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EMBODIED LEARNING OF LANGUAGE IN PRESCHOOLERS: EMOTION, ENACTMENT, AND COGNITION

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ABSTRACT. Language learning in preschool children tends to be likened to school-like learning, using verbal explanations more than actions when new words are learned during storytelling. Based on previous results that showed that sensorimotor elements help language learning at this age this study aimed to investigate whether positive emotions also act like essential elements for language learning. Fifty-five 4 to 5 year olds listened to a modified version of the "Town Musicians of Bremen" story. There were four conditions: one that included emotions and sensorimotor elements during storytelling, one that had only emotions, one that had only sensorimotor elements, and one that had neither emotions nor sensorimotor elements. Results show no advantage of positive emotions by themselves, and a clear advantage of sensorimotor elements. Implications are discussed with regard to inducing emotions versus naturally arising emotional states, and also to the embodied learning perspective.

Keywords*: language learning, embodied cognition, sensorimotor, emotions*

RÉSUMÉ : L'apprentissage du langage chez les enfants d'âge préscolaire tend à être assimilé à l'apprentissage scolaire, utilisant davantage les explications verbales que les actions lorsque de nouveaux mots sont appris quand on leur raconte d'histoires. Cette étude, qui s'appuie sur les résultats montrant que les éléments sensorimoteurs aident cet apprentissage, vise à déterminer si les émotions positives agissent aussi comme des éléments essentiels. Cinquante-cinq enfants de 4 à 5 ans ont écouté une version modifiée de l'histoire des "Musiciens de la ville de Brême". Cela dans quatre conditions : une qui incluait des émotions et des éléments sensorimoteurs pendant la narration, une qui n'avait que des émotions, une qui n'avait que des éléments sensorimoteurs, et une qui n'avait ni émotions ni éléments sensorimoteurs.

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Les résultats ne montrent aucun avantage des émotions positives en soi, et un avantage clair des éléments sensorimoteurs. Les implications sont discutées en ce qui concerne l'induction d'émotions par rapport à des états émotionnels naturels, ainsi que par rapport à la perspective d'apprentissage incarné.

***Mots-clés** : apprentissage du langage, cognition incarnée, émotions, action.*

1. Introduction

Cognition is not independent from the body's morphology, the states of the body, and the environment (Barsalou, 2008). Post-cognitivist approaches like embodied cognition and grounded cognition show that there are no clear boundaries between cognitive processes, sensorimotor mechanisms, emotional states, and context (Barsalou, 2008, 2010; Gomila & Calvo, 2008; Ionescu, 2011; Laakso,2011; Smith & Sheya, 2010; Wilson, 2002). More important, this lack of boundaries is present at every age (Gallese & Lakoff, 2005; Glenberg, 2008; Landy & Gldstone, 2007; Zwaan, Stanfield, & Yaxley, 2002).

Language is based on symbolic processing and language learning has long been considered an expression of pure cognitive sophistication in children (Schaffer, 2004). Recent empirical evidence shows, however, that language learning in infancy is shaped by several non-cognitive factors: posture (Morse, Benitez, Belpaeme, Cangelosi, & Smith, 2015), body properties (Kucker, McMurray, & Samuelson, 2015; Pereira, Smith, & Yu, 2014; Smith, Yu, & Pereira, 2011) and social context (Kucker et al., 2015). Furthermore, it has been shown that adults understand language by using simulations (Zwaan, Stanfield, & Yaxley, 2002) or the motor system (Glenberg, Sato, Cattaneo, Rigio, Palumbo, & Buccino, 2008). All these studies argue for the embodied nature of language learning and language use. Because most of the above mentioned studies have infant or adult participants, the present endeavour aimed to investigate the embodied nature of language learning in pre-schoolers (specifically, between 4 and 5 years of age).

