https://doi.org/10.1590/1982-0275202239e200015

How perspective-taking underlies creative thinking and the socio-emotional competency in trainings of drama pedagogy

Como a tomada de perspetiva está subjacente ao pensamento criativo e à competência sócio-emocional na formação em pedagogia dramática

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Abstract

Policy-makers and scholars agree that creativity and socio-emotional competencies can be taught, learned, and enhanced through creative arts like theatre. Nevertheless, few authors have studied the processes underlying both constructs in artistic education, which would permit to understand how children develop them and re-create adapted methodologies. Thus, we proposed to observe a drama pedagogy training for elementary school children, evaluating their creative thinking and theory-of-mind. To understand perspective-thinking as a process underlying creative thinking and theory-of-mind in the context of drama pedagogy training. Quasi-experimental pre-post-test design. Standardized tests analysis, plus thematic analysis from observation of 240 minutes recording of drama pedagogy training. Higher increase in creative thinking with a strong effect of drama pedagogy training on divergent thinking. Thematic analyses showed that drama pedagogy training activities focus mainly on socio-emotional competency (linked to theory-of-mind). Perspective-taking appears as an underlying process that explains both creative thinking and the development of socio-emotional competencies by permitting the child to see from another person's perspective, providing several ideas-solutions for a problem (creative thinking), as well as understanding other people's emotions and motivations (theory-of-mind).

Keywords: Children; Creativity; Drama; Emotional intelligence; Social intelligence.

Resumo

Os legisladores e estudiosos concordam que a criatividade e a competência socioemocional podem ser ensinadas, aprendidas e aprimoradas através das artes criativas, como o teatro. No entanto, poucos autores estudaram os processos

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Article based on the dissertation of M.-P. CELUME, entitled "Creativity and emotional competencies' development in 9 and 10-year-old children. Evaluation of Drama Pedagogy Training method". Université de Paris, 2019.

How to cite this article

Celume, M.-P., & Zenasni, F. (2022). How perspective-taking underlies creative thinking and the socio-emotional competency in trainings of drama pedagogy. *Estudos de Psicologia* (Campinas), *39*, e200015. https://doi.org/10.1590/1982-0275202239e200015

subjacentes a ambas as construções na educação artística, o que permitiria compreender como as crianças as desenvolvem e, assim, recriar metodologias adaptadas. Assim, propõe-se, através deste estudo, observar um Treinamento de Pedagogia Teatral para crianças do ensino fundamental, avaliando no pensamento criativo e teoria da mente ds crianças. Tem por objetivo entender o pensamento prospectivo como um processo subjacente ao pensamento criativo e à teoria da mente no contexto do Treinamento da Pedagogia Teatral. Foi utilizado o método da abordagem mista: Projeto de pré-teste quase experimental. Análise de testes padronizados mais análise temática a partir da observação de 240 minutos de registro do Treinamento da Pedagogia Teatral. Os resultados demonstraram aumento do pensamento criativo com um forte efeito do Treinamento da Pedagogia Teatral sobre o pensamento divergente. As análises temáticas mostraram que as atividades do Treinamento da Pedagogia Teatral se concentram principalmente na competência socioemocional (ligada a teoria da mente). Conclui-se que o pensamento de perspectiva aparece como um processo subjacente que explica tanto o pensamento criativo quanto o desenvolvimento de competências socioemocionais, permitindo que a criança veja da perspectiva alheia, fornecendo várias ideias-soluções para um problema (pensamento criativo), assim como a compreensão das emoções e motivações alheias (teoria da mente).

Palavras-chave: *Crianças; Criatividade; Drama; Inteligência emocional; Inteligência social.*

Studies on drama-based games and pretend play have shown positive effects on a wide range of cognitive, social, and emotional competencies in children, such as social relationships and behaviors, empathy, humour, emotional understanding, and Theory of Mind (ToM) (Goldstein & Winner, 2012; Hoffmann & Russ, 2012; Joronen et al., 2011; Joronen et al., 2012; Seja & Russ, 1999; Yeh & Li, 2008). On the other hand, drama-based games and creative drama have also shown positive effects on children's creativity (Garaigordobil & Berrueco, 2011; Hui & Lau, 2006; Karwowski & Soszynski, 2008; Lin, 2010), developing imagination, flexibility, and problem-solving abilities, among other outcomes. Creativity and emotional understanding (considered here as a part of ToM) have been related to drama-based activities, such as pretend play, for a long time (Dansky & Silverman, 1973; Leslie, 1987). Some authors present evidence on how these competencies can be developed through the same drama-based training, such as Drama Pedagogy Training (DPT) (Celume et al., 2019a, 2020), implying a relationship between these outcomes within this collective group pedagogy, that some authors consider therapeutic (García-Huidobro, 1996). Unfortunately, we agree with several authors (Goldstein et al., 2017; Winner et al., 2013) who establish that there is a number of drama-based studies that lack scientific rigor, presenting an absence of controlled trials (Joronen et al., 2012), which results in there being little evidence to support the crucial role of pretense activities in children development (Lillard et al., 2013). Nevertheless, among well-designed studies, we find a tendency for the results to show the impact of drama or drama games on the development of emotional regulation or emotional control (Goldstein & Lerner, 2018; Hoffmann & Russ, 2012; Yeh & Li, 2008), empathy and ToM abilities (Goldstein & Winner, 2012; Holland, 2009), and creativity (Garaigordobil & Berrueco, 2011) in children. Until today, few authors have provided links between these outcomes (Ebert et al., 2015), with some studies explaining a relationship between creativity and ToM from the perspective of executive functions (Karmiloff-Smith, 1990; Suddendorf & Fletcher-Flinn, 1997). In the 1997 study by Suddendorf and Fletcher-Flinn, they established a relationship between executive function-ToM and divergent thinking, measuring ToM through a false belief task and divergent thinking through Wallach and Kogan's creativity test (Wallach & Kogan, 1965), showing significant correlations of ToM scores with uniqueness ($r = 0.48$; $p < 0.01$) and fluency ($r = 0.62$; $p < 0.01$) scores. They explain these results, suggesting that there is a relationship between ToM and creativity that implies that being able to understand others' false beliefs is a mental process related to the ability to detach from known perceptions and knowledge in the same way divergent thinking works when finding solutions that are outside "the box". In this sense, the fact of detaching from known perceptions and knowledge will correspond to a mental process that occurs similarly in ToM and divergent thinking. Nevertheless, the question of how the fact of working executive functions in a drama pedagogy training would predict creativity, remains unsolved.

