

## Creativity, Motivation to Learn, Family Environment, and Giftedness: A Comparative Study<sup>1</sup>

Denise de Souza Fleith<sup>2</sup>  
*Universidade de Brasília*

**ABSTRACT** - This study compared gifted and non-gifted students with respect to the perception of classroom climate for creativity, family environment, and motivation to learn. The 107 participants were 4<sup>th</sup> grade students. Among them, 41 attended a program for gifted students. Three instruments were administered: the Classroom Climate for Creativity Scale, the Evaluation of Elementary School Students' Motivation to Learn Scale, and Quality of Family Interaction Scales. Differences between gifted and non-gifted students were noted regarding the perception of classroom climate for creativity and motivation to learn. Both groups evaluated positively the family environment.

**Keywords:** creativity, motivation to learn, giftedness, family

## Criatividade, Motivação para Aprender, Ambiente Familiar e Superdotação: Um Estudo Comparativo

**RESUMO** - Este estudo comparou alunos superdotados e não superdotados em relação à percepção do clima de sala de aula para criatividade, do ambiente familiar e motivação para aprender. Participaram 107 alunos de 4ª série do Ensino Fundamental. Entre eles, 41 frequentavam um programa de atendimento ao aluno superdotado. Três instrumentos foram empregados: Escala sobre Clima para a Criatividade em Sala de Aula, Escala de Avaliação da Motivação para Aprender de Alunos do Ensino Fundamental e Escalas de Qualidade de Interação Familiar. Diferenças entre os alunos superdotados e não superdotados foram observadas no que diz respeito à percepção do clima de sala de aula e à motivação para aprender. Ambos os grupos avaliaram satisfatoriamente o ambiente familiar.

**Palavras-chave:** criatividade, motivação para aprender, superdotação, família

There are numerous challenges to overcome on the 21<sup>st</sup> century, which require from human beings some urgent and innovative solutions. As prophesized by Garcia Marques, "do not expect anything from the 21<sup>st</sup> century, for it is the one who expects better things from us". With this panorama, it has become fundamentally important to prepare men and women, from an early age, to anticipate and solve problems creatively. This implies that we must create the conditions to favorably develop the full expression of creative potential.

Since the end of the last century, creativity has been considered under a systemic perspective, and it has been defined as a continuous dynamic process, a result of intraindividual and environmental factors. (Amabile, 1996; Csikszentmihalyi, 2014; Martínez, 2007; Nakano & Wechsler, 2012; Robinson, 2013; Sternberg & Lubart, 1991; Sawyer, 2012; Simonton, 2008).

Among the personal attributes highlighted by experts as being the essential elements of the creative act, motivation is worthy of note (Amabile, 1996; Csikszentmihalyi, 1996; Fleith & Alencar, 2010; Lubart, 2007). Until the end of the 1980's, intrinsic motivation was considered to be the key element of creative action, and external motivation was considered as a hindrance to the creative process. This view

was later replaced by a perspective that integrates both forms of motivation (Amabile, 1996). Choi (2004) defends that extrinsically motivated people may present a highly creative performance when the criteria for reward involves creativity but may show a more conventional performance when the criteria for reward is the efficacy of the solution. Although Lubart (2007) recognizes that extrinsic motivation may have a positive effect on creativity, he states that these effects are less significative than those stemming from intrinsic motivation. The study by Prabhu, Sutton and Sauser (2008), with 124 undergraduate students, presented evidence that intrinsic motivation is a powerful mediator in the relationship between creativity and self-efficacy, while extrinsic motivation only moderately contributed to the explanation to this relationship.

The role of motivation on the learning process has also been a matter of discussion by scholars on the area (Boruchovitch & Bzuneck, 2004; Boruchovitch, Bzuneck, & Guimarães, 2010; Salvador, Mestres, Goñi, & Gallart, 1999). According to Neves and Boruchovitch (2007), a student may be identified as intrinsically motivated to learn when their involvement on school activities is characterized by their interest and satisfaction shown on the task itself. On the other hand, when the students completes school work with the intention of getting back social or material rewards, their motivation to learn is typically extrinsic. The authors draw special attention to the fact that the motivation to learn is a

