The relationship between the time spent in family environment and preschool language development

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Abstract
The goal of this study was to identify and to assess the characteristic aspects regarding the preschool language and communication development depending on the quality and quantity of the allocated parental time, as well as on the characteristics of the family environment. The sample included 155 children aged 36 – 71 months old (M = 52.61, SD = 10.40) and their parents. The results of present research suggest that an increased level of parental involvement in structured activities predicts an increased level of language development, an increased level of time spent in familial environment predicts an increased level of language development, at the same time, the relationship between parental involvement in family learning activities is moderated by the chronological age of preschool children in the sense that at an early age, the effect of parental involvement in structured activities and time spent by parents with children on language development and the parents involvement in structured activities and the time spent by parents with children on extravertal features is stronger compared to that related to older ages. Findings highlight the unique contributions of parental implication and the quality time on preschool language development.

Keywords
preschool language development, parental involvement, socio-economic status, media exposure, quality and quantity parental time

1. Introduction
In a cognitively and linguistically stimulating family environment, with age-appropriate learning materials, children enrich their vocabulary and are encouraged to express themselves spontaneously, to explore and expand their knowledge (Lohnorf et al., 2018). Therefore, the language codes used by parents differ according to the socio-economic status: parents with lower socio-economic status use a limited language code, characterized by the frequency of simple sentences, repetitions, non-compliance with grammar rules, while parents with superior socio-economic status use a developed linguistic code by using complex sentences, a rich vocabulary and grammatical correctness (Marjanovič Umek et al., 2008). Parents language style used, including the frequency of questions, adding new information and the sentences extension influence children language development (Marjanovič Umek et al., 2008). Children who come from families with higher socio-economic status hear an average of 215,000 words per week, children from middle-class families hear 125,000 words, while children from lower socio-economic families hear about 62,000 words (Hart & Risley, 1995).

Socio-economic status differences are obvious at preschool age, when children from low-income families demonstrate at kindergarten significantly weaker lexical skills compared to colleagues who belong to middle and higher income families, therefore, the quality of language stimulation in the family environment influences the preschool language skills development (Brooks-Gunn & Markman, 2005; Hoff, 2006).

1.1. The relationship between children language development and the family socio-economic status
The language seems to develop faster in case of children from higher socio-economic status families, the differences on this line being obvious from 2 years old, the socio-economic status is constantly considered one of the important factors for children's language development, the amount of time that parents spend in activities focused on the child provides opportunities for vocabulary modeling, respectively for the language skills development (Richels et al., 2013). Children from lower socio-economic backgrounds experience poorer family environment quality, including fewer resources and educational materials, fewer skills enrichment opportunities and more stress factors compared to children from higher socio-economic backgrounds (Payne et al., 1994). Socio-economic status, including educational, occupational and income levels create the basic conditions at different levels of social class, mothers with higher socio-economic status talk more with children, read frequently stories, use a rich vocabulary and address more questions in order to start conversations compared to mothers with low socio-economic status, the purpose of their speech is to direction children behavior (Hoff, 2006). Mothers with low socio-economic status spend less time in games that involve interchangeable interaction, conversations or structured educational activities with their children due to unavailability of material resources and economic deficit compared to mothers with higher socio-economic status (Lohnorf et al., 2018).

Parents with a lower level of education engage their children in fewer activities, because they feel less effective for influencing language development and are therefore less likely to engage in these structured activities compared to parents who have a higher educational level (Teepe et al., 2017).

1.2. The siblings influence on children language development

In family environments with more children, the first-born experiences a different socio-linguistic environment from the second children born later, in the sense that they are temporarily alone and benefit from the unique child status, a greater opportunity to interact with parents and long exposure to adults directed speech (Hoff, 2006). According to the author, when younger siblings appear, each child benefits from a smaller amount of exclusively speech directed, mothers produce the same amount of speech, regardless of whether they interact with one or more children, being more centered around activities and social interaction, therefore, there may be structural and lexical differences in the mother speech addressed to the first born child compared to the speech addressed to child born later.

It is generally considered that the language model offered by children as older siblings is less mature due to egocentrism and low receptivity, so most researchers argue the superiority of parents and adults to create a favorable environment to language development; mothers provide more language stimulation, establish frequent verbal interactions with each other, conversations are complex, ask more questions, and provide answers to children born later compared to the first born into a family (Kibler et al., 2016).

1.3. Children language development according to the quality and quantity of time spent in the family environment

Parent-child interaction is the main source for language input and development, an essential context for vocabulary acquisition, which parents can model by conducting structured activities, reading story books and acquiring educational materials and resources (Bojczyk et al., 2016; Teepe et al., 2017). Therefore, several aspects of the family context are important for the preschool vocabulary development, giving children the opportunity to participate in language stimulation
activities, the frequency with which a child is involved in these types of activities in the family environment is correlated with their vocabulary (Teepe et al., 2017).

