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العنوان: Family Environment and Child Language Development: A Quasi-Experimental Speech-Language Pathology Study Protocol

Family Environment and Child Language Development: A Quasi-Experimental Speech-Language Pathology Study Protocol

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Abstract: Child language development is strongly shaped by everyday interaction within the family. In speech-language pathology, the family is not only a social background. It is also a key context in which language input, emotional security, conversational turns, symbolic play, and shared reading are formed. Aim: This protocol proposes and describes a 12-week family-based speech-language intervention for preschool and early-school children with mild to moderate language delay. Methods: The study is designed as a quasi-experimental protocol with pre-test and post-test measures. A comparison group may be added when field conditions allow. Parents in the intervention group receive weekly training in responsive interaction, waiting, following the child's interest, expansion, recasting, dialogic reading, symbolic play, and home language-environment organization. Main outcomes include expressive vocabulary, mean length of utterance, communicative initiatives, conversational turns, receptive language indicators, and the quality of the family language environment. Data will be collected through natural language sampling, a vocabulary checklist, a parent-child interaction observation grid, a family language-environment questionnaire, a home-practice

log, and a preschool or school report. Discussion: The protocol translates Arabic and international evidence on family language input and parent-implemented intervention into a structured model that can be applied in speech-language clinics and educational settings. The manuscript is presented as a protocol. No field results are reported. Outcomes should be inserted only after implementation with a real sample and statistical analysis.

Keywords: family environment; language development; speech-language pathology; parent-implemented intervention; parental responsiveness; dialogic reading; preschool child; quasi-experimental protocol

البيئة الأسرية وتطور لغة الطفل: بروتوكول دراسة شبه تجريبية في علم أمراض النطق واللغة

ملخص: يتشكل تطور لغة الطفل بدرجة كبيرة من خلال التفاعل اليومي داخل الأسرة. في علم أمراض النطق واللغة لا تُعد الأسرة خلفية اجتماعية فقط، بل تمثل سياقا أساسيا تتكوّن فيه المدخلات اللغوية، والأمن الانفعالي، وتبادل الأدوار الحوارية، واللعب الرمزي، والقراءة المشتركة. الهدف: يقترح هذا البروتوكول برنامجا تدخليا أسريا مدته اثنا عشر أسبوعا للأطفال في مرحلة ما قبل المدرسة والسنوات المدرسية الأولى ممن لديهم تأخر لغوي بسيط إلى متوسط. المنهج: صُممت الدراسة كبروتوكول شبه تجريبي بقياسين قبلي وبعدي، مع إمكان إضافة مجموعة مقارنة إذا سمحت ظروف الميدان. يتلقى الوالدان تدريبا أسبوعيا في التفاعل الاستجابي، والانتظار، واتباع اهتمام الطفل، والتوسيع، وإعادة الصياغة، والقراءة الحوارية، واللعب الرمزي، وتنظيم البيئة اللغوية المنزلية. وتشمل المخرجات الرئيسة المفردات التعبيرية، ومتوسط طول الجملة، والمبادرات التواصلية، والأدوار الحوارية، ومؤشرات اللغة الاستقبالية، وجودة البيئة اللغوية الأسرية. تُجمع البيانات من خلال عينة لغوية طبيعية، وقائمة مفردات، وشبكة ملاحظة لتفاعل الوالدين والطفل، واستبيان البيئة اللغوية الأسرية، وسجل الممارسة المنزلية، وتقرير الروضة أو المدرسة. المناقشة: يحول البروتوكول الأدلة العربية والدولية حول المدخلات اللغوية الأسرية والتدخل المنفذ من الوالدين إلى نموذج منظم قابل للتطبيق في العيادات والمؤسسات التعليمية.

