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Continuing the development of the Multilingual Assessment Instrument for Narratives – New language adaptations and empirical investigations

Contents

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Preface: *Continuing the development of the Multilingual Assessment Instrument for Narratives – New language adaptations and empirical investigations*

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Since its launch in 2012 (Gagarina et al., 2012) and subsequent revision in 2019 (Gagarina et al., 2019), the Multilingual Assessment Instrument for Narratives (MAIN) has become a cornerstone in the fields of multilingual language development and narrative assessment. Designed to evaluate narrative abilities in a theoretically grounded way that is as comparable as possible across languages and cultures, MAIN has grown into a robust international infrastructure with approximately 100 language versions from 66 countries and more than 4,500 registered users across 60 countries. The instrument serves as a valuable tool for researchers, clinicians, and educators working with monolingual and multilingual children, including both typical and atypical populations, and has been used in a large and continuously growing number of published studies to date (see Lindgren, Tselekidou & Gagarina, 2023 for an overview). This new volume with its 12 contributions reflects the ongoing growth of MAIN. Out of the contributions, six describe new language versions of MAIN, seven report empirical studies that apply MAIN to investigate children's narrative development in various sociolinguistic contexts, and one introduces the methodological extension of MAIN to dynamic assessment. Together, these papers show the adaptability of MAIN across typologically different languages and illustrate its applications in clinical, educational, and community-based research. In what follows, we briefly summarize the content of each of the contributions in this volume.

Alqahtani et al. present the adaptation of MAIN to Saudi Arabic, focusing on the Najdi, Hijazi, and southern dialects. The paper demonstrates adjustments needed for cultural appropriateness and highlights findings from a pilot study, including insights into the comprehension of emotional state questions and the usability of the parent questionnaire.

Bracker et al. outline the adaptation of MAIN to European Portuguese, highlighting linguistic differences from the Brazilian Portuguese version showing the importance of tailoring narrative assessments to specific varieties and cultural contexts within the same language.

Hnialum introduces the adaptation of MAIN to Mizo, a tonal language spoken in north-eastern India. The paper discusses typological differences and cultural considerations, illustrating how the Mizo MAIN addresses gaps in assessment for a vulnerable linguistic community.

The adaptation of MAIN to Faroese described in the contribution by *Rasmussen* broadens MAIN's reach into the North Germanic language family. She outlines the language's sociolinguistic background and describes ongoing and future applications of the Faroese MAIN for educational and clinical purposes.

Iefremenko and Alkhimchenkova document the Ukrainian adaptation of MAIN, which was used to assess Ukrainian-Russian bilingual children who had recently arrived in Germany. They examine the effect of both the specific language and of language dominance on narrative macrostructure, offering a unique lens on narrative development in bilingual populations, and valuable suggestions for how MAIN can be revised further in the future.

De Gaudio offers a partial adaptation of MAIN to *Coriglianese*, an Italian dialect, and presents a study involving bilingual children and adolescents. Results from 85 participants show that age and frequent usage of Coriglianese enhance the production of complex syntax in narrative retellings in both Coriglianese and Italian. The study highlights the importance of recognizing and preserving dialectal heritage within the context of contemporary bilingualism.

The contribution by *Augusto et al.* reports on the relationship between syntactic competence, inhibitory control, and narrative skills in Brazilian Portuguese-speaking children, both with typical language and at risk of Developmental Language Disorder (DLD). Their findings point to significant correlations between linguistic measures and narrative scores, confirming MAIN's diagnostic potential in identifying discourse-level difficulties.

Hilker et al. provide local reference data for Albanian-speaking children in Kosovo, addressing the current lack of standardized assessment tools in this context. By analyzing story structure and comprehension across different age groups, their community-based study contributes essential data for this population.

Hržica et al. explore the narrative macrostructure of Croatian-speaking children aged 5 to 7, focusing on the effects of age and receptive language skills on story structure and story complexity. Their conclusions emphasize the need for cross-linguistic, longitudinal research on narrative development that also takes a range of background factors into account.

Perugini explores referential strategies in the narratives of Mandarin-Italian bilingual children, revealing bilingual-specific patterns such as an increased use of demonstrative NPs and strategic word order choices. These findings mirror prior research and underscore the adaptive strategies bilingual children employ in complex narrative contexts.

Smith and Klop examine the narratives of young Afrikaans- and Xhosa-speaking children from low socio-economic status (SES) communities in South Africa. Their findings on macrostructural complexity provide insights into the developmental trajectories in

underrepresented populations and stress the importance of including diverse SES backgrounds in MAIN research.