Accordingly, a study conducted on preschool-aged children to determine the sense of this relationship through a fantasy-oriented pretend-play training (a kind of DPT), found that this kind

of fantastic pretend-play favors executive functions (differently from more realistic pretend play) and suggested that children do not necessarily need the development of executive functions to be able to exhibit fantasy-oriented behaviors (Thibodeau et al., 2016). In other words, executive functions were not necessarily predictors of creativity in DPT. On the other hand, in a study conducted by Hoffmann and Russ (2012), they showed evidence to support the idea that during pretend-play activities, emotional regulation (that some authors understand as an executive function) is related to creativity. They showed that emotional regulation was significantly correlated to children's divergent thinking in all three factors (fluency ($r = 0.30$; $p < 0.01$), flexibility ($r = 0.29$; $p < 0.01$), and originality ($r = 0.31$; $p < 0.01$)), concluding that creative children would use creative skills such as solution-finding to cope with unpleasant emotions. Nevertheless, one could argue that the study of Hoffmann and Russ (2012) does not consider emotional regulation as an executive function, but more as a socio-emotional competence, within the context of DPT. Along these lines, the definition of ToM as the cognitive aspect of empathy (Frith & Singer, 2008; Shamay-Tsoory, 2015) corresponds in part to the definition of perspective-taking given by some authors (Shaffer, 2008) whereby perspective-taking is considered as the cognitive ability to understand others' perspectives and emotions. In other words, ToM, defined as a complex socio-cognitive ability that permits understanding other people's perspectives and emotions (Premack & Woodruff, 1978), encompasses the concept of perspective-taking. Thus, for this study, ToM will be understood within the framework of socio-emotional competencies, as a socio-cognitive ability to understand other people's emotions and motivations. On the other hand, this concept of perspective-taking has also been related to creativity as linked to the creative potential of an individual (Runco, 2007), and in more recent work as linked to the dynamic of differentiating perspectives within the acts of creation (Glaveanu & Gillespie, 2015).

In DPT, perspective-taking abilities have already been considered to be related to ToM in children (Goldstein & Winner, 2012; Qu et al., 2015) and to creative enhancement in preschoolers (Mages, 2018). This relationship linking perspective-taking with drama-based settings might suggest a new linking bridge between ToM and creative thinking. Unfortunately, to our knowledge, no recent study has deeply studied the relationships among these constructs within an artistic pedagogy, such as DPT. Understanding how the underlying process of perspective thinking works on creative thinking and ToM within this pedagogy might help us understand better how these constructs are acquired by children and thus it might help us improve existing pedagogical resources and build more specific tools, in order to enhance this development. Accordingly, this study proposes an analysis of a DPT intervention, with the aim to understand the underlying process of perspective-taking on creative thinking and ToM in DPT.

Method

This was a quasi-experimental cohort study with a mixed method approach. The quantitative data was collected from standardized tests. The qualitative data was collected through the observation of video recordings.

Participants

Our sample was composed of 9 children ($M = 9.78$; $SD = 0.23$) attending a double-level class in a public elementary school in Paris, classes in which children from different grades and levels share the same classroom. Our sample was part of one of these classes. The majority of the children were fifth-graders and only nine of them were fourth-graders, and agreed to participate in this study. Among these nine, there were four boys ($M = 9.81$; $SD = 0.27$) and five girls ($M = 9.76$; $SD = 0.23$). The school is located in central

Paris, in a middle-upper class neighborhood. Data collection on racial background is forbidden in France, so no description regarding race is included in this study. In a preparation meeting with the main teacher of the class, she explained that one of the boys presented important socio-emotional difficulties related to a low self-esteem issue. She was following him personally and had recommended that his parents met with a psychologist. All the other children reported no major cognitive, social, or affective difficulties or differences according to the observations of the main teacher and the school principal. For the final analyses, the boy who presented socio-emotional difficulties was excluded from the sample because he was not available for the post-test evaluation.

