

LANGUAGE IN FETAL ALCOHOL SPECTRUM DISORDER: A REVIEW

Linguagem no transtorno do espectro alcoólico fetal: uma revisão

Giulia Ganthous⁽¹⁾, Natalia Freitas Rossi⁽²⁾, Célia Maria Giacheti⁽²⁾

ABSTRACT

The Fetal Alcohol Spectrum Disorders is a clinical condition has aroused the interest of researchers as it is considered relatively common in the population, with an incidence of approximately 10 cases per 1000 births. The neurodevelopmental changes that characterize the phenotype of this condition are described by the presence of loss of memory, attention, visuospatial ability, executive function, learning and impairment in spoken language. Considering the damage of language of the Fetal Alcohol Spectrum Disorders, we proposed to review the literature to identify which procedures are used in the assessment of language and findings reported in language of Fetal Alcohol Spectrum Disorders. The 21 articles selected in this review reflect variability in methodology and commonly used procedures assessment of spoken language. The profile of the spoken language of individuals diagnosed with Fetal Alcohol Spectrum Disorders characterized by different performance and with varying degrees of impairment. There are several factors that influence the variability of spoken language impairment described in Fetal Alcohol Spectrum Disorders, and the quantity of alcohol consumed, the gestation period that occurred consumption and individual susceptibility of each fetus to metabolize alcohol in the body are often described.

KEYWORDS: Fetal Alcohol Syndrome; Language; Speech; Review

■ INTRODUCTION

Fetal Alcohol Spectrum Disorder (FASD) is considered one of the most-studied neurodevelopmental disorders in the past decade¹. Since it is a clinical condition relatively frequent in the population, with incidence of approximately 10 cases for each 1,000 births,² several studies have been carried out aiming to better understand the impact of alcohol on brain, behavioral, cognitive and speech development of individuals exposed to alcohol during the gestation period.

The physical and neurodevelopmental changes resulting of fetal exposure to alcohol were firstly described by Lemoine et al.³ and, later on, complemented by Jones and Smith (1973)⁴ when they studied a group of English children with positive history of intrauterine exposure to alcohol and described the clinical triad named “Fetal Alcohol Syndrome (FAS)” associated with the following clinical signs: (1) growth retardation, (2) central nervous system impairment and (3) typical facies.

Along the years, results of research carried out with this population showed that the FAS clinical manifestations were quite variable among individuals. Thus, in 1980, the *Fetal Alcohol Study Group of the Research Society on Alcoholism* proposed the use of the phrase “Alcohol Effects” or “Fetal Alcohol Effects (FAE)” to refer to all manifestations that, as a result of alcohol consumption during the gestation period, did not fit in the FAS diagnostic triad. Later on, in 1996, the Institute of Medicine (IOM) suggested that the phrase “Alcohol Effects” be replaced by the phrase “Fetal Alcohol Spectrum Disorder (FASD)”, putting forward the idea of sub-phenotypes related

⁽¹⁾ Programa de Pós-Graduação (Mestrado) em Fonoaudiologia, Universidade Estadual Paulista “Júlio de Mesquita Filho” – UNESP – Marília (SP), Brasil.

⁽²⁾ Departamento de Fonoaudiologia, Universidade Estadual Paulista “Júlio de Mesquita Filho” – UNESP – Marília (SP), Brasil.

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to the effect of alcohol during gestation, with the most serious phenotype being the one expressing the triad of FAS manifestations⁵.

Several factors were related to the clinical variability of FASD, among which the amount and alcohol consumption standard by pregnant women were pointed out as one of the main ones⁶. Another important factor is the fetal developmental period, in which the fetus is exposed to alcohol,⁷ as well as other gene-environment interaction factors which contribute to the predisposition of the mother and fetus to alcohol absorption^{7,8}.

The existence of sub-phenotypes, derived from clinical variability, is expressed both in the type of alteration and the degree of physical compromise of the Central Nervous System and the cognitive aspects⁶. Intellectual deficiency is a frequent manifestation in cases with FASD, even though there are also reports of cases with intellectual performance within the standards of normality. Studies on intellectual performance suggest that the total IQ of these individuals range between 20 and 86, with the lowest scores found in cases with FAS^{9,10}, placing this disorder among one of the main causes of intellectual deficiency in childhood^{11,12}.