<sup>1</sup> Support: CNPq

<sup>2</sup> Contact: [deniseffleith@gmail.com](mailto:deniseffleith@gmail.com)

fundamental variable to measure learning self-regulation. Adelman and Taylor (1983) state, on the other hand, that learning is not exclusively dependent on the students' motivation, because other factors such as the absence or insufficiency of previous knowledge, as well as inadequate teaching practices may negatively influence school performance. Identifying the characteristics of classroom climate which favor or inhibit creativity is also something that might contribute to the understanding of different dimensions of the teaching-learning process (Alencar, Bruno-Faria, & Fleith, 2010; Cropley, 2005; Kaufman, Beghetto, & Pourjalali, 2011; McCluskey, 2013; Wechsler & Souza, 2011).

Esquivel and Hodes (2003) remind us that the development of creativity, especially on the early years of childhood, is influenced not only by school environment, but also by home and family environment. Family is one of the first experiences of socialization of individuals and it has a fundamental role on human development. It is also a space for the transmission of culture, values, beliefs and knowledge throughout the generations. Family is the primary source of genetic, social and psychological influence (Dessen & Braz, 2005; Wagner et al., 2011; Weber, 2008).

Csikszentmihalyi (1996), when interviewing scientists, artists and executives who were considered to be highly creative, faced several stories of flexible, stimulating families, who were responsive to the interests of their children. In continuing this study, Gute, Gute, Nakamura e Csikszentmihalyi (2008) analyzed responses from nine creative individuals who had participated in the previous research. The authors came to the conclusion that parents who engage in activities with their children, present consistent values and stable routines, provide social and psychological support, avoid over controlling their children, encourage autonomy, independence and exploratory behavior and believe in their children's potential are the kind of parents who contribute to the development of creative abilities.

Conversely, Kerr and Chopp (1999) bring forth the hypothesis that conflicted and stressful family environments may motivate individuals to develop creative ways to solve problems and minimize tension, which may favor creative process. The authors even suggest that the emotional distance between parents and children may give rise to rebellion on the child, which could stimulate autonomy and independence.

In this sense, Kerr and Chopp bring attention to the importance of healthy and moderate affective attachment between parents and children: on one side, to give emotional support for the children feel safe when exploring new environments and learning possibilities, and on the other, to create opportunities to the development of their confidence. The role of family on the development of creativity remains a controversial and fertile field for research.

The phenomenon of creativity has also been the focus of researchers on the field of giftedness. On the last thirty years, the idea that giftedness is correlated to high IQ scores has been continuously disproven. Research has shown the necessity to consider other aspects such as environmental factors, luck, positive self-concept, motivation and creativity (Fleith & Alencar, 2013; Gagné & Guenther, 2012; Pfeiffer & Wechsler, 2013). The model of the three rings, proposed by Renzulli (1978, 1988, 1994), for example, considers

giftedness to be the result of the interaction of three factors: above-average ability, task commitment and creativity. In Brazil, the definition of the Ministry of Education states that "students with high abilities or giftedness show high potential in any of the following areas, in isolation or in a combined form: intellectual, academic, leadership, psychomotricity and arts, as well as showing high creativity, involvement in learning and the completion of tasks in their areas of interest" (Ministry of Education, 2008, p.15).

According to Davis and Rimm (1994), there is no theme more important in giftedness education than creativity, because two important goals of their education is to develop talents and abilities, aiding these individuals in the actualization of their full potential and in becoming creative; and to empower them to give valuable and creative contributions to society. Although in the last decade the discussion about the principles and practices of social and scholar inclusion, gifted children still are a group not very well known and usually neglected. According to Delou (2007), gifted students are rarely spotted in the classroom. Also, the educational practices implemented do not always keep up to their level of development. Alencar (2007) clarifies that low motivation, boredom and the lack of challenges in school may give rise, in the gifted individual, to lack of compromise, lack of interest and lack of participation in classroom activities, which may hinder their academic performance.

Jin and Moon (2006) compared the academic satisfaction of gifted high school students who attended a science school in Korea to that of gifted students enrolled in regular schools. Results indicated that the students attending science school evaluated school context more positively than the students in regular schools, with special emphasis on the advanced curriculum, the level of expertise of their teachers and the good relationship with teachers and classmates. On the longitudinal study by Gottfried and Gottfried (1996), with gifted students from 9 to 13 years of age, it was observed that, along the years, there was a rise on the level of intrinsic motivation of the participants in all curricular courses. The authors explain that students with superior intellectual abilities feel good about learning.