Instruments

The intervention

The intervention was an adaptation of a DPT program carried out in a previous study. The DPT was created by selecting and adapting some of the drama-based activities proposed in the Spanish program "Programa Juego" (Garaigordobil, 2003). Other activities were taken from other drama-based pedagogy books (Boal, 1989; García-Huidobro, 2004). The original pilot training consisted of six sessions, four for training and two for the evaluation of collaborative behavior. For this study, only four sessions were considered, excluding the collaborative behavior evaluation sessions. At the beginning of each session, there was a warm-up that included a mindfulness activity. Later, the children expressed how they felt, leaving the standard activities of school and getting prepared for the training. Then, there was the main Drama Pedagogy Training activity(ies). "Collective body expression" is an example of a main DPT activity. In this activity, children are put together in groups through an earlier collective activity. Once the groups are completed, they choose a leader. The leader of each group comes to the facilitator and picks up a paper that has an emotion or mental state-related message written on it. The leaders go back to their groups and present the group with this word. Each group has to create a short collective presentation, using only their bodies (no use of the voice for this activity), representing the word they were given. The idea is to make it very clear so that the other group (or groups) can guess the word. If the group or groups find out the word, each group earns one point. After the main activity is accomplished, there is feedback time, when children express their opinions and feelings about the session. The facilitator asks questions about the main activity, guiding the reflections about why the groups decided to represent the word in that way, and how/why the other groups guessed the word. Each of the sessions lasted between 60 and 70 minutes, depending on the feedback time.

Observation

In order to understand the process of perspective-taking on creativity and ToM, and to explore other possible outcomes, we video-recorded each of the four sessions of the DPT intervention. All recordings were made with a fixed frontal camera. Each session lasted around 60 minutes. We selected recording material for the analyses, using recorded material that started after the introductory part (mood assessment and class management). All sessions were integrally transcribed through an online platform (HappyScribe.com©) and analyzed through a collective thematic analysis procedure (Braun & Clarke, 2006). Coding was made by two judges (M = 36.7) who read the transcriptions and wrote down themes observed during the activities. First, judges pre-coded the first sessions collectively in order to discuss differences in the coding. As the focus of the study was to examine links of perspective-taking on creative thinking and ToM, pre-codes considered creativity-related topics (such as creation, imagination, idea), as well as ToM-related topics (such as empathy, understanding emotions, etc.). Following sessions were coded collectively, based on these pre-coded agreements. When themes were not clearly creativity-related or ToM-related, we used an exploratory approach

(Saldaña, 2009) to code other themes. We observed the interactions that occurred between the facilitator and the group, based on studies focusing on the instructions, questions, and topics that arose (Yan et al., 2011). We created the categories based on the main topics proposed by the facilitator during the sessions. We also conducted a semantic analysis measuring the frequency of the words used.

Evaluation of Creative Potential (EPoC)

To evaluate creativity, we focused on measuring creative thinking, defining creativity as "creative thinking" measured through a battery of tests on creative potential. Thus, we used the forms A and B, from the abstract figurative tasks for divergent and integrative thinking from the EPoC battery of tests (Lubart et al., 2011). This task measures the fluency of ideas, resulting in a main divergent thinking score that includes flexibility and originality (Lubart et al., 2011). For the abstract figurative divergent thinking task, children were asked to look at a given figure and make as many drawings as possible on separate sheets, using the given figure. They had 10 minutes to complete the task. All drawings had to have a name describing what the child had drawn. For the abstract figurative integrative thinking task, children were asked to do a drawing using at least four shapes from eight given figures. They had 15 minutes to complete this task. They had to give the drawing a title and indicate its main idea. Three judges evaluated the productions. Inter-judge agreement was satisfactory, data showing good interjudge fidelity ($\alpha = 0.89$).

Evaluation of Theory of Mind (ToM)

We used a self-adapted French version from the Reading the Mind in the Eyes Test, Child Version (RMET-G) (Baron-Cohen et al., 1997). This task was originally created to measure ToM in an autistic population, understanding ToM as the identification of emotional and mental states. In this task, the identification is made via the observation of looks in pictures. Children were presented with a series of 28 pictures of different pairs of eyes expressing emotions or mental states. We projected these images onto a whiteboard and gave the children an answer sheet. They were asked to look at each picture and to circle the emotion or mental state that best described it out four words displayed on their answer sheet. Three of these words were distractors and only one matched the emotion or mental state of the person in the picture. The task was scored by adding up the number of items correctly answered. For each image, the children had around 15 seconds, adding up to 7 to 10 minutes. Reliability was not considered for this sample because of its small size.

Evaluation of mood state

In order to measure the children's emotions, we used the adapted paper version (Monnier et al., 2018) of the valence and arousal Self-Assessment Manikin scale – SAM (Bradley & Lang, 1994). Mood valence was measured with a 9-point Likert scale ranging from a positive manikin at the right extreme of the paper to a negative manikin at the left extreme of the paper. At the beginning and at the end of each session, children had to circle the manikin that best represented how they felt at that precise moment. As a visual and self-reported measure, this scale can be easily used by children (Monnier et al., 2018) and has already been tested for children aged from 6 to 12 years old (McManis et al., 2001).

