Dialogic reading in the promotion of cognitive, emotional and behavioural profiles in early childhood

La lectura dialógica en la promoción de perfiles cognitivos, emocionales y comportamentales en primera infancia

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Abstract
In this article we present the results of a research with early childhood in which the incidence of dialogical reading was established in the cognitive, emotional and behavioral profiles in a group of children aged 4 to 5. An experimental intervention was carried out in school and family contexts, where previously trained parents and teachers applied the dialogical reading techniques of Whitehurst (1988), using album books. Parents were guided with a mobile app called FamiLectura, which was built for this research. The study was quasi-experimental, with a pre test-post test design and a control group. The results indicated significant increases in memory and recovery domains, comprehensive and expressive language, in addition to important variations in emotional skills, such as the recognition and expression of emotions.

Resumen
En el presente artículo se presentan los resultados de una investigación con primera infancia en la que se estableció la incidencia de la lectura dialógica en los perfiles cognitivos, emocionales y comportamentales de un grupo de niños y niñas entre los cuatro y los cinco años. Se realizó una intervención experimental en el contexto escolar y familiar, donde padres y maestros entrenados aplicaron las técnicas de lectura dialógica de Whitehurst (1988), utilizando libros álbum. Los padres fueron acompañados con una aplicación móvil llamada FamiLectura, la cual fue construida para esta investigación. El estudio fue cuasiexperimental, con un diseño de preprueba-posprueba y grupo control. Los resultados indicaron incrementos significativos en los dominios de memoria y recuperación, lenguaje comprensivo y expresivo, además de variaciones importantes en las competencias emocionales, como el reconocimiento y expresión de emociones.

This paper is derived from the macro-project entitled Análisis multidimensional de niños con manifestaciones afectivo – comportamentales (Multi-dimensional analysis of children with affective-behavioural manifestations), registered in the Directorate-General of Research and Postgraduate Studies of the University of Manizales.

Introduction

The subject matter of this research focuses on the use of children's literature as a mechanism for providing infants with comprehensive development that enables them to enhance their cognitive, emotional and behavioural processes, so that they become children who take on roles that optimise their performance, not only in academic life, but in all social and cultural settings that await them throughout their life cycle. It would also be interesting to have the mediation of adults between the text and the reading subject as a starting point, since their function is decisive in any process of shared reading, or dialogic reading, as defined by Whitehurst et al. (1994). Thanks to this type of reading, the adult becomes a facilitator of the cognitive, emotional and behavioural development inherent to children's literature.

Between 1988 and 2016, a background check out on scientific studies and literature reviews was performed at a national and international level, which reported studies on the importance of dialogic reading for the cognitive and emotional development of infants. As of the date of this review, their effects on behavioural development have not been found. Some examples of the studies that address the cognitive variable in an intervention with shared or dialogic reading are those of Whitehurst et al. (1988), Karrass & Braungart-Rieker, (2005), Blom-Hoffman, O'Neil-Pirozzi and Cutting (2006) and Boit (2013), inter alia. On their part, studies such as those by Riquelme & Munita (2011), Riquelme, Munita, Jara & Montero (2013) and Riquelme & Montero (2013), refer to the advances generated by dialogic reading in emotional competence.

No research has been found so far that simultaneously incorporates the variability of cognitive, emotional and behavioural developments when facing an intervention with dialogic reading of children's literature. For this reason, we tried to bring together the analysis of these three development processes and to solve a research question in a single study: What is the impact of dialogic reading on the promotion of cognitive, emotional and behavioural profiles of four- and five-year-old children in a private educational establishment in the municipality of Cali (Colombia)?

To answer the question, an initial measurement of the children's cognitive, emotional and behavioural profiles was first carried out using standardised tests such as the Neuropsychological Battery for Preschoolers (BANPE, as per its Spanish acronym). Then, a school and family intervention mediated by the dialogic reading technique was implemented within the experimental group, taking the principles developed by Whitehurst (1994) as reference. At the end of the intervention, a new measurement was carried out again with the same tests used in the initial measurement, in order to analyse the variations in the cognitive, emotional and behavioural profiles of the sample after the experimental intervention.