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الكلمات المفتاحية: البيئة الأسرية؛ تطور اللغة؛ علم أمراض النطق واللغة؛ التدخل الوالدي؛ الاستجابة الوالدية؛ القراءة الحوارية؛ الطفل قبل المدرسي

1. Introduction

Language is one of the most context-sensitive aspects of human development. It does not develop in the nervous system alone. It is also shaped by the child's daily experience in the family. First words usually emerge within repeated relationships. These include a mother's call, a father's response, sibling play, a grandparent's story, object naming during meals, dressing, or bathing, and short conversations that connect words with actions, emotions, and meanings.

Modern speech-language pathology therefore moves beyond narrow verbal training. It also examines the communicative environment that allows the child to hear, understand, initiate, take turns, try, and make errors without fear. The family becomes a clinical partner because it offers the most frequent and natural setting for language practice.

Arabic studies used in this manuscript confirm that the family is the first institution in which the child receives the foundations of language and culture. Bounouiga (2021) describes the family as the first environment that refines linguistic skills and supports social integration through language. The study also links balanced parenting and the family's social, cultural, and economic level with the richness of the child's linguistic acquisitions in both quantity and quality (pp. 181-185). Hadji (2016) also argues that child language cannot be understood without examining the relationship among family, environment, and school. Separating these contexts leads to an incomplete view of language acquisition (pp. a-d).

The topic is clinically important because a child's language disorder does not affect speech alone. It can also affect schooling, peer communication, self-esteem, and classroom inclusion.

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Maarouf and Houla (2018) studied 90 school children with language disorders and found that articulation disorders represented 22.2% of the cases, reading and writing difficulties 18.9%, and stuttering 15.6%. They also found that 77.8% of cases had received a school summons, which shows the need for real cooperation between the family and the school (p. 519). The same study reported irregular family follow-up and weak school communication in some cases, making language disorder a psychological and academic risk factor (pp. 520-521).

International research supports this direction. Studies on the quantity and quality of language input show that child-directed speech, parental responsiveness, conversational turns, and shared reading are modifiable factors that relate to vocabulary, comprehension, and later language outcomes. Meta-analytic evidence also shows that parent-implemented interventions guided by specialists can improve expressive language, vocabulary, and parental interaction practices (Roberts & Kaiser, 2011, pp. 180-199; Heidlage et al., 2020, pp. 6-23).

This manuscript is written as an applied study protocol. It does not claim field results. Instead, it converts the relationship between family environment and child language into a structured intervention that can be implemented and measured. The protocol defines the sample, tools, procedures, intervention sessions, and outcome indicators needed for a publishable empirical study after data collection.

2. Research Problem

Most studies agree that the family has a central role in child language development. Yet many interventions for children with language delay remain limited to the session between the specialist and the child. The home is the child's most frequent environment, but it often receives only general advice and not systematic training.

Some families also view language disorder as a school or clinical problem that is separate from daily life. They may not realize that their way of speaking, listening, playing, reading,

managing screen time, and responding to cries or gestures can support language development or slow it down.

The central research question is: What is the effect of a family-based speech-language pathology program, which trains parents in daily language stimulation strategies, on indicators of child language development?

The following sub-questions guide the protocol: What is the relationship between the quality of the family environment and the child's expressive and receptive language indicators? Does parent training in responsiveness, expansion, recasting, and dialogic reading increase language initiatives and conversational turns? Do vocabulary and mean length of utterance improve after a 12-week family language program? Which family dimensions are most associated with improvement, such as parental education, home reading, screen time, parenting style, or continuity of follow-up? How can the speech-language pathologist make the family a therapeutic partner rather than only a source of information?

3. Significance of the Study

The significance of this protocol appears at three levels. At the scientific level, it offers an applied model that brings together psycholinguistics, the sociology of language, and family-centered speech-language intervention. At the clinical level, it gives the specialist a practical training structure that can be measured. This is more useful than general advice. At the educational and social level, it seeks to reduce the gap between home language and school language, especially in contexts where children live with dialectal or linguistic diversity.

The study is also important because weak communication between family and school may increase the impact of language disorders. Maarouf and Houla (2018) reported that 36.7% of families stated that their children refused to attend school because of their language disorder. They also found that good communication in the educational process did not exceed 6.7%

(pp. 520-521). These findings support the need for a coordinated intervention that includes the child, the family, the school, and the specialist.