Memory and attention deficits, reduction of visual-spatial ability, executive and learning functions¹¹⁻¹⁵ and spoken-language development have been listed as part of the main neurodevelopmental alterations of individuals with FASD, and not exclusively of cases of FAS^{16,17}.

In order to learn about the research that has been carried out on the aspects of spoken language in this important neurodevelopmental disorder, this paper aims to conduct a review of the literature seeking to identify procedures and findings reported in the field of spoken language for this clinical condition.

METHODS

Considering that the Fetal Alcohol Spectrum Disorder is a neurodevelopmental disorder presenting clinical heterogeneity and that alterations of spoken language are described as part of the manifestation of the phenotypes of these individuals, some questions supported the design of this review: (1) which studies focused specifically on the language of FASD, (2) what was the methodology used and (3) which language alterations have already been described as part of the FASD phenotype.

From these questions, we proceeded with a survey in the literature on the following databases: Pubmed (National Center for Biotechnology Information, National Library of Medicine), the Virtual Library in Health (BVS- Bireme), Lilacs

– Latin-American and Caribbean Literature on Health Science) and the Scientific Electronic Library Online (SciELO-Brasil). The survey was carried out without restriction to the year of publication of the articles, starting from the first description of FASD to the present date. The data survey took place with the help of a librarian working at a reference center for research on health.

The first survey adopted the following individual descriptor: “*Fetal Alcohol Syndrome*”. The result on the date of the survey was of 4,108 citations (Medline, Scielo & Lilacs). Subsequently, the survey was carried out by crossing the descriptor “*Fetal Alcohol Syndrome*” with each of the following descriptors: *Language; Communication; Speech; Narration; Communication Disorders; Language Disorders and Language Development Disorders*”.

In view of the high number of studies found from the initial survey, a second bibliographical survey adopting the descriptors previously mentioned was carried out cross-sectionally. For that purpose, the connective “OR” was adopted between the listed phrases, restricting them with the connective “AND” among these descriptors, with the purpose of specifying this clinical condition (Fetal Alcohol Syndrome). From this survey, 152 studies were identified, which were analyzed for application of the inclusion and exclusion criteria adopted in this work.

Study selection criteria

For the selection of the studies constituting this review, inclusion and exclusion criteria were established and applied following the reading of the 152 studies previously selected. The inclusion criteria were: (1) having individuals diagnosed with FASD as research subject; (2) being an original research article; (3) having specifically addressed language abilities in this population; and (4) being published in English, Portuguese or Spanish. The exclusion criteria were: (1) having case studies including, in addition to alcohol, the use of other drugs during the gestation period; (2) having cited language alteration only as part of the phenotype of this condition; (3) being a literature review article, even if focused on language; (4) having addressed therapeutical intervention in FASD; and (5) duplicate studies.

Results of the bibliographical survey

Out of the 152 studies identified from the cross-sectional survey of descriptors, a total of 120 studies were excluded for not specifically addressing spoken language or for only referring to language or communication alterations as part of the phenotype of this condition. Out of the 120 excluded studies, 3 were withdrawn due to duplicate data on the Lilacs

and Scielo bases and 7 for falling into the category of literature review articles (Medline base). Out of the 29 studies addressing specific language aspects, 8 studies were excluded for not meeting the inclusion

criteria adopted (e.g. drug consumption concurrently with alcohol use by mother), resulting in a total of 21 studies to comprise this review (Figure 1).