One recently published study (Wellsby & Pexman, 2019) has shown that direct interaction with an object does not help 5-year old children learn the labels of novel objects. However, in a previous study (Ionescu & Ilie, 2018) we showed that in the preschool years, language learning is intertwined with sensorimotor aspects well beyond the Piagetian sensorimotor period (namely, infancy). The main purpose of the study was to compare the efficiency of embodied language learning with that of traditional language learning in preschool children. The learning activity

was the storytelling of a modified version of the "Town Musicians of Bremen" (written by the Grimm brothers) that included 10 new words and idioms. Specifically, we aimed to find out whether enacting the meaning of new words while listening to a story leads to better language learning than simply hearing the explanation of the meaning of new words. Thus, the experimental group used sensorimotor cues and interacted with the content during storytelling (e.g., by moving quickly through the classroom while repeating the idiom "to scuttle away").The results showed that children who enacted the meaning of new words and idioms while listening to the story, had a better performance both at recognizing the meaning of the new words/idioms and at retelling the story in the correct order (Ionescu & Ilie, 2018). As such, we reasoned that embodied learning is more efficient for increasing cognitive performance than traditional learning. Moreover, language development seems to be dependent on sensorimotor elements, lending support to previous studies showing the embodiment of language (Morse et al., 2015; Smith & Sheya, 2010). It is worth noting that the sensorimotor information extracted from the enactment of the meaning of novel words in the latter study is qualitatively different from the information extracted from the direct manipulation of objects included in the former study. This difference might account for the divergent end results of the two studies.

One important element that might have influenced children's performance in the study conducted by Ionescu and Ilie (2018) is represented by emotions. Children in the experimental group might have liked the story more because enacting the meaning of words elicited positive emotional states and this emotional element might have indirectly led to our results. In other words, it is possible that what counted more were not the sensorimotor elements used during enacting but the emotional states that were activated by this way of listening to a story. Continuing our previous work, we tried to explore in the present endeavour if positive emotions shape children’s language learning.

2. Positive emotions and cognition

One of the main psychological theories that investigates the influence of positive emotions on cognitive processes is the broaden-and-build theory (Fredrickson, 1998; 2001; 2013; Fredrickson & Branigan, 2005). The main premise of the theory centres on the idea that positive emotions potentiate people’s thought-action repertoires and enable flexibility and creative thinking. For example, joy is identified as a positive emotion that gives people an urge to explore (Fredrickson & Joiner, 2002). Another key idea is that a broad mindset leads to an increase in personal

resources (physical, intellectual, social and psychological). For instance, the play activities in which children are frequently involved - through their exploratory and creative nature - provide them with knowledge about the world and about themselves, leading to increases in psychological complexity (Fredrickson & Joiner, 2002).The broaden-and-build theory contributes to the body of scientific research on the influence of emotion on cognition, along with the studies led by Isen (Isen, Johnson, Mertz, & Robinson, 1985; Isen, Daubman, & Nowicki, 1987). These studies have shown that positive emotions facilitate a more flexible approach when solving problems and are associated with creativity, global information processing and openness to information (Fredrickson & Joiner, 2002).

In terms of methods used to induce positive emotions in the preschool age, previous studies have used several strategies, such as reading lists of positive words, viewing short videoclips/cartoons, or simply offering rewards (e.g. success feedback, candies) (Cohn & Fredrickson, 2008). Because most of these methods have been found to be more or less successful in eliciting positive emotions, we tried to manipulate children's mood by using a plush toy that invited children to laugh at certain points of the storytelling process. By doing this, we sought to investigate if the induction of a positive mood would influence children's learning of new words and idioms and their ability to recall the plot of the story in its correct chronological order. Hence, we tried to dissociate the emotional component from the sensorimotor experience during storytelling in order to investigate if emotions lead to better learning than embodied learning based only on sensorimotor elements and traditional learning.

3. The present study

The main purpose of the current research was to explore the role that positive emotions might play in language learning in the preschool period. Specifically, we wanted to investigate if adding an emotional component to storytelling leads to better learning, that is, to better cognitive performance. For this end, we manipulated embodied learning via positive emotions both for the sensorimotor condition (sensorimotor with emotions - SME) and for the traditional learning condition (E) and compared these groups to the two groups without emotions, the sensorimotor condition (SM) and to the control condition (traditional learning - C). In this way, we intended to measure whether the emotional element adds critically to the sensorimotor component of embodied learning.