4. Objectives

The first objective is to analyze the role of the family environment in child language development from an applied speech-language pathology perspective.

The second objective is to construct a 12-week parent-implemented intervention based on Arabic studies and recent international literature.

The third objective is to train parents in practical strategies that can be used during everyday routines.

The fourth objective is to measure the effect of the program on vocabulary, mean length of utterance, communicative initiatives, conversational turns, and receptive language indicators.

The fifth objective is to provide tools that can be used in later field studies or in speech-language pathology clinics.

The final objective is to offer practical recommendations for families, schools, and speech-language pathologists.

5. Hypotheses

H1: There is a positive correlation between the quality of the family language environment and the child's expressive and receptive language indicators.

H2: There are statistically significant differences between pre-test and post-test scores in expressive vocabulary, in favor of the post-test, after the family program is implemented.

H3: There are statistically significant differences between pre-test and post-test scores in mean length of utterance and conversational turns, in favor of the post-test.

H4: Parental language practices improve after training, especially in responsiveness, expansion, recasting, and dialogic reading.

H5: The degree of improvement is associated with family factors such as parental education, regular completion of home assignments, reduced screen time, and family stability.

6. Operational Definitions

Concept	Theoretical definition	Operational definition
Family environment	The set of linguistic, emotional, and cultural practices and conditions within the family. These include dialogue, responsiveness, reading, play, encouragement, screen time, educational level, and cooperation with school.	The family score on the Family Language Environment Questionnaire and observation of a 10-minute parent-child interaction.
Language development	Improvement in the child's ability to understand, produce, and use language socially.	Vocabulary size, mean length of utterance, number of initiatives, number of turns, comprehension of instructions, and narrative ability.
Family-based speech-language intervention	A parent-training program that uses language-	Attendance at sessions, completion of assignments,

Concept	Theoretical definition	Operational definition
	facilitation strategies within daily routines.	family practice log, and improvement in parental practices.
Parental responsiveness	The adult's timely and suitable response to the child's initiative and topic of interest.	Percentage of appropriate responses in the recorded interaction sample.
Conversational turn	A reciprocal exchange between child and adult that includes an initiative, a response, and continuation.	Number of turns in a 10-minute free-play session.

7. Theoretical Framework and Previous Studies

7.1 The Family as the First Language Environment

The Arabic studies used in this manuscript agree that the child spends the early years within the family. These years form the basis of physical, mental, emotional, social, and linguistic development. Bounouiga (2021) states that the child's first relationships and experiences begin inside the family. The family is the first group in which the child learns language, habits, and values. The pre-school period is also a sensitive stage for language acquisition because it prepares the child for school entry (p. 182).

This view has an important operational meaning. If the family is the first language group, language assessment remains incomplete unless the quality of speech within the family is examined. The speech-language pathologist needs to know whether the child hears mainly

commands or real dialogue. The specialist also needs to know whether someone reads to the child, whether the child is allowed to choose and request, and whether adults respond to gestures with words or speak on behalf of the child. These questions change the family from a general background into a measurable and modifiable variable.

7.2 Family Upbringing and Parenting Styles

Family upbringing refers to the procedures and styles used by parents to transform the child from a biological being into a social being who absorbs the values and norms of society (Bounouiga, 2021, p. 183). Parenting styles may include encouragement, overindulgence, strictness, or a balanced style. The balanced style is the most suitable because it combines encouragement, discussion of errors, gentle guidance, and persuasion (Bounouiga, 2021, pp. 184-185).

From a language perspective, parenting style does not affect behavior only. A balanced family allows the child to express, make errors, try again, choose, ask questions, and join conversations. Excessive strictness may connect language with fear of error. Overindulgence may reduce the child's need to speak because needs are met before the child asks. Neglect deprives the child of necessary speech models.