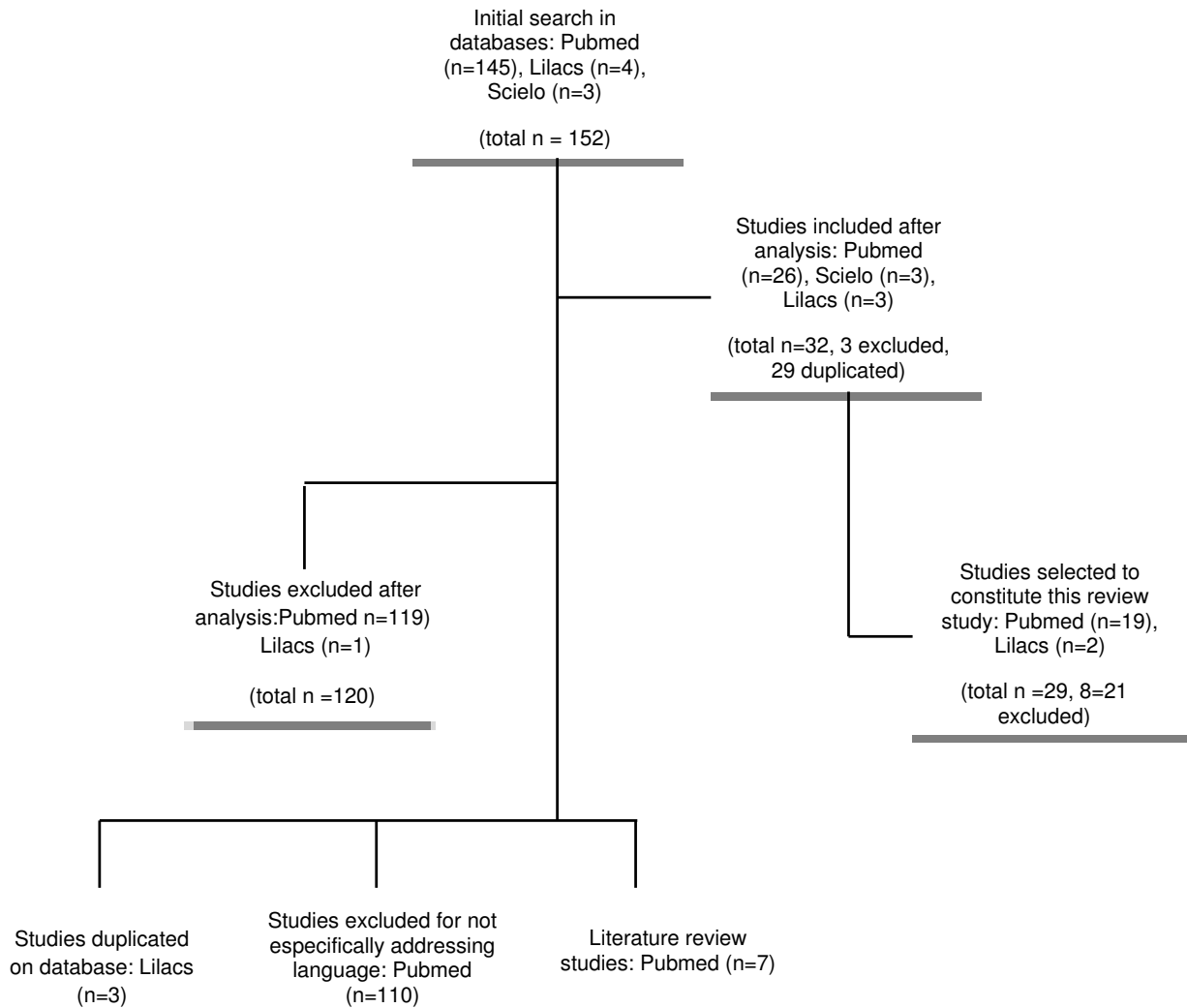


Figure 1 – Flowchart of the number of studies found and selected following a search and analysis strategy of the inclusion and exclusion criteria.

■ LITERATURE REVIEW

The purpose of the literature review was to identify the procedures used in the studies addressing the language aspects in individuals with FASD. By applying the inclusion and exclusion criteria set forth for this review, 21 studies specifically dealing

with spoken-language aspects in individuals with FASD were selected, as shown in Figure 2. This figure presents information referring to each one of the 21 studies regarding: publication year, authors, country of execution of the study, case studies, age of participants, methodology and results found.