The importance of this study lies in the possibility of nurturing the development of children, and its novelty lies in involving three processes of child development that can be stimulated and promoted through the use of dialogic reading of stories, introduced in everyday contexts such as school and family, significantly contributing to early childhood and corresponding to primary socialising contexts for their formation. The findings are also intended to promote more frequent encounters with children's literature, aware of the guarantees and advantages it brings to the development of children, even improving the quality of reading routines in charge of adult mediators such as teachers, parents or caregivers.

Method

Participants

34 children in Early Childhood Education participated in the study: 25 boys and 9 girls, aged...
four and five, who are at the Pre-kindergarten, Kindergarten and Transition level. They attend a private school of medium-high socioeconomic status in the municipality of Cali (Colombia). The sample included an experimental group and a control group; the two groups were made up of 17 children; the first one had 11 boys and 6 girls, and the second one had 14 boys and 3 girls. The entire sample remained the same during the study, none of them was excluded. The participants’ parents signed an informed consent and received the socialisation of the results obtained after the study was completed. Table 1 shows the sociodemographic characteristics and the distribution between both groups.

**Instruments**

Three data collection instruments were used for the two measurement stages: pre-test and post-test. They were used to measure the cognitive, emotional and behavioural profile of the 34 children who participated in the study, distributed in the experimental and control group. In order to measure the cognitive profile, the Neuropsychological Battery for Preschoolers (BANPE, as per its Spanish acronym) developed by Ostrosky, Lozano & González (2016) was used. This is an assessment tool designed to be sensitive to cognitive changes at school age, which allows for the evaluation of cognitive processes such as language, memory, attention, executive functions and motor skills. In order to assess the emotional profile of preschool children, we decided to design an instrument to make it possible to know -from the standpoint of parents and teachers- the situation in which an emotion is most expressed, its intensity, the frequency whereby it becomes evident and the behavioural manifestations of the child when expressing it. Four basic emotions were chosen: anger, fear, happiness and sadness. The instrument was called the Emotional Exploration Questionnaire and was reviewed and approved by expert judgement and subject to a pilot test. An individual exploration of emotional competencies was also carried out with the children in order to obtain a characterisation of the recognition, expression and comprehension of emotions. The Colombian version of the Conners’ Test, standardised and validated by Pineda et al. (1999), was used to measure the behavioural profile, as it is an evaluation tool that analyses how teachers and parents perceive the child’s behaviour.

### Table 1

| Sociodemographic data and distribution in the control and experimental group |
|-----------------------------|-----------------------------|-----------------------------|
|                             | Control group              | Experimental group          |
|                             | Frequency | %     | Frequency | %     | Frequency | %     |
| Gender                      |           |       |           |       |           |       |
| Boys                        | 25        | 73.5% | 14        | 82.3% | 11        | 64.7% |
| Girls                       | 9         | 26.5% | 3         | 17.6% | 6         | 35.2% |
| Age                         |           |       |           |       |           |       |
| 4                           | 14        | 41.2% | 8         | 47.0% | 6         | 35.2% |
| 5                           | 20        | 58.8% | 9         | 52.9% | 11        | 64.7% |
| ESE                         |           |       |           |       |           |       |
| 2                           | 2         | 5.9%  | 1         | 5.8%  | 1         | 5.8%  |
| 3                           | 2         | 5.9%  | 1         | 5.8%  | 1         | 5.8%  |
| 4                           | 15        | 44.1% | 8         | 47.0% | 7         | 41.1% |
| 5                           | 15        | 44.1% | 7         | 41.1% | 8         | 47.0% |
Procedure

This research is a study of a qualitative and quasi-experimental nature, with a pre- and post-test design and a control group. Two groups were created for this purpose, each one made up of 17 individuals, aged four and five. Pre-tests were applied to the experimental and control groups in order to measure the cognitive, emotional and behavioural profile of the children. A six-week intervention was implemented within the experimental group using dialogic reading in two environments, school and family, while the control group was not allowed to implement any such reading in any of these environments. The parents and two teachers with a B.A. in Early Childhood Education were trained in dialogic reading following Whitehurst et al. (1988). The experimental group was divided into two subgroups and the reading workshops were led by a teacher. A total of 18 workshops were held (3 per week) and a series of reading reports were filled out, specifying: name of the text read, dialogic reading techniques used, presence of emotional interventions, characteristics of the group’s attention and remarks. Meanwhile, it was instructed to implement a minimum of 18 reading routines with the children in the family context; on average, the families complied with 23 reading routines mediated by dialogic reading.

