is universally acknowledged that, due to memory constraints, a sentence's complexity definitely takes its toll on the way in which the parser manages ambiguity, neither **fixed-choice two-stage reanalysis models** nor *constraint-based lexicalist competition models* have been able to successfully describe the process of sentence comprehension in all the cases that require ambiguity resolution. **C**onstrual theory, on the other hand, seems to enjoy more flexibility, as it only operates like a **fixed-choice model** in the case of **argument attachment ambiguities,** and rather like a **variable-choice model** whenever **adjunct attachment ambiguities** are present. However, recent eye-tracking experiments (Van Gompel, Pickering, Liversedge & Traxler, 2010) seem to uphold the **unrestricted race model** as one of the most accurate accounts of sentence processing and ambiguity resolution.

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WORKING MEMORY ABILITIES AS PREDICTORS OF MATHEMATICAL PERFORMANCE IN FIRST GRADE

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ABSTRACT. In the current study, we have investigated the predictive role of working memory on mathematical performance in first grade. We have analyzed separately the relation among several measures of working memory and Mathematical knowledge. Therefore, we assessed the three working memory components, based on Baddeley and Hitch's model (1974), in the beginning of first grade. Seven months later, we administered the measures of Mathematical knowledge. Analyses showed that all three components of working memory were significantly correlated with the Math knowledge test.

Keywords: *working memory; mathematical performance; central executive component, phonological loop, visual spatial sketchpad.*

Introduction

The role of working memory in the development of mathematical abilities is not sufficiently clarified, as there is contradictory data in the literature. Previous findings (Alloway and Gathercole, 2006) indicate that the role of working memory in mathematical performance varies as a function of age and type of mathematical tasks. In a comprehensive theoretical synthesis, Raghubar, Barnes, and Hecht (2010) summarizes the findings from the literature, concluding that executive and visual spatial skills may be employed for learning of new mathematical knowledge, while phonological loop may be more involved later in the learning process after the skill has been consolidated.

Rasmussen and Bisanz (2005) found that in the beginning years of formal Math learning, visual- spatial abilities play a major role, in representing quantities visually. These representations are stored in visual- spatial memory. As they improve their formal math experience, children move from visual representation towards phonological representations, stored in phonological loop. Rasmussen and Bisanz (2005) found a greater contribution of visual- spatial working memory to math performance in preschool children and a change in the relations between different components of working memory and Math performance as a function of age and

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formal Math experience. In the mentioned study, researchers found a correlation between visual-spatial memory abilities and preschool performance in Math activities presented verbally or non- verbally. Visual spatial functioning was an independent predictor of non- verbal Math problem solving at this age (mean 5 years, 3 months), but was not correlated or predictive of any type of arithmetical task in elementary students (mean age 6:11).

In a different study, Kyttala & Lehto (2008) studied the relation among intelligence, active and passive visual- spatial memory, and Math performance. Participants were 128 adolescents (15- 16 years old). Active visual- spatial memory was measured through a mental rotation task. Passive visual- spatial memory was measured by a simultaneous processing task (visual matrix) and a successive processing one (on Corsi block model). Raven progressive matrices indexed fluid intelligence. Results indicate a significant contribution of non- verbal intelligence in overall Math performance, as well as in areas such as mental arithmetic, geometry, Math problem solving. Simultaneous passive visual- spatial memory was implicated in overall Math performance and mental arithmetic. Overall, results indicate a selective implication of visual- spatial abilities in Math, according to the mathematical domain.

Bull, Andrews Espy, and Wiebe (2008) in a longitudinal study investigated the role of several cognitive abilities (measured at 4.5 year old) for the prediction of mathematical performance three years later. Short term visual spatial memory emerged as the unique predictor specific to mathematical ability. Even when reading was controlled for, Corsi Span Forward contributed significantly to the variance in mathematical performance of 5-6 year olds and 7-8 year olds.

Passolunghi, Vercelloni, and Schadee (2007), based on regression analysis, have emphasized the importance of central executive component for the prediction of mathematical performance at the end of first grade. Similar results were obtained by De Smedt, Janssen, bouwens, Verschaffel, Boets, and Ghesquiere(2009), central executive abilities were a unique predictor of mathematical performance at the end of the first semester of first grade and beginning of second grade. Based on regression analysis, De Smedt et al. (2009) brought evidence in support of a different implication of the working memory components in predicting mathematical performance as a function of age. In first grade, the central executive component and the visual spatial sketch pad (especially with the spatial component) emerged as unique predictors of mathematical achievement measured with a curriculum based standardized achievement test (number knowledge, understanding operations, simple arithmetic, word problems and measurement). Phonological loop was a unique predictor of mathematical achievement at the beginning (first month) of second grade.

Meyer, Salimpoor, Wu, Geary, Menon (2010) have obtained that counting recall (as a measure of the central executive component) explained 20% of the variance of second graders' performance in mathematical reasoning tasks. In third grade 11% of the variance of performance in mathematical reasoning tasks was explained by visual spatial memory abilities. In a longitudinal study, Passolunghi,

Mammarella, and Altoe (2008) obtained that in first grade the role of intellectual ability in predicting mathematical performance was mediated by working memory and short term memory.

Based on the reviewed data, we can conclude that more research is needed in order to clarify these relations among working memory components (as comprised by Baddeley and Hitch's model) and mathematical performance. More studies are needed, particularly longitudinal and not cross sectional, as other factors are also important. Such factors seem to be related to cultural differences that influence differently the acquisition of phonological representations (de Jong and van der Leij, 1999) and mathematical education. These two can lead to an early shift between the components of working memory at seven years of age. Such as, given that teaching methodology in introducing and developing number concept and arithmetical operations in first grade students relies heavily in the first months on manipulating sets of objects, we can assume that some type of visual spatial representations are employed later on in arithmetic and that visual spatial sketchpad would be used to manipulate these representations. Also, by developing working memory capacity, an available mental space would be created that would allow for a shift from concrete action to mental manipulation. Another shift would be in the type of working memory component employed. Is this shift made earlier than reported in the literature, based on the characteristic of linguistic context? On the other hand, attention resources of the central executive component would be particularly useful at the time of learning new mathematical skills and concepts, as these skills are not automatized. If visual spatial representations put a greater load on the central executive, than by shifting to a more reliance on phonological representations, we assume that the predictive role of the central executive component for math performance would also be to a lesser extent.

Therefore the aim of the current study is to investigate the unique contributions of working memory components in predicting math performance at the end of first grade on a Romanian student sample (by replicating previous results on the importance of working memory abilities in first grade math performance). Our hypothesis is that all three working memory components would significantly predict mathematical performance in first grade.

Method

Participants

A total of 103 first grade children in two different counties (Cluj and Dolj) were tested at the beginning of first grade and 7 months later. Child participation was voluntary, with written parental consent.

Procedure

Participants were tested in two stages. The first phase lasted throughout October and November and the second in April-May.

In the first phase, measures of working memory components considered in the study were administered. In the second phase, the math knowledge test was administered collectively.

Measures

Working memory skills were measured by means of several tasks. Thus, the **phonological loop** function was assessed through digit span forward subtest (Wechsler Intelligence Scale for Children-IV). This is considered a measure of **short-term verbal memory**. Reliability coefficients are appropriate and have values over 0.9.

Phonological loop abilities were measured through Digit span forward (DSF) (Wechsler Intelligence Scale for Children - IV). In order to have a non- numeric measure of phonological loop, and based on existing descriptions in the literature (Noel, 2009), we have built an experimental word span task. In this type of task, the child is presented increasing series of mono-syllabic words, with a frequency of 1 word per second. The child is required to repeat the words in the same order of presentation. The words selected are adequate to developmental characteristics of the child, and have a high frequency in Romanian language. At the first level, there are series of two words. The series go up to 6 words. For each span length, there are 3 items. If the child made errors consecutively for 2 items of the same length, the testing was stopped. Each correctly recalled series received 1 point. For each set, the total score was multiplied by 1/3. Total maximum score was 5. Internal reliability of the task, measured through split half is adequate (Guttman split-half=0,74; Sperman-Brown r= 0,74).

The central executive component was evaluated by the digit span backward (DSB) subtest of the Wechsler Intelligence Scale for Children-IV (Romanian edition, 2011). The internal consistency is adequate, the α Cronbach coefficient has a value greater than 0.9.

Visual-spatial working memory was assessed through a Corsi blocks type of task (MVSSP), the computerized version, built based on descriptions in the specialized literature.

The mathematical knowledge test is an informal educational tool, built based on the first grade Math curriculum in place (2003) and related performance benchmarks, but also by consulting an alternative second grade Math textbook (Pacearcă and Mogoş, 2004). The final version of the test comprised 23 items, grouped into the following dimensions: number, ordering, reading and writing numbers, numerical comparison, number composition, calculation. The raw data obtained were the basis for calculating the internal consistency of the instrument. A 0.84 α Cronbach coefficient was obtained, which corresponds to a good internal consistency.

We present underneath the contents distributed over the 6 dimensions:

- Counting (forward/backward, by ones or skip counting): 1 through 6 (6 items)
- Number ordering (items 7,8,9a, 9b, 9c, 12, and 20)(7 items)
- Reading and writing numbers (items 10 and 11)(2 items)
- Numerical comparisons (items number 13, 14, 15, 18, 19)(5 items)
- Composition and decomposition of numbers (item 16) (one item)
- Calculation (items 17 and 21) (2 items)

Design

In order to investigate predictors of math performance we employed a multivariate procedure that would allow us for considering several predictors for our criterion variable. Due to the fact that we have several predictor variables, some of them overlapping partially, we proceeded first at investigating their correlations and only afterwards at combining the significant ones into prediction models. We chose to use multiple hierarchical regressions that allow us to introduce independent variables in a specific order. Therefore we used a forced entry method.

Results

First we analyzed the usefulness of including several measures of working memory components into the prediction model.

Table 1.

Correlation matrix among measures of working memory and mathematics

	Test of mathematical knowledge	DSF	DSB	MVSSP	word span
Test of mathematical knowledge	-	.377**	.376**	.283**	.179
DSF	.377**	-	.323**	.223*	.527**
DSB	.376**	.323**	-	.294**	.303*
MVSSP	.283**	.223*	.294**	-	.253
word span	.179	.527**	.303*	.253	-

Note: ** $p < .01$; * $p < .05$ / DSF – digit span forward; DSB – digit span backward; MVSSP –visual spatial sketchpad.

As illustrated by the correlation matrix, the strongest relationships between measures of working memory and mathematical performance emerged in the case of DSF and DSB. Both correlate positively with mathematical performance. Positive correlation, weaker, though significant is between MVSSP and mathematical performance. Significance threshold for r values was subjected to Bonferroni corrections.

The non-numerical measure of the phonological loop did note correlate significantly with the criterion and therefore was not considered into the prediction model. Analyzing the relations between the predictive variables, one can observe that these are significant except for the correlation between MVSSP and Word Span. There is a strong correlation between the two numerical measures of working memory and a weaker, positive and significant correlation between MVSSP and DSB. Based on these results, we eliminated Word Span and we established the order for the first entry of prediction blocks. Table 2 presents descriptive statistics for the measures of working memory and mathematical knowledge.

Table 2.

Descriptive statistics

	Mean	SD	N
Math knowledge test	15.6528	4.14145	104
DSB	4.9327	1.15972	104
DSF	6.5288	1.33625	104
MVSSP	1.0577	.73672	104

Note: DSF – digit span forward; DSB – digit span backward; MVSSP –visual spatial sketchpad;

We introduced the variables in the model in the following order: backward digit span, forward digit span and last visual spatial sketchpad. After analyzing the indices for extremes, we obtained that parameters D^2 Mahalanobis, D-Cook and Standardized Dfit are in accepted range. Therefore our data does not contain extreme values that would affect the prediction model.

Table 3 illustrates the correlation coefficients and the R squared values for each of the three working memory components considered in the study.

Table 3.

Model	R	R²	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.484	.234	.226	3.64240	.234	31.158	1	102	.000	
2	.540	.292	.277	3.52027	.058	8.200	1	101	.005	
3	.555	.308	.287	3.49728	.016	2.333	1	100	.130	1.731

Table 4.