7.3 Structural Factors

Adjouz and Belmokhtar (2020) offer an important sociological analysis. They view the family as a social structure affected by structural factors that form the child's first reference for language acquisition. These factors include the parents' cultural and educational level, socioeconomic status, and the opportunities they provide for reading, conversation, extracurricular activities, and communicative-skill development (pp. 683-685). Their study uses Basil Bernstein's theory of linguistic codes and suggests that social differences can produce differences in the form of discourse that the child brings to school.

This does not mean that families with limited economic resources cannot support language development. It means that intervention must be sensitive to available resources. A successful program should not assume the presence of a large home library. It can use everyday objects such as a spoon, a shoe, a window, the market, the road, a family photograph, a folk song, or a conversation during meal preparation. In this way, language becomes a daily practice and not an expensive activity.

7.4 The Family-School Relationship in Language Disorders

The relationship between family and school becomes more important when the child has a language disorder. In the study by Maarouf and Houla (2018), the researchers selected a purposive sample of 90 children aged between five and fourteen years. The children were of both sexes and came from varied social backgrounds. Findings showed that articulation disorders were the most common, at 22.2%. Reading and writing difficulties followed at 18.9%, and stuttering at 15.6%. The study also showed that 77.8% of the cases had received a school summons and that 80% of the families responded to it (p. 519).

Follow-up was not always regular. The same study reported that 38.9% of parents did not make follow-up visits, while 18.9% did so only sometimes. It also reported that 74.13% of families stated that their children had schooling and learning difficulties, especially in reading, writing, mathematics, oral expression, and written expression (Maarouf & Houla, 2018, p. 521). These findings show that speech-language intervention should include a formal channel among family, school, and specialist. The child's language does not improve in the clinic alone. It also needs generalization at home, in the classroom, and during play.

7.5 The Mother-Child Relationship and Language Acquisition

Ben Mansour's study on the mother-child language process confirms that the child's language expression reflects intellectual, practical, and imaginative capacities. These

capacities depend on the environment, interactive relationships, and cognitive activities. The study also states that the mother-child relationship may explain part of delayed speech. The mother's language also supports continuity between family experience and school experience (Ben Mansour, 2022, pp. 697-699). This supports the present protocol, which trains parents, especially the mother or main caregiver, to use language strategies in daily activities.

7.6 International Evidence Supporting the Protocol

International evidence provides a clear basis for family-based intervention. Hoff (2003) showed that socioeconomic status affects early vocabulary partly through maternal speech. Rowe (2012) showed that both the quantity and the quality of child-directed speech matter, but their role changes with age. Tamis-LeMonda et al. (2014) explained how parental responsiveness supports word learning. Romeo et al. (2018) showed that conversational turns are linked to language-related brain function. Heidlage et al. (2020) found that parent-implemented interventions improve expressive language and vocabulary. Finestack et al. (2022) called for clearer descriptions of caregiver-implemented communication interventions. Brushe et al. (2024) reported that increased screen time is linked to fewer adult words and fewer conversational turns. Dicataldo et al. (2022) found that parent-focused dialogic reading can improve early language and literacy skills.

Taken together, these findings support a program that relies on daily practices rather than artificial training alone. The child learns language when responsiveness, waiting, expansion, reading, and play are repeated in meaningful situations.

8. Methods

8.1 Design

The study uses a quasi-experimental design with pre-test and post-test measurement. A comparison group can be added if field conditions allow. The program is applied to an

intervention group whose families receive weekly speech-language training and home assignments. The child's results are compared before and after the program. If a comparison group is available, it receives usual care only. The two groups are compared at post-test while controlling for pre-test scores.

Stage	Duration	Procedure
Pre-test stage	Week 0	Family questionnaire, natural language sample, vocabulary checklist, interaction observation, school or preschool report.
Intervention stage	Weeks 1-12	Weekly session with family, home assignments, daily log, and short phone follow-up when needed.
Post-test stage	Week 13	Re-administration of the same tools and comparison of results.
Follow-up measure	Six weeks later	Estimate of maintenance and generalization at home and at school.