Procedures

Before the beginning of the study, letters of authorization for the children's participation were sent to their parents. After the parental authorizations were received, we scheduled the sessions. A pre-test time

was held before the training in order to evaluate ToM and creative thinking. The mood was measured at the beggining and end of each session. A post-test time for the evaluation of creative thinking and ToM was carried out after the end of the last training session.

Results

Our sample consisted initially of nine children, but only eight (M = 10.81; SD = 0.24) were present in all sessions, including the post-test time. Descriptive results on divergent thinking, integrative thinking, mood, and ToM showed an increase in post-test scores.

Table 1 above presents the mean scores on ToM (RMET-G), mood (SAM), and creativity (EPoC). Although there was no significant difference between pretest and post-test scores in creativity and ToM, means show an increasing trend in the post-test time. A significant difference was found only in mood, increasing the mean scores of the group in the post-test time (t = -2.93; p < 0.022). Further on, in order to find effect sizes for the different measures, we ran Cohen's d analyses (Cohen, 1988). Results showed a small to medium effect size on ToM (d = 0.45), a medium effect size on integrative thinking (d = 0.56), and a large effect size on divergent thinking (d = 0.76).

Table 1
Mean Scores of ToM, mood, and creativity in pre-test and post-test times

Test	*n*	*M*	Min	Max	*SD*
RMET-G Pre	8	18.25	15	23	2.49
RMET-G Post	8	19.38	15	24	3.11
SAM Pre	8	1.69	0.25	3	1.09
SAM Post	8	2.56	0.75	3.75	1.0
EPOC-D Pre	8	9.38	6	13	2.62
EPOC-D Post	8	11.38	7	16	2.92
EPOC-I Pre	8	3.46	1.67	5.33	1.42
EPOC-I Post	8	4.25	3	5.67	0.87

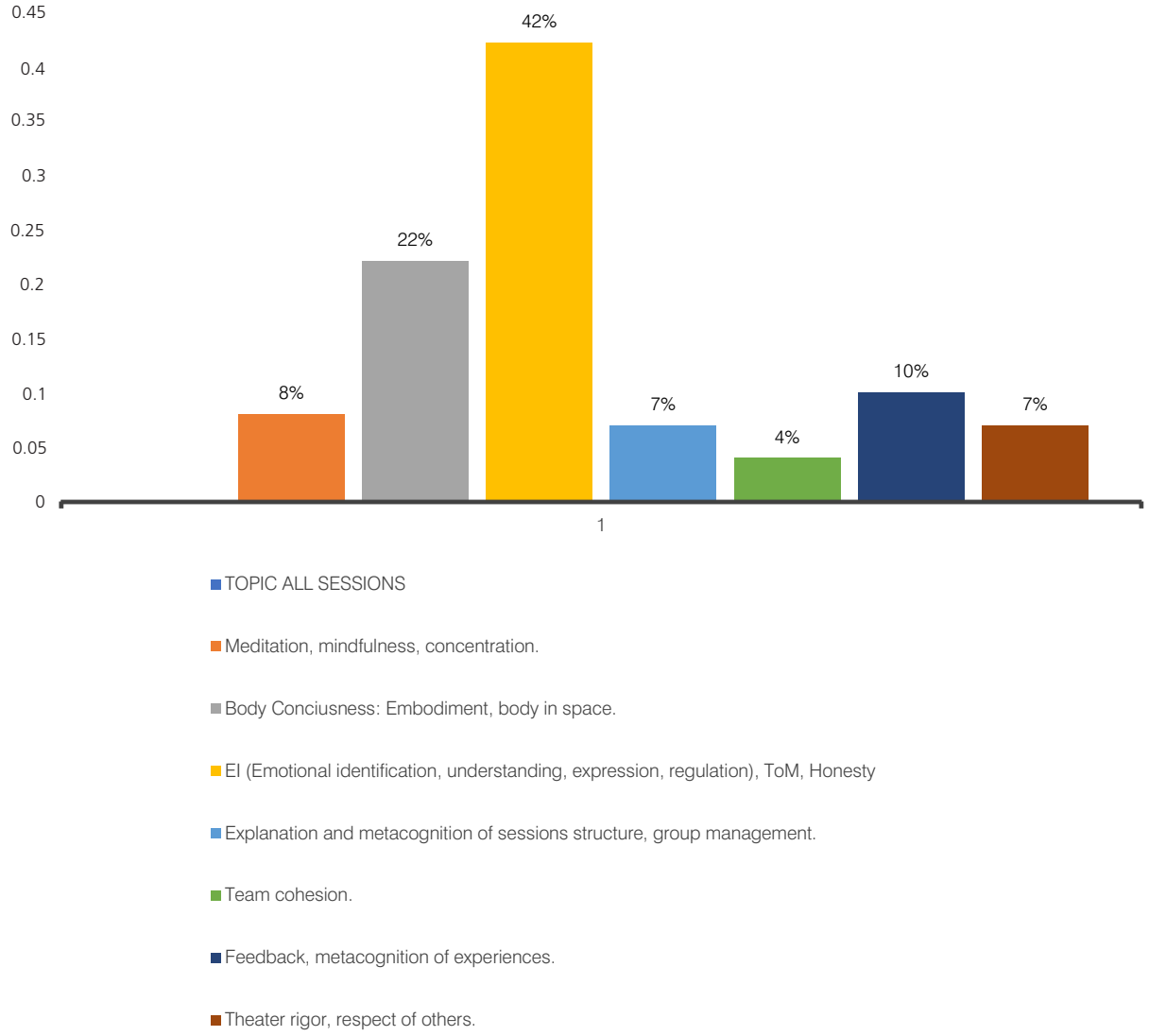
Note: RMET-G = Assessing theory of mind; SAM = Assessing mood; EPOC-D = Assessing divergent thinking; EPOC-I = Assessing integrative thinking.