Hierarchical regression analysis

Model		Unstandardized coefficients		Standardized coefficients	t	Confidence interval (95.0%) for B		Colinearity	
		B	Std. Error	Beta		min.	max.	tolerance	VIF
1	(Constant)	7.132	1.568		4.549**	4.022	10.241		
	DSB	1.727	0.309	0.484	5.582**	1.114	2.341	1	1
2	(Constant)	3.641	1.945		1.872	0.217	7.499		
	DSB	1.368	0.324	0.383	4.22**	0.725	2.012	0.851	1.176
	DSF	0.806	0.281	0.26	2.864**	0.248	1.364	0.851	1.176
3	(Constant)	3.682	1.932		1.906	0.152	7.516		
	DSB	1.234	0.334	0.346	3.697**	0.572	1.897	0.792	1.263
	D	0.779	0.28	0.251	2.781**	0.223	1.335	0.847	1.18
	MVSSP	0.752	0.492	0.134	1.527	0.225	1.728	0.903	1.107

Analysis of results indicates that two of the three models have similar prediction power (R= 0.54 and R = 0.55). R^2 change indicates that eliminating the last predictor from the model would have a small effect over R^2. The first model explains most of the predicted values, $R^2 = 0.234$, $F(1, 102) = 31,158$, $p < 0.001$. In other words 23% of the variance in the mathematics test results is due to the variability of this predictor (measure of the Central Executive component). R^2 value for the second model indicates that by introducing Phonological Loop into prediction model will explain an additional 5.8% of the variance for predicted values ($R^2 = 0.29$, $F(2,101) = 20.77$, $p < 0.001$).

In the third model we introduced MVSSP which explained an additional 1% of the variance for predicted values ($R^2 = 0.30$, $F(3,100) = 14.81$, $p < 0.001$). Multiple regression coefficients for all three models are statistically significant ($p < 0.001$) which invalidates null hypothesis and supports that prediction based on the model is better than random prediction. Based on sum of squares residual analysis we can conclude that by adding more predictors to the backward digit span would increase prediction power but it won't modify the significance level.

In the case of the first model, where we introduced only the Central Executive measure, $\beta=0,484$, $t(102)=5.58$, $p<0.001$. For the second model both coefficients were statistically significant ($\beta_{dsb}= 0,38$, $t=4,22$, $p<0.001$; $\beta_{dsf}= 0,26$, $t=2,86$, $p<0.01$). For the third model the coefficients corresponding to VSSP was not significant ($\beta= 0,13$, $t=1,52$, $p>0.10$).

Discussion

In the current study, we aimed at examining whether measures of working memory early assessed in the beginning of first grade would predict mathematics performance seven months later. The correlational analyses conducted first indicated that all three components of working memory were significantly related to math performance. However, the relation between the non- numerical measure of the phonological loop and mathematical performance was not significant, whereas the numerical measure of the phonological loop correlated significantly with Math performance. On the other hand, the correlation between the two measures of the phonological loop was a strong one ($r=0,52$, $p<0.001$), which comes as a strong support for the criterion validity of the word span task (an experimental task in our study).

Based on the linear correlations, we selected to introduce in the first prediction block the central executive component. The second block contained additionally the phonological loop. In the third block, we introduced additionally the visual- spatial memory.

The results of the regression analysis indicate that central executive component can uniquely explain 23% of the variability in the scores on the Math knowledge test. In other words, the central executive component represents a good predictor of Math performance. By adding a second predictor, represented by the phonological

loop, a greater proportion was explained (29%). Whereas, by introducing visual-spatial working memory in the third block, only a small percentage change occurs (1%). By analyzing values of the unstandardized and standardized coefficients of the regression analysis, one can observe that the coefficient for the visual spatial working memory was not statistically significant. Consequently, it was not introduced further into the regression model.

Therefore, Math performance on a curriculum based informal test, can be predicted by the central executive and the phonological loop performance, as measured at the beginning of first grade. It needs to be pointed out that both measures were numerical. Visual spatial working memory explains only a small proportion, as compared to the central executive component and the phonological loop. One possible explanation comes from the correlation between its measure and the central executive measure ($r = 0,29$, $p < 0.001$).

This correlation comes in support of the hypothesis that visual spatial memory tasks load heavier on the central executive component, as compared to phonological loop task (Miyake et al., 2001). Also, some researchers argue that visual spatial tasks require more attention resources from the central executive component, especially in younger ages (Alloway et al., 2006, apud De Smedt et al., 2009). However, DeSmedt et al.(2009) showed that in first grade, visual spatial working memory and the central executive component, but not phonological loop contributed each uniquely to the prediction of Mathematical performance. Moreover, by separately analyzing the contribution of the spatial and the visual components, the above mentioned authors argue that prediction power is mostly conferred rather by the Corsi block type of tasks. In our study, phonological loop explains, in addition to the central executive component a considerable proportion in the variability of scores on the Math knowledge test. It is possible that this switch from visual to phonological representations to occur earlier in the case of Romanian children, as a consequence of the combined action of several factors, including the facilitation offered by a phonetic language, but also by a transparent numeration system, and an early contact with abstract symbolic representations since kindergarten.

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THE EFFECTS OF METACOGNITIVE TRAINING ON MATH PERFORMANCE: INDIVIDUAL VERSUS SMALL GROUP

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ABSTRACT. In the current study we investigated the effects of the metacognitive intervention on students' math performance. It's all known as metacognition may influence how children learn or perform Mathematics. Participants were seventh grade students from two different schools, who were randomly assigned into one of the three groups. First group received an individual metacognitive training, the second one received a metacognitive training combined with the cooperative learning, and the third one was the control group. Particularly, the study was conducted to investigate the effect of metacognitive intervention delivery on students Math performance.

Keywords: metacognition, training, metacognitive strategies, math performance

ZUSAMMENFASSUNG. In der vorliegenden Studie haben wir die Auswirkungen der metakognitiven Eingriffe in mathematischen Leistungsfähigkeiten der Schüler untersucht. Es ist bekannt, dass die Metakognition einen Einfluss auf die Leistungsfähigkeiten und die Lernensart der Schüler in Mathematik ausübt. Die Teilnehmer an der Studie waren Siebtklässler von verschiedenen Schulen, die in eine der drei Gruppen wahllos zugeteilt worden sind. Die erste Gruppe hat einzelne metakognitive Ausbildung, die zweite metakognitive Ausbildung zusammen mit kooperativem Lernen erhalten, und die dritte stellte die Kontrollgruppe dar. Die Studie war insbesondere demnach ausgeführt, um zu untersuchen, ob es wesentliche Unterschiede in metakognitiven und mathematischen Leistungsfähigkeiten an Schülern gibt, die über eine Art metakognitiver Ausbildung – entweder individuell oder in Kleingruppen – verfügen.

Stichwörter: Metakognition, Ausbildung, metakognitive Strategien, mathematische Leistungsfähigkeiten

1. Introduction

Considering the complex nature of mathematical domain, it may be important to evaluate the metacognitive skills in order to focus on metacognitive training and its role in mathematics learning and development. Metacognition is considered an important mediating variable for learning. Improving students' metacognition may influence students' math performance. But metacognitive skills

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need to be taught explicitly in order to improve and cannot be assumed to develop from freely experiencing mathematics (Desoete, 2007). The question is how can we improve mathematical performance through metacognition.

Most of the studies underline two major components of metacognition: metacognitive knowledge and metacognitive strategies. The most efficient approaches in developing metacognition involve the developing of knowledge about cognitive strategies and processes, and offering opportunities for practicing cognitive strategies and metacognitive ones (David and Maier, 2011). Students could learn to use a more orienting and self-judging learning approach, even through a very short metacognitive training.

According to Hartman and Sternberg (1993, apud Desoete, 2007) you can find four main approaches, while reading the research literature in this field. In the first approach of promoting general awareness, teachers modeled metacognitive skills. Within the second one, the improving metacognitive knowledge approach, teachers pointed out the successful strategies for different situations, so students learn to read again the word problem, go over some solving plan, slow down on more difficult tasks, check the solution to be sure, etc. The third one aims to improve the students math performance by developing their metacognitive skills, such as prediction, planning, monitoring and evaluation. In the fourth one researchers focused on a teaching environment, fostering self-reflection, and helping students to attribute their success to the use of appropriate strategies and self-regulation (Desoete, 2007).

Mevarech and Kramarski (1997) designed a multidimensional method that emphasizes reflective discourse by providing each student the opportunity to be involved in mathematical reasoning. IMPROVE is the acronym of seven teaching steps: Introducing new concepts, Metacognitive questioning, Practicing, Reviewing, Obtaining mastery on the objective proposed, Verification, and Enrichment. The students are trained to use four types of metacognitive questions: the comprehension questions (What is it given and what do you have to find out?), the connection questions (Did you solve a similar problem?, How is it different than the previous one?), the strategy questions (What strategies can you use to solve the problem?, Why?, How do you solve the problem?, What are the steps involved?), the reflection questions (How can I check the solution?, How can I do it in another way?) (Mevarech, Kramarski, 2003).

Mevarech and Kramarski already indicated that implementing IMPROVE in cooperation settings is slightly more efficient than metacognitive instruction implemented in individual settings, but there were some limitations of their studies. Metacognition was assessed with just a child questionnaire, and that one didn't have a separate scale for each of the four metacognition skills (prediction, planning, monitoring, and evaluation). Intact classrooms were randomly assigned into either experimental or control group. The person delivering the training was the math teacher, during the math class, inside their classrooms. They used a short time training, covering just a class unit (linear graph), as talking about the math content covered by the experiment.

Our objective is to evaluate metacognition using a multiple-method design (Desoete, 2007), including teacher questionnaires to get a complete picture of metacognitive skills, and to investigate the effects of an individual metacognitive training vs. a metacognitive training in small groups on math performance.

Our first hypothesis is that the students who received a metacognitive training in small groups will have a better metacognitive performance than those who received an individual metacognitive training. And also, the second one, the students who received a metacognitive training in small groups will have a better math performance than those who received an individual one.

Metacognition assessment techniques can be classified as prospectively, concurrently or retrospectively to performance on a learning or problem solving task. Prospective and also retrospective techniques are self-report questionnaire and interviews. As concurrent assessments there are mentioned think-aloud protocols or systematical observation of metacognitive skills (Desoete, 2007). Often a complex and complete evaluation combine prospective, concurrent and retrospective measures of metacognition. On this method, our third hypothesis says that it is necessary to assess metacognition through a multiple-method design to get a complete picture of it.

2. Method

Participants

Subjects were 7th grade, middle school children attending two schools in Cluj-Napoca, from 5 different inclusion classrooms. They had 4 different math teachers; one teacher taught two different classrooms, but the same teacher delivered the metacognitive training to all of them, in 50 minutes sessions, once a week. The pretest was administered to a number of 64 students. After that, they were randomly assigned to one of a three groups, of which two were administered the training conditions. One was the control group. No significant differences were found between groups in the pre-test conditions.

Procedure

The pre-test was administered in December and the metacognitive training was delivered in 12 sessions of 50 minutes, during January – Mai. The post-test was administered in June.

Measures

Mathematics measures

The mathematics knowledge test is an informal instrument developed together with one of the math teachers, based on a sixth and seventh grade curriculum and their long range plans. It contains several mathematical problems, such as equations, percentages, fractions, order of operations.

Metacognitive measures

Metacognition was assessed with off-line (prospective and retrospective), and combined techniques. The Prospective Assessment of Children (PAC) and the Retrospective Assessment of Children (RAC) were used as off-line ratings for children, and Teacher Ratings were used as off-line rating for teachers. The Evaluation and Prediction Assessments were used as combined (prospective and retrospective) assessment.

Off-line techniques

The Prospective Assessment of Children (PAC) is a child questionnaire, adapted from Desoete (2007). It is a 25 item rating scale questionnaire for children on metacognitive predictions, planning, monitoring and evaluation skills. Children have to indicate before solving any mathematical problem on a 4 point Likert-type of scale to what statement is representative of their behavior during mathematical problem solving (1- never, 2 - sometimes, 3 – frequent , 4 – always). The PAC scale, as well as the subscales have an adequate internal reliability. Cronbach's alpha for the PAC scale was .81 (25 items). For the PAC subscales Cronbach's alpha were .60 (9 items – prediction), .64 (4 items, planning), .76 (8 items, monitoring) and .52 (4 items, evaluation).

The Retrospective Assessment of Children (RAC) is the same 25 item rating scale questionnaire for children on metacognitive prediction, planning, monitoring and evaluation skills. Children have to indicate on a 4 point Likert-type of scale to what statement was representative of their mathematical behavior, the last 6 months during mathematics. The PAC scale, as well as the subscales have an adequate internal reliability.   Cronbach's alpha for the total score was .79 (25 items). For the RAC subscales Cronbach's alpha were .44 (9 items, prediction), .59 (4 items, planning), .73 (8 items, monitoring), .56 (4 items, evaluation).