Finally, *Meyer* describes how MAIN can be used for Dynamic Assessment (MAIN-DA). By applying a test-teach-retest format, MAIN-DA offers a responsive and culturally sensitive framework that evaluates a child's learning potential rather than their static performance, supporting more equitable language evaluation for different types of language learners.

Together, the 12 papers constitute a valuable and methodologically diverse set of contributions that represents the breadth of the research that is and can be conducted using MAIN. They extend the geographical and linguistic coverage of MAIN, and enrich our understanding of narrative development. We thank the authors for their commitment to adaptation and research. We hope that this volume will inspire further development and use of MAIN in underrepresented languages and communities and foster collaborative efforts toward more inclusive, comparative language research around the globe.[1]

Josefin Lindgren and Freideriki Tselekidou
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[1] The papers in this volume have not undergone a process of double-blind peer review. We therefore want to emphasize that each author is responsible for the quality of their respective paper. As editors, we have read all contributions carefully and provided feedback and suggestions for improvements, both regarding the content and the coherence and clarity of the writing, but the final responsibility lies with the authors. The individual authors also vouch for the quality of the MAIN language version described in the papers, and they were all required to follow the same rigorous criteria for translation and adaptation (described in Gagarina et al., 2012, and further revised in Bohnacker & Gagarina, 2020). All existing language versions of MAIN–Revised can be accessed here (after registration).

Adapting the Multilingual Assessment Instrument for Narratives to Saudi Arabic

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The purpose of this paper is to elaborate on the challenges of adapting the Multilingual Assessment Instrument for Narratives (MAIN) to Saudi Arabic. The paper also describes a pilot study in which MAIN was adapted to Saudi Arabic and provides an overview of the research on assessment of Arabic narratives that used MAIN. Although a Lebanese Arabic version was already available, it is unsuitable for children who speak the Saudi dialect and the Saudi MAIN was therefore developed.

1 Introduction

Narrative skills are often assessed to measure a child's academic skills. The ability to tell or retell stories and respond to comprehension questions are prerequisites for literacy skills, which are, in turn, essential for academic achievement (Berman & Slobin, 1994). Narrative skills reflect certain social-cognitive and metacognitive-related attributes (i.e., organization, coherence, attention to the listener's needs, and awareness of the listener's state of mind) (John, 2001). Therefore, narratives provide rich cognitive and linguistic data and reflect children's social skills (Spencer et al., 2019). In recent years, the number of children who grow up speaking two languages has increased dramatically. It is challenging to evaluate the narrative

abilities of bilingual children because the tools to assess such skills are designed for monolingual speakers. Thus, they are not appropriate for cross-cultural assessments (Maviş et al., 2016). To overcome some of these limitations, Gagarina et al. (2012) designed the Multilingual Assessment Instrument for Narratives (MAIN) to assess narrative skills in multilingual children and enable parallel assessment in their two languages. It was subsequently revised in 2019 (Gagarina et al., 2019). MAIN is suitable for children aged 3–10.

MAIN includes a protocol for evaluating the production and understanding of macrostructure components: story structure, the complexity of narratives and internal state terms of the characters. The instrument includes two pairs of stories in the form of picture sequences: the first pair consists of the *Cat* and *Dog* stories, and the second of the *Baby Birds* and *Baby Goats* stories. The Cat and Dog stories were developed completely for the MAIN. The Baby Birds story was inspired by the Cat tale, while the Baby Goats tale was somewhat inspired by the fox's tale (Hickmann, 2002; Gülzow & Gagarina, 2007).

The MAIN stories have the same episodic structure, but they differ in the number of protagonists. The *Cat* and *Dog* stories have three characters, while Baby Birds and Baby Goats have five. Each story was designed with six color pictures that act as visual cues for elicitation, and the pictures are arranged in a foldout book. The sequence of a character's goals, attempts, and outcomes is shown in a series of two pictures, with each series comprising an episode. Each episode offers the child an opportunity to produce the story elements for macrostructure analysis. Three episodes are included in each story and there are three ways to narrate the stories: retelling, telling, and model story. MAIN also includes ten comprehension questions for each story.

This paper discusses the challenges of adapting MAIN to Saudi Arabic, describes a pilot study on using MAIN in Saudi Arabic, and provides an overview of research on Arabic narratives that have used MAIN. Section 2 provides information on the characteristics of the Arabic language, while Section 3 discusses the studies that have analyzed narratives using the other Arabic versions of MAIN. Section 4 explains the Saudi Arabian adaptation process. Section 5 presents a pilot study of the Saudi Arabic version of MAIN, and Section 6 describes the challenges faced in adapting it to Saudi Arabic from English. Finally, a short conclusion in completes the paper (Section 7).