8.2 Population and Sample

The proposed study targets preschool and early-school children aged 3 to 6 years who show mild or moderate language delay. Children with uncorrected hearing impairment or severe

neurological disorder are excluded. The sample size may range from 30 to 60 children, depending on institutional resources. For a first field application, the minimum acceptable size is 15 children in the intervention group and 15 in the comparison group. The sample is purposively selected from speech-language clinics, preschools, or preparatory classes. A pre-assessment is then carried out to confirm suitability.

Inclusion criteria	Exclusion criteria
Age between 3 and 6 years.	Unidentified or uncorrected hearing impairment.
Mild or moderate language delay in comprehension or expression.	Severe neurological disorder or profound intellectual disability that prevents program application.
Family ability to attend one weekly session and carry out short assignments.	Family irregularity or refusal to record an interaction sample.
Preschool or preparatory-class attendance, or sufficient family interaction.	Another intensive speech-language intervention during the study period, unless controlled.

8.3 Variables

Type of variable	Variable	Measurement method
Independent	Family-based speech-language intervention program	Session attendance, assignment completion, family log.

Type of variable	Variable	Measurement method
Dependent	Expressive vocabulary	Picture-naming checklist and number of different words in the language sample.
Dependent	Mean length of utterance	Analysis of a 10-minute natural language sample.
Dependent	Initiatives and turns	Coding of parent-child play recording.
Dependent	Language comprehension	One-step and two-step instructions and simple comprehension questions.
Mediator / control	Parental education, screen time, home reading	Family questionnaire and weekly record.

8.4 Data Collection Tools

Family and developmental information form: This form includes pregnancy and birth history, hearing, motor development, home language, number of siblings, parental education, occupation, screen time, home reading, and family history of language disorder.

Family Language Environment Questionnaire: This questionnaire includes 30 items distributed across five dimensions: daily dialogue, parental responsiveness, reading and play, screen management, and cooperation with school or the specialist. Parents answer on a five-point scale from 1 to 5.

Parent-child interaction observation grid: This tool is applied to a 10-minute free-play recording. It records initiatives, responses, expansion, questions, commands, waiting, and emotional climate.

Natural language sample: This sample is recorded during free play or story reading. It is analyzed to extract the number of different words, mean length of utterance, number of sentences, communicative functions, and prominent errors.

Expressive and receptive vocabulary checklist: This checklist uses familiar pictures or words from the child's environment. It includes nouns, verbs, adjectives, and spatial and temporal concepts.

Home assignment log: Parents complete this log weekly. It documents practice duration, completed activities, difficulties, and observations about the child.

Preschool or school report: This report records classroom participation, peer communication, comprehension, expression, and adjustment in play.

8.5 Validity and Reliability

To ensure content validity, the tools should be reviewed by three to five experts in speech-language pathology, psychology, and educational sciences. They should judge whether the items fit the child's age and the family context. Reliability can be examined by re-administering the questionnaire to a small pilot sample after two weeks and calculating a correlation coefficient. Coding reliability for the interaction sample can be checked by two independent coders using percentage agreement or Cohen's kappa. A pilot study with 5 to 8 cases is recommended before the final field application.

9. Intervention Program

9.1 Program Rationale

The program is based on a simple principle. The child does not need heavy home language lessons. The child needs a rich and repeated communicative environment. The family is not asked to buy special materials or conduct long sessions. Parents are trained to turn daily routines into language opportunities. These routines include meals, dressing, play, going outside, shopping, bathing, arranging the room, story reading, and bedtime. This rationale agrees with Arabic studies that define the family as the first institution of language upbringing and with international evidence on the effectiveness of parent-implemented interventions.

9.2 Program Objectives

The program aims to increase parental awareness of language-development milestones and risk indicators. It also aims to increase verbal and non-verbal interaction between the child and adults, train the family in language-facilitation strategies, develop vocabulary and early sentence use, reduce interaction patterns that hinder speech, and strengthen cooperation among family, preschool or school, and the specialist.