The quantity and quality of the linguistic environment (number of words, complexity of sentences and lexical diversity) are closely related to the socio-economic status of the family and children's language skills, differences in children's language skills being influenced by structural indicators of families before to 2 years old, while the formal learning opportunities in the family environment and parental involvement in activities such as reading stories, learning rhymes and songs, verbalizing intentions, playing with phonemes and words have a significant influence on the child's language development (Schmerse et al., 2018). However, the family structural indicators are frequently associated with the quality of the family environment, so that stimulating educational activities are less frequent in socio-economically and educationally disadvantaged families, leading to significant differences in language development during the preschool years, on the other hand, early language exposure predicts children's vocabulary size and language skills development, structured educational activities could advance language skills (Schmerse et al., 2018).

While some studies have found that there are no significant associations between the amount of time and children language development (Downer & Pianta, 2006), others have reported positive associations indicating that a higher number of hours spent in the family environment have been associated with higher scores on language assessment tests (Vandell et al., 2010), while other research has shown that the lack of parental involvement in the first year of life affects children's cognitive development (Belsky, 2002).

In light of these contradictory findings, it remains unclear what are the effects of the quantity and quality parental involvement on language development or whether the number of hours spent in the family environment in the first year and after the first year of life differently influences children's language skills (Schmerse et al., 2018).

1.4. The relationship between media exposure and children language development

The relationship between media exposure and children's cognitive development offers contradictory results: on the one hand, the literature supports the long-term benefits of TV educational programs for cognitive and behavioral development, on the other hand, the negative associations between exposure TV and the child development in the first years of life, especially the language skills development is a concern cause among parents and researchers (Kostyrka-Allchorne et al., 2017).

Although most children prefer TV and other new forms of media, recent numbers indicate that three-quarters of children under 5 years use a tablet or smartphone, but watching TV programs remains preferred leisure, increasing the popularity of new mass media devices and continues to create additional challenges among scientists related to the potential effects (Kostyrka-Allchorne et al., 2017). Amount of time spent watching TV programs, exposure to certain content are associated with poor attention, lack of behavioral control and language development delays, at the same time, the potential benefits of watching educational TV content of age-appropriate improve children's language skills (Kostyrka-Allchorne et al., 2017).

Understanding and improving vocabulary varies depending on the quality of parental involvement while co-watching TV programs, children whose parents have a conversation about the content sought by asking questions report better abilities to understand and have a significant vocabulary development (Strouse et al., 2013; Kostyrka-Allchorne et al., 2017).
2. The current study

2.1. Aim and specific research questions of the present study

The goal of this study was to identify and to assess the characteristic aspects regarding the preschool language and communication development depending on the quality and quantity of the allocated parental time, as well as on the characteristics of the family environment. We investigated three questions: (1) Are there differences in the preschool language development depending on the family environment characteristics?; (2) Is qualitative parental involvement a significant predictor of preschool language development?; (3) Does parental involvement in learning activities is moderated by the chronological age of preschool children? were used the following instruments in the research: Denver Developmental Screening Test II (Frankenburg & Dodds, 1995); Adaptive Behavior Assessment System (Harrison et al, 2012); Test set for the psychological age of language knowing (adapted from Alice Descoeurdes); Piagetian-type formative-dynamic tests (Storytelling based on images) and a Questionnaire-based survey.

2.2. Data collection procedure

The assessment instruments application was made in individual sessions during the period October 2019 - October 2020 on a sample of 155 parent-child dyads in a kindergarten with extended program from the mainstream education system. Preschoolers are between 36 and 71 months old (M = 52.61, SD = 10.40), of Romanian nationality, having a typical development and attending the mainstream education system in urban areas. Regarding the gender of the participants, the sample consists of 78 male (50.32%) and 77 female preschoolers. The consent of the educational institution management of the preschoolers and of the participating parents was obtained, as well as the teachers support. The informed consent form was distributed to the participating parents in the context of the meetings with the parents who provided the information framework regarding the scientific purpose of the research and the conditions of participation, being asked to return the forms within one week. The participation was voluntary, was not rewarded and no pressure was exerted on the enrollment of preschoolers and parents in the research study, the informed consent form specifying the possibility of discontinuing participation at any time during the process.