Observational analyses revealed seven categories. When analyzing the time spent on each topic, results showed they ranged from 4% to 42% of the time of the whole training.

Figure 1 above presents the seven topic categories identified in the analysis and the percentage of time spent on their related activities during the training. The two main categories are "emotional intelligence, theory of mind, and emotional honesty" with 42% of the whole time of the training dedicated to them, and "body consciousness: embodiment and body in space" with 22%. The third place is occupied by "feedback and metacognition of experiences" activities, with 10% of the time, followed by 8% for "meditation, mindfulness, and concentration" activities. For 7% of the time, we found both "explanations, metacognition of session structure, and group management" and "theatre rigor and respect of others" categories. The last category only took up 4% of the time spent in the training and was dedicated to "team cohesion" activities. For the semantic analysis, after excluding words directly related to the explanation of activities as well as grammatical prepositions, conjunctions, and interjections, results showed that the most spoken words during the training were "emotion" or "emotions" with a frequency of 99 times. Out of 15 highest frequency scores, the last three, with a frequency of 16 times each, were found to be "action", "body", and "team".

Figure 1

Percentage of topics in DPT sessions



The categories "emotional intelligence, theory of mind and emotional honesty" (category 1) and "feedback and metacognition of experiences" (category 3) were categorized under the "socio-emotional competency" theme, following an inductive procedure. It was agreed that the content of both categories was directly related to tnd others' emotions, which is considered a part of the socio-emotional competency. The following quotation illustrates it: "you walk [through the museum], and look 'upset', how is it like to be "upset"? [the children express it with their faces and bodies] Go, we walk... Enthusiastic will be the next: so, 1, 2, 3, enthusiastic. [the children express it with their faces and bodies] […] Look at the others, look at the museum. How are they enthusiastic? How is enthusiasm like? [the children express it with their faces and bodies]" (session 1, "museum of emotions" activity). The activity was initially inserted in category 1, and later covered under the "socio-emotional competency" theme. Following this lead, a quotation like "What did you think of the emotions? Are they difficult to represent? [...] Have you found that there are emotions more difficult [to represent] than others?" (session 1, "feedback" activity), that initially corresponded to category 3, was also later covered under the theme "socio-emotional competency" due to its content, mainly on

emotional understanding or ToM. In this line, the socio-emotional competency theme engaged categories 1 and 3, and it appears as the main theme addressed in the DPT.

Discussion

Quantitative data results showed small to large effects on ToM and creative thinking, respectively. Nevertheless, no significance in pre-post tests for the variables of creative thinking and ToM was found. This could be due to the fact that the sample was too small to replicate the results of past findings (Celume et al., 2019b), or because a four-session training may not have been sufficient to develop the desired competencies. Another possibility is the impact of a missing control group. A matching control group is necessary in this kind of study in order to better understand the behavior of children who are engaged in a particular intervention/training. We are aware of the need for more controlled trials, as we mentioned in the introduction to this study, otherwise, studies in the field will continue to provide incomplete information issued from quasi-experimental studies. However, the objective of this study was not focused on corroborating the quantitative results of DPT presented in previous studies, but the qualitative aspect of perspective-taking and its relationship with the development of both creative thinking and ToM within a DPT. Moreover, the intervention was followed step by step as the manual described for each session, with no improvised activities. Besides, the intervention was recorded under the same conditions in all sessions; they were transcribed with the help of online speech recognition software, and these data were analyzed by independent judges who coded the transcribed sessions, arriving at a consensus about the most important topics in order to generate categories.

Regarding the results, descriptive data analyses showed a trend of increasing the mean scores for creativity and ToM after the DPT, supporting the theory that drama games can enhance ToM (Celume et al., 2020; Goldstein & Winner, 2012; Harris, 1992, 2000; Leslie, 1987; Qu et al., 2015), which is also consistent with other studies presenting evidence on the enhancement of creativity through trainings that work through drama games (Celume et al., 2019b; Garaigordobil & Berrueco, 2011; Hui & Lau, 2006; Karwowski & Soszynski, 2008; Lin, 2010). Moreover, results presented medium-large effect sizes, particularly for divergent thinking, suggesting a large impact of the training on the development of creativity. These outcomes support the results of previous studies (Celume & Zenasni, 2017) that used DPT and subjects of the same characteristics, with a larger sample, showing significant results for socio-cognitive and socio-emotional competencies (such as collaborative behavior and ToM) and creativity. Moreover, regarding the presented literature, descriptive analyses tend to go in the direction of the presented evidence, establishing links of DPT with creativity and with ToM.