9.3 Detailed Program Sessions

Week	Focus	Session content	Family assignment	Measurement indicator
1	Assessment and therapeutic alliance	Explain assessment results, set two realistic goals, and record a play sample.	Free play for 10 minutes daily without too many questions.	Number of verbal and non-verbal initiatives.

Week	Focus	Session content	Family assignment	Measurement indicator
2	Listening and waiting	Train parents to look, wait five seconds, and avoid finishing the child's speech too quickly.	Choice game between two objects.	Increase in requests or gestures with a sound or word.
3	Following the child's interest	Describe what the child looks at or touches instead of imposing the adult's topic.	Box of household objects.	Number of comments linked to the child's interest.
4	Expansion and recasting	Turn the child's word into a phrase and then a sentence. Correct indirectly without punishment.	Meal and dressing routines.	Mean length of utterance.

Week	Focus	Session content	Family assignment	Measurement indicator
5	Functional language	Teach requesting, refusing, choosing, calling, and commenting.	Daily choices: water/milk, ball/car.	Number of communicative functions.
6	Dialogic reading	Use pictures, naming, prediction, and what/where questions.	A short picture story every day.	Number of words linked to the story.
7	Symbolic play	Role play: doctor, kitchen, shop, family.	Doll or kitchen play.	Use of verbs, adjectives, and social sentences.
8	Concepts and relations	Teach above/below, inside/outside, big/small, before/after.	Arrange the room while describing locations.	Comprehension of two-step instructions.
9	Early narrative	Who? Where? What happened?	Talk about a family photo.	Three connected sentences.

Week	Focus	Session content	Family assignment	Measurement indicator
		What happened next?		
10	Early phonological awareness	Rhyme games, clapping syllables, and identifying the first sound.	Short song and rhyme.	Sound and syllable discrimination without pressure.
11	School generalization	Transfer strategies to the teacher and use a communication notebook.	One shared weekly goal with preschool.	Use of the skill outside the home.
12	Evaluation and follow-up plan	Compare pre- and post-recordings and prepare a follow-up plan.	Record a new play sample.	Improvement in vocabulary, turns, and sentences.

9.3 Core Techniques

Parallel talk: The adult describes what the child is doing. Example: 'You are opening the box. You found the car.'

Self-talk: The adult describes what he or she is doing. Example: 'I am washing the apple. I cut it. I put it on the plate.'

Expansion: If the child says 'ball,' the adult says 'red ball,' then 'You are throwing the red ball.'

Recasting: The adult corrects indirectly. If the child says 'I go park,' the adult says, 'Yes, you went to the park.'

Verbal choice: The adult offers two clear options, such as 'Do you want water or milk?' or 'Shall we play with the car or the blocks?'

Waiting: The adult leaves enough time after a question or initiative so that the adult does not become the only speaker.

Commenting more than questioning: The adult reduces test-like questions and increases descriptions of events and feelings.

Dialogic reading: The child is invited to describe, predict, name, and retell the story in his or her own way.

Screen management: Non-interactive screen use is reduced. When screens are used, they are accompanied by conversation.

10. Statistical Analysis Plan

After field implementation, data should be analyzed in a statistical program such as SPSS, Jamovi, or R. Group, age, sex, parental education, and tool scores should be coded clearly.

Descriptive statistics should be calculated first. These include mean, standard deviation, median, and percentages. Normality should be tested using the Shapiro-Wilk test when the sample is small.

Pre-test and post-test scores within the intervention group should be compared using the paired-samples t-test. Wilcoxon signed-rank test can be used if parametric assumptions are

not met. The intervention group and comparison group can be compared using the independent-samples t-test or Mann-Whitney U test. ANCOVA can also be used while controlling for pre-test scores.

Effect size should be reported using Cohen's d or r. This shows the practical value of the program and not only statistical significance. Correlations should be calculated among child improvement, family adherence, screen time, and home reading. Qualitative notes from families and teachers should be analyzed to identify functional changes in communication.