The ascertaining character and the qualitative analysis of the collected data were possible through the construction of a questionnaire. The questionnaire completion is performed by the parents of preschool children aged 3-6 / 7 years, the administration of the instrument was performed during sessions of 15-20 minutes and respects the international ethical recommendations regarding the confidentiality of the data collected during the research, as well as the anonymity or confidentiality of the participants.

From the study perspective, the following dimensions are distinguished in the conceptualization of time spent in the family environment: the level of parents education and profession, hours spent by parents at work, the type of kindergarten program attended by children, preschoolers involvement in structured activities and extracurricular activities, parental support for preschool participation in activities, involvement in learning activities, time allocated to preschoolers by parents and the level of children language.

The instruments were administered in three stages to avoid overwork, decreased degree involvement or lack of concentration due to the large volume of items for preschool children. In the first stage were applied Denver Developmental Screening Test II and Test set for the
psychological age of language knowing (adapted from Alice Descoeudres), in the second stage, preschoolers were asked to create a story based on a series of illustrations and in the third stage, was administered the Adaptive Behavior Assessment System (ABAS-II). The instruments administration was performed in sessions between 20-45 minutes depending on the maintenance of each participant's attention and desire to continue. Thus, the parents were asked to answer some questions, the data collection being carried out in two stages, namely a meeting that included the semi-structured interview. The classroom was the place where the instruments were applied. The training was conducted individually, providing support during the administration of the questionnaire. Teachers did not have access to the answers provided during the process.

2.3. Measured variables

Independent variables: parents' educational and occupational status, number of children in the family, family fun activities, structured family activities, storytelling, parental involvement in learning activities, time spent in front of technological means and daily parenting time.

Dependent variables: language development (Denver, ABAS, storytelling ability, number of words used, psychological age of language, communication interest, extravert characteristics).

Moderating variable: chronological age.

2.4. Sample

The present study involved the participation of a sample of 155 parent-child dyads from a kindergarten with extended program from the mainstream education system. Preschoolers are between 36 and 71 months old (M = 52.61, SD = 10.40), of Romanian nationality, having a typical development and attending the mainstream education system in urban areas. Regarding the participants gender, the sample consists of 78 male (50.32%) and 77 female preschoolers.

Participants were differentiated by gender, age, parents educational and occupational status, number of children in the family, type of family, aspects to which were added expressions of variability introduced by the psycho-individual characteristics investigated and the level of preschool language development and communication.

2.5. Statistical analyses

In order to test the hypothesis according to which there are differences in language development depending on the family environment characteristics were applied the one-factor analysis of variance (ANOVA One-Way) and the Pearson linear correlation coefficient. Specifically, the one-factor analysis of variance was applied to test whether the level of language development differs significantly depending on the parents educational and occupational status. The Pearson linear correlation coefficient was applied to analyze the relationship between the level of language development and the number of siblings.

The results obtained indicate that the results of the Denver test (F = 1.97, p = .239), ABAS (F = 2.20, p = 211), the psychological age of the language (F = 3.84, p = .095), the storytelling ability (F = 1.48, p = .323), the number of words used (F = 3.34, p = .113) and the communication interest (F = 3.61, p = .239) do not differ significantly depending on the parents educational and professional status.

The Pearson correlation coefficient was applied to analyze the relationship between the language development level and the number of siblings. The correlation coefficients obtained are
a very low intensity, varying between $r = -.16$ (p <.05) and $r = .15$, reflecting the fact that there is no relationship between the language development level and the number of children in the family.

To test the parental involvement effect and time spent by children in front of technological media on language development were used regression analyzes. Thus, the parental involvement in learning activities, reading stories, structured family activities, time spent with the family and time spent in front of technological means explain about 27% ($R^2 = .27, F = 10.87, p <.001$) from language development measured through the ABAS test. More specifically, parental involvement in learning activities ($b = -0.77, p <.05$), structured family activities ($b = 1.15, p <.01$) and time spent with parents ($b = 1.62, p <.001$) are significant predictors of language development. Reading stories and spending time in front of technologies are not predictors of language development.

Table 1.1.
The parental involvement effect on language development

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$b$</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involvement</td>
<td>-0.77*</td>
<td>.27</td>
</tr>
<tr>
<td>Reading</td>
<td>-0.39</td>
<td></td>
</tr>
<tr>
<td>Activities</td>
<td>1.15**</td>
<td></td>
</tr>
<tr>
<td>Parental time</td>
<td>1.62***</td>
<td></td>
</tr>
<tr>
<td>Technologies time</td>
<td>-0.28</td>
<td></td>
</tr>
</tbody>
</table>

Regarding language disorders, the variables associated with parental involvement contribute about 8% ($R^2 = .08, F = 2.41, p <.05$). Individual analysis of predictors shows that none make a significant contribution to explain language disorders.