When analyzing observational data, results showed that the most part of the training was dedicated to cognitive-socio-emotional learning, such as emotional identification, understanding, expression, and regulation, followed by body-related cognition (body awareness, body-in-space, and embodiment), with unexpectedly no explicit mention of creativity or elements related to it, even if the training was based on games conceived for creativity. Moreover, semantic analyses corroborated these results, revealing that words like emotion/s, action, and body were among the fifteen most used ones. Thus, considering both observational and descriptive data results, there appears to be an implicit relationship between body awareness, cognitive-socio-emotional competencies, and creativity, which is consistent with the observations of Wee (2009), who noted that students' body movements in the regular classroom were merely instrumental, but in Drama Pedagogy they were exploratory and expressive.

We observed an enhancement of ToM and divergent thinking in descriptive analyses, while most of the time the sessions were dedicated to emotional competencies development and body awareness. If we consider ToM in its larger definition, encompassing a broad scope of mental states ranging from perception to

intentions, cognition, and emotional states (Hughes & Leekam, 2004). Within this scope, in DPT, the increase of ToM could be related to the ability of identifying and understanding others' emotions and emotional expressions, which was one of the most practiced activities during the training. So, if this kind of intervention based on drama games was shown to develop creativity, but no creative training is directly observable in the interactions during the sessions, this might indicate that there is a non-evident link between ToM and creativity that happens during a DPT.

As the literature suggests, wider access to the emotional world may generate more associations, and thus improve the creation of ideas (Russ & Schafer, 2006). As we saw above, Suddendorf and Fletcher-Flinn (1997) and Hoffmann and Russ (2012) presented consistent evidence establishing links between creativity and socioemotional competencies. Nevertheless, the direction of the relationship is not entirely clear and it remains a poorly studied field. Ebert et al. (2015) studied this relationship in children working through plastic arts, revealing a relationship between emotional identification, labelling, and creativity. These results imply a link among these three concepts and could help us partially explain why the children participating in our study, despite working mostly on emotional identification and understanding with no direct mention of creativity or related topics, showed an increase in divergent thinking and convergent thinking scores after finishing the training. Suddendorf and Fletcher-Flinn (1997) thought of the idea of detachment of preconceived knowledge and ideas as a bridge that goes between a) others' false beliefs and b) divergent thinking. Likewise, when the children in our study were confronted with having to identify and understand other people's emotions, they had to be able to do the mental process of detaching themselves from their personal perspectives and understand others' minds and beliefs. The same capacity for detachment used in identifying and understanding others' emotions would be a predictor of an enhancement of our creativity scores, as divergent thinking also requires us to detach from previous personal knowledge in order to generate more ideas.

Considering drama-based trainings, ToM has already been considered as an executive function (Qu et al., 2015; Vygotsky, 1978), but the evidence is not sufficient to support the idea of creative thinking enhancement predicted by executive functions (Thibodeau et al., 2016). Thus, considering ToM as an executive function does not imply in fully supporting the theory of a causal relationship between our increased scores of creativity after a training based on emotional identification and understanding. Nevertheless, if ToM is considered as the socio-cognitive ability to understand others' mental states, and it is thus more related to empathy and socio-emotional learning, the concept of perspective-taking arises. As we saw above, studies have already linked perspective-taking to ToM in Drama Pedagogy Training (Goldstein & Winner, 2012), thus establishing a sort of parallel between the two definitions. While some authors (Shaffer, 2008) use the definition "understanding others' perspectives and emotions" to define perspective-taking, other authors (Flavell, 2004) use the same definition to explain one of the characteristics of ToM. In this sense, perspective-taking, considered as the process of taking other angles on situations and exploring the perspectives that differ from one's own, would be related to the development of ToM, understood as the ability to consider the perspective of another one that differs from mine in order to understand her/his motivations, ideas or feelings. In the activities and sessions, children were confronted to this change of perspective, thus there was an involvement of perspective-taking by taking the place of the one that was on stage, and trying to understand her/his emotional state or her/his motivations to express one emotion or another. In this line, perspective-taking or taking the view of another person could be seen as a component of ToM.

Regarding the enhancement of creative thinking, Lubart et al. (2015) explain that considering different perspectives could be an element in the process of idea-generation. In this line, perspective-taking appears as an underlying process that could serve as a basis to understand the relationship between the practice of ToM through DPT and the large effects of DPT on creative divergent thinking observed after the sessions. Lubart et al. (2015) explain that creative enhancement through perspective-taking could be due to the fact that looking at things from different perspectives might enhance idea production (thus impacting divergent

thinking) and problem solving. Consequently, Mages (2018) states that drama activities are intrinsically related to problem solving that requires perspective-taking abilities. In that line, creativity in Drama Pedagogy Training could be enhanced thanks to perspective-taking abilities interacting with two cognitive processes related to creative thinking: divergent thinking and/or problem-solving abilities. In order to evaluate the validity of this hypothesis, a deeper analysis of the interactions of the DPT sessions was needed.