In order to guarantee the permanence of the families during the experimental intervention, as well as the quality of the reading routines with the technique used, a mobile application (app) called FamiLectura was designed, through which parents prepared their reading reports, received recommendations on children’s literature books and guidance on dialogic reading techniques and tips on the importance of reading in early childhood.

Every two weeks, the families received statistical reports about their reading routines, were encouraged to increase these encounters with children’s literature, and were guided on the proper use of dialogic reading to avoid any potential malpractice.

The material used in the dialogic reading workshops included album books carefully selected from the children’s reading rooms of the educational institution and from the Cultural Network of the Bank of the Colombian Republic; they were purchased on loan in order for them to be rotated among families and teachers. According to the studies conducted

Figure 1. Follow-up of the parents’ reading routines.
Source: Inevery Crea España - Equipo Inevery Crea (2014).
by Whitehurst et al. (1994) and the review by Goikoetxea-Iraola & Martínez-Pereña (2015), the type of children’s literature used for dialogic reading is decisive for the optimal development of the reading technique, book albums being the most suitable to this end.

After the experimental intervention, a post-test was applied to the two groups, using the same evaluation batches as in the initial phase of the study. Once the results and the discussion were obtained, the teachers and parents who participated in the research socialised with one another, issuing relevant recommendations to be implemented in the contexts of action with infants. Likewise, a proposal was presented to the educational establishment to consider introducing dialogic reading in the childhood education curriculum.

Results

The SPSS statistical package (version 25) was used for statistical analysis of data. Firstly, the data of each one of the two groups (in the two measurements) were analysed aiming at determining whether there is any behaviour that can be assimilated to that of the normal distribution or not, so that it can be concluded whether procedures for testing parametric or non-parametric hypotheses should be implemented or not. After this first approach, a Student t-test was applied to those tests showing a parametric behaviour. For those data showing non-parametric behaviour, the Mann-Whitney U-test was performed. In order to analyse the emotional questionnaire, a frequency analysis was performed. The values used for the different analysis tests were 0.05, where higher values show support of the null hypothesis and lower values reject it.

Cognitive profile before and after exposure to dialogic reading

The BANPE batch is made up of 41 subtests that assess attention, memory and recall, cognitive flexibility, academic skills, inhibition, orofacial structures, comprehensive language, orientation, planning, expressive language, abstraction, working memory, risk-benefit processing, emotion identification, and theory of mind. Graphs 1, 2, 3 and 4 show the results obtained after an intervention based on dialogic reading, in the cognitive domains, during pre-test and post-test measurements, present in each one of the groups (G1- experimental group / G2 -control group).

Graph 1 shows the behaviour of cognitive domains such as Attention, Memory and Recall, Cognitive Flexibility and Academic Skills; Graph 2 shows the behaviour of domains such as Inhibition, Orofacial Structures, Language, Comprehension and Orientation.

With regard to the experimental group, 17 children exposed to an intervention with dialogic reading both in the school and family context for six weeks, statistically valid increases were found in the domains of Memory and Recall and Language Comprehension, compared to the results of the control group.

Graph 3 shows the behaviour of the cognitive domains such as Planning, Language Expression, Abstraction and Working Memory.

The domain of expressive language shows a statistically valid increase when comparing the results of the experimental group with those of the control group, after the children have been exposed for six months to dialogic reading of children’s literature, performed by a teacher and the parents of the 17 children belonging to the Early Childhood Education cycle in a private educational establishment.