The variables associated with parental involvement explain approximately 18% ($R^2 = .18, F = 6.46, p <.001$) of the variant of the psychological age of language. However, none of the predictors has a significant effect on the psychological age of language. Similar results were obtained for the effect of predictors in the field of parental involvement on children storytelling ability ($R^2 = .12, F = 3.88, p <.01$). Also, none of the variables associated with family involvement had a significant effect on storytelling ability.

The predictors included in the regression analysis explain approximately 21% of the variance in the number of words ($R^2 = .21, F = 7.70, p <.001$). However, of all the variables analyzed, only the time spent with parents influences vocabulary development ($b = 8.40, p <.001$). Parental involvement, reading stories, structured family activities and time spent in front of technological means have no effect on the number of words used by children.

Table 1.2.
The parental involvement effect on the number of words used by children

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$B$</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>involvement</td>
<td>-0.77*</td>
<td>.21</td>
</tr>
<tr>
<td>reading</td>
<td>-0.39</td>
<td></td>
</tr>
<tr>
<td>activities</td>
<td>1.15**</td>
<td></td>
</tr>
<tr>
<td>Parental time</td>
<td>1.62***</td>
<td></td>
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</tbody>
</table>
Parental involvement in learning activities, reading stories, structured family activities, time spent with family and time spent in front of technological means explain about 37% (R2 = .37, F = 17.11, p < .001) of communication interest. Specifically, structured family activities (b = 0.32, p < .001) and time spent with parents (b = 0.24, p < .01) are significant predictors of communication. Parental involvement in learning activities, reading stories and time spent in front of technologies are not predictors of language development.

Table 1.3.
The parental involvement effect on communication interest

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>involvement</td>
<td>-0.41</td>
<td>.37</td>
</tr>
<tr>
<td>reading activities</td>
<td>-0.04</td>
<td></td>
</tr>
<tr>
<td>Parental time</td>
<td>0.32***</td>
<td></td>
</tr>
<tr>
<td>Technologies time</td>
<td>-0.09</td>
<td></td>
</tr>
</tbody>
</table>

Parents' involvement in learning activities, reading stories, structured family activities, time spent with family and time spent in front of technological means explain about 15% (R2 = .15, F = 5.44, p < .001) of extraverbal features used. Specifically, structured family activities (b = -0.18, p < .05) and time spent with parents (b = -0.12, p < .05) are significant predictors of extraverbal characteristics. Involving parents in learning activities, reading stories and spending time in front of technologies are not predictors of the extraverbal features used.

Table 1.4.
The parental involvement effect on extraverbal features

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>involvement</td>
<td>0.02</td>
<td>.15</td>
</tr>
<tr>
<td>reading activities</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>Parental time</td>
<td>-0.18*</td>
<td></td>
</tr>
<tr>
<td>Technologies time</td>
<td>-0.12*</td>
<td></td>
</tr>
</tbody>
</table>

To analyze the moderating effect of age on the relationship between the variables associated with parental involvement and language development, moderation analysis was used through PROCRSS 3.5 (Hayes, 2018). Given the conditions that must be met to test a moderating effect, the analysis was made only on significant predictors of language development.

The results indicate that age does not moderate the relationship between parental involvement in learning activities and language development assessed by the ABAS test (b = -0.24, p = .273).
Regarding the relationship between the structured activities family and the results of the ABAS test, it can be seen that age has a moderating role ($b = -0.68$, $p < .01$). Specifically, it can be observed that at young ages the relationship between parental involvement in structured language activities ($b = 1.68$, $p < .001$) is stronger than that observed at older ages ($b = 0.50$, $p < .05$).

Also, age has a moderating effect on the relationship between the daily parental time and the score obtained with ABAS test ($b = -1.067$, $p < .01$). At young ages, the effect of time spent by parents with children on language development ($b = 1.75$, $p < .001$) is stronger than that obtained at older ages ($b = 0.90$, $p < .05$).

The results obtained indicate that age does not moderate the relationship between parents’ involvement in structured activities ($b = -1.90$, $p = .200$), respectively the time spent with parents ($b = -3.14$, $p = .188$) and the number of words used.

Also, age does not moderate the relationship between parental involvement in structured activities ($b = -0.10$, $p = .060$), respectively time spent in the family ($b = -0.14$, $p = .106$) and communication interest.

Age has a moderating effect on the relationship between parental involvement in structured activities and extravertal characteristics ($b = 0.08$, $p < .001$). At young ages, the effect of parental involvement in structured activities on extravertal characteristics ($b = -0.11$, $p < .001$) is significantly stronger than that obtained at older ages ($b = -0.04$, $p = .130$).