This analysis looked at dialogues in which we observe interactions that might be related to the development of perspective thinking. In the first session, the facilitator tells the children to walk through the "museum of statues". This museum of statues is made by children expressing different emotional/mental states (such as remembering, feeling cross or surprised, among others) by pretending to be a statue. In a certain moment, half of the children are asked to stop being statues and become visitors, and the other half to remain as statues. Visitors walk through the "museum" observing the emotional/mental states these statues displayed. The facilitator insists that children need to be "looking at the statues […] to see how it is done […] to really observe [the mental state]"; she also asks the children how people look when they are in this particular emotional/mental state, implicitly instructing them to access their own knowledge as they observe other people's ways of doing, letting children change their perspectives by working, in the first place, from a more personal expression perspective, to end up working from an observer perspective, always through pretense. The same happens by the end of the activity, when the facilitator tells the children that they "are going to do the statues in a circle, looking at each other".

By pretending to be statues in a circle, they are switching perspectives, from expressing the emotional/mental state to observing how others express the emotional/mental state, sometimes even adjusting/regulating their own expressions. The roles are changed with each emotional/mental state proposed which gives the opportunity for every child to experiment with both perspectives. This change of perspective when facing a problem or constraint (like pretending to be and representing one thing and then changing to another during the drama game) was explained by Lubart et al. (2015) as one of the variables implicated in the development of creativity. This transformation of perspectives was described by Guilford (1967) throughout his works as "adaptive flexibility". In other words, the change of role expressed in the drama game proposed could lead children to acquire a sort of adaptive flexibility while constantly changing their perspective, which might engage them in a more flexible, thus creative, behavior. These ideas were also considered by Capron Pruozzo (2016), who explained how drama activities enhanced students' abilities of redefining their points of view, developing a sort of empathy that implied flexibility, and thus impacted creativity.

After the activity is finished, there is always time for feedback. For this first session, feedback was mostly focused on understanding the emotional/mental states represented in play. The facilitator asked the children what they thought of emotions, of representing the different emotional/mental states, asking if it was difficult, and which ones were easier or more difficult to represent. One child expressed her difficulty in expressing surprise as she found it too similar to fear. At this moment, the facilitator guided the group to collectively express fear with their bodies while changing to express surprise, highlighting the general cues and differences in the expression of both emotions. In this part of the session, we can also say that children were practicing perspective-taking, considering the fact that they are all confronting their own perspectives on how an emotion should be represented and which one was easier/more difficult for them to guess. In the same manner, this happens when they redefine their perspectives of emotions when playing in the sessions.

In session two, children had to represent with their bodies three different emotions picked out from a fish bowl. Here, the main activity is based on the use of the body for emotional expression, which, according to some authors, might have an influence on creative development (Aden, 2014; Andolfi et al., 2017; Damasio, 2001; Hao et al., 2017). As a first step, the children were asked to only use body gestures and postures in

order to represent the different emotions, and for a second try, the children were asked to repeat and retry other postures of emotional expressions if the rest of the class could not guess the emotion expressed. This implies a re-use of the body in order to make it match a particular emotional or mental state, as well as a change of perspective, considering classmates' responses to their expression. In line with this, the facilitator asked the spectators to guess the emotional or mental state their classmates were representing, without focusing on the right or wrong answer, but mostly on the thoughts of children regarding the emotional or mental state, as ToM would work. For example, she asked "Why do you think that is 'reflecting' or 'thinking'?"; she then insisted: "But, why do you think that?". By asking this kind of question, the children are required to understand one another's perspectives and give the selected expression a logical explanation. During the rest of the activity, the children became used to answering by guessing the emotional or mental state they believed was being expressed by their classmates, adding their thoughts and beliefs about why this expression represented a particular emotion contrasting their thoughts on the emotion and how their classmates expressed it.

For example, by the end of the activity in session 2, a discussion between the facilitator and two children occurred: – "Why did you think it was sadness?", the former asked; "Because in the first scene, I thought that she was giving him a present and later he was not happy […]", "And why did you also think it was sadness?", "Because, actually, he did this" [the child turns to the facilitator and mimics the facial gesture and posture of classmate]. This response of the child made him work his emotional understanding and perspective-taking abilities, as he was literally taking the place of another person in order to show and explain from his perspective how the emotional state had been expressed, showing an understanding of the emotion (Harris, 2008) while also explaining why he related it to "sadness" (thus, this was related to a ToM ability). This kind of guessing the emotion sub-activity was repeated in the rest of the activities carried on in this study.