An additional aim was to see if the previous results can be replicated. For this end, we compared children's performance in the non-emotional SM condition and C condition, that were identical to the previous study (Ionescu & Ilie, 2018).

Given the exploratory nature of the study, we expected that children in the SME condition will have the best performance because this condition combines two elements of embodiment and thus may better shape language learning. Performance was operationalized as the number of newly learned words and idioms, and the number of narrative sequences retold in the correct order. These two measures of language development are widely used as learning criteria for 4 to 5-year olds in Romanian kindergartens (Boca, Bucinschi, & Dulman, 2008; Ionescu & Ilie, 2018). We expect the lowest performance in the traditional storytelling condition (C), because here the storytelling process (i.e., just listening to word meaning explanations) might be too abstract and unnatural for this age. As for the E and SM conditions, at least two outcomes can be envisaged: if on the one hand, emotions and sensorimotor elements are equally important components of cognitive processing, then performance will be similar. If, on the other hand, emotions are more powerful and have been the crucial element in the previous study, albeit not investigated there directly, then children in the E group will outperform those in the SM group.

3. Methods

3.1. Design

We used a pre-test/post-test quasi-experimental design, with the type of learning as independent variable (i.e., sensorimotor learning with emotional elements; traditional learning with emotional elements; sensorimotor learning; traditional learning) and children's performance in language learning as the dependent variable (i.e. number of new words and idioms learned/recalled, and number of narrative sequences retold in the correct order).

3.2. Participants

Fifty-five children from two kindergartens in Cluj-Napoca participated in the experiment. The age range was between 4 and 5 years, and the mean age was 57 months (N=51; 4 children had no birth date on their informed consent; age range from 47 to 70 months). There were no significant differences between the four groups in terms of age, the mean for the SM group being 58 months (N=7)

and for the SME group57 months (N=20); for the E group, the mean age of the participants was 58 months (N=14), while the mean age for the C group was 54 months (N=10).Children were in their second year of kindergarten. None of the children had any special education needs or cognitive deficiencies, according to the individual evaluations their teachers made at the beginning of the school year. Only children with consent forms signed by their parents were included in the research. The children were split into 4 groups: sensorimotor learning with induced emotions (SME); traditional learning with induced emotions (E); sensorimotor learning without induced emotions (SM); and traditional learning without induced emotions or control (C).

An additional group of 47 children took part in the pre-test, but they were not included in the experiment because: 33 knew either the story or some of the words; 13 were absent either during the story listening activity or on testing; 1 did not want to interact.

3.3. Procedure

Participants were selected non-randomly: children in each group were from six classes, from two kindergartens located in Cluj-Napoca. Children in the SM and C groups were each from one class; children in the SME and E groups were from the remaining 4 classes (two classes SME, and the other 2 classes E). In all conditions children listened to a modified version of the Romanian translation of the "Town Musicians of Bremen" story, written by the Grimm Brothers. The story was changed so as to include 10 new words and idioms (see Appendix) and to have seven narrative sequences. The cues for the words were visual and motor for the words, and motor for the idioms (as it is hard to visually depict some of the actions in the idioms). The experimental timeline was the same for all four groups: a pre-test on Day 1, story listening after a two-day interval, on Day 2, and a post-test after another two-day interval, on Day 3.

Pre-test. On Day 1, each child was evaluated by an experimenter for approximately 5 minutes in a quiet room. In this way we determined if children knew the content of the story and if they recognized the novel 10 words and idioms that had been inserted into the story. Some of the children knew either the content of the story or what some of the new words and idioms meant and thus, they were excluded from the study. The children that were included in the four conditions did not know either the story or any of the words and idioms, showing the same baseline level (Level 0).