School is not the only system worthy of attention when analyzing the situation of gifted students. Family, just as much as school, is a critical and essential context in the development of gifted children. These individuals' families have been described as environments that stimulate the children's independence, but with no lack of monitoring and support on the part of the parents, who support their children's decisions, value education and are centered on the needs of the child, and who set high performance levels (Winner, 1996). In addition to that, according to Aspesi (2007), families of gifted children are more harmonious, caring, and with less conflicts when compared to those of children who do not show signs of giftedness.

In the study done by Chan (2005) about the perception of gifted students about family environment, family cohesion and high parental expectations about their children's performance have arisen as variables that may predict talent. On the other hand, Ochse (as cited in Aspesi, 2003) suggests that the presence of stressful and adverse situations in family life may propel the will to reach higher performance levels.

Delisle (1992) concluded that the giftedness phenomena produces an impact on the roles of the parents and the child in the family context, and it demands changes in the interactions between parents and children. In this sense, knowing family functioning is an important step to the understanding of the development of giftedness.

Results of a comparative study by Mueller (2009), involving gifted and non-gifted students, have revealed that social support from family and from school contributes to the decrease in emotional problems (such as depression) and to the development of resilient behaviors in both groups of students. Also, Preuss and Dubow (2004) compared gifted and non-gifted children on terms of the employment of strategies for resolution of stressful events on school environment. Data points to the hypothesis that the former apply these strategies more frequently than the latter. Teachers said that the gifted children were better adjusted academically and socially in comparison to the other students.

We may observe that the majority of comparative studies comparing gifted and non-gifted students were done in other countries, which shows the lack of research on the subject in Brazil. Also, considering the moment through which Brazilian education faces, of discussion of guiding principles and practices of social inclusion, it is imperative to investigate the needs and demands of the students who present promising potential, as well as the context in which these students are living. This study's main goal was to compare gifted and non-gifted students – the latter being those not identified as gifted and not attending special programs – in relation to the perception of classroom climate, family environment and motivation to learn.

## Method

### Participants

The participants were 107 fourth grade students, 58 (54.2%) male and 40 (45.8%) female, 91 (85%) from public schools and 16 (15%) from private schools from the central region of Brazil. The average age was 10.32, ranging from 8 to 13 years ( $SD=0.82$ ). Most of them lived with both parents ( $n=64$ ; 59.8%) or with their mother ( $n=30$ ; 28%). From the total number of participants, 41 attended a program for gifted children that offers extracurricular activities in special resources classrooms once or twice a week. The extracurricular activities are proposed considering the students' abilities, interests and learning styles. The theoretical model of the Three Rings (Renzulli, 1988, 1994) was adopted in this program. From the gifted group, 29 (70.73%) were male and 12 (29.27%), female; 25 (60.98%) came from public schools and 16 (39.02%) from private schools, with an average age of 9.9 ( $SD=0.66$ ). Among the non-gifted ( $n=66$ ), 29 (43.94%) were boys and 37 (56.06%) were girls; all of them attended public schools and were of an average age of 10.58 ( $SD=0.81$ ). Considering how difficult it was to select a random sample of individuals for this study, we chose to use a convenience sample.

### Instruments

**Classroom Climate for Creativity.** The Scale on Climate for Creativity in the Classroom (Fleith, 2010) is composed of 22 items, and it identifies the factors associated with creativity in the classroom according to the perceptions of 3<sup>rd</sup> and 4<sup>th</sup> grade students. A 5 point scale of frequency is used as the answer to the items: (1) never, (2) rarely, (3) sometimes, (4) very often and (5) always. Five factors are measured by this scale. Factor 1, Support by the Teacher to the Expression of the Students' Ideas, includes five items relating to the support that the teacher gives the student to give their opinion, creating a climate of respect of the ideas presented by the students, which helps create a safe environment in which the students feel safe to provide their opinions in the classroom (for example, "the teacher pays attention to my ideas"). Factor 2, Self-Perception of the Students' Creativity, includes four items about the image the students hold of themselves relating to their level of creativity (for example, "I think of myself as being creative"). Factor 3, Students' Interest in Learning, includes six items relating to the students' involvement in schoolwork (for example, "schoolwork is fun"). Factor 4, Students' Autonomy, includes four items relating to a personality trait has some correlation to creativity (for example, "I can choose what I want to do"). Factor 5, Teacher's Incentive to the Students' Ideas, includes three items related to the attitude of incentive and acceptance from the teacher towards the students' ideas (for example, "the teacher asks me about new ideas"). Reliability alpha coefficients were: 0.73 for factor 1; 0.65 for factor 2; 0.55 for factor 4 and 0.58 for factor 5.