	Authors/ Year	Country	Sample	Age (years)	Methodology	Results
1.	Shaywitz et al., 1981	USA	2 FAS	4 and 5 years	1- <i>Sequenced Inventory of Communicative Development (SICD)</i> 2- <i>Testing of nonverbal intellectual abilities on the Leiter International Scales of Performance</i>	1- Comprehension deficits, syntactic, semantic and discrimination errors with larger expression loss. 1- Alterations in social language use during dialogue. 2- Preserved non-verbal ability.
2.	Becker et al., 1990	England	8 FAS and 6 CLT	4 to 9 years	1- <i>The Arizona Articulation Proficiency Scale (AAPS)</i> 2- <i>The Auditory Comprehension of Language (TACL)</i> 3- <i>Token Test</i> 4- <i>Northwestern Syntax Screening Test (NSST)</i> 5- <i>Developmental Sentence Scoring (DSS)</i> 6- <i>Illinois Test of Psycholinguistic Abilities (ITPA)</i> 7- <i>Clinical Evaluations of Language Functions (CELF)</i>	1- Articulatory deviations as a result of alterations in structural larynx, palate, gums and toothings. 2,3,7-Understanding and semantic ability alterations. 4,5,7-Compromise in language grammar development in spontaneous production compared with CLT. 7- Phonological processes with discrepancy with regard to chronological age. 7- Verbal apraxia.
3.	Carney; Chermak, 1991	USA	10 SAF and 17 CLT	4 to 12 years	1- <i>Test of Language Development-Primary (TOLD-P)</i> 2- <i>Test of Language Development-Intermediate (TOLD-I)</i>	1,2-Expressive and receptive language deficits compared with CLT. 1,2-Syntactic and Semantic alteration in all individuals with SAF. 2-Greater syntactic compromise in older FAS group. 1-Global language compromise for younger FAS group.
4.	Janzen et al., 1995	USA	10 SAF and 10 CLT	3 to 5 years	1- <i>The Test of Early Language Development (TELD)</i>	1-Compromise of all expressive and receptive language, including: syntax, morphology and phonology compared with CLT group.
5.	Church et al., 1997	USA	22 FAS	3 to 26 years	1- <i>Preschool Language Scale-III</i> 2- <i>Peabody Picture Vocabulary Test</i> 3- <i>Expressive One- Word Picture Vocabulary Test, Revised</i> 4- <i>Clinical Evaluation of Language Fundamentals</i>	1-Deficits in expressive and receptive language development. 2,3-Decrease of expressive vocabulary. 2,3-Disfluencies and unintelligibility of speech in some participants. 4-Cleft palate and hypernasality in some participants.