2 Arabic: A brief overview

An important characteristic of Arabic script is that most vowels are not written, which differs from Latin and Cyrillic scripts. In Arabic, there are three types of word order: VSO, SVO, and OVS. The most common word order is VSO (verb–subject–object), where there is a verb at the beginning of the sentence. SVO (subject–verb–object) is also a standard structure, while in some cases, the word order is OVS (object–verb–subject). Additionally, in Arabic, the adjective is usually placed after the noun it modifies. Arabic also differentiates between masculine and feminine in nouns, adjectives, and verbs (Albaqami, 2020). For instance, gender can be distinguished through a word without knowing the context of the sentence. The word 'Muslims' is a good example of this. Among English speakers, the term refers to all Muslims, but to an Arabic native speaker, it refers specifically to men, with 'Muslima' being a corresponding term

for women. Additionally, Arabic has a 'dual' form, which differs from many other languages that only have singular and plural forms (Albaqami, 2020). For example, the term 'Muslim' has a dual masculine form, 'Muslimân,' and a dual feminine form, 'Muslimatân.' Thus, each language has its own set of words, some of which are difficult to translate directly; when translated into English, they need more than one word to describe their true meaning. These words often need more than one English word to capture their true meaning.

Arabic has three primary forms: Classical Arabic, Modern Standard Arabic (MSA), and colloquial Arabic (Albirini, 2016). The first form is the classical language, which is known as the Quranic language. It is the language of the Qur'an, the Muslim holy book, and it is the language in which religious rituals are performed. The second form is MSA, which is widely used on television, radio, in newspapers, literature, religious sermons, children's media, and the education system. The third form is the colloquial language, which differs from one Arab country to another. Each region has its own dialect, with unique distinguishing grammatical, morphological, phonetic, and semantic characteristics. There are five groups of Arabic dialects. First, the Egyptian dialect includes the Egyptian civil dialect (Alexandrian and Saidi), Sudanese (Jubian in southern Sudan and Nubian in Uganda and Kenya), and Chadic (Nigerian dialect). Second, the Levantine dialects include the Lebanese, Syrian, Palestinian, and Jordanian dialects. Third, the Iraqi dialects include the southern and northern Celtic dialects. Fourth, the Maghreb dialects include the Moroccan, Algerian, Tunisian, and Libyan dialects. Finally, the dialects of the Arabian Peninsula include the Gulf dialects (Emirati, Bahraini, Hasawi, Qatari, and Kuwaiti dialects), the Saudi dialects (Najd, Hijaz dialect, and southern dialect) and the Yemeni dialect. Each of these can be further divided into subdialects (Albirini, 2016). The dialects spoken at home are an important factor in how many cultures maintain their identities (Verdon et al., 2014).

Colloquial Arabic is generally used to communicate orally within Arab societies, and children acquire it from their parents, siblings, and other community members. In contrast, MSA is the language that is primarily used for reading and writing in formal education. It is important to note that each of these forms serves a different purpose.

3 Research using MAIN in Arabic

A limited number of studies have analyzed narratives using the previously existing Arabic version of MAIN, which is only suitable for Lebanese, Palestinian, Syrian, and Iraqi Arabic speakers (Fiani et al., 2020; Fiani et al., 2022; Haddad, 2022). Fiani et al. (2020) conducted the first published study using the Lebanese Arabic MAIN, investigating the development of narrative comprehension among 48 bilingual Lebanese Arabic–French children aged from 4 to 9 years. The findings indicated that comprehension varied significantly with age, regardless of language dominance, and that there was no difference between languages. The results also demonstrated no major differences in comprehension between Lebanese Arabic and French among bilingual children. This could be because the children had spoken Arabic and French since they were 3 years old, and they resided in a community that widely speaks both languages. Moreover, according to a later study conducted by Fiani et al. (2022), age effects were found

across all measures of macrostructure production, including story structure, structural complexity, and the use of internal state terms.

Haddad (2022) studied the narrative skills of Lebanese Arabic–Swedish-speaking children (N= 100), aged 4 to 7 years in Sweden. The Lebanese Arabic and Swedish versions of MAIN were used to assess their narrative macrostructures. This included language differences, age differences, and the effects of the task. The results demonstrated that story structure and narrative comprehension in both Arabic and Swedish developed with age. The ability to comprehend and produce Arabic was higher among older children whose parents primarily communicated in Arabic with them. Moreover, children who scored high in Swedish were older and began speaking Swedish at an early age.