The Teacher Rating Assessment (adapted from Desoete, 2007) is a 20 item rating scale teacher-questionnaire on metacognition prediction, planning, monitoring and evaluation skills. The PAC scale, as well as the subscales have an adequate internal reliability. Cronbach's alpha of .91 was found for the test score (20 items). For the teacher rating subscores Cronbach's alpha were .81 (7 items, prediction), .59 (4 items, planning), .62 (6 items, monitoring), .71 (3 items, evaluating).

Combined technique

The Evaluation and Prediction Assessment is a procedure for assessing prediction and evaluation. In the measurement of prediction skillfulness, children were asked to look at the math problems without solving them and to predict on a 0-10 point scale, how they can solve it. After they solve the math problems from the knowledge math test, they are asked to evaluate their answers on the same 0-10 point scale. It was used the same 0-10 point scale, in analogy with the Romanian

Evaluation System. We did a calibration score for each item, which means a difference between the math performance they had and the predictions/evaluations they did.

3. Description of the training program

Duration: both trainings were conducted over a six months period with once a week sessions of 50 minutes each. Sessions were conducted individually for the first group and in small groups of 4-5 students for the second one. All sessions were conducted in school, in the Resource room, apart from their classrooms.

The metacognitive training was created to improve metacognitive knowledge and metacognitive skills of students from inclusive settings. It was designed on an IMPROVE model (Mevarech, Kramarski, 1997).

First session was an introductory one, students found out some information about metacognition, cognition, metacognitive knowledge and metacognitive skills, metacognitive trainings. We talked about the acronym IMPROVE, and the seven steps that are involved in this method. The students have to think about these seven steps, and to find an acronym in the Romanian language.

In the second session we reviewed the steps involved by IMPROVE, and we tried to define them. Each definition in Romanian language, needs to start with the correspondence letter from the English acronym:

I-Introducerea noului material (introducing the new material)

M- metacognitie (metacognition)

P- profesorul ajuta elevii in rezolvarea problemei (the teacher helps the students to solve the problem)

O – o rezolvare pe cont propriu (resolving by himself)

V – verifcarea problemei (verification)

E- elaborarea alternativelor de rezolvare (finding different ways to solve the problem).

We also tried to find a good acronym in Romanian language:

C-citirea problemei (reading the problem)

I-intrebari metacognitive (metacognitive questions)

R-rezolvarea problemei cu ajutor (solving the problem with help)

P-planul de rezolvare al problemei (the solving plan)

R-rezolvarea problemei fara ajutor (solving the problem without help)

V-verificarea problemei (verification)

A-alternative de rezolvare a problemei (finding good solving alternatives)

The third session consisted of reviewing of the solving steps illustrated by the acronym IMPROVE. It was discussed the second step, the metacognitive questions. The students are asked to come up with as many questions as they can think when they have to solve a math problem.

In the fourth session we discussed the metacognitive questions pointed out by the students, and we identified the four types of metacognitive questions:

- Comprehension questions: questions about the problem task (What is this problem about?)
- Connection questions: questions about similarities and differences between the problems they work (How is this problem different/ similar from the previous one?)
- Strategic questions: questions about the appropriate strategies for solving the problem (Why is this strategy appropriate to solve the problem?)
- Reflection questions: questions to reflect on their understanding the solution process (Can you solve it in a different way?)

The fifth session consisted of reviewing all of the metacognitive questions found by the students, and writing them on colored posting cards. When the cards are done, students read them and divide them into 4 groups, one for each metacognitive question type.

The next sessions are designed for practicing the method on different problems, from different math book chapters.

The last session is for reviewing the method, and to underline its importance during the math solving process.

4. Results

ANOVA statistical procedure was used to analyze the data obtained in pre and post intervention phases for all three groups. The results showed no significant difference among groups (two experimental and the control group) before training.

After the training the results showed significant differences between groups. A POST-HOC analysis (Tukey test) was further conducted. Prior to this analysis a Levene test was run to assess the equality of variances in different samples. Based on the results, we selected the Post-hoc Tukey test in order to compare each measure. For the Evaluation Assessment Test we used Tamhane test, because the Levene one showed significant results. In the next table we showed the mean value of differences among groups.

Post-Hoc Tukey Test and the Tamhane Test

Measures	Groups	Mean value of differences	p- value
Prospective Children Assessment (PAC)	Control and Group Training	-7.05	$p < .05$
Prospective Children Assessment (PAC) - prediction	Control and Individual Training	-3, 62	$p < .01$

Retrospective Children Assessment (RAC)	Control and Individual Training	-6.60	p<.01
	Control and Group Training	-9.71	p<.01
Retrospective Children Assessment (RAC) - prediction	Control and Individual Training	-2.58	p<.05
	Control and Group Training	-4.29	p<.01
Retrospective Children Assessment (RAC) - planning	Control and Group Training	-1.57	p<.01
Retrospective Children Assessment (RAC) - evaluation	Control and Group Training	-2.48	p<.05
Prediction Assessment Test	Control and Individual Training	-16.11	p<.01
	Control and Group Training	-6.10	p<.05
Math knowledge Test	Control and Individual Training	-10.66	p<.01
	Control and Group Training	-9.24	p<.01
Evaluation Assessment Test (was used Tamhane test)	Control and Individual Training	-9.17	p<.01

Significant differences are shown between the control group and both experimental ones, for the Math Knowledge Test. That means individual metacognitive training and metacognitive training in small group are both efficient, because the students improved their math performance, but there is no difference between the way of delivering the training, both being equally efficient in improving the math performance.

Significant correlations were shown between Prospective and Retrospective Children Assessment (PAC- RAC) for each experimental group, for each of the four metacognitive skills. Significant correlations were shown between Prospective Children Assessment and Teacher Ratings for prediction and planning skills in group 2 and for monitoring and evaluation skills in group 1. Other significant correlations were shown between Prospective Children Assessment and Prediction Assessment Test in group 1 (see the correlation table).

Correlation table

	Group 1- individual intervention		Group 2 – group intervention		Group 3 – control group	
Correlations among the meta-cognitive prediction skills	Prospective Children Assessment (PAC) - Retrospective Children Assessment (RAC)	.94**	Prospective Children Assessment (PAC) - Retrospective Children Assessment (RAC)	.95**	Prospective Children Assessment (PAC) – Retrospective Children Assessment (RAC)	.83**
	Prospective Children Assessment (PAC) – Prediction Assessment test	.43*	Prospective Children Assessment (PAC) – Teacher Ratings	.53*		
Correlations among the metac-ognitive planning skills	Prospective Children Assessment (PAC) – Retrospective Children Assessment (RAC)	.86**	Prospective Children Assessment (PAC) – Retrospective Children Assessment (RAC)	.95**	Prospective Children Assessment (PAC) – Retrospective Children Assessment (RAC)	.93**
			Prospective Children Assessment (PAC) –Teacher Ratings	.53*		
Correlations among the meta-cognitive monitoring skills	Prospective Children Assessment (PAC) – Retrospective Children Assessment (RAC)	.97**	Prospective Children Assessment (PAC) – Retrospective Children Assessment (RAC)	.90**	Prospective Children Assessment (PAC) – Retrospective Children Assessment (RAC)	.84**
	Prospective Children Assessment (PAC) –Teacher Ratings	.61*				
Correlations among the meta-cognitive evaluation skills	Prospective Children Assessment (PAC) – Retrospective Children Assessment (RAC)	.94**	Prospective Children Assessment (PAC) – Retrospective Children Assessment (RAC)	.92**	Prospective Children Assessment (PAC) – Retrospective Children Assessment (RAC)	.94**

	Group 1- individual intervention		Group 2 – group intervention		Group 3 – control group	
Prospective Children Assessment (PAC) –Teacher Ratings	.58*					

Note: **- p<.01, *- p<.05

5. Discussions

Based on the results we can conclude that students can improve their metacognitive skills and also their math performance through either an individual metacognitive training or a metacognitive training in small groups. There were significant differences in POST-test between both the experimental groups and the control one. Among the two experimental ones there were no significant differences.

Because there is no significant difference between the way of delivering the training, both being equally efficient in improving the math performance, we can use this information in controlling the costs of the training. Delivering an individual training it takes much time, or many teachers, that means more money, and when your financial resources are limited, you choose the economical one especially because you expect the same results.

Thinking about the correlations between the metacognitive measures, we can say that assessing metacognitive through a multiple-method design, including teacher questionnaire it's very important. Children questionnaire do not seem to reflect actual skills, but they are useful to get a picture of metacognitive knowledge, beliefs, skills. In addition to prospective and retrospective techniques, concurrent assessment or mixed ones should take place. Teacher questionnaires were found to have some value added in the evaluation of metacognitive skills. The results of this study should be interpreted with care since we worked with just 64 students, from 2 different schools, even though, the experiment took almost 6 months.

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AN EXAMINATION OF THE RELATIONSHIPS BETWEEN SELF-ESTEEM, SELF-EFFICACY, DISPOSITIONAL OPTIMISM, IRRATIONAL AND RATIONAL BELIEFS, AND GENERALIZED TRUST

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ABSTRACT. The aim of the present study is to examine the relationships between global self-evaluations (self-esteem, self-efficacy), dispositional optimism, beliefs (irrational and rational), and generalized trust. The data were collected from 92 participants using Rosenberg Self-Esteem Scale (Rosenberg, 1965; Băban, 1998), Generalized Self-Efficacy Scale (Jerusalem & Schwarzer, 1995; Băban, 1998), The Life Orientation Test (Scheier & Carver, 1985; Băban, 1998, ABS (DiGiuseppe, Leaf, Exner, & Robin, 1988; Macavei, 2002) and a two-item scale to measure generalized trust. The results indicate that self-esteem, self-efficacy, dispositional optimism and the two types of beliefs (rational and irrational) are not associated with generalized trust. Also, it was found that self-esteem is positively associated with self-efficacy and dispositional optimism. Instead these associations, it wasn't identified a second-order factor to explain the relationship between self-esteem, self-efficacy and dispositional optimism. The results indicate that global self-evaluations (self-esteem, self-efficacy), dispositional optimism, rational and irrational beliefs don't have significant associations with generalized trust. The implications, limits and future directions based on these results are also presented.

Keywords: generalized trust, self-esteem, self-efficacy, optimism, irrational beliefs, rational beliefs

Introduction

The acknowledgement that trust reflects a multitude of roles, functions, and levels of analysis has been a turning point for theory and research on this topic (Costa et al., 2001). Instead of accentuating the differences, researchers are starting to concentrate on common elements across perspectives in order to provide

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coherent knowledge with regard to trust (e.g., Costa, 2000; Rousseau et al., 1998). Most researchers agree that trust is as a highly complex and multidimensional phenomenon containing distinct but related components (Lewis & Weigert, 1985; Mayer, Davis, & Schoorman, 1995; McAllister, 1995; Rousseau et al., 1998). Many definitions and models of trust include both individual and relational components, respectively regarding the trustor and his/her relationship with the trustee(s) (e.g., Mayer et al., 1995; Rousseau et al., 1998). Propensity to trust and trustworthiness have been the two most mentioned and measured components of trust (Costa & Anderson, 2010).

Perceived trustworthiness refers to the extent to which individuals expect others to be and to behave according to their claims. These expectations have cognitive and emotional grounds (McAllister, 1995) and develop from perceptions or information regarding competence, benevolence, integrity, motives, and intentions of others to whom we are willing to become vulnerable (Lewis & Weigert, 1985; McAllister, 1995). The relational level of trust is contextual specific; depend on characteristics of specific persons and specific situations (McKnight, Cummings, & Chervany, 1995).

But trust can also be viewed as a cross-situational, cross-personal variable (e.g. Deutsch, 1973; Uslaner 2002; Rotter, 1967). The decision to trust people we do not know, though difficult and risky, is often necessary in order to initiate a transaction. We trust for example a doctor we did not visit before. This trust in people we do not know, our expectation that they will behave honestly, responsibly and uphold their implicit or explicit promises is termed *generalized trust (*Uslaner 2002) in sociology. In psychological studies several authors named the propensity to trust this cross-situational, cross-personal variable and address it as a personality trait that leads to generalized expectations about the trustworthiness of others and that is stable across situations (e.g., Rotter, 1967; Costa & Anderson, 2010).