*Story listening (Day 2).*In all conditions, the storytelling lasted for approximately 30 minutes, and children were seated on chairs, in their classroom, in a semicircle. The story was told by their regular teacher. The way the story was told differed as follows:

- In *the sensorimotor with induced emotions (SME) condition*, positive emotions were induced with the help of a toy. Specifically, one experimenter went to the class when the story was read and used a plush monkey named Cici to have a short interaction with the children before and after the story: Cici invited children to laugh because she is very happy to be with them. During the fourth narrative sequence, there was also a short interaction: the monkey told the children that it was glad that the animals in the story decided to sing and that this will make them happy, and invited children to laugh together again. For the sensorimotor part, the teacher used hand-puppets representing the characters and extra visual and motor cues while reading (see Appendix). For example, the teacher showed a picture of a lute for the second narrative sequence, when the donkey tells the dog that it could play the lute in their band, and she asked the children to pretend to play a lute. This was repeated for every new word/idiom in each narrative sequence and so the children were directly involved in the storytelling process.
- In the *traditional learning with induced emotions (E) condition*, emotions were induced exactly like in the SME condition, but there was no sensorimotor part. Namely, the teacher explained verbally the meaning of new words/idioms, and only showed the pictures depicting the sequences of the story.
- In the *sensorimotor condition (SM),* no positive emotions were induced, but the story was told with the sensorimotor elements presented at the SME condition (i.e. children enacted the meaning of new words/idioms).
- In the *control condition (C)*, the story was told like in the E condition (i.e., with verbal explanations for the new words/idioms) but without induced positive emotions.

Post-test (Day 3). After a two-day interval, each child was assessed again on the two measures. The assessment lasted approximately 10 minutes and was carried out in a quiet room in the kindergarten by two experimenters: one interacted with the child and the other one kept record of the child's responses. The experimenter first shuffled the pictures corresponding to all narrative sequences on the table in front of the child and asked him/her to arrange them in the correct order. Afterwards, children were asked a few questions about each novel word/idiom. For each of the 10 linguistic items, the children could use words and/or gestures to explain their meaning.The maximum score was 10. For the correct order of the narrative sequences, we counted the first correct sequence of each child (e.g., if recorded as 1, 2, 3, 6, 4, 7, the score is 4; if recorded as 3, 4, 1, 7, the score is 2). The maximum score for this measure was 7.

4. Results

Table 1 shows the mean and standard deviations for the 4 conditions. We used the Kruskal – Wallis test to see if there was a difference in performance between the four conditions, in terms of number of recognized words or idioms, and the results proved to be significant (H(3) = 23.32, p= .000) (see Figure 1). Pairwise comparisons between the four groups showed that the SM group had the best performance, while the C group had the lowest performance, with the difference between them being significant (H(3) = 31.78, p=.000; M SM=7.40, SD=2.31; M C=1.63, SD=.92). The following comparisons also yielded significant differences: SME and SM (H(3) =-12.35, p=.045; M SME=4.90, SD=2.61; M SM=7.40, SD=2.31), SME and C (H(3) = 19.43, p =.001; M SME=4.90, SD=2.61; M C=1.63, SD=.92), E and SM (H(3) = - 20.82, p =.002; M E=3.35, SD=2.16; M SM=7.40, SD=2.31). Children in SME and E, and those in E and C did not differ significantly on this measure.

Table 1. Mean number of recognized new words or idioms and narrative sequences in each group

Group	n	Mean no. of words or idioms	SD	Mean no. of sequences	SD
SME	20	4.90	2.61	4.75	2.22
E	14	3.35	2.16	2.64	2.23
SM	10	7.40	2.31	5.30	1.70
C	11 (N=55)	1.63	.92	4.36	2.01