**Scale of Motivation to Learn for Elementary School Students (SML).** This is a Brazilian scale, valid for elementary school students, and composed by 31 items that investigate the will (motivation) to learn and the reasons why the students are dedicated or not to their studies (Neves & Boruchovitch, 2007). SML is a 3-point scale of frequency: always, sometimes and never. Two factors are evaluated by this scale: Intrinsic Motivation – IM (Factor 1) and Extrinsic Motivation – EM (Factor 2). The maximum total score including IM and EM is 93. The maximum score for IM is 51 and for EM it is 42. The higher a student's score is, the higher their motivation. According to the authors, intrinsic motivation is related to the satisfaction, interest, challenge, curiosity and novelty on the task performance; external rewards, material or social in nature, the need for recognition or the need for superior performance or abilities when compared to other people are related to extrinsic motivation. Seventeen items constitute Factor 1 – Intrinsic Motivation (for example: "I study even if my parents don't ask me to"; "I like to study difficult subjects"). Fourteen items form Factor 2 – Extrinsic Motivation (for example: "I only study to please my parents"; "I study because my parents promise me gifts if I get good grades"). As for precision, the scale has a satisfactory reliability index, with a Cronbach alpha coefficient of 0.80 – 0.86 for Factor 1 (IM) and 0.80 for Factor 2 (EM).

**Scales of Family Interaction Quality (SFIQ).** The instrument developed by Weber, Salvador and Branden-

burg (2006, 2009) is composed by 9 scales that evaluate parental practices and aspects of family interaction. The aspects of family interaction are verified by the testimony of the children, who answer separate questions about their father and their mother. There are 40 items to be answered in a 5 point scale (never, hardly ever, sometimes, almost always, always). Six scales approach positive aspects of family interaction: (1) Involvement, (2) Rules and Monitoring, (3) Positive Communication with the Children, (4) Model, (5) Children's Feelings, and (6) Positive Couple's Climate. Three scales evaluate negative aspects: (7) Negative Communication, (8) Physical Punishment and (9) Negative Couple's Climate. The scale Involvement, with 8 items, evaluates the parents' participation in their children's lives. The items investigate whether or not the parents support and are sensitive to their children's reactions, whether they are present and available in their children's routines, whether they embrace dialogue and autonomy. This scale also evaluates displays of affection from the parents toward their children. Some examples: "My parents usually tell me how much I mean to them"; "My parents try to find out what is wrong when I feel sad". The scale Rules and Monitoring, with 6 items, includes two aspects: the existence of rules that stipulate what the child must do, how and when they must do it; and the existence of supervision to check the rules are met and the monitoring of the children's activities. Some examples: "My parents tell me right from wrong"; "My parents usually check if I did my chores". The scale Positive Children's Communication, with 3 items, evaluates the existence of constructive dialogue in the interactions between children and parents, and it investigates whether the children feel comfortable to talk about themselves to their parents, for example: "I usually tell my dad/mom when good things happen". Positive Parental Model (3 items) evaluates whether the parents' behavior is consistent to what they teach, that is, if they are a positive example to their children (i.e.: "My parents do themselves what they teach me to be good or right"). Children's Feelings, with 5 items, is a more subjective scale that tries to evaluate how the children feel about their parents. "I think my dad/mom are the best parents I know" or "I feel loved by my parents" are some examples of items in this scale. The scale Positive Conjugal Climate (5 factors) is about the good relationship of the couple, which includes affection, dialogue and respect (i.e.: "My parents caress each other"). The seventh scale, Negative Communication, with 5 items, is about harmful dialogues between parents and children, and involves questions about the lack of emotional self-control and inadequate manners from the parents toward their children. "My parents usually take it out on me when they have problems" and "My parents get mad at me for no reason" are some of the items. Physical Punishment, with 3 items, evaluates the use of slapping as a means of correcting or controlling children's behavior (for example, "My parents usually slap me when I do something wrong" or "My parents usually slap me even when I've done nothing wrong"). The tenth scale, Negative Conjugal Climate (4 items) evaluates whether the parents interact aggressively with each

other. One example: "My parents say bad things about each other". The alpha reliability index ranged from 0.67 to 0.92 (Weber, Prado, Salvador & Brandenburg, 2008).