The study should use a significance level of .05. Confidence intervals should be reported when possible because peer-reviewed journals prefer statistical significance, effect size, and clinical interpretation together.

11. Planned Outcome Reporting

Because this manuscript is a protocol, the following tables are not results. They are templates for reporting outcomes after field implementation. They must be completed only with real data collected from the study sample.

Variable	Pre-test: mean and SD	Post-test: mean and SD	Test value	p value	Effect size
Expressive vocabulary					
Mean length of utterance					

Variable	Pre-test: mean and SD	Post-test: mean and SD	Test value	p value	Effect size
Number of communicative initiatives					
Number of conversational turns					
Family language-environment score					

Dimension	Before training	After training	Amount of improvement	Clinical comment
Parent response to child initiative				
Use of expansion and recasting				
Dialogic reading				

Dimension	Before training	After training	Amount of improvement	Clinical comment
Reduction of test-like questions				
Screen management				

12. Expected Discussion Framework

If the results show improvement in vocabulary, conversational turns, and mean length of utterance after the program, this can be interpreted as a change in daily interaction. The intervention would not only add separate therapy sessions. It would change the child's everyday communicative pattern.

A child who previously heard scattered commands may begin to hear comments and expansions. A child whose needs were met through gestures may begin to find opportunities to request. A child who only listened to a story may become a participant who names, describes, and predicts.

This interpretation would be consistent with Bounouiga's view that balanced parenting enriches linguistic acquisitions. It would also agree with Adjouz and Belmokhtar's findings on the effect of cultural and economic level on language opportunities, and with Ben Mansour's emphasis on the mother-child relationship. It would also be consistent with Heidlage et al. (2020) and Roberts and Kaiser (2011), who found positive effects of parent-implemented interventions on child language.

If improvement is weak, the discussion should consider family adherence, severity of disorder, screen time, irregular attendance, or deeper hearing or developmental causes. A weak response should not be interpreted as failure of the child or the family. It should lead to a review of the fit of the program, the severity of the case, and the quality of school support.

13. Ethical Considerations

Ethical approval must be obtained from the relevant institutional committee before recruitment. Written parental consent must be obtained before recording or applying the program. The aim of the study must be explained in clear language, and families must have the right to withdraw without harm.

Children's and families' names must remain confidential. Codes should be used instead of names. The child must not be photographed, and no images should be published, without separate and explicit consent. The child should be referred for hearing or medical assessment when signs indicate such a need.

No child should be denied care. If a comparison group is used, the program can be offered to that group after the measurement period. The family must be approached without blame or stigma. The aim is therapeutic partnership.

14. Practical Recommendations

14.1 Recommendations for Families

Set aside ten minutes each day for play or story time without a phone or television.

Follow the child's interest and comment on what the child is doing instead of forcing repetition of isolated words.

Wait for the child's initiative. Do not complete the child's speech too quickly unless support is needed.

Correct errors through recasting, not through mockery or punishment.

Make requesting through speech, sound, or gesture with a word a daily goal.

Reduce non-interactive screen use, especially before the age of three, because it removes opportunities for reciprocal talk.

Communicate regularly with the school and the specialist. Apply one small goal each week.

14.2 Recommendations for Speech-Language Pathologists

Begin by assessing the family language environment, not only the child.

Train the family in two or three skills at each stage so that the instructions do not become burdensome.

Use short video feedback. It helps parents see what they did well and what needs adjustment.

Make goals functional: requesting, refusing, commenting, asking, and narrating, not only producing isolated words.

Respect the home dialect and multilingual context. Do not treat dialectal difference as a disorder.

Coordinate with the preschool or school to generalize the skill.

14.3 Recommendations for Educational Institutions

Include storytelling and dialogic reading sessions in preschool education.

Train teachers to recognize signs of language delay and referral procedures.

Use a communication notebook among the family, teacher, and specialist for children with language difficulties.

Avoid mocking the child with a language disorder. Raise peer awareness and encourage support.

Build a gradual bridge between home language and school language during the first years.