	Authors/ Year	Country	Sample	Age (years)	Methodology	Results
6.	Coggins et al., 1998	USA	2 FAS and 2 CLT	14 and 16 years	1-Narrative cohesion and coherence protocol (proposal)	1-Deficits in narrative task used: no relation between one episode and another and no detail of events. 1-Loss of cohesion and coherence 1-Less information in each sentence compared with CLT group. 1- Compromised semantic-lexical repertoire compared with CLT group.
7.	Mattson et al., 1998	USA	15 FAS, 10 FASD and 25 CLT	5 to 16 years	1- <i>Peabody Picture Vocabulary Test</i> (PPVT-R) 2- <i>Boston Naming Test</i> (BNT) 3- <i>California Verbal Learning Test-Children's</i> (CVLT-C)	1,2,3-Inferior performance for FAS and FASD group compared with CLT. 1,2,3-Similar performance between FAS and FASD in language tests. 3-Compromise in learning grammar rules in FAS and FASD group, despite preserved verbal information retention ability.
8.	Monnot et al., 2002	USA	11 FASD, 41 CLT and 32 alcoholics	25 to 63 years	1- <i>Aprosodia Battery</i>	1-Compromise of proper production of prosody and prosodic comprehension of others. 1-Distinction between performances in the two groups exposed to alcohol, even though lower compared with CLT.
9.	Kodituwakku et al., 2006	South Africa	62 FAS and 61 CLT	6 to 9 years	1- <i>Test for the Reception of Grammar</i> (TROG) 2- <i>Modified Children's Test of Nonword Repetition</i> 3- <i>Fluency Tasks</i>	1-Phonemic compromise 1-Vocabulary decrease compared with CLT. 1,2,3-Higher performance for male gender in the FAS group.
10.	Garcia et al., 2007	Brazil	2 FAS	8 and 16 years	1-Child's Phonological Assessment 2-Illinois Test of Psycholinguistic Ability 3-Phonological assessment	1-Speech unintelligibility. 2-Absence of oral emissions. Comprehension alteration. 3-Discourse intentionality and use of variable communicative resources between brothers. 1,2,3-Compromise of syntactic, semantic, phonological and pragmatic ability. 3-Difficulty in lexical correlation and use of grammar elements in structure of oral narration. 3-Difficulty in planning and execution of problem-situation
11.	Thorne et al., 2007	USA	16 FASD 16 CLT	8 to 11 years	1- <i>The Semantic Elaboration Coding System</i>	1-Deficits in narrative: more ambiguous and redundant sentences. 1-Decontextualized uses of grammar elements, such as pronouns and nouns 1-Simplistic sentence structures. 1-Alterations in expressive oral language. 1-Pragmatic and semantic alterations.
12.	Aragón et al., 2008	Italy	24 FASD 32 CLT	7 to 17 years	1- <i>D-KEFS Verbal fluency</i> 2- <i>Progressive Planning Test</i> 3- <i>Clinical Assessment</i>	1,2-Language comprehension deficits. 1-Non-compromised vocabulary. 3-Frequent behavioral and attention problems.
13.	Thorne et al., 2008	USA	16 FASD 16 CLT	8 to 11 years	1- <i>Tallying Reference Errors in Narrative</i>	1-Compromise of story oral narrative. 1-Nominal reference errors. 1-Production of ambiguous sentences.
14.	McGee et al., 2009	USA	25 FASD and 26 CLT	3 to 5 years	1- <i>Clinical Evaluation of Language Fundamentals, Preschool version</i>	1-Alteration in comprehension. 1-Compromise of receptive and expressive aspect of language with regard to CLT.

	Authors/ Year	Country	Sample	Age (years)	Methodology	Results
15.	Robert et al., 2009	Canada	29 FASD	4 to 8 years	1- <i>Communication Subscale of the Vineland Adaptive Behavior Scale</i>	1,2-Greater compromise of receptive language with regard to expressive language. 1-Alteration in interaction and social skill
16.	Olswang et al., 2010	USA	12 FASD and 12 CLT	7 to 11 years	1- <i>The Social Communication Coding System</i>	1- Interaction performance, engaging, irrelevance, passivity, assertiveness and hostility more frequent than CLT group. 1-Compromise in interaction and social skill during development.
17.	Lamônica et al., 2010	Brazil	3 FASD and 4 FAS	2 to 8 years	1-Gesell & Amatruda's Behavioral Development Scale 2-Peabody Picture Vocabulary Test 3-Phonological assessment	1-Delay in language acquisition. 1-Behavioral alterations. 1-Speech unintelligibility. 2-Vocabulary short of the expected for the chronological age 3-Autistic characteristics in some individuals with FAS: absence of visual contact, production of sounds with no communicative purpose, repetitive movements, lack of comprehension and interest in interaction. 3-Variability between profiles of communicative abilities of brothers. 3-Dialogical and comprehension alterations with several degrees of compromise.
18.	Beer et al., 2010	South Africa	5 FASD	4 months to 4 years	1- <i>The comprehensive four-levels early communicative assessment framework</i>	1-Six-month language delay compared with population with typical development at the same chronological age.
19.	Wyper; Rasmussen, 2011	Canada	27 FASD and 23 CLT	5 to 13 years	1- <i>Comprehensive Receptive and Expressive Vocabulary Test</i> 2- <i>Test of Language Development (TOLD-3)</i>	1-Smaller expressive and receptive vocabulary compared with CLT. 2-Language development with deficits to relate vocabulary and imitate sentence. 2-Difficulty in organizing sentences. 1-Alteration of discrimination of words with similar sounds but different meaning. 2-Compromise in identifying sentence errors. 1,2-More evident deficit in older individuals in the FASD group.
20.	Vario et al., 2011	USA	55 FASD and 55 CLT	6 to 16 years	1- <i>Peabody Picture Vocabulary Test</i> 2- <i>Boston Naming Test</i> 3- <i>Controlled Oral Word Association</i>	1,2-Paired by mental age to CLT, did not show difference between receptive and expressive vocabulary. 3-Verbal language deficit with deficits in retention of verbal material.
21.	Ganthous; Rossi; Giacheti, 2013	Brazil	7 ARND, 2 FAS and 9 CLT	4 to 12 years	1-Child's Language Test –ABFW- Fluency	1-Common disfluencies and more frequent stuttering than CLT. 1-Higher frequency of pause and hesitation. 1-Emission of fewer words and syllables than CLT