## Procedures and Data Analysis

After the project had been approved by an ethics committee, we scheduled meetings with psychologists and/or teachers of programs for gifted children in order to schedule the application of the instruments. In the case of the non-gifted children, we contacted a public elementary school and scheduled with the principal a day to present the instrument to two classes of 4<sup>th</sup> grade students. The instruments were presented both collectively and individually, by trained psychology students, by the author of the study and by one of the psychologists who worked for the gifted children program. Correlation and variance analysis were used in this study.

## Results

### Perception of Classroom Climate and Creativity

Considering both groups of students, the best evaluated factor was Factor 3, Student's Interest in Learning ( $M=4.13$ ;  $SD=0.58$ ), followed by Factor 2, Self-Perception of the Students' Creativity ( $M=4.02$ ;  $SD=0.79$ ) and Factor 1, Support by the Teacher to the Expression of the Students' Ideas ( $M=3.96$ ;  $SD=0.72$ ). The factors most negatively evaluated were Factor 4, Students' Autonomy ( $M=2.85$ ;  $SD=0.76$ ) and Factor 5, Teacher's Incentive to the Students' Ideas ( $M=3.73$ ;  $SD=0.72$ ). The results of the variance analysis indicated significative differences between gifted and non-gifted students only on Factor 2 of the Scale on Climate for Creativity in the Classroom,  $F(1,105)=4.985$ ,  $p=0.028$ ,  $\eta^2=0.045$ . Gifted students ( $M=4.23$ ;  $SD=0.68$ ) perceive themselves as being more creative in comparison to the non-gifted students ( $M=3.89$ ;  $SD=0.82$ ). We did not find significative differences on all the other factors: Support by the Teacher to the Expression of the Students' Ideas,  $F(1,105)=0.674$ ,  $p=0.41$ ,  $\eta^2=0.006$ ; Students' Interest in Learning,  $F(1,105)=0.738$ ,  $p=0.392$ ,  $\eta^2=0.007$ ; Students' Autonomy,  $F(1,105)=1.969$ ,  $p=0.164$ ,  $\eta^2=0.018$ , and Teacher's Incentive to the Students' Ideas,  $F(1,105)=1.227$ ,  $p=0.27$ ,  $\eta^2=0.012$ .

We also intended to examine whether there was a difference in perception on the gifted students' part, considering classroom climate in the regular classroom and in the special resources classroom used in the gifted students' program. In general, the special resources classroom was more positively evaluated, with superior means in all factors in comparison to the regular classroom. The results of variance analysis signaled significative differences in four factors: Factor 1, Support by the Teacher to the Expression of the Students' Ideas,  $F(1,80)=20.444$ ,  $p<0.01$ ,  $\eta^2=0.204$ ; Factor 3, Students' Interest in Learn-



ing,  $F(1,80)=13.225$ ,  $p<0.01$ ,  $\eta^2=0.142$ ; Factor 4, Students' Autonomy,  $F(1,80)=11.931$ ,  $p=0.001$ ,  $\eta^2=0.130$ ; and Factor 5, Teacher's Incentive to the Students' Ideas,  $F(1,80)=4.654$ ,  $p=0.034$ ,  $\eta^2=0.055$ . Only in Factor 2, Self-Perception of the Students' Creativity, we could not find any significative differences,  $F(1,80)=0.906$ ,  $p=0.344$ ,  $\eta^2=0.011$ .