In the literature another distinction is made between trust expressed in people in general, and trust in people who are known to us personally (Sturgis & Smith, 2010). Generalized trust measure the expectation regarding people in general *(*Uslaner, 2002). Other studies attempting to examine generalized trust that have not utilized Rotter's scale have typically used one or two self-report items (Wheeless, & Grootz, 1977). Usually generalized trust is investigated by asking if "most people" can be trusted. Sometimes an alternative question is used in order to control de result, because recently has been shown that apparent differences in trust across question formats and groups within the general public derive, at least in part, from heterogeneity in question interpretation (Sturgis & Smith, 2010).

There are studies showing the positive effects that generalized trust has on several organizational and societal processes (Gurtman, 1992; Hardin 2006), but we do not know many things regarding how this generalized expectancy regarding the behavior of others is related with other generalized expectancies regarding their competence (i.e., self-efficacy), regarding the future (i.e. optimism) and the self (i.e., self-esteem).

The present study aims to explore the relations between generalized trust and a variety of other psychological constructs. Therefore, it is described here why and how certain variables should be related to generalized trust.

Generalized Self-Efficacy (GSE) is the belief in one's competence to tackle novel tasks and to cope with adversity in a broad range of stressful or challenging encounters, as opposed to specific self-efficacy, which is constrained to a particular task at hand (Schwarzer, 1992). Perceived self-efficacy facilitates goal-setting, effort investment, persistence in face of barriers and recovery from setbacks. It can be regarded as a positive resistance resource factor. The highest positive associations of general self-efficacy were with optimism, self-regulation, and self-esteem, whereas the highest negative associations emerged with depression and anxiety (Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005).

Perceived self-efficacy can be characterized mainly as being competence-based, prospective, and action-related (Bandura, 1997, 1999). Self-efficacy is commonly understood as being task-specific or domain-specific. But some researchers have also conceptualized a generalized sense of self-efficacy that refers to a global confidence in one's coping ability across a wide range of demanding or novel situations (Schwarzer & Jerusalem, 1995). These characteristics make it a unique theoretical construct different from related ones such as self-esteem.

According to social-cognitive theory, people are considered to be self-organizing, self-reflective, self-regulative, and to make judgments about themselves based on their own activity. Moreover, self-efficacy beliefs influence personal motivational processes, affect, and behaviors, and they should be related to certain personality characteristics as well as to stress perception, life satisfaction, and achievements throughout different areas of functioning (Bandura, 1997).

Persons with low self-efficacy have low self-esteem and pessimistic thoughts about their accomplishments and personal development (Bandura, 1997). Self-esteem refers to a conviction about one's worth, whereas self-efficacy pertains to judgments of personal ability to act (Bandura, 1997). Individuals with high self-esteem should have high self-efficacy, since they undertake more challenging goals than those with low self-esteem (Bandura, 1997).

Similar to self-efficacy, optimism is theorized to influence human behaviour through its effect on goal striving and motivation. As a disposition, it is expected that optimism has relevance across diverse situations. Optimism is a generalized expectancy regarding future outcomes (Scheier, Carver, & Bridges, 1994). Optimists, who hold positive expectancies for their future, should also harbour optimistic beliefs about their own ability to accomplish various goals. The pursuit lasts as long as optimistic beliefs about possible success (that is, self-efficacy) are sufficiently favourable (cf. Scheier et al., 1994).

We also know that there are strong relations between self-efficacy, self-esteem and optimism (Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005), but we do not know much regarding the relationship of generalized trust with this concepts (Uslaner, 2002). Self-esteem is seen as a stable and global evaluation of the self. A

global evaluation of the self in positive terms is not compulsorry a sign of healthiness or has functional psychological and behavioral consequences (Rosenberg, 2007). The four concepts investigated are all global evaluation: of the future (optimism), of the professional competences (self-efficacy), of the self (self-esteem), or of the general trustworthiness of unknown others (generalized trust). The vulnerability to pathology is due toirrational beliefs regarding self, others and life (DiGiuseppe, Leaf, Exner, & Robin, 2007). The irrational beliefs (demandingness, catastrophising, low frustration tolerance and silf-downing/global evaluation) are a vulnerability factor, and when circumstances of the life do not confirm them, a person has dysfunctional emotions and behaviors. The rational beliefs (the balanced evaluation of the adverse caracter of an event, the tolerance to frustration, the unconditional acceptance and the evaluation of specific behavior) are insteed an protective factor.

Building on the aspects discussed above, we argue for the importance of studying the relations between generalized trust and rational and irrational beliefs, and the relation between the four global evaluation studied (generalized trust, self-esteem, self-efficacy and optimism) in order to understand better the role of generalized trust and of the other concepts in psychological functioning. We want to see if generalized trust is a protective or a vulnerability factor.

It is hypothesized that 1) the generalized trust has a positive relation with self-esteem, self-efficacy and optimism and 2) the generalized trust has a positive relation with rational beliefs and a negative relation with irrational beliefs.

Method
Participants
The participants were included voluntary in this study. A number of 101 participants have filled in the questionnaires but in the final analysis were included the scores of 92 participants. The mean age is 20.03 (SD= 3.01). Two participants didn't report their age. Most of the participants were females (63%). Under the aspect of education 58.9% participant have graduated a high-school, 9.8% a collegium, 16.3% a faculty and 14.1% have other studies.

Measures
Generalized trust. It is measured in this study by two items: "In general I trust other people" and "Usually, I trust people I don't know when I meet them for the first time". The first item is very used in national sociological surveys and in World Values Survey (Paxton, 2007; Uslaner, 2002). The second item is an alternative version of the question (Sturgis & Smith, 2010). The Cronbach's alpha was .56.

Generalized Self-Efficacy Scale (Schwarzer & Jerusalem, 1995; Romanian version – Băban, 1998) reflects an optimistic self-belief (Schwarzer, 1992). This is the belief that one can perform a novel or difficult tasks, or cope with adversity in various domains of human functioning. The scale has ten items. Each item refers to successful coping and implies an internal-stable attribution of success. Responses are made on a 4-point scale (1=s*trongly disagree* and 4=*strongly agree).* The Cronbach's alpha was .82 and the construct is one-dimensional.

The Life Orientation Test (LOT; Scheier & Carver, 1985; Romanian version – Băban, 1998) is a 10-items measure that assesses dispositional optimism. Responses are scored on a 5-point scale anchored by s*trongly disagree* and *strongly agree*. Higher scores on this scale indicate a higher level of optimism. The Cronbach's alpha was .63.

Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965; Romanian version – Băban, 1998). The scale is a ten-item Likert scale with items answered on a four-point scale (from *strongly agree* to *strongly disagree*). Five items are scored reversed. Whereas some studies have shown that the scale is a valid and reliable unidimensional measure of self-esteem, others have found that the RSE is comprised of two factors. Goldsmith (1986) suggested that the RSE factor structure depends on age and other characteristics of the sample. Investigations that used high school or college students supported the scale's unidimensionality (McCarthy and Hoge 1982). The Cronbach's alpha was .80.

Attitudes and Beliefs Scale II (ABS-II) (DiGiuseppe, Leaf, Exner, & Robin, 1988; Romanian version - Macavei, 2002) was used as a measure of irrational and rational beliefs. The ABS-II has been shown (e.g., David, Schnur, & Belloiu, 2002; DiGiuseppe et al., 1988) to be a reliable and valid measure of both rational and irrational beliefs. The ABS2 is a 72-item scale consisting of a 4x3x2 matrix. The first factor consists of belief processes and has four levels representing demandingness (DEM), self-worth or self-downing (SD), low frustration tolerance (LFT) and awfulizing (AWF). The second factor includes content/context information and has three levels representing beliefs about affiliation, achievement and comfort. The third factor determines if the item is worded rationally or irrationally. The overall score, as well as subscale scores are computed by summing the scores of individual items. The scale allows the discrete evaluation of irrationality, rationality, demandingness, self-downing, frustration tolerance and awfulizing. For this study we used only two of the three components: cognitive processes and wording modality.

Procedure

Participants completed all measures on one occasion. Scales were administered individually. Informed consent was obtained from the participants, after the procedure had been fully explained to them.

Results

Trust measures

In order to verify if the two items that were used to measure trust can be combined into a single measurement scale, it was conducted an exploratory factorial analysis using principal component method (N= 90). The results of this analysis indicate one factor that explains more than 70% (70.02) of dispersion. Also, using Kaiser´s criterion a single factor was identified (eigenvalue= 1.40). The resulted scree plot from this analysis indicated the existence of one factor behind the two items that measure trust (Figure 1). Because only one component was extracted, the

solution cannot be rotated. So, the two items that measured trust were considered as items of a single generalized trust scale.

Scree Plot
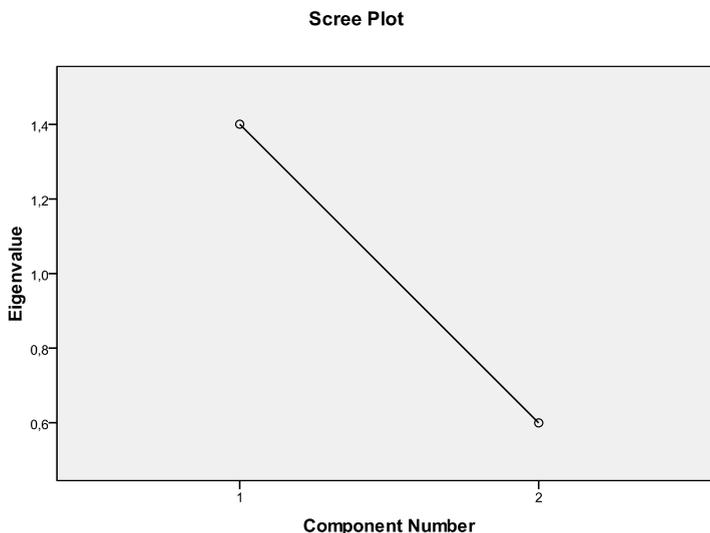
Figure 1. *Number of factors extracted in the analysis (N=90)*

The means, standard deviations, alpha Cronbach reliability coefficients and intercorrelations between the all variables included in the study are presented in Table 1. Because the reliability of the trust composite measure was lower than .70, in the analysis were also included in the analysis the two items that measured trust as a generalized trust and trust in new situation. In the case of generalized trust and trust in new situation, values of median were computed as an indicator of central tendency and rho Spearman correlation coefficients were computed between these variable and the others included in the study. All the variables included in the study were transformed in z-scores.

Table 1.

Means, standard deviations, alpha Cronbach reliability coefficients and intercorrelations between the variables (N= 92)

Variable	Mean	SD	1	2	3	4	5	6	7	8
1. Self-esteem	28.84	4.84	(.80)							
2. Self-efficacy	29.88	4.70	.34**	(.82)						
3. Optimism	27.31	5.15	.15	.26**	(.63)					

Variable	Mean	SD	1	2	3	4	5	6	7	8
4. Irrational beliefs	107.02	18.94	-.16	-.03	.08	(.86)				
5. Rational beliefs	124.54	19.75	.06	.01	.16	.12	(.88)			
6. Trust	5.66	1.44	.11	.09	.04	-.11	.04	(.56)		
7. Generalized trust[b]	3[a]	-	.09	.13	.07	-.09	.00	.80**	-	
8. Trust new situation[b]	3[a]	-	.15	.10	.01	-.16	-.03	.85**	.40**	-

Note: [a] – Median as an indicator of central tendency, [b] - rho Spearman correlation coefficient, ()- Alpha Cronbach reliability coefficient is presented in parenthesis

The results indicate significant associations between self-esteem and self-efficacy (r= .34, p<.01) and, self-efficacy and optimism (r= .26, p<.01). The individuals that express high scores on self-esteem have a strong belief of feeling competent in most of the situations. Also, the individuals with a strong feeling that they are competent in handling most of the situation report high levels of optimism. None of the global self-evaluations included in the study significantly associated with the composite score of trust or the two items that measured trust. As expected, there are significant positive associations between the composite score of the trust and the two items that measured generalized trust and trust in new situation (rho= .80, p<.01 and rho= .85, p<.01). It can be observed that the association between generalized trust and trust in new situation is a positive one (rho= .40, p<.01). This means that individuals that express a high level of generalized trust are characterized by a high level of having trust in others in situation that are new for them.