For session 3, the main activity was more complex as they were asked to use their bodies and voices to represent emotional or mental states. They could talk and had to perform a short scene expressing an emotional or mental state without saying what it was. In the feedback part of session 3, the children commented that the most difficult part when creating the scenes was to come to an agreement on how to represent it. There was a constraint that obliged them to put the emotional or mental state in a particular context that they "chose" from a fish bowl. A child explained that at the beginning, they couldn't agree on something because "we couldn't really find something good for the birthday (context constraint) and the emotions that were with […]"; he continued, "I don't know […] because worried and interested in a birthday is not that […] (he was interrupted by other kids talking at the same time)". In this case, we could say that the element of problem solving was implied in the activity as they needed to solve the problem of expressing the emotions they had picked from the fish bowl in agreement with the context they had also picked from the fish bowl. This collective problem-solving activity might have an impact on our participants' creative scores which were shown to have increased after the training. This is consistent with several studies that showed that problem solving tasks are broadly related to creative thinking (Lubart & Sternberg, 1995; Reiter-Palmon & Illies, 2009). Following the lead, the last session (Session 4) was also based on creative problem-solving, as the main activity asked the children to represent a problem and the emotions that are felt by the characters before and after the problem is solved. This activity has a lot more complexity, as the children needed to find a problem that has to be solved by themselves in order to express "pleasant" emotions after solving the problem. This activity wasn't achieved in the same manner as the others, and due to the time, there was no time for feedback, so the opinions of the children regarding the activity couldn't be recorded, and an important part of how dramatic problem-solving tasks could have had an influence on their creative thinking, as well as their emotional understanding, was thus missing.

Limitations and future perspectives

Besides the main limitation, the lack of a control group, we found other limitations that should be taken into account. First of all, our sample was too small to allow generalizations related to the quantitative results we obtained regarding the enhancement of creative thinking and ToM. The results presented by our participants did not reach significance in pre-post tests and so were not consistent with previous results for the same type of studies with larger samples. Nevertheless, they did present medium to large effects, which is consistent with previous work. Secondly, analyses were made based on the transcription of observations, in which, according to some authors, subjective perspectives could bias the results. Nevertheless, we believe this perspective on observational analyses might be outdated, as results provided important pathways in understanding the perspective-taking process within DPT. Also, to assure the reliability of the results, we used multiple coding with different judges' perspectives who arrived at the same conclusions. On the other hand, we focused on the link of Emotional Intelligence (EI) and ToM with creativity, mainly from the perspective-taking view, even though we suggested some possible links due to an executive function, but without deeper analyses in the field of neuroscience, which may be an important perspective to consider in future works. Finally, the role of facilitator in the DTP activity, which is not neutral, is neglected and not considered in the analysis. Hereby, we understand the need to replicate this study with a larger sample, a matching control group, and better tested tools considering several perspectives (children, researcher, facilitator) in order to clarify if the relationship between ToM and creative development can be established through perspective taking. Moreover, we did not accomplish a deep analysis of the implications of body and space consciousness as a link between creativity and ToM/EI, even if it appeared as the second most addressed topic during the training. Thus, a further analysis seems necessary to see if the relationship with embodiment and space awareness has more effect than we were able to show. Finding a link between creativity and socio-emotional competencies could help understand how children behave in groups and in the classroom and how they interact during collective activities and groups. We understand that using and understanding emotions helps children develop divergent thinking and thus, finding new and novel solutions to the presented problems. In this sense, the work of children's socio-emotional competency through DPT could help them develop perspective-taking by permitting the child to see from another child's perspective during the proposed DPT activities where they not only have to recreate and express emotional state but also to understand one another's emotions and motivations (ToM). Thus, this perspective development could have an impact on creative thinking, as seeing from others' perspectives permits to see a situation from different angles, which could explain the large effects on idea-generation (creative thinking). Programs in schools that are focused on developing 21st century skills may consider complementing their work with DPT, and focusing on socio-emotional development through creative pedagogies (Toivanen et al., 2013), which are active pedagogies like the one presented by DPT. This may not only enhance children's creative thinking, but also develop positive environments and thus, more healthy educational organizations (Celume & Zenasni, 2020).

Conclusion

This study showed evidence that interactions during the training sessions were mainly related to emotional intelligence and ToM. These were the main topics addressed during the Drama Pedagogy Training, being consistent with the literature showing an enhancement of ToM and EI through drama. On the other hand, although the literature suggests a direct link between creativity and drama pedagogies, no explicit creativity topics appeared in the observational exploratory research. Nevertheless, further analysis suggests some possible linking concepts between EI, ToM, and creativity, such as perspective-taking and, with less

clear evidence, executive function. There is still no clear evidence of the underlying elements that link ToM with creativity or of the real cause that leads creativity to be enhanced through Drama Pedagogy Training that was mostly focused on emotional identification and understanding. Nevertheless, the literature suggests that this relationship should be due to perspective-taking abilities as multiple perspectives would lead to multiple solutions to the constraints for the different activities proposed during the sessions. In any case, deeper analyses and a better design protocol are needed in the field in order to fully prove these hypotheses.

Aknowledgements

To the children, teachers, and school directors involved in the study.

Contributors

M.-P. CELUME contributed to the conceptualization, methodology, validation, writing-original draft, writing-review, and editing. F. ZENASNI was supervision and contributed to the methodology, validation, writing-review, and editing.

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Received: March 3, 2020
Final version: October 9, 2020
Approved: December 18, 2020