### Motivation to Learn

The results revealed a superior mean on the Factor Intrinsic Motivation ( $M=2.69$ ;  $SD=0.22$ ) in comparison to the Factor Extrinsic Motivation ( $M=1.80$ ;  $SD=0.44$ ), which indicates that the students in general have a higher intrinsic motivation to learn than extrinsic motivation. The variance analysis results indicated a statistically significant difference between gifted and non-gifted students on the Factor Extrinsic Motivation,  $F(1,105)=8.566$ ,  $p=0.004$ ,  $\eta^2=0.075$ . Non gifted students showed higher extrinsic motivation ( $M=1.89$ ;  $SD=0.4$ ) in comparison to

gifted students ( $M=1.65$ ;  $SD=0.33$ ). As for the Factor of Intrinsic Motivation, although the students have reached a higher mean ( $M=2.72$ ;  $SD=0.19$ ) than the gifted students ( $M=2.64$ ,  $SD=0.25$ ), this difference is not statistically significant.

### Family Environment

According to Table 1, we may see that Factors 1 and 5 from the Quality of Family Interaction Scale (positive factors in family environment) show the highest mean scores in relation to mother figures according to the sample of this study. The data shows that there is a high involvement of mothers and the positive feelings of children towards their mothers. On the other hand, Factors 7, 8 and 9 (negative factors in family environment) show the lowest mean scores in relation to mothers, which indicates that negative communication; physical punishment and negative conjugal climate are low in the research subject's families.

Table 1. Mean and Standard Deviation in Each Factor of the Scale of Quality of Family Interaction Considering Mother and Father Figures

Factors	Mother		Father	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Factor 1 Involvement	4.60	0.60	4.34	0.75
Factor 2 Rules and Monitoring	4.50	0.87	4.16	0.87
Factor 3 Children's Positive Communication	4.03	0.92	3.45	1.20
Factor 4 Model	4.52	1.57	4.05	1.01
Factor 5 Children's Feelings	4.68	0.66	4.52	0.76
Factor 6 Positive Conjugal Climate	3.61	1.24	3.69	1.21
Factor 7 Negative Communication	1.72	0.71	1.71	0.67
Factor 8 Physical Punishment	1.81	0.67	1.81	0.78
Factor 9 Negative Conjugal Climate	1.71	0.72	1.80	0.85

Globally, regarding the mothers non-gifted students have given more positive scores to Factors 1 to 6 in comparison to gifted students. With relation to Factors 7, 8 and 9, gifted students presented lower means, which indicates that these events happen with a lower frequency when compared to the means of non-gifted students. However, the variance analysis results pointed to significative differences between gifted and non-gifted students only in relation to Physical Punishment Factor,  $F(1,101)=7.771$ ,  $p=0.006$ ,  $\eta^2=0.071$ ). Non gifted students showed that physical punishment is used on them by their mothers more often than on gifted students (see Table 2).

As to father figures, we noticed that Factors 1 and 5 (positive family environment factors) have shown the highest mean scores in this study's sample. This data shows that there is a high involvement of the fathers and positive feel-

ings from the children towards their fathers. Factors 7, 8 and 9 (negative family environment factors), as it appeared in relation to mothers, have presented the lowest mean scores to fathers, indicating that negative communication, physical punishment and negative conjugal climate have low occurrence in the study's subjects families. (See Table 3).

Just as shown in the results for mothers on Table 2, non-gifted students evaluated more positively factors 1 to 6, except for factor 2, when compared to gifted students. And as for factors 7, 8 and 9, gifted students presented lower mean scores to factors 8 and 9, which indicated that these events occur in a lower frequency when compared to the mean scores of non-gifted students. However, variance analysis results indicated a statistically significative difference only for Physical Punishment Factor,  $F(1,92)=5.256$ ,  $p=0.024$ ,  $\eta^2=0.054$  (see Table 3).

Table 2. Mean, Standard Deviation, *F* and *p* in Each of the Factors of the Scale for Quality of Family Interaction for Mothers