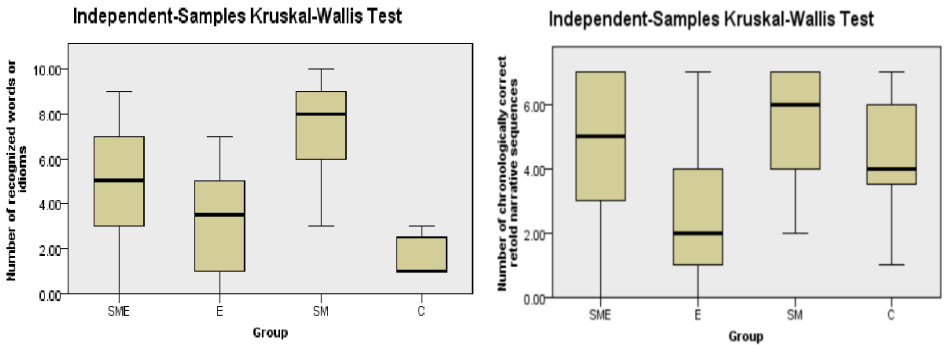

Figure 1. Pairwise comparisons of the four conditions for words/idioms and for narrative sequences in the correct order.

Using the same statistical analysis, we also checked to see if there was a difference in performance between the four groups in terms of chronologically correct retold narrative sequences, and the results proved to be significant (H(3) = 09.39, p=.025). Overall, the SM group had the best performance, while the SME and the C group had similar performances. The E group had the lowest performance in retelling the story in its correct chronological order. Pairwise comparisons between groups yielded significant differences between the SM group and the E group (H(3) = -17.40, p=.007; M SM=5.30, SD=1.70; M E=2.64, SD=2.23) and between E and the SME group (H(3) = 14.30, p=.009; M E=2.64, SD=2.23; M SME=4.75, SD=2.22). All other comparisons were non-significant.

We also decided to analyse performance in two larger groups for the emotion versus non-emotion manipulation on the one hand, and in other two larger groups for the sensorimotor versus non-sensorimotor manipulation on the other hand. Therefore, we first merged the four initial groups into two groups: one with the emotional component during storytelling (E group: E and SME initial conditions) and one without the emotional component (Non-E group: C and SM initial conditions). The results yielded no significant differences in performance between the E group and the Non-E group, both for the number of words and idioms recognised (U=346, p = .855) and for the number of chronologically correct retold narrative sequences (U=282, p = .188).

We then merged the four groups into two different groups: one in which the story was told with sensorimotor elements (SM group: SM and SME initial conditions) and one where the story was told without sensorimotor elements (Non-SM group: C and E initial conditions). These results showed significant differences in performance between the SM group and the non-SM group (with/without E), both in terms of number of words and idioms recognised (U=137, p = .000) and for the number of chronologically correct retold narrative sequences (U=233, p = .014). Table 2 shows the means and standard deviations for the merged groups.

Table 2. Mean number of recognized new words or idioms and narrative sequences for the merged conditions

Group	n	Mean no. of words or idioms	SD	Mean no. of sequences	SD
E	34	4.26	2.52	3.88	2.43
Non E	21 (N=55)	4.38	3.39	4.80	1.88
SM	30	5.73	2.75	4.93	2.04
Non SM	25 (N=55)	2.60	1.91	3.40	2.27

Note. E=the initial SME and E conditions; Non E=the initial SM and C conditions; SM=the initial SM and SME conditions; Non SM=the initial E and C conditions

5. Discussion

The main purpose of the present study was to investigate whether positive emotions have an added effect over embodied learning that uses sensorimotor elements for language development during the preschool years. For this end, we created four conditions based on our previous results that explored the difference between embodied learning based on sensorimotor elements and the traditional learning method (Ionescu & Ilie, 2018). Specifically, the main manipulation in the present study was the induction of positive emotions, and thus the four conditions were: sensorimotor with induced emotions (SME), traditional method with induced emotions (E), sensorimotor without induced emotions (SM), and traditional method or control without emotions (C).