Legend: Fetal Alcoholic Spectrum Disorder- FASD; Fetal Alcoholic Syndrome-FAS; Control- CLT; Alcohol-Related Neurodevelopmental Disorder- ARND

Figure 2- Synthesis of compiled articles on spoken language in Fetal Alcohol Spectrum Disorder

Through a historical and evolutionary perspective of the 21 studies carried out in the area of spoken language in FASD, we note that the first publication dates to 1981¹⁸, 13 years after FASD was acknowledged by the scientific community. Approximately ten years after this first publication, which reported two brothers with FASD presenting significant impaired language acquisition, a study¹⁹ was published – extending the number of FASD cases and also adopting the case-control method –, and compared the performance of individuals with FASD with individuals of the same chronological and mental age with typical language development.

From the year 2000, we note an increase in the number of publications on the specific aspects of spoken languages of individuals with FASD.

Even though FASD has been quoted among the most studied neurodevelopmental disorders in the past decade, amid other neurodevelopmental conditions,¹ we note that few studies have addressed specifically the aspects of spoken language in this clinical condition, to the detriment of studies in the area of cognition and behavior. This may be evidenced by the number of studies initially identified in the bibliographical survey (119 studies) and that, however, were excluded for only mentioning the language alteration as part of the FASD phenotype, without a more detailed characterization of this alteration or the specification of the use of instruments for language assessment.

The survey showed that the scientific production in the field of spoken language on FASD was predominantly from the United States (57.15% of studies), although it was little representative^{16,18,20-26}. We note that out of the 21 studies selected for this review, only 3²⁷⁻²⁹ presented data of Brazil, in spite of the country's increase in alcohol consumption by pregnant women. Of this group, two were carried out by the authors of this review^{27,29}.

When analyzing the case studies constituting the 21 studies presented in Figure 2, it is possible to note that the number of participants in the articles was quite variable, with a minimum of 2 and maximum of 62 cases (M=18, DP=16). It is worth mentioning that, out of the 21 studies, 4 informed having used the same case studies of previous studies^{23,25,26,30}.

Of the 21 studies, 10 (47.61%) presented case studies with over 15 cases. Among the three Brazilian studies, one reported two brothers,²⁷ and the others seven²⁸ and nine cases²⁹. The study with the highest number of cases (n=62) was carried out in South Africa, a country with serious socioeconomic and nutritional problems, in addition to low education rates and a history of high alcohol consumption by the population³¹.

This scenario may not be very different in Brazil, given the many regions in the country with socioeconomic and educational conditions similar to those found in South Africa, which leads to the belief in the existence of underdiagnosed cases in this country³². Future epidemiological studies may reveal more reliable data on the frequency of FASD in Brazil and we hope this will reflect on the healthcare of the population, the increase of Brazilian scientific production in the field of spoken language with case studies higher than those presented by the studies carried out to this date, in addition to actions to reduce alcohol consumption by pregnant women and, thus, prevent the horrible impact of alcohol consumption during pregnancy on Brazilian children.

The information gathered on the cases of the 21 reviewed studies pointed out to their age heterogeneity, suggesting that it may be indicative of the difficulty to have access to this clinical population to carry out studies with a significant number of participants belonging to the same age group. Figure 2 shows the studies that tend to present case studies with a wide-ranging age group.