Factors	Group	<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>
Factor 1 Involvement	Gifted	4.56	0.66	0.288	0.593
	Non Gifted	4.62	0.56		
Factor 2 Rules and Monitoring	Gifted	4.49	0.56	0.008	0.927
	Non Gifted	4.50	0.71		
Factor 3 Children's Positive Communication	Gifted	3.94	1.06	0.633	0.428
	Non Gifted	4.09	0.81		
Factor 4 Model	Gifted	4.54	2.35	0.012	0.914
	Non Gifted	4.50	0.67		
Factor 5 Children's Feelings	Gifted	4.64	0.71	0.233	0.630
	Non Gifted	4.71	0.72		
Factor 6 Positive Conjugal Climate	Gifted	3.60	1.16	0.004	0.948
	Non Gifted	3.62	1.29		
Factor 7 Negative Communication	Gifted	1.71	0.68	0.005	0.943
	Non Gifted	1.72	0.74		
Factor 8 Physical Punishment	Gifted	1.59	0.61	7.771	0.006**
	Non Gifted	1.95	0.68		
Factor 9 Negative Conjugal Climate	Gifted	1.60	0.67	1.487	0.226
	Non Gifted	1.78	0.75		

\*\**p*<0.01.Table 3. Mean, Standard Deviation, *F* and *p* in Each of the Factors of the Scale for Quality of Family Interaction for Fathers

Factors	Group	<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>
Factor 1 Involvement	Gifted	4.27	0.85	0.513	0.476
	Non Gifted	4.38	0.68		
Factor 2 Rules and Monitoring	Gifted	4.23	0.79	0.346	0.558
	Non Gifted	4.12	0.92		
Factor 3 Children's Positive Communication	Gifted	3.28	1.23	1.224	0.272
	Non Gifted	3.56	1.72		
Factor 4 Model	Gifted	3.92	0.93	0.873	0.353
	Non Gifted	4.13	1.05		
Factor 5 Children's Feelings	Gifted	4.44	0.83	0.527	0.470
	Non Gifted	4.56	0.72		
Factor 6 Positive Conjugal Climate	Gifted	3.63	1.15	0.149	0.700
	Non Gifted	3.73	1.26		
Factor 7 Negative Communication	Gifted	1.72	0.63	0.007	0.932
	Non Gifted	1.71	0.70		
Factor 8 Physical Punishment	Gifted	1.59	0.62	5.256	0.024*
	Non Gifted	1.95	0.84		
Factor 9 Negative Conjugal Climate	Gifted	1.62	0.66	2.584	0.111
	Non Gifted	1.91	0.95		

\**p*<0.05.

## Relationship Among Perception of Classroom Climate for Creativity, Motivation to Learn and Family Environment

Results suggest a significant positive correlation (ranging from 0.20 to 0.42) between classroom climate for creativity and intrinsic motivation to learn; a significant positive correlation (ranging from 0.21 to 0.40) between positive factors in family environment and intrinsic motivation and between negative factors in family environment and extrinsic motivation (correlations varying from 0.23 to 0.25); a significant positive correlation (from 0.20 to 0.49) between classroom climate for creativity and positive factors in family environment and a significant negative correlation (from 0.20 to 0.31) between classroom climate for creativity and negative factors in school environment. Although the correlations are significant from a statistical point of view, they may be considered to be weak to moderate.

## Discussion and Conclusions

In general, gifted and non-gifted students have positively evaluated classroom climate for creativity. The best score was for factor Student's Interest in Learning, which suggests that students are interested in the search for knowledge and are willing to do schoolwork with pleasure. On the other hand, the factor with the lowest score was Student's Autonomy. This result confirms previous studies' results about classroom climate for creativity (Fleith & Alencar, 2006, 2008, 2012; Gonçalves, Fleith, & Libório, 2011). This factor's low score may reflect the rigidity of the formal educational system and its focus on memorizing and reproducing contents, as well as on students' obedience and passiveness (Alencar & Fleith, 2009).

The study also shows that gifted and non-gifted students share a similar perception of the climate on a regular classroom, except for the factor Self Perception of the Students' Creativity, in which gifted students showed a significantly higher mean score than the non-gifted students. However, when comparing the psychological climate of the gifted students' program to that of the regular classroom, gifted students pointed to the first being much more favorable to creativity than the latter. The data corroborated the educational propositions of the gifted program, in which creativity is one of the components to be stimulated. The theory behind the program states that creativity is a dimension to be developed in the education of gifted students (Renzulli, 1978, 1994). The concept of higher ability/giftedness proposed by the Ministry of Education (2008) also emphasizes creativity. This leads us into reflection about the extent in which the strategies for gifted education that could be extended to the regular classroom involving all students (Burns et al., 2002).