In order to test the predictive role of the personality traits, rational and irrational beliefs on trust, it was conducted a hierarchical regression analysis. The independent variables included in the regression steps were the following:

1. Age and gender
2. Self-esteem
3. Self-efficacy
4. Optimism
5. Irrational beliefs
6. Rational beliefs.

The results indicate that none of the models included in the steps of the regression analysis significantly estimates the evolution of the dependent variable represented by the composite score of generalized trust (F(2,87)= .01, p>.05; F(3,86)= .36, p>.05; F(4,85)= .37, p>.05; F(5,84)= .29, p>.05, F(6,83)= .43, p>.05, F(7,82)= .38, p>.05. At the individual level, it was found that age (β= .00), gender (β= -.02), self-esteem (β= .11), self-efficacy (β= .07), optimism (β= .00), irrational (β= -.11) and rational beliefs (β= .04) are not predictors for generalized trust.

Table 2.

Results of regression analysis estimating the evolution of generalized trust based on self-esteem, self-efficacy, optimism, irrational and rational beliefs (N= 92)

STEPS	F	R^2	ΔR^2	Fsch	β
1. Demographics Age Gender	$F(2,87)= .01$	.00	.00	$F(2,87)= .01$	 .00 -.02
2. Self-esteem	$F(3,86)= .36$	.01	.01	$F(1,86)= 1.06$	.11
3. Self-efficacy	$F(4,85)= .37$	.01	.00	$F(1,85)= .40$	.07
4. Optimism	$F(5,84)= .29$	.01	.00	$F(1,84)= .00$	.00
5. Irrational beliefs	$F(6,83)= .43$	.03	.01	$F(1,83)= 1.10$	-.11
6. Rational beliefs	$F(7,82)= .38$	.03	.00	$F(1,82)= .13$	.04

In order to see if the construct represented by self-esteem, self-efficacy and optimism as global self-evaluations are best explained by a second order factor, it was conducted a confirmatory factorial analysis using the AMOS 7.0. In this analysis it was hypothesizes apriori that:

1. Responses to the scales that evaluated self-esteem, self-efficacy and optimism can be explained by three first-order factors (self-esteem, self-efficacy, and optimism) and one second-order factor (Resilience)

2. Each item has a nonzero loading on the first-order factor it was designated to measure, and zero loadings on the other two first-order factors

3. Error terms associated with each item are uncorrelated

4. Covariation among the three first-order factors is explained fully by their regression on the second-order factor.

The diagram of this model is presented in Figure 2. In this model were included the following variables:

1. Observed variables (28): the items of the Self-Esteem Scale, Generalized Self-Efficacy Scale and Life-Oriented Test

2. Unobserved variables (35) : 28 error terms, 3 first-order factors, 1 second-order factor, and 3 residual terms

3. Exogenous variables (32): 28 error terms, 1 second-order factor, and 3 residual terms

4. Endogenous variables (31): 28 observed variables and 3 first-order factors.

The parameters were fixed and unlabeled. In the first group, 28 error term regression paths (fixed to 1.0), 3 factor loadings (fixed to 1.0), residual regression paths (fixed to 1.0), and variance for one second-order factor were included. In the second group of parameters, 28 factor loadings, 28 error variances and three residual variances were included.

The results indicate that the value of the χ^2 is statistically significant at the probability level p<.001, $\chi^2(347)= 603.86$. This means that there are significant differences between the matrix of the observed data and the matrix based on the

relationships specified in the model. Others indicators of goodness of fit indicate also a poor fit of this model. The value of the root mean squared error of approximation (RMSEA) is .09 and the confidence interval 90% is [.078; .102] having a pclose of .00. The index of goodness of fit (GFI) and AGFI shows values that are below .85 (Sava, 2004). These results suggest that self-esteem, self-efficacy and optimism are not explained best by a single second-order factor represented by personal resilience.
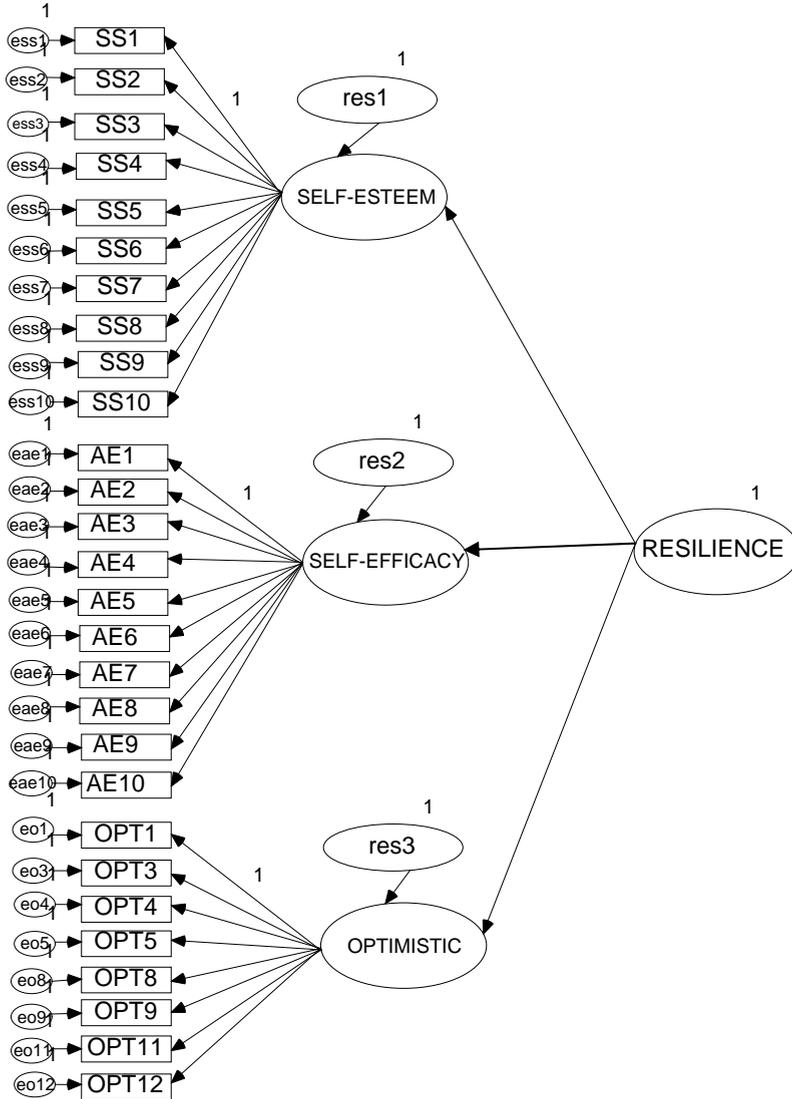

Figure 2. *Hypothesized second-order model*

Discussions

The purpose of the present study was to investigate the relationship between self-esteem (measured by RSE), optimism (measured by LOT-R), self-efficacy (GSES), generalized trust and rational and irrational beliefs (ABS II). Earlier studies have argued that are positive relations between this concepts. Results of our study are confirming only partially the previous evidence found in the literature regarding the relations between the optimism, self-esteem, self-efficacy and generalized trust.

As mentioned before, according to both the theory and the evidence the generalized trust was expected to be positively related to rational beliefs and negatively related with irrational beliefs. Also was expected that trust will correlate with optimism, self-esteem and self-efficacy. A possible explication of why the generalized trust (using the composite score of trust or the two items that measured trust) is not correlated with neither of the concepts investigated can be due to the way generalized trust is defined and measured.

Often referred to as dispositional trust in the psychological literature (Jefferies 2002; Rotter, 1967), generalized trust is sometimes considered to define the same aspects of trust as propensity to trust. If we look back to the definitions of the concepts we see that the propensity to trust is defined like a willingness to accept vulnerability and based on this willingness a person develops generalized expectations about the trustworthiness of others in general that allow him/her to initiate new relationships (Costa & Anderson, 2010). After it is started an interaction with a person and/or team, based on contextual factors people acquire knowledge about the others and the expectations regarding their trustworthiness became more specific: expectations regarding competence, benevolence, integrity, motives, and intentions (McKnight, Cummings, & Chervany, 1995). Future studies should investigate in more detail the relationship between generalized trust, propensity to trust in specific behaviours of others and propensity to trust people in general in an attempt to clarify and integrate the existing evidence. Rational and irrational beliefs did not correlate with none of the concepts investigated. A reason can be due to the distribution of the rational and irrational scale of ABS II between the mean -/+ 1 SD. In order to do multivariate analysis and to test more specific hypothesis we should first screen the population with ABS II. Based on the results on the scale, the eligible participants should be assigned to groups with higher scores, normal scores and lower scores. High scores are considered to be those higher than the mean + 1SD (standard deviation), whereas low scores are considered to be those lower than the mean – 1 sd. Normal scores are defined as those ranging between the mean -/+ 1 SD (Macavei, 2002). Future research should investigate if medium level of the concepts investigated will correlate with rationality and high and low scores with irrationality.

There are some limitations that must be taken into account when considering the results of this study. The first limitation regards the correlational nature of the data used in this study. All the data were based on data collected using a cross-sectional design. These study designs permit only the detection of the association between the

positive psychological capital and outcome variables. The scales used in the present study have a self-report nature. This means that scores can be easily exaggerated or minimized by the person completing them. Like all questionnaires, the way the instrument is administered can have an effect on the final score. Also the method used has reduced possibility to bring to light significant relationships between predictors and generalized trust because of the variance due to the use of common methods. So, the results of the present study cannot be considered in the terms of causality between the studied variables. The causality nature between these variables can be examined by future studies using cvasi-experimental and longitudinal designs.

Future research should clarify if generalized trust (Uslaner, 2002) and propensity to trust (Costa & Anderson, 2010) are measuring the same phenomenon, and only afterwards to try to see which are the relations of generalized trust with other concepts important for the well functioning of a person.

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TYPES OF AGGRESSION IN ADOLESCENTS WITH HIGH AND LOW CALLOUS UNEMOTIONAL TRAITS

ADRIAN ROŞAN[∗]

ABSTRACT. This study investigates the relationship between the four types of aggression and callous-unemotional traits in a sample of non-reffered adolescents aged 14-18 in Romania. Result have shown that adolescents with a high level of callous-unemotional traits (callousness, uncaring and unemotional) show higher rates of proactive overt and relational aggression compared to adolescent low on callous-unemotional traits. In what concerns the overt and relational reactive type of aggression, we found no significant differences according to the presence of callous-unemotional traits, which is consistent with the the fact that there were no significant differences in the levels of impulsivity between adolescents high and low in callous-unemotional traits.

Keywords: *callous-unemotional traits, proactive agression, reactive agression, non-reffered adolescents*

ZUSAMMENFASSUNG. Dieser Studie untersucht die Beziehung zwischen verschiedenen Arten von Aggression und die Merkmale „callous unemotional" in einer Stichprobe von 149 Jugendlichen non referred im Alter von 14-18 Jahre in Rumänien. Jugendliche mit einem hohen Grad der callous unemotional Merkmale (Gefühllosigkeit, gefühllos und emotionslos- callousness, uncaring und unemotional) zeigen ein hohes Maß an offener proaktive und relationale Aggression als Jugendliche mit niedrigem callous unemotional Züge. In der offenen reaktive und relationalen Aggression wurden keine signifikanten Unterschiede nach callous unemotional Züge gefunden, die im Einklang mit nicht vorhandene signifikante Unterschiede auf Impulsivität bei Jugendlichen mit hohem und die mit einem niedrigen callous unemotional Eigenschaften ist.

Introduction

Recent studies have pointed out the fact that antisocial personality traits, such as lack of guilt, absence of empathy, callous and manipulative use of others for personal gain are relatively stable during childhood and adolescence, witch designates a group of individuals with a particularly severe, aggressive and stable pattern of

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antisocial behaviour. Further, antisocial youth with CU traits show a number of distinct emotional, cognitive, and personality characteristics compared to other antisocial youth. These characteristics of youth with CU traits have important implications for causal models of antisocial and aggressive behavior, for methods used to study antisocial youth and for assessing and treating antisocial and aggressive behavior in children and adolescents.

Dodge and Pettit (2003), Frick and Marsee (2006), Loeber and Farrington (2000); Raine (2002) have identified certain risk factors associated with an aggressive and antisocial behaviour. These risk factors include characteristics of the child (e.g., neuropsychological deficits, autonomic irregularities, temperamental traits) and characteristics of the many social contexts (e.g., peer rejection, family dysfunction, neighborhood disorganization) that can influence the child's development. Thus, the theoretical models which try to explain the development of this kind of behaviour and the psychiatric diagnoses related to it must incorporate this constellation of risk factors for explaining the proposed causal mechanisms.