Even though the age group described in the case studies comprises individuals still at their first three years of life, most participants are in school age. This fact was also described in a prior study³³.

Studies with cases made up of younger individuals tend to report less-compromised clinical pictures than those with school-aged individuals^{16,18}. However, the use of development scales has allowed researchers to identify delays of, at least, six months by individuals with FASD compared with their peers of the same chronological age and who have not been exposed to alcohol during pregnancy^{16,18,20,21,33,34}.

One aspect that must be considered when proposing a design for a study in the area of spoken language, including individuals in preschool age, is the relatively lower number of instruments available for this assessment, when compared with the instruments available for school-aged population. This reality is less significant in the international scientific context, which already relies on standard instruments adapted to the linguistic culture in preschoolers. However, in Brazil this reality needs to be taken into account by the researcher interested in investigating language aspects in specific populations, including FASD, when designing the purposes and methodology of the study.

The age heterogeneity and the diversification of instruments used in the studies presented are some of the factors that make it difficult to carry out a comparative analysis of these studies, mainly with regard to chronological age and intellectual

performance. Such methodological aspects, referring to case studies and language investigation methods, may influence the discrepancies found in the literature on the specific language aspects of FASD.

The compromise in expressive and receptive vocabulary during spontaneous and elicited emissions compared with the population with typical development is described in several publications^{22,27,28,31,34}.

When compared with individuals with typical language development, individuals with FAS and FASD present significant deficits both in receptive and expressive language^{20,34}. However, findings reported in 1991²⁰ described greater compromise in expressive language with regard to the syntax of wordings produced by younger individuals with FAS; whereas in 2011³⁴ a greater compromise in expressive language was reported in older individuals with a FASD diagnosis.

The semantic ability described in the population with FASD, more specifically the ability to understand, interpret and correlate meaning, was characterized by quantitative and qualitative alterations with different degrees of compromise^{18,20,23,25-28,30,31,34}.

As for the phonological ability of individuals with FASD, articulatory distortions have been noted as a result of the structural compromise of phonatory organs, making speech unintelligible for some individuals with FAS²¹. The same study also described cases of verbal apraxia, although they were not common to all participants with FAS. The occurrence of phonological processes no longer expected for the chronological age or deviating from the acquisition stages, during activities of phonemic recognition and discrimination, was described in three studies.^{16,19,31} As for compromise in discrimination, two studies also described errors of hearing perception by individuals with FASD^{31,34}.

The assessment of the pragmatic ability in individuals with FASD becomes a difficult process for researchers, since the behavioral alterations accompanying this population – such as absence of visual contact, production of sounds with no communication purpose, repetitive movements, absence of comprehension and difficulty of interaction - directly interfere in language social skill and are confused with other neuropsychological conditions, making it extremely hard to dissociate them from spoken language. Some of the most often described pragmatic deficits in this population refer to the dialogical ability as the one most compromising the intentionality of the speech and the use of communicative resources^{18,25,27}.

Studies 16 and 20 of this literature review compared individuals with FASD with those with

typical development and described the compromise in social abilities even during social interaction with their peers. Such compromise was described in individuals in a wide range of age groups, without improvement of this ability as participants became more mature in their development^{17,35}.

As for the ability to tell stories, we note that most studies assessed the performance in comprehension abilities and the reception of words and sentences, with very few studies on oral narration.

Three studies specifically analyzed narration^{22,25,26} from the assumption that such individuals represent a sample of the population with language problems, when compared with individuals of the same chronological age and typical language development. In fact, the results found confirmed that individuals with FASD presented difficulty in oral narration of stories, when compared with individuals with typical development, mainly for cohesion and coherence aspects,²² use of improper sentence elements, such as pronoun and noun with no direct meaning in the context²⁵, in addition to the emission of less-complex sentences with ambiguities and nominal regency errors^{25,26}. The most curious information observed was that the narrative performance could be used as an important tool for the diagnosis of language disorder instead of standardized tests²⁵.