15. Strengths and Limitations

The main strength of this protocol is that it translates theoretical findings into a structured intervention with measurable outcomes. It also uses low-cost daily routines, which makes it suitable for families with different resources. Another strength is the inclusion of family, school, and clinical indicators.

The main limitation is that this manuscript does not yet report field results. The protocol must be implemented with a real sample before claims about effectiveness can be made. Another limitation is that the proposed instruments require local validation before wide use. Future research should test the program with larger samples, randomized allocation when possible, and follow-up measurements.

16. Conclusion

The family environment is not a secondary factor in language development. It is the first space in which biological and cognitive readiness becomes living communication. Language does not grow through word quantity alone. It grows through the quality of response, turn-taking, clarity of context, emotional warmth, shared reading, play, and cooperation among home, school, and specialist.

Arabic studies used in this manuscript show that the family shapes language, thinking, and behavior. They also show that a weak family-school relationship may increase schooling difficulties in children with language disorders. International research shows that parents, after structured training, can implement effective interventions in daily life. For this reason, the present study proposes a measurable family-based speech-language pathology protocol that turns the family into an informed therapeutic partner.

For this protocol to become a completed empirical article, it should be applied with a real sample. Pre-test and post-test data should then be collected, analyzed statistically, and discussed in light of Arabic and international literature. This will combine methodological rigor with practical value and contribute to Arabic speech-language pathology research on family environment and child language development.

17. Declarations

Ethics approval and consent to participate: Ethical approval must be obtained before recruitment. Written informed consent from parents or legal guardians is required.

Consent for publication: No identifiable personal data are included in this protocol. Separate consent will be required for any identifiable material.

Availability of data and materials: No empirical dataset is reported in this protocol. Anonymized data may be made available after field implementation according to institutional and journal policies.

Competing interests: The author should declare any competing interests before submission. If none exist, state: The author declares no competing interests.

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Appendices

Appendix 1. Family Language Environment Questionnaire

Response method: 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always. Scores are summed to obtain a general index of the quality of the family language environment.

No.	Item	Score from 1 to 5
1	I talk to my child every day during home routines.	
2	I wait for my child to try to speak before I help.	
3	I expand my child's speech by adding new words.	
4	I correct my child's errors calmly and without mockery.	
5	I read or tell a story to my child several times a week.	
6	I ask open questions during story time or play.	
7	I reduce phone or television use when I am with my child.	
8	I encourage my child to request needs through speech or a verbal attempt.	
9	I play symbolic games with my child, such as doctor, kitchen, or shop.	

No.	Item	Score from 1 to 5
10	I inform the teacher or specialist about changes I notice in my child's language.	
11	I avoid comparing my child with siblings or other children because of language.	
12	I use words that describe feelings, such as happy, sad, afraid, and angry.	
13	I give my child verbal choices between two things.	
14	I use songs, rhymes, and sound play with my child.	
15	I set aside screen-free time for direct interaction.	

Appendix 2. Parent-Child Interaction Observation Grid

Observed behavior	0 = absent	1 = weak	2 = moderate	3 = good	Notes
The adult waits for the child's initiative.					
The adult follows the child's interest.					
The adult uses expansion.					
The adult recasts without reprimand.					
The adult comments more than asks.					
The adult encourages verbal requesting.					

Observed behavior	0 = absent	1 = weak	2 = moderate	3 = good	Notes
The adult provides a safe emotional climate.					
The adult maintains turn-taking.					

Appendix 3. Natural Language Sample Analysis Sheet

Indicator	Pre-test value	Post-test value	Notes
Total number of words			
Number of different words			
Mean length of utterance			
Number of initiatives			
Number of conversational turns			

Indicator	Pre-test value	Post-test value	Notes
Number of utterances of two or more words			
Communicative functions: request / refusal / comment / question / narrative			

Appendix 4. Weekly Home Assignment Log

Day	Activity completed	Duration	Strategy of the week	Child response	Difficulty faced by family
Saturday					
Sunday					
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					

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