It has been clearly proven that among youth who develop severe patterns of aggressive and antisocial behaviour, there are likely to exist certain subgroups, who may show distict causal processing leading to their disruptive behaviour. There have been a number of attempts to define these important subgroups of aggressive individuals that are different in their types of behaviour, in the risk of developing future behavioural problems and in the associate risk factors that could suggest distinct etiologies.

The case given, it is of major importance the identification of these specific traits which indicate a lack of emotions and feelings and also the level of indifference towards it, for explaining the causal factors of the most severe and aggressive patterns of antisocial behaviour developed by certain individuals and for the defining and classification of distinct groups of youngsters with aggressive potential.

CU traits are prominent in most conceptualizations of psychopathy in adults (Cleckley, 1976; Hare, 1993). The construct of psychopathy in adults has proven to designate a particular severe and violent group of antisocial adults who seem to have distinct causal processes leading to their antisocial behavior, of pathological nature (Blair, Peschardt, Budhani, Mitchell & Pine, 2006; Patrick, 2007).

There is still substantial unclearness about how many dimensions best capture the construct of psychopathy in adult samples. Despite this, at last three of them emerge constantly.Those are:

- affective experience (existence of certain callous-unemotional personality traits, under the name of "deficient affective experiences");

- an arrogant and deceitful interpersonal style involving a narcissistic view of one's self and conning and manipulative behavior;

- an impulsive and irresponsible behavioral style involving poorly planned behavior and proneness to boredom.

Youngsters with conduct problems and pronounced Cu traits:

- exhibit deficits in conscience development;
- exhibit instrumental and premeditated aggressive behaviors;
- show low levels of fearful inhibitions.

Characteristics of adolescents with CU traits

Individual characteristics such as: lack of remorse or guit, low expression of emotion, lack of empathy, use of others for personal gain indicate an deficit in the development of moral consciousness (Hare, 1998). This constellation of traits refer to psychopathy and designate a subgroup of individuals with a more severe pattern of premeditated and instrumental aggression. Moreover, this subgroup of individuals also present deficits in what concers the level of response to punishment and level of reactivity to threatening external stimuli (Levenston, Patrick, Bradley and Lang, 2000).

The research was extended from incarcerated adults to juveniles residents in detention centres and adolescents with aggressive behaviour in schools. A high level of Cu traits was identified in all mentioned categories, especially the lack ef empathy and guilt. Results also indicated a tendency to be less affected by the effects of their actions on other people (Frick et al., 1999; Pardini, Lochman and Frick, 2003), significant deficits in the level of reasoning and argumentation and a reduced ability to recognize and distinguish other people's verbal or non-verbal emotions (Stevens, Charman and Blair, 2001).

Callous-unemotional traits are also associated with the tendency to highlight the positive aspects of aggression (immediate rewards, influence, superiority) and to annul the importance of its negative consequences (punishment). Thus, this socio-cognitive style is strongly related to proactive instrumental aggression.

Youngsters with CU traits have low levels of fearful inhibition. For example, adolescents with conduct disorders and high levels of CU traits tend to prefer new and risky activities and are more sensitive to the idea of punishment, especially when there is a reward orientated response (Frick, Cornell, Bodin et al., 2003; O'Brien and Frick, 1996).

As a result, adolescents with conduct disorders and Cu traits present the following characteristics:

a. deficits in the level of moral conscience;
b. violent premeditated and instrumental behaviors;
c. low levels of fearful inhibition.

Stability of CU traits

An important issue that has been raised is whether this Cu traits are stable enough during childhood and adolescence. Studies have confirmed this assumption

on the basis of parents and teachers report, but also on the self-report, during a 4 year research (Frick et al., 2003). In 2007, Obradović, Pardini, Long and Loeber also reported relatively high rates of stability for parent and teacher ratings of CU traits, after a 9 year research within a sample of 506 boys, aged 8 to 16. This study consisted of semi-structured interviews with parents and teachers and several evaluation of the youngsters.

However, these findings do not imply that these kind of traits are unchangeable. Frick et al. (2003) reported that, despite the high level of stability in these traits across their 4-year study period, there were a significant number of youth who decreased in their level of CU traits over the course of the study. Furthermore, it seems that these decrease in the level of CU traits was related to the characteristics of the psychosocial environment, the socio-economic status of the child's parents and the quality of parenting the child received.

Blonigen, Hicks, Kruger, Patrick and Iacono (2006) certified the same hypothesis, reporting that CU traits are relatively stable (r = .60) during adolescence and early adulthood.

All together, this longitudinal studies have highlighted not only the stability in time of CU traits, but also their predictive value in what concerns the development of disruptive behaviour among children and adolescents

Data has shown not only the stability in time of these traits, but also indicated a certain variability in the level of this traits over time. It seems that the pattern of change indicates that youth with high levels psychopatic traits improve and show less severe levels of these traits across time. On the other hand, there is very small probability that youth who scored low on these traits to develop significant levels later in time.

Predictors of these variations in the stability of CU traits

The two most important predictors were found to be related to the child's psychosocial environment, such as socioeconomic status and quality of parenting. Although the quality of parenting was found in other studies not to be related to the development of deliquency in adolescents with high levels of CU traits, the importance of parenting was important for the development of guilt and empathy and other aspects of conscience (Frick & Morris, in press; Hoffman, 1994; Kochanska, 1995).

Findings suggest that the level of conduct problems is related to the existence of more stable psychopatic traits. Because there is less research on youth with psychopatic traits but who not display an aggressive or antisocial behavior, we consider that it will be interesting to investigate what are the determinants that prevents this youth to react aggressively, despite of their high levels of callous, impulsive and narcissistic traits, which also seem to be less stable over time.

The relationship between levels of narcissism and self-esteem and juvenile deviant behaviour

Although theorists considered narcissism as an extreme form of high level of self-esteem, recent studies revealed a distinction between this two concepts mentioned. Thus, self-esteem it is thought to be a global evaluation of an individual, while narcissism can be defined as a form of grandiosity regarding the personal status compared to, and in the eye of others (Bushman and Baumeister, 1998). Moreover, narcissism appears to be related more to the desire of being admired by other people than to the willingness to establish contacts and be part of a group (Raskin et al., 1991).

A distinction between adaptative and maladaptative narcissism should be made. Characteristics of narcissism that imply feelings of self-appraisal, pleasure in using others for personal gain and a powerful desire to be admired by other people are associated with impulsivity, sensation-seeking and other indicators of social inadaptability. On the other hand, personal characteristics such as a certain sense of authority and leadership are related to variables considered as socially desirable, such as asertivity, independece and self-confidence (Raskin and Terry, 1988).

Taking into account the distinction between this two forms of narcissism (adaptative and maladaptative), Barry (2003) argues that the maladaptative form of narcissism is related with conduct disorders, callous-unemotional traits and low levels of self-esteem.

Rhodewalt and Morf (1998) argue that narcissism can be related to both high or low levels of self-esteem. Thus, considering the fact that narcissists are dependent of other people's admiration to maintain a high level of self-esteem, the lack of positive feedback leads to a diminution of it. In conclusion, the relationship between the level of self esteem and narcissism is complex enough to conclude that narcissism is not necessarily related to a high level of self esteem.

Research in this field confirmed the hypothesis according to witch narcissism associated with a low level of self esteem represents an important predictor for the development of deviant behaviour. Results of various studies show:

    a.   narcissism and not the level of self esteem is associated with agrression and violent behaviour;

    b.   maladaptative narcissism is related to deliquency, overt aggresssion and relational reactivity.

Associations between CU traits and reactive and proactive forms of aggression

Research in the field of aggressive behavior distinguished between two forms of aggression: reactive / impulsive aggression and proactive / instrumental aggresion (Poulin and Boivin 2000; Dodge and Pettit 2003). Reactive aggression refers to impulsive defensive responses to a perceived provocation (Dodge and Coie 1987; Eisenberg and Fabes 1992), generally accompanied by intense psysiological reactivity („hot blooded", angry, hostile).

On the other hand, proactive aggression is not a consequence of provocation or threat, but it is associated with the pursuit of an instrumental goal, a personal gain (Poulin and Boivin, 2000; Dodge and Pettit, 2003), with anticipative positive outcomes.

Studies in this field of activity have shown that reactive aggression is strongly correlated with social, academic and emotional problems (Dodge et al., 1997; Schwartz et al., 1998; Waschbusch et al., 1998; Poulin and Boivin, 2000), whereas proactive aggression is more associated with criminality and substance abuse both in adolescence and adulthood (Pulkkinen, 1996; Vitaro et al., 2000).

There appears to be an important number of children who only diplay reactive forms of aggression, but most children who show high levels of proactive aggressive responses also show high levels of reactive aggressive responses (Dodge and Coie, 1987; Brown et al., 1996; Pitts, 1997). Thus, two groups of aggressive children have been identified. The first one, considered a high-risk group, is formed by those children who display both reactive and proactive aggressive responses. The second group, less aggressive overall, is constituted by those children who only show reactive aggressive responses (Frick et al., 2003).

Researchers have advocated for the use of person-centered approaches for the analysis of correlates to different types of aggression (Barker et al. 2006; Frick 2006).

Other studies concerning these two types of aggression didn't take into consideration the fact that there may be differences in the leveles of provocation as reffered to reactive aggression, if we take into account the fact that some aggressive children may respond even to minimal provocation, whereas others will only react when strongly provoked (Dodge and Pettit, 2003; Waschbusch et al., 1998; 2002). It has been proven the fact that children who display only a reactive form of aggression respond to a threat or provocation with both behavioral and psyschopsysiological responses. On the contrary, adolescents who display only proactive aggression have the tendency to respond behaviorally to provocation or threat, without any increase in the autonomic reactivity. To support this discrepance between the autonomic and behavioral responses to provovation, Frick et al. stated that adolescents with high levels of proactive aggression show also high levels impulsivity and reactive aggression and that they differed from adolescents with only reactive aggressive responses by having deficits in what concerns emotional reactivity (Frick et al., 2003).

Individuals with high levels of callous-unemotional traits seem to be less reactive to different types of negative stimuli, but they report experiencing high levels of anger to provocation (Blackburn and Lee-Evans, 1985; Steuerwald and Kosson, 2000). Overall, studies have shown the fact that there is a discrepance between the behavioral and psychophysiological responses to provocation in individuals who display both reactive and proactive aggression and also in individuals high on callous-unemotional traits. Moreover, individuals high on callous-unemotional traits have high rates of both reactive and proactive aggression (Frick et al., 2003a; Kruh et al., 2005).

In conclusion, there is the possibility that this disconnection between the behavioral and psychopsysiological response to provocation in individuals high on both reactive and proactive forms of aggression is related to the high rates of callous-unemotional traits displayed by this group.

Measures

Inventory of callous-unemotional traits (ICU; Frick, 2004)

ICU is a self-report inventory that measures callous-unemotional traits in youth and has been developed from the CU dimension of the Antisocial Process Screening Device (APSD; Frick & Hare, 2001), a highly used scale in the assesment of psychopathy in children and adolescents. It consists of 24 items rated on a four-point Likert scale from 0 (Not true at all) to 3 (Definitely true) and it was designed to assess three key components of psychopathy (callousness, uncaring and unemotional). A high total score of ICU was proved to be associated with aggression, delinquency and antisocial behavior (Frick, 2006) and also emotional reactivity and psychological impairment.

The Antisocial Process Screening Device (APSD; Frick & Hare, 2001)

The APSD (Frick & Hare, 2001) is a screening device designed to assess psychopathy tendencies in children and adolescents and was derived from the Adult Psychopathy Checklist – Revised (Hare, 1991). The self-report form of the APSD was administered to all detained adolescents. It consists of 20 items, each item being rated on a 3 point Likert scale from 0 (Not true at all) to 2 (Definitely true). The APSD captures three dimensions of psychopathy: narcissism (seven items), impulsivity (five items) and callous-unemotional (six items). The callous-unemotional dimension includes items like 'I feel bad and guilty when I do something wrong' and 'You are concerned about the feelings of others' and it has proven to be the most stable dimension of the APSD (Frick, Bodin & Barry, 2000). All three subscales were created to capture the characteristics of psychopathy: affective ('Your emotions are shallow and fake'), behavioral ('You act without thinking at the consequences') and interpersonal ('You think you are a better or more important than other people').