Contrary to our hypothesis, children in the SM condition remembered the most novel words and idioms, followed by the SME condition. The third in line is the E condition and the fewest words were recalled by children in the C condition. The groups that engaged their sensorimotor system while learning the meaning of new concepts acquired more novel words and idioms than children who only listened while being read to. This finding lends support to the embodied cognition approach that speaks about the sensorimotor involvement in cognitive processing (Barsalou, 2008, 2010; Gomila & Calvo, 2008). However, it seems that the additional emotional manipulation, although it appears to add a significant effect in comparison to the traditional method, did not increase children's performance when added to enactment. Regarding the order of the retold narrative sequences, the SM group again performed best, with children in this group recalling the most narrative sequences in the correct order. The performance of the SME group follows closely, having a similar performance with the participants in the C group. Children in the E group retold the fewest narrative sequences in chronologically correct order. Hence, once again contrary to our expectations, inducing positive emotions was apparently not important in the sensorimotor condition; surprisingly, however, when induced in the traditional learning group, they seemed to negatively interfere with children's performance. This finding stands in contrast with the idea that positive emotions generally enhance performance (Fredrickson & Branigan, 2005), but see the limits of this study below.

A possible explanation for these results is that artificially introducing emotions in the context of storytelling might be distracting for children at this age. This can be very easily observed in the difference in performance of the E group in the two measures. In both cases, performance fell behind the conditions that also had a sensorimotor manipulation, and in the case of recalling the story line, the E group

even had the lowest performance. Also, performance of the SME group was always second to the SM group. Emotions helped learning compared to only verbally explaining the meaning of words, supporting the idea that they create a more enjoyable environment and stimulate openness and interest in the content (Fredrickson, 1998), therefore resulting in better outcomes than the classical format. In the context of the broaden-and-build theory, positive emotions stimulate children to manifest interest towards the concepts at hand and to assimilate more of the information that is conveyed about them as a way of accumulating intellectual resources needed to further interact with the environment (Fredrickson, 2001, 2013). However, to recall a series of narrative sequences in the correct order, a certain degree of sustained attention to the storyteller is necessary for the whole time he/she is reading the content. Since the emotional manipulation was done by introducing a character that children enjoyed, this might have been a distracting element in the environment that overstimulated children and disrupted their ability to focus on the storyline, subsequently leading to poorer recall of the sequence order. This is important in the context of the developmental characteristics of the attentional system during the preschool years – the ability to inhibit distracters is only fully mature at about 10 years of age, meaning that at 4 to 5 years of age children are more susceptible to distraction from irrelevant information (Rueda et al., 2004).

Learning that includes enacting (sensorimotor elements like multimodal cues and action) naturally elicits positive emotions in the body that enacts the meanings. In this way, the SM group had positive emotions elicited by the context of storytelling and as such performed best in both measures. Most contemporary embodied cognition accounts argue for the natural way in which the body learns (Kiefer & Trumpp, 2012; Kucker et al., 2015; Stolz, 2015) and thus for the difficulty to separate the non-cognitive elements that shape cognition in experiments. In other words, children experience positive emotions while learning words by using their body. This general disposition facilitates both the grasping of new words and concepts and allows children to pay attention to the narrative line. By artificially introducing affect in the conditions with induced emotions, children's attention may have been diverted from the content, thus resulting in lower levels of learning in both measures as compared to the SM group. However, the distraction produced by the manipulation could have been counteracted by the grounding effect of using the body in the learning process, resulting in better performance than the E and C groups. We know of no appropriate way for measuring naturally occurring positive emotions at this young age, and this is why we tried to induce them the way we did, acknowledging the fact that, in the end, this might have an opposite effect which indeed is the case.

Importantly however, we replicated the previous results, namely the essential role of the sensorimotor elements for language learning in preschoolers. In contrast to Wellsby and Pexman (2019), we allowed children to enact the meaning of new words, and not just take the objects in their hand. Manipulating objects by holding them and then hearing their names might not be such a strong sensorimotor element and in fact it might be just a pure cognitive activity in which you also hold the objects. On the other hand, embodied learning via enactment seems to be the best suited method for language learning activities with pre-schoolers. This consistent pattern of results speaks for the importance of putting the body back into the learning process, especially at this young age (Ionescu & Glava, 2015; Kiefer & Trumpp, 2012). Cognition, and consequently language, is not separated from the body (Barsalou, 2003, 2008) and it follows from this that allowing children to use their bodies when learning makes cognitive acquisition better (Ionescu & Glava, 2015; Stolz, 2015). One conclusion that can be drawn from these results is that the sensorimotor aspects of the learning activity are the ones that enhance the acquisition of language. In the embodied cognition perspective, affect is part of the learning process, along with the bodily states, reactions and the context in which learning occurs – all are dynamically linked and reciprocally influence each other (Ionescu, 2011; Thelen & Smith, 1998). Therefore, if we take emotions apart from the other elements, we might in fact disrupt embodied learning. As it appears, the naturally emotional context created by the sensorimotor enactment of concepts during storytelling is more effective when it comes to learning than artificially `constructing` an emotional context, by adding an unnatural `active` ingredient.