In another study, the same authors started from a bolder hypothesis, which established that the narrative performance could be used as a predictive sign for a FASD diagnosis. They also showed that the presence of nominal regency errors in narration would be a predictive sign for the FASD diagnosis, since the level of narrative performance was strongly related to the degree of compromise and the diagnosis of (FAS or FASD) cases²⁶. However, the authors acknowledged that the study would have to be replicated and the case studies expanded also to include other clinical groups with language problems.

Another characteristic observed in the narration of stories by individuals with FASD is the highest frequency of disfluencies such as hesitation and silent pause, when compared with the narration by their peers of the same chronological age and typical language development. This finding was explored by the researchers as an important sign that individuals with FASD need additional time to plan the verbal information in view of the difficulty in wording and a more punctual selection of words during a formulation in progress²⁹. These findings offer important information about the cognitive and linguistic processes regarding spoken language production and semantic evocation.

Peculiar alterations of behavior and language often supported the diagnosis of FASD through

milder physical signs and intellectual performance within borderline or slightly lower normality parameters^{16-18,35-37}. This aspect was presented in a 1981 publication¹⁸. In this study, the authors turned their attention to the behavioral and language losses (mainly the pragmatic component), which were essential for the diagnosis of the cases.

As for the most compromised spoken language components, we note that the majority of studies mentioned the semantic^{18,21-23,25,27,28,34-36}, syntactic^{16,18,19,20,25,34} and pragmatic^{17,18,27,28} components.

Wide variability was described in all compromised spoken language components, both in type and degree of compromise. Such heterogeneity is due to the fact that case studies tend to be formed by individuals that have been exposed to different amounts of alcohol, in different periods of fetus development, that each child has different susceptibility to their mothers' alcohol intake, which would justify the different degrees of compromise or the normality per se^{7,8,38}.

■ CONCLUSION

Based on the data obtained in this review, it was possible to survey several instruments used to assess distinct aspects of language in individuals exposed to alcohol in the womb. The studies compiled in this work reflect the variability in the methodology used and the distinct procedures to assess spoken language.

After analyzing the 21 articles compiled in this review, we conclude that the profile of the group with FASD diagnosis indicated different spoken-language performances in view of the type and degree compromise. Such compromise has shown to be intimately related to the intellectual ability of participants. Several factors influence this variability of compromises described in the Fetal Alcoholic Spectrum, with the amount of alcohol intake, the gestation period when consumption took place and individual fetus susceptibility to metabolize alcohol in the organism as the most frequently described in the literature.

RESUMO

O Transtorno do Espectro Alcoólico Fetal é uma condição clínica que vem despertando o interesse de diferentes pesquisadores por ser considerada relativamente frequente na população, com incidência de aproximadamente 10 casos a cada 1000 nascimentos. As alterações neurodesenvolvimentais que caracterizam o fenótipo desta condição são descritas pela presença de prejuízos de memória, de atenção, da habilidade visuo-espacial, das funções executivas, de aprendizagem, bem como do comprometimento na linguagem falada. Considerando os prejuízos da linguagem que permeiam o Espectro Alcoólico Fetal, este trabalho propõe-se a realizar uma revisão da literatura para identificar quais os procedimentos e achados reportados na área da linguagem para essa condição clínica. Os 21 artigos selecionados nesta revisão refletem uma variabilidade na metodologia empregada e distintos procedimentos de avaliação da linguagem falada. O perfil da linguagem falada dos indivíduos com diagnóstico de Transtorno do Espectro Alcoólico Fetal caracteriza-se por diferentes desempenhos na linguagem falada e com grau de comprometimento variável. Diversos fatores influenciam na variabilidade de comprometimento da linguagem falada descrito no Transtorno do Espectro Alcoólico Fetal, sendo que a quantidade de álcool ingerida, o período de gestação em que ocorreu o consumo e a susceptibilidade individual do feto ao metabolizar o álcool no organismo são frequentemente descritos.

DESCRITORES: Síndrome Alcoólica Fetal; Linguagem; Fala; Revisão

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Mailing address:

Célia Maria Giacheti

Av. Hygino Muzzy Filho, 737 - Campus

Universitário

Marília – SP – Brasil

CEP: 17525-900

E-mail: giacheti@uol.com.br