Peer Conflict Scale (PCS; Marsee & Frick, 2007)

PCS is a self-report measure that assesses both proactive (overt and relational) and reactive (overt and relational) forms of aggression. It consists of 40 items, divided in 20 items for each form of aggression (reactive and proactive). The proactive subscale includes aggression for gain, aggression for dominance (e.g., "When I hurt others, I feel like it makes me powerful and respected"), aggression for reasons that include sadism (e.g., "I enjoy hurting others") and also premeditated and unprovoked

aggression (e.g., " I carefully plan out how to hurt others"). On the other side, the reactive subscale included emotionally provoked and angry form of aggression (e.g., "When I get angry, I will hurt someone") and aggression as a result of impulsivity (e.g., "Most of the times that I have gotten into arguments or physical fights, I acted without thinking"). The items were designed to highlight the corespondence between the the overt and the relational forms of aggression, so that for each item that measured the overt form, there is a another item that evaluates the relational aspect of each form of aggression (proactive and reactive). The items of PCS are rated on a 4 point Likert scale from 0 (Not true at all) to 3 (Definitely true).

METHODS

Participants and Procedure

Participants were 149 male adolescents between the ages of 14 and 18 years. Participants were recruited from three high schools from Romania. Prior to data collection, all procedures were approved by the National Council of Scientifical Reasearch and the high schools participating in the project. Research proceedings were signed between the university and the high schools prior to data collection. Furthermore, parents or legal tutors were informed about the project that was being conducted by a team of researchers from a national university and their permission for participation was asked and obtained. The testing battery, consisting only of self-report measures, was administered orally (to control of reading level) and individually, each member of the research team using one-to-one testing, for an additional assurance of the correct understanding of the items. Where needed, additional explanations were offered. All data was completed by the researchers.

Predictions

Based on this issues, the current study study investigated the relationship between callous-unemotional traits (measured in the levels of callousness, uncaring and unemotional), psychopatic traits (narcissism, impulsivity and callous-unemotional) and reactive and proactive aggression in a non-referred sample of male adolescents (n = 149), aged 14 to 18.

- We first tested the prediction that adolescents who will rate high scores on the callous-unemotional traits (callousness, uncaring, unemotional) will show higher levels of both proactive and reactive aggresion than adolescents who will score low rates on the callous unemotional traits
- Second, we tested the prediction that high scores on psychopatic traits such as narcissism, impulsivity and unemotional will be associated with high rates of aggressive behavior.

- Third, we tested the hypothesis that individuals who score high on impulsivity will show higher rates of reactive aggression and those who score high on narcissism and unemotional will show higher levels of proactive instrumental aggression.

Results

Based on the Inventory of Callous Unemotional Traits we divided 149 male adolescents in two groups: Low Callous-unemotional traits (n = 129) and High Callous-Unemotional traits (20).

Univariate ANOVA analysis of types of aggression on the non-referred sample of adolescents according to the levels of callous-unemotional traits

VARIABILE	1 Low CU	2 High CU	Mean Difference (1-2)	F	Partial eta
	(n = 129) M(SD)	(n = 20) M(SD)			squared
Reactive Overt	5.04 (0.44) a	7.50(1.12)a	-2.09	3.02	.020
Reactive Relational	3.36 (3.92)a	4.15 (5.27)a	-0.79	0.6 4	.004
Proactive Overt	3.51 (0.33) a	5.55 (0.85)b	- 2.03*	4.88*	.038
Proactive Relational	3.84 (3.54)a	6.10 (4.47)b	- 2.25*	6.5*	.042
Impulsivity	3.66 (1.81)a	4.35(2.54)a	-0.69	2.28	.015
Narcissism	3.40 2.19)a	4.85(2.85)b	-1.45*	6.96**	.045

Different subscripts (a, b) denote significant differences between groups based on the linearly independent pairwise comparisons among the estimated marginal means. (** - $p < .01$, *- $p < .05$), Construct assessed using: Inventory of Callous Unemotional) Peer Conflict Scale (Marsee & Frick, 2007) for reactive overt, reactive relational, proactive overt and proactive relational and Antisocial Process Screening Device (Frick & Hare, 2001) for impulsivity and narcissism

The results of the study indicate the fact that, in what concerns our sample of non-referred adolescents, there are significantly higher rates of proactive overt and relational aggression in adolescents with high levels of callous-unemotional traits but no significant differences in what concerns the reactive (overt and relational) form of aggression. Furthermore, we found higher levels of narcississm in adolescents high on callous-unemotional traits, but no significant differences in our sample

concerning the levels of impulsivity. This results are consistent with previous studied concerning callous-unemotional traits in samples of non-referred adolescents that show that 10-15% of adolescents show high rates of callous-unemotional traits. In our sample of 149 non-referred adolescents, we found 20 adolescents with high levels of Cu traits. Moreover, adolescents with callous-unemotional traits show higher rates of proactive aggression (both overt and relational) and we found no significant differences in their levels of reactive aggression (overt and relational) or levels of impulsivity.

Discussion

According to our predictions, adolescents high on callous-unemotional traits showed significantly higher rates of proactive aggression, but no high levels of reactive aggression compared to adolescents low on callous-unemotional traits. Furthermore, adolescents high on callous-unemotional traits and proactive aggression presented significantly higher scores in both narcissism and unemotional dimensions compared to adolescents low on callous-unemotional traits. Also, we found no significant differences in the what concerns the impulsivity dimension dependent on the rates of callous-unemotional traits. This is consistent with the fact that we found no significant differences in the rates of reactive aggression, considering the fact that impulsivity, besides callous-unemotional traits, plays an important role in the onset of reactive aggression (overt and relational) .

The results we found in our study are consistent with previous research that indicates the fact that adolescents high on callous-unemotional traits show high rates of aggression (Kruh et al., 2005; Cornell et al., 1996; Serin, 1996; Serin, Peters & Barbaree, 1990). Moreover, it has been shown that individuals with behavior disturbances and psychopathic features show high levels of both proactive and reactive aggression (Frick et al., 2003). Our study found the same results, although, in what concerns reactive aggression, even though the rates of reactive aggression were higher in adolescents high on callous-unemotional traits, there were no significant differences found. The explanation there will be that reactive aggression is displayed when provocated, and between our two groups (high and low in callous-unemotional traits) we found no significant differences in what concerns the impulsivity dimension.

In conclusion, results indicate that high rates of callous-unemotional traits are associated with high levels of aggression and high levels of narcissism are associated with high levels of proactive aggression. Moreover, on the level of non-referred adolescents, a small percentage develop higher levels of callous-unemotional traits.

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TASKS-ORIENTED ACTIVITIES AND DRAWINGS IN THE STUDY OF CREATIVITY OF PRESCHOOL CHILDREN

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ABSTRACT. The goal of this paper is to plan tasks for preschoolers in order to deliver diverse and different drawings while trying to avoid imitation. The theoretical background of the paper resides in defining creativity as the ability to create *something new, original, and adequate to reality* (Mihaela Roco, 2004; H. Jaoui, 1975; Al. Roşca, 1981; Margaret A. Boden, 1992). We started from the hypothesis that *if preschoolers are given guidelines on the possibilities to vary on a model they will deliver more original outputs. Independent variable* is the task given to children and the *dependent variable* is the output (drawing). The empirical research involved children enrolled in high-preparatory group from one kindergarten in Cluj County. The content sample consisted in specific elements of mathematic and arts: straight and oblique lines. Children were involved in four experimental learning contexts and their progress was monitored. Preschoolers delivered original compositions, different from their peers, but maintaining certain similarities by the usage of the same decorative element. The research hypothesis confirms, but future research should involve less tasks. Children were not able to memorize the entire set of tasks and teacher had to repeat them constantly. Implications for practice are further discussed.

Keywords: tasks, progress, originality, variety

INTRODUCTION

The scientific problem and the motivation of research

Analyzing the Romanian products from the market we noticed that there is little creativity and weak adjustment to the customers needs in the light industry. We studied the patterns from the textures, carpets and faience. For several decades

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the same patterns are promoted through the Romanian products. Creators and designers show little creativity and flexibility in conceiving new and distinct models. On an international level, there already is a tendency to break any pattern and to promote new models according to the rapid changes of fashion. The same conservatory attitude we notice in the cloths of many adults, in the houses design and in its interior and exterior design, in the design of gardens and parks.

We also analyzed the drawings of preschoolers in different contexts. We were interested in the initial task set by the national curriculum and explained by the teacher through the activity. Therefore, several questions were asked: Are pre-school teachers aware of the significance of the tasks they set for the development of children's creative potential? Do pre-school teachers set tasks by which children would develop their creativity? Are these tasks set randomly?

Previous researches studied the characteristics of the drawings shown by preschool children and the stages were described. We were interested in the manner children draw, in the degree of commitment displayed through drawing activity, in the degree of positive or negative influence displayed by adults, and in the connection between their representations and their products.

Starting from these data, we aimed to study how could we determine preschoolers to show more flexibility when they carry on their drawing tasks and how can they obtain an output with mainly a decorative function. From this perspective, this exploratory research assessed five indicators: originality, fluency, flexibility, execution, and synthesis. We were focused on the manner the teachers' creativity could also be developed in order for them to create stimulatory educational contexts for their students.

Theoretical background

Our research is based on several definitions of creativity. Mihaela Roco (2004) states that *being creative* means *creating something new, original and adequate to reality*. H. Jaoui (1975) refers to creativity "as the process of associating and combining pre-existing elements in new structures". Al. Roşca (1981, p. 16) defines creativity as "the ability or the capacity to produce something new and valuable". Other authors as Margaret A. Boden (1992) believe that in general creativity means "creating new and original combinations using old ideas", but these combinations should have a certain value.

J.P. Guilford claimed that all people are creative and they can be distributed on continuous scale of creativity. I. A. Taylor (1959, *apud* Mihaela, Roco, 2004) distinguishes five levels of creativity: *expressive creativity, productive creativity, inventive creativity, innovative creativity and emerging creativity*. The current study focuses on *expressive creativity* defined as the fundamental form of creativity and characterized by spontaneity and freedom of expression. It is not subject to any ability and is revealed in children's drawings.

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In order to measure the creative behavior, Guilford (1967) developed sets of tests focused on divergent thinking. *Factors of divergent thinking* being measured are: (a) *the fluency (flow)* - the ability to quickly and easily produce under certain conditions words, ideas, phrases, sentences; (b) *the flexibility* - the ability to change and effectively restructure problem solving skills and to transfer them in different contexts; (c) *the originality* - the ability to deliver new ideas, creative, unconventional and unusual solutions that shock; (d) *the development* - the ability to plan an activity taking into account as many details as possible and the ability to predict the final outcome, to develop and finalize an idea; (e) *the attention to problems* - the ability to easily observe unusual phenomena; (f) *the reorganization (or restructuring)* - the ability to use an object or a part of it in a new and unusual way. In this paper we analyze the ability of children to produce their work differently from their previous works and from their colleagues by following certain guidelines provided by the teacher.

METHOD

The main objective of this research is to design and to carry on stimulating activities for developing the creativity of preschoolers. The proposed activities included drawing. In order to meet this objective an empirical research was conducted during the school year 2010-2011 at Grădiniţa cu Program Normal Floreşti (Cluj). The sample consisted in 16 children (boys and girls) enrolled in high-preparatory group (preschool teacher Vanea Cornelia). During the plastic activities two major themes were involved: parallel horizontal and parallel oblique lines. A similar research was conducted at the same kindergarten on a different class during the school year 2009-2010 (Dulamă, Alexandru, Vanea, 2010). The current research aimed to validate previous hypothesis, instruments of data collecting, tasks and learning contexts. Also, this research is wider, but we will focus only on the first part of the learning contexts and its concluding remarks.

The tested hypothesis was: *if preschoolers are given guidelines on the possibilities to vary on a model they will deliver more original outputs*. The working task (characteristics and number) represented *the independent variable*. Children's outputs represented *the dependent variable*.

Children received four white A6 paper sheets and color pencils. They had 50 minutes, but if needed additional time were granted.