In general terms, the results of the cognitive domain analysed from the Student t-test show that when comparing the measurements carried out in the memory and recall domain in the post-test within the control and experimental groups,
Graph 1: Cognitive Domains of Attention, Memory and Recall, Cognitive Flexibility and Academic Skills.

Graph 2: Domains of Inhibition, Orofacial Structures, Comprehensive Language and Orientation.
Graph 3: Domains of Planning, Expressive Language, Abstraction and Working Memory.

Graph 4: Domains of Emotion Identification, Risk-Benefit Processing, Theory of Mind.
a significant difference is found compared to the data obtained in the pre-test, in which there were no differences between the two groups evaluated. No significant differences are found in the domains of attention and academic skills when comparing the two measurements in both groups. Cognitive flexibility shows that the pre-test and post-test means of the control group show significant differences that do not arise when comparing the means of the experimental group.

Likewise, the result of the analysis obtained after using the Mann-Whitney U-test shows that there is a significant difference in the post-test between the control group and the experimental group in the domain of comprehension language; with regard to Expressive Language, there is no significant difference between the pre-test and the post-test in the control group, unlike in the experimental group. With regard to orofacial structures, inhibition, working memory, abstraction, planning, risk-benefit processing, emotion identification and theory of mind, there are no differences between the pre-test and post-test in both the control and experimental groups for our sample evidence.

Table 2
Questionnaire for Emotional Exploration in Teachers and Parents

<table>
<thead>
<tr>
<th>EMOTION RECOGNITION</th>
<th>TEACHERS</th>
<th>PARENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EXPERIMENTAL</td>
<td>CONTROL</td>
</tr>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Sadness</td>
<td>28.33%</td>
<td>26.88%</td>
</tr>
<tr>
<td>Happiness</td>
<td>49.09%</td>
<td>49.91%</td>
</tr>
<tr>
<td>Anger</td>
<td>24.37%</td>
<td>21.59%</td>
</tr>
<tr>
<td>Fear</td>
<td>23.26%</td>
<td>22.00%</td>
</tr>
</tbody>
</table>

Likewise, the result of the analysis obtained after using the Mann-Whitney U-test shows that there is a significant difference in the post-test between the control group and the experimental group in the domain of comprehension language; with regard to Expressive Language, there is no significant difference between the pre-test and the post-test in the control group, unlike in the experimental group. With regard to orofacial structures, inhibition, working memory, abstraction, planning, risk-benefit processing, emotion identification and theory of mind, there are no differences between the pre-test and post-test in both the control and experimental groups for our sample evidence.

Table 3
Analysis of emotional competencies in Students

<table>
<thead>
<tr>
<th></th>
<th>EXPERIMENTAL</th>
<th>CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Emotion recognition</td>
<td>88%</td>
<td>96%</td>
</tr>
<tr>
<td>Emotional expression</td>
<td>88%</td>
<td>99%</td>
</tr>
<tr>
<td>Emotion comprehension</td>
<td>87%</td>
<td>97%</td>
</tr>
</tbody>
</table>

In Table 3, a significantly variable behaviour is found related to emotion recognition and expression within the experimental group in the measurement of the post-test, compared to the behaviour found in the control group, where a decrease of these emotional competences can

Emotional profile before and after exposure to dialogic reading

After applying the emotional exploration questionnaire to the tutor of each student and to the parents of each child, it was found that in the school context there was a decrease in the frequency, intensity and behavioural manifestation of the emotion of sadness and anger, in the experimental group, compared to their perception in the control group. On their part, in the family context, parents perceived a decrease in the frequency, intensity and behavioural manifestation of the emotion of sadness. These data are highlighted in the rows corresponding to the emotion of sadness and anger in Table 2.
be seen. Significant increases in emotion comprehension are found in both groups.

**Behavioural profile before and after exposure to dialogic reading**

Graphs 5 and 6 show the results of the Conners questionnaire and the DSM-IV Checklist for Attention Deficit/Hyperactivity Disorder filled in by the teachers.

Graphs 7 and 8 show the results of the Conners questionnaire and the DSM-IV Checklist for Attention Deficit/Hyperactivity Disorder filled in by the parents.