The participants of this research study presented a higher mean score on intrinsic motivation than on extrinsic motivation, which agrees with the evaluation of classroom climate for creativity, in which the factor Students' Interest in Learning had the highest score. Understanding the relationship between intrinsic motivation and schoolwork completion is fundamental to study and measure learning self-regulation

(Neves & Boruchovitch, 2007). Low motivation in gifted students may result in lack of interest and lack of commitment to schoolwork which may compromise their school performance (Alencar, 2007). In addition to that, motivation boosts creativity and leads the individual to more dedication and higher involvement in schoolwork. Activities must be challenging and keep up with the students' pace of learning, in order to keep their interest high, which in turn leads to higher self-efficacy and independent involvement in activities (Alencar & Fleith, 2009).

Data from comparative analysis show that non gifted students are more extrinsically motivated than gifted students who, on their turn, perceive themselves to be more creative. Theoretical models for creativity (Amabile, 1996; Csikszentmihalyi, 1996, 2014; Sternberg & Lubart, 1991) emphasize the relevance of the motivational component, especially intrinsic motivation, for creative production. According to Amabile (1996), extrinsic motivation may limit the involvement and the pleasure of the task, because the focus turns to the anticipation of the reward, which deviates the attention from the task itself. Also for Lubart (2007), the effects of extrinsic motivation on creativity are less significant than those of intrinsic motivation, although both kinds of motivation may combine in order to strengthen creativity.

Results on family environment indicate, generally speaking, good quality family interaction on the study's sample, in both gifted and non-gifted students. We may say, based on the subjects' answers, that these were harmonious families, full of affection and with few conflicts. There is, apparently, family support on both groups of students. The only statistically significant difference between them was the use of physical punishment by the mother or by the parents, with a higher occurrence in non-gifted students. Parents of gifted students are rarely rigid or authoritarian; on the contrary, they nourish feelings of independence and autonomy in their children (Aspesi, 2007; Winner, 1998). A study lead by Aspesi (2003) with families of gifted students in pre-school age concluded that those families used inductive socialization practices more often than coercive practices. According to the parents in this study, their children were able to understand right from wrong and what behavior was expected from them using only dialogue.

The findings on the correlations among classroom climate for creativity, motivation to learn and family environment are in agreement with the literature on the subject, which highlights the systemic view of the creativity phenomena (Alencar & Fleith, 2009; Sawyer, 2012). It is interesting to notice that all the factors of classroom climate for creativity have a positive correlation to intrinsic motivation, but none of them with extrinsic motivation. This finding confirms the interrelationship between creativity and motivation, which is defended by several theories (Amabile, 1996; Csikszentmihalyi, 1996; Sternberg & Lubart, 1991). This fact also points to an urgent curriculum change in schools. Both the contents and the curricular activities seem to be tedious and decontextualized, and do not offer the possibility of choice or challenge students with special talents, which, often times, destroys intrinsic motivation for learning and creativity in students.

Correlations among quality of family interaction, considering mother figures as well as father figures, classroom climate for creativity and motivation are very similar on both groups of students, gifted and non-gifted. On Ferreira and Fleith's research (2012) on the characteristics and the family dynamics around talented students, the results showed, in opposition to this study, that the children consider mothers better than fathers on communication, time management, teaching, frustration, satisfaction and need for information.

The process of learning-teaching, and especially creative production, is complex and it is influenced by numerous factors. We must turn our attention to the understanding and implementation of the conditions that favor their development in the classroom and, especially, to the identification and education of the gifted student, whose abilities and potential have often been wasted. It is essential to know the reality in schools as perceived by gifted students, and in which measure the pedagogical practices take into consideration their strengths, interests, learning rhythm and also the relationships between teacher and student, student and student, the communication among teachers in the regular classroom and in the gifted programs, and the school-family partnership (Fleith & Alencar, 2013; Nakano & Siqueira, 2012). Research studies joining qualitative and quantitative methods might be a promising option.

As a limitation of the present research, we highlight sample size, specially of the gifted students group. For future research, we recommend the search for a larger and more homogenous sample, with a balance of the number of female and male students, and the inclusion of other instruments, such as interviews, which will allow qualitative analysis.

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Recebido em 04.12.2014

Aceito em 06.11.2016 ■