Learning context 1A was titled ***Horizontal straight lines of different colors and weight***. Children were given the task to draw as many surfaces for present bags (the paper sheet was vertical flipped). The drawings had to combine a decorative element created by children using one or two colors (optional) and straight lines of different weight and colors using the *horizontal alignment*. Children

were also asked to fulfill three requirements: not to look at their peer outputs, not to copy them and not to load the drawing. If they look at their peer's outputs they should try not to work on their models and to create their own. Before starting, the preschool teacher explained and gave examples of decorative elements (e.g. flower, butterfly, house, leaf). She asked first for the decorative element to be drawn and after she approved it children could continue. Children generate a list of such possible elements and each student picks one. On their papers, each child will draw different combinations of lines, but will use the same decorative element.

In order to stimulate the creative potential of their compositions, children are involved in the same learning context, but the indications are different.

Learning context 1B is similar to the previous one. In addition, the teacher tells children they can use continuous or dashed lines (assuming that they did not realize they could have used those in the previous task); they can also alternate the dashed lines with the decorative element; they can merge different lines (with no space between them); on one side of the bag the lines may have different weight and the distance between them may vary; they can apply decorative elements on lines. She explains children every type of lines. While children are drawing, the teacher repeats these possibilities in order to assure they understood. Children were also asked to fulfill the same *three requirements* as in the previous task.

Learning context 2A: *Oblique lines of different weight and colors*. Children were asked to draw as many present bags as possible (vertical flip of the paper sheet) that would combine a decorative element created by them of one or two colors (optional) and oblique straight lines of different weights and colors. The same *three conditions* had to be met.

Learning context 2B is similar to context 2A. In addition, the teacher tells children they can use continuous or dashed oblique lines (assuming again they did not use them in the previous task), that they can alternate decorative elements with dashed oblique lines, that they can merge lines, that one side of the bag may have lines of different weight and that the distance can vary, that they can use zigzag lines and create a zigzag (we drew a zigzag design on the blackboard as an example); that they can draw geometric shapes by using oblique lines or decorative elements (we did not draw on the blackboard; they could make a rhombus, and also parallelograms and triangles, but not horizontally positioned); that they can place the decorative element in order to result diagonal lines, that they can merge the oblique lines with the decorative elements, that they can overlap the decorative elements, that they can intersect the oblique lines in order to create models (as an example we drew on the board two diagonal lines that intersect). The teacher explained every type of line and while they were drawing she repeated these opportunities. The same *three conditions* had to be met.

RESULTS

The following figures show the children outputs for the four tasks.

Figure 1. Straight horizontal lines of different weight and color (**1A**)

Figure 2. Horizontal straight lines of different weight and colors (**1B**)

Figure 3. Oblique lines of different weight and colors (**2A**)

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Figure 4. Oblique lines of different weight and colors (**2B**)

DISCUSSION

Before and during the task children were given information on the possibilities to vary their drawings. They were supported to deliver original models. We monitored if children respect the requirements, if they create new models, if there are differences among children drawings, if they drawings are systematic of chaotic. Also the number of models generated by each child was counted. In order to understand their thinking and their creative process, the difficulties they encounter during drawing, each deliverable was carefully analyzed. The general observations are discussed in the next section.

Output 1A

Originality. The drawings are different for each child; therefore we can distinguish whom they belong to.

Fluency. Children realize four outputs so the degree of fluency is high. One child delivers only 3 drawings and one delivers 5.

Flexibility. There are not big differences among the drawings. Although they were not asked, children have the tendency to cover the entire surface of the paper with lines. For the four outputs they had to deliver, they also have the tendency to place the decorative element on the same area. In general, they alternate lines of different colors, but for some outputs they use the same color. The lines of similar weight are also dominant. Only in a few drawings we can notice colored stripes.

Development. Some children do not merge the edges of the paper. This negatively affects the general appearance of their products. Some children do not draw the line with one move so the resulting line is discontinued. Lines or not horizontal but twisted. We can also notice their tendency to work "in a series" meaning that their four drawings are similar.

Synthesis. The products do not have a high aesthetic value.

Output 1B. Children were asked to draw straight lines of different weight and colors in horizontal position, but the number of tasks was higher. In this task we are interested if preschoolers fulfilled the requirements. These were mentioned in the Table 1. Compared to the previous mentioned research (Dulamă, Alexandru, Vanea, 2010), in this case we used a dichotomic scale. Based on the data we notice that children used more dashed lines (a new idea), lines of different weights and at different distance (task similar to 1A). Only two subjects use merge lines, either because they do not know how to draw it or because they forgot the requirement.

Table 1.

Fulfillment of the requirements during the task 1B

First name	Dashed lines	Alternation decorative elements with dashed lines	Merge lines	Lines of different weights on one output	Different distances between lines on one output	Decora-tive elements on lines
Adrian	x	no	no	x	no	no
Andreea	x	no	no	x	x	x
Andrei	no	no	no	x	x	x
Diana M	x	x	no	no	x	no
Iasmina	x	x	no	x	x	x
Lavinia	x	x	no	x	x	x
Medeea	x	x	no	x	x	x
Melisa	x	no	no	no	no	no
Raluca	x	no	x	x	x	x
Rebeca	x	x	x	x	x	x

Analyzing the outputs lead to the following conclusions:

Originality. The products are different for every child so we can establish who the author was.

Fluency. Children deliver 4 drawings except for Rebeca who draws 2.

Flexibility. There are very few differences among their drawings. The same child also delivers similar drawings, even if the task allowed them multiple combination opportunities. Even if not explicitly asked, the tendency to cover the entire surface and placing the decorative element on the same area are still present. In general they alternate lines of different colors; some drawings have lines of the same color.

Almost all drawings use combinations of different colors and not group of lines of the same color. Lines of the same weight are dominant; children do not use colored stripes (lines of different weight). Children *are focused on representing dashed lined* which means that on a working task they can change only one element.

Development. Lines are not horizontal, but twisted. The manner in which they draw horizontal lines is according to the motric and cognitive developmental stage. Their outputs are somewhat more elaborated. Very seldom they draw lines in two phases which means a higher quality in execution.

Synthesis. Aesthetically the outputs are not impressive, but they are conceived as a unitary product. The coverage of the entire surface with lines and placing the decorative element mainly in the center gives drawings consistence.

Output 2A. Children were asked to draw several models for present bags in which they had to combine a decorative element using one or two colors (optional) and straight lines of different weights and colors in oblique position. The analysis of their compositions led to the following conclusions:

Originality. The products are different for every child so we can establish who the author was.

Fluency. Children deliver 4 drawings, except for one who delivers 3.

Flexibility. The drawings differ in a little manner between. They show the tendency to cover the entire surface with lines. Only the unfinished drawings do not display lines on the entire surface. Also, on those 4 papers they had to deliver, the decorative element is still placed on the same area. They also alternate lines of different colors and weights. Only several drawings show lines of the same color and weight (stripes). The degree of flexibility is weak. They do not use dashed lines. One girl uses zigzag and other uses different line orientation.

Development. Some children do not merge the edges of the paper. In several drawings they do not draw the lines from a single move. Therefore, the line appears dashed which demonstrate their ability to draw lines. Lines are not oblique, but twisted with the tendency to curve.

Synthesis. Drawings of each child are similar. Therefore in general there are conceived as unitary.

Output 2B. Children were asked to decorate present bags using different oblique and colored lines, but according to some requirements. At the task 2B we were interested if preschoolers fulfilled the new requirements. These are shown in Table 2. Based on these data we can notice that they used more dashed lines, alternated dashed lines with decorative elements, used lines of different weights and distances, applied decorative elements on lines, and used geometric shapes; only a few merged lines and used zigzag. On task 1B they received 6 new ideas and for task 1B they received 9 new ideas. We notice thou that they met more requirements than in 1B. This is due to that fact that the teacher repeated for several times the new requirements.

Fulfillment of the requirements during the task 2B

First name	Dashed lines	Alternation decorative elements with oblique dashed lines	Merge lines	Oblique lines of different weights on one output	Different distances between lines on one output	Decorative elements on lines	Zigzag	Geometric shapes	Cuts the oblique lines
Adrian	x	x	no	x	x	no	no	x	no
Andreea	x	x	no	x	x	x	no	x	no
Andrei	x	x	no	no	x	no	no	x	no
Diana M	x	x	x	x	x	x	no	x	x
Diana T	x	x	no	x	x	x	no	x	x
Flavia	x	x	x	x	x	x	no	x	x
Lavinia	x	x	no	x	x	x	x	x	x
Medeea	x	x	no	x	x	x	no	x	x
Melisa	x	x	no	x	x	x	no	x	x
Rafael	x	x	no	no	x	x	no	no	no
Raluca	x	x	no	x	x	x	no	x	x
Ramona	x	no	no	x	x	x	x	x	x
Rebeca	x	x	x	x	x	x	no	x	x

Based on the content analysis of the compositions we reached the following conclusions:

Originality. The products are different for every child so we can establish who the author was.

Fluency. Children deliver 4 compositions, except for Rebeca who delivers 2.

Flexibility. Children's drawings differ among them, but the style is similar. Even if they had the opportunity to vary their compositions, the drawings of the same child are still similar. They show the tendency to cover the entire surface of the paper. They do not use the decorative element used in the previous tasks. Only in few compositions they still alternate different colored lines. They create rows of decorative elements: circles, rhombus, flowers etc.; some or places over the lines which means that they understood the new task. Lines of the same weight are dominant; stripes are used in few exceptions. They did not realize the opportunity of drawing zigzags and that they can merge lines. Only in few cases the oblique lines are crossed with other lines, except for the case of decorative elements (little stars) or geometric

shapes (squares, rhombus, triangles). Compositions are similar to one another. This shows little flexibility.

Development. Lines are not oblique, but twisted and curved. But in general their deliverables are more consistent. In general they draw the lines on one move which proves a progress in the quality of execution.

Synthesis. It is specific that they draw rows of decorative elements and geometric shapes places on oblique lines. Children show the tendency to load the composition with many decorative elements and lines.

Compared with the drawings from the previous research (Dulamă, Alexandru, Vanea, 2010) we notice that the current drawings are very similar. We explain this by the similarity of given tasks. If preschoolers from the experimental group meet more requirements is due to the teacher who offers support during the task. It would be interesting to compare with compositions from older children to see the role of knowledge in task oriented drawings.

CONCLUSIONS

This exploratory study reached some significant conclusions for future research in this area.

With respect to *originality,* we can notice that children's compositions are different from their peer's. The requirement to use a certain decorative element (as a personal feature) gave personality to the drawings. As for *fluency,* with few exceptions, children deliver the four outputs and may have been able to deliver even more. Analyzing the *flexibility* we concluded that even if the drawings differ among them, the style is similar. The drawings belonging to the same child are similar, even if he/she had the opportunity to vary the composition combining different elements. Almost all drawings use the entire surface of the paper (even if not required). This proves the lack of previous knowledge on decorative drawing and little flexibility. Analyzing the degree of *development* we notice that the lines are not straight or oblique, but twisted and curved. There is a slight progress in the quality of execution from one composition to another. As for *synthesis* we notice that compositions are similar and that each composition is unitary even if the general appearance is somewhat less aesthetic.

Comparing current drawings with previous ones (Dulamă, Alexandru, Vanea, 2010) we notice the similarities in style. We explain this by the similarities of tasks. Both researches confirmed the hypothesis. If children are given possibilities to vary the compositions they create more original outputs. As for the independent variable we notice that in the future the task should be simpler. Children found difficult to meet all the requirements in one drawing. Their memory is reduced and only if they were constantly repeated they could remember the possibilities. Therefore, in the second part of the research we reduced the number of tasks given.

Implications for practice

Considering the limitation of the study, results still reach interesting conclusions not only for educational practices mentioned above. Drawing is an important activity for preschoolers. Moreover, the use of art to understand preschool-aged children is particularly advantageous because very young children usually are not able to communicate clearly their feelings associated to maltreatment behaviors or to the trauma associated with it. Family drawings of abused or neglected preschool children can be differentiated from those of children not identified as abused or neglected (Carpenter et al., 1997). Therefore it is important to develop this skill from an early age. Moreover, considering that usually maltreated children's language is likely to have been developmentally delayed (Veltman, Browne, 2001), drawing may be the only available activity for this age-group. But also we must be aware that they provide only clues, not necessarily evidence, and therefore should be used only within the context of other effective elementary school counseling practices (Sadowski, Loesch, 1993). The evidence from research indicates that caution should be employed in the use and overinterpretation of drawings. Further large-scale, controlled studies may be necessary to indicate whether drawings have a real use in the identification of child maltreatment (Veltman, Browne, 2002).

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