The analysis of the data obtained in the behavioural dimension was performed based on the Mann-Whitney U-test. The results show that the dimensions evaluated by both the Conners and the DSM-IV Checklist do not show any significant variation in the two measurements, both in the control group and in the experimental group, after the six-week intervention based on dialogic reading. Special attention should be paid to individual differences, since there was the case of a child from the experimental group whose teachers and parents reported important changes in his behaviour.

**Discussion**

In this research study conducted in the Early Childhood Education cycle of an educational establishment in the municipality of Cali (Colombia), we tried to determine the incidence of an intervention based on dialogic reading in the cognitive, emotional and behavioural profiles of children aged four and five. In this sense, the results indicate that the intervention in the school and family context had a significant impact on the experimental group, since some cognitive and emotional domains increased compared to the control group, although no increases of statistical relevance have been found in connection with the behavioural component.

**Dialogic reading in the promotion of cognitive profiles**

More specifically, it was found that dialogic reading increases cognitive processes such as expressive language and comprehensive language, matching the approaches outlined in research studies conducted by Zevenbergen & Whitehurst (2003), Gest, Freeman, Domitrovich & Welsh (2004), Karrass & Braungart-Rieker (2005) and Landry et al. (2012), inter alia. The underlying concept behind their studies, some of which were conducted in populations with different socioeconomic levels and levels of language development, is that adult-mediated reading practices, in which interactive relationships are necessarily established giving rise to the participation of children, are those that lead to the optimisation of linguistic and cognitive skills at preschool age, and as we have seen, there is ample evidence of their effectiveness.

The experimental group of this study, made up of 17 children (11 boys, 6 girls), showed significant changes at the cognitive and emotional level evidenced in the school and family context, specifically at the level of extension and structure of their statements, of gains in their vocabulary; this was in line with the statistical results. This suggests the importance of implementing this social activity of reading in the Early Childhood Education curriculum and in early childhood education in general.

Another significant finding of this study is related to the increases evidenced in the domain of memory and recall, since the results are statistically significant for research currently focusing on issues of dialogic reading and their impact on the development of preschool children. It is noteworthy that the review by Goikoetxea-Iraola and Martínez-Pereña (2015) indicates that research has not yet been able...
Graph 5: Conners Questionnaire (Teachers).

Graph 6: DSM IV Checklist (Teachers).
Graph 7: Conners Questionnaire (Parents).

Graph 8: DSM IV Checklist (Parents).
to report on the impact of dialogic reading or shared reading on this domain of memory, which opens the door to continuing exploring and becoming a line of study for future research. The results obtained so far here will be used to motivate and encourage parents and teachers to continue implementing these interactive interventions to approach children’s literature. In order to achieve this goal, future research should focus on a single variable such as the cognitive domain of memory. It would also be necessary to consider increasing the number of samples and the time of exposure to dialogic reading, as well as regulating the number of participants during the interventions. According to studies conducted by Morrow & Smith (1990) and Whitehurst (1994), it is found that while there is evidence that reading in small groups can be effective, dialogic reading is particularly interactive and it may thus not be easily applicable in a larger group of more than five children.

**Dialogic reading in the promotion of emotional profiles**

This study also aimed at promoting the acquisition of emotional skills by preschool children through communicative and affective encounters with children’s literature. Although parents and caregivers do not determine the cognitive, emotional and behavioural processes of their children, they do contribute to their children’s development (Sánchez, 2017; Sánchez, Vasco & Restrepo, 2017; Sánchez & Restrepo, 2018). In this study, we found that children are active recipients of information and builders of their own processes, which are enhanced with the support of parents, caregivers and teachers. According to Sánchez (2017a) “Children are capable of resignifying the information that comes to them from their environment and selectively decide which information is opened and which information is closed” (p. 25).

In this regard, there is a widespread belief that dialogic reading transforms and triggers obvious emotional changes in different contexts, as stated by Riquelme & Munita (2011), Riquelme et al. (2013), Riquelme & Montero (2013) and Riquelme & García-Celay (2016) “it is possible to develop and strengthen emotional competencies in the classroom [...] through mediated reading of children’s literature” (Riquelme et al., 2013, p. 10); the purpose of this study was also to attain this goal in the school and family context.