Also, age has a moderating effect on the relationship between daily parental time and extravertal characteristics ($b = 0.15$, $p < .001$). At young ages, the effect of time spent by parents with children on extravertal features ($b = -0.15$, $p < .001$) is significantly stronger than that obtained at older ages ($b = -0.02$, $p = .626$).

**Discussions**

In the current study, we examined preschool language development according to the quality and quantity of time spent in the family environment, finding that there are no differential features in preschool language development depending on educational and occupational parents status, there are no differences in the relationship between preschool language development level and the number of siblings, a high level of parental involvement in learning activities predicts a low level of language development, while a high level of storytelling predicts a low level of children language development. These results could be explained by the fact that when parents become involved in learning activities, they no longer allow the child to think or by overburdening parental involvement, when work tasks become increasingly complex, the parent is no longer patient and gives him the answers directly, either to compensate and not to acknowledge that the problem is with them, the parents overload the answers and determine this negative relationship between parental involvement in learning activities and language development. When the parent gets involved, gives up the parent role and enters in a teacher role, becoming more demanding and focused on achieving performance, losing its authenticity in interaction with the child. The results of present research also suggest that an increased level of parental involvement in structured activities predicts an increased level of language development, an increased level of time spent in familial environment predicts an increased level of language development and the number of words used, while structured family activities contribute to increasing the number of words used by children.

The family environment and parents activities with their children have a direct impact on phoneme awareness, vocabulary development, reading comprehension and spelling before the
child enters in the formal learning environment, there is considerable variability in both type of activities, the quality of interactions between parents and children, the frequency with which these activities are performed, the quality of learning experiences and the impact that these types of activities have on children (Bingham et al., 2016).

Reading story books in the family environment contributes to the development of qualitative interactions between parents and children through extensive conversations around the book content, a dynamic framework that improves oral language and vocabulary through the use of complex language structures, diversified vocabulary, frequent addressing of questions, the name of the words in the images encountered, constituting at the same time, a strong predictor of language development (Hoff, 2006; Mol & Neuman, 2014; Deniz Can et al., 2016). Frequent reading of stories contributes significantly to the development of linguistic and lexical skills, narrative and conversational skills, subsequent ability to read also contributes to phonological awareness and grammatical development (Noble et al., 2019). Significant correlations between the frequency of storytelling books in the family environment and preschoolers’ language skills suggest that limiting these opportunities may negatively affect both children language development and subsequent school achievement in low-income families, as they have rare exposure to verbal interactions, which is carried out within these activities that contribute to linguistic stimulation (Payne et al., 1994).

The research results suggest that an increased level of time spent in front of technological media predicts a low level of language development and the number of words used by children, as well as a low-level communication interest. In most families, television is an integral part of the child's environment, being considered a ubiquitous facet that provides a seemingly continuous verbal content, the language exposed in TV programs differs from exposing language through social interactions, because during viewing, the child does not communicate, but on the other hand, the examination of language in TV educational programs for preschool children has revealed that it contains many of the features of speech used in direct interaction, the language used in TV programs describes on-screen events, includes many repetitions and questions and new words receive appropriate explanations (Hoff, 2006; Lavigne et al., 2015). The TV viewing effects on language development seem to depend on the programs watched, the total amount of child exposure to television has a negative relationship with the level of grammatical and lexical development, while time spent in age-appropriate TV educational programs has a positive relationship with development lexical (Hoff, 2006; Kostyrka-Allchorne et al., 2017).

At the same time, the relationship between parental involvement in family learning activities is moderated by the chronological age of preschool children in the sense that at an early age, the effect of parental involvement in structured activities and time spent by parents with children on language development and the parents’ involvement in structured activities and the time spent by parents with children on extraverted features is stronger compared to that related to older ages. During the language acquisition period, parents structure the child's experiences in the family environment through the quantity and quality of directed speech, modify their speech to attract and maintain the child's attention, while helping infants and preschoolers to realize the communicative power of their actions and to give them meaning (Adamson et al., 2020). Therefore, children vocabulary development is largely determined by social interaction during activities between parents and children in the family environment, by providing language stimulation activities (Teepe et al., 2019).
Parents play an essential role with direct positive contributions on children language development, on forms of verbal and nonverbal communication (Verza, & Verza, 2017). In conclusion, parental time resources allocated to children play an important role in the optimal development of the child, in particular, the quality time spent in the family, in structured activities and diversified linguistic interactions between parents and children is a predictor of language development and communication. We notice, therefore, that not only the amount of time, but the quality makes the difference between children language development and the individual differences noticed.

References