This study is not without limits. First, the way in which we decided to induce emotions might have created unnecessary distraction during the activity. This might explain the poorer results that children in the emotional groups had in the measures. Other ways of inducing positive affect, like offering rewards, might prove to be more effective in future studies. Another limitation was the pre-existing relationship classes had with their teachers, specifically storytelling might have been influenced by the way the teacher usually read to their classes. This might have influenced the degree of attention children paid to the story while the positive emotions character was in the classroom – some of the groups seemed less distracted by the monkey, while the other ones were more interested in it. A follow-up should aim to randomly select children from different classes and to have an experimenter tell the story even if practically this is very difficult to achieve in real-life preschool settings. This too might have limitations because children at this young age do not always interact well from the beginning with

strangers in school activities. Lastly, we aimed for larger samples in each group, but were impeded by the fact that several children in the classes we approached already knew the story and some of the words/idioms. However, the fact that we replicated our previous results shows that we might have found an important effect in language learning in pre-schoolers: learning activities that involve sensorimotor elements proves to be more effective for linguistic development than the traditional unidirectional and non-interactive method of language learning. Future studies can aim to explain in more depth why the sensorimotor cues work, and to find better ways to induce positive emotions at early ages.

6. Conclusions

The present study aimed to investigate whether emotions have a more important role for language learning than sensorimotor elements. The results showed that emotions might have a secondary role, while sensorimotor elements are the best aid for language learning. While enactment naturally evokes a positive state of the body, separating emotions in trying to objectively manipulate them may in fact disrupt learning, especially when sustained attention to a story line is required. As such the fact that adding emotions did not improve performance but enactment did is by itself a proof that cognition is embodied: It is unnatural to separate sensorimotor elements, emotions and cognition. This adds to the growing body of research emphasizing the importance of taking the body and the naturally occurring affect into consideration when designing learning activities for children.

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Appendix

New words and idioms in the story in English and Romanian
and the sensorimotor cues used for learning

Word/ Idiom in English	*Word/ Idiom in Romanian*	*Sensorimotor cue*
Lute	*Lăută*	***Visual cue:*** *Children saw a picture of a lute.* ***Motor cue:*** *Children pretended to play a lute.*
Flute	*Flaut*	***Visual cue:*** *Children saw a picture of a flute.* ***Motor cue:*** *Children pretended to play a flute.*
Robber	*Tâlhar*	***Visual cue****: Children saw a picture of some robbers.* ***Motor cue****: Children pretended to steal an object from another child.*
Pile	*Maldăr*	***Visual cue****: Children saw pictures of piles of clothes, garbage, and carrots.* ***Motor cues****: Children formed a pile with their hands.*
Hullabaloo	*Hărmălaie*	***Visual cue:*** *Children saw a picture of children making noise.* ***Motor cue:*** *Children rose from their chairs, made noise, and ran around the classroom.*
Batten down the hatches	*A-i ajunge funia la par*	***Motor cue:*** *Children acted frightened and upset.*
To sing a serenade	*A cânta o serenadă*	***Motor cue:*** *Children sang a serenade in cat language.*
To feel light-headed	*A vedea stele verzi*	***Motor cue****: Children acted as if they were dizzy, walked in circles, and tripped.*
To scuttle away	*A-și lua tălpășița*	***Motor cue:*** *Children ran to the other side of the classroom as fast as they could.*
To cram	*A se ghiftui*	***Motor cue:*** *Children imitated the act of eating too much by rubbing their bellies.*