The results obtained in this study on what was reported by the teachers in the emotional exploration questionnaire show a significant improvement in the management of sadness and anger among the children of the experimental group compared to the control group in the school context. The result is consistent with the parents’ impression with regard to sadness, in which a significant variation was also found, unlike what happened to anger in this context. On the other hand, in the exploration of the individual competencies carried out with the students, it was found that the experimental group showed a significant variation in emotion recognition and emotional expression after performing dialogic reading activities, compared to the control group. As far as emotion comprehension is concerned, both groups showed significant variations, so it cannot be explained that dialogic reading had a significant impact on the evolution of the variables.

The results obtained after a brief six-week intervention confirm the need for further proposals, from the pedagogical point of view, of intentional approaches to the emotional world of children, energised by dialogic reading, where, through the generation of interventions loaded with emotional interaction, safe, warm and affective environments are fostered. By means of this, children are led to reflect on their own and other’s emotion recognition and expression, so that they can manage healthy ways of facing a series of situations in their daily lives. Parents are obviously another significant adult figure at preschool age, so it would be interesting that the
dialogue on emotions from the fantasy worlds worked on when reading stories is also extended to family environments. This should be guaranteed by the successful mediation of parents in these encounters with children and children’s literature, as Denham (2007) recalls that emotional skills are based on basic elements of social interaction, whereby such mediation during reading is essential.

The dialogic exchange of emotional interactions between a mediating adult and a child was also reflected in the study conducted by Riquelme and Montero (2013); in this case, emotional competencies experienced a slight increase, but the exposure time of their group was longer, so it would be convenient to increase emotional interactions for future studies since—according to them—dialogue on emotions with adults supports the foundations of children’s emotional development.

**Dialogic reading in the promotion of behavioural profiles**

The behaviour of the four- and five-year-old children from the experimental group, exposed to a dialogic reading intervention for six weeks, failed to be variable compared to the cognitive and emotional domains, both in the family and school context. It was not until the end of the research that any background referring to any study on the impact of dialogic reading on this aspect of development was found. However, according to Bleger (1963), behaviour is inseparable from the social context, and its development is dynamic, and, according to Riquelme & Montero (2016), strengthening emotional competencies makes it possible to improve children’s emotional intelligence and implement greater self-control. In line with these two aspects it would be expected that, if dialogic reading shows favourable variations in children’s emotional development, this would also be shown in a similar way in the case of behavioural development.

For this study, it was important to pay attention to the individual differences of some of the children in the experimental group, since we obtained a case whose parents and teachers perceived changes in their behaviour when applying the dialogic reading techniques. In initial reading reports, the teacher reported constant motor restlessness, poor posture, and even withdrawal from the activity; while at home, parents reported failing to complete a story because of their child’s behaviour. The situation was significantly regulated by the dialogic reading interventions implemented.

It is presumed that the exposure time was too short to find some kind of statistically valid variation or increase in the development of early childhood behaviour; therefore, it would be important to consider extending this time in future lines of research.

In general, the results presented in this study lead to establish with great conviction that it is possible to optimise the cognitive and emotional development of early childhood and that new avenues of research should be opened to continue exploring the behavioural changes that can occur with this type of intervention based on dialogic reading with adults for preschool children.

Likewise, it would be advisable to train more teachers who accompany early childhood education, deepening on the technique of dialogic reading, in order to increase the quality of the encounters with children’s literature, make this technique a routine within pedagogical activities and generate development proposals that link these principles of Whitehurst (2014). Likewise, it is also necessary to disseminate the results of this study to other parents so that enriched environments, mediated by dialogic reading, are generated in their context, thus fostering even greater development in children, promoting the use of the mobile app as an innovative strategy that accompanies and mobilises
parents towards maintaining reading routines with their children.

The achievements of the children from the experimental group in the cognitive and emotional domains are an interesting contribution of this work as they open a door to further studies and research on the incidence of dialogic reading at preschool age.

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