Thus, the above review of the literature demonstrates that relatively few studies have examined the Arabic version of MAIN. No studies have focused on Saudi Arabia, which is a research gap that the current study aims to fill.

4 The adaptation of MAIN to Saudi Arabic

MAIN has been translated and adapted into over 90 languages, including an Arabic version that is suitable for use with Lebanese, Palestinian, Syrian, and Iraqi Arabic speakers (Bohnacker & Haddad, 2020). These varieties of Arabic are significantly different from the dialects spoken in Saudi Arabia, and it is challenging for young speakers of Saudi Arabic to comprehend other dialects. Hence, MAIN needed to be adapted for the Saudi context, focusing on the Najd, Hijaz, and southern dialects. To achieve this, a Saudi pilot version of MAIN was first created. The researcher, Turkaih Alqahtani, a native speaker of Saudi Arabic, translated MAIN from the English version (Gagarina et al., 2019) in February 2023. The translation was then checked by three native Saudi Arabic speakers: Deema Turki, Muhammad Al Zaidi, and Hala Alshahrani. Following comparison, discussion, and translation, a consensus was reached. Finally, to determine the optimal wording for MAIN, and because some words proved challenging to translate, seven native Saudi Arabic speakers provided further advice. Words and phrases that sound natural in colloquial Saudi Arabic had to be carefully selected so that they could be properly comprehended by children.

5 The pilot study

In April 2022, Alqahtani used the Saudi Arabic version of MAIN to collect data from Arabic monolingual (N=6) and Arabic–English bilingual children aged 8 to 10 years (N=6). The author recruited children in Auckland City, New Zealand and Riyadh City, Saudi Arabia. Saudi Arabic monolingual children and Saudi Arabic-English bilingual children were evaluated. The main aim was to determine whether children who spoke Saudi Arabic could understand the processes and materials of MAIN. For example, Alqahtani was interested in determining how effective the prompting and comprehension questions were in the Saudi Arabic version of MAIN. The pilot study also aimed to analyze and address any potential difficulties regarding the parent questionnaire. Another objective of the pilot project was to consider which factors of age and gender affected the results.

In terms of the procedure of the pilot study, background information was also collected from parents using a questionnaire. Each child was tested individually by Alqahtani. Bilingual children were tested at a library in New Zealand (the Auckland area) in the first session. However, as a result of COVID-19, the second session took place through Zoom. Monolingual Arabic children located in Riyadh were tested via Zoom in a single session. The session lasted for a duration of 20–40 minutes, depending on the pace of the child. The Dog and Cat stories were used in the retelling procedure, while the Baby Birds and Baby Goats stories were used in the telling process. Both Arabic and English were assessed in the bilingual group. All bilingual children were tested on four stories: two stories for storytelling in Arabic and English, and two for story retelling in both languages. The testing interval between the two languages was one week for bilingual children. Monolingual children were assessed using two stories. The final analysis focused on comprehension, where children were asked ten comprehension questions and were scored based on their responses.

The pilot study indicated that children had no difficulty completing the data collection tasks, with each session taking between 20 and 40 minutes. The Saudi version of the MAIN assessment was effectively applied. We also examined the effect of age and gender on story production and comprehension. Age and gender were not found to affect narrative skills because our sample size was small. The revised Saudi Arabic version, based on the results of the pilot study, was published as part of *ZAS Papers in Linguistics*, vol. 64.

6 Challenges in adapting MAIN to Saudi Arabic

Some challenges were associated with converting narrative texts from one language to another. First, the children could not understand some questions about the characters' internal states, such as 'How does the dog feel?'. This is because the questions about emotional states were directly translated from English. Thus, various Saudi Arabian phrases and wording similar to the English questions were tested to determine whether they elicited the appropriate responses. After consulting many native speakers of Saudi Arabic, the experimenter agreed to change the word 'feeling' to أحس (aiḥse), which we considered a synonym. Second, the Hijaz dialect, which differs from the Najd and southern dialects, was found to be particularly challenging. Deema Turki developed the Hijaz version. We added alternatives to the questions and prompts and presented them alongside the other Saudi dialects. These alterations did not influence the responses. Alqahtani tested the Hijaz dialect by collecting data from monolingual children in Saudi Arabia (N=3) and bilingual children in New Zealand (N=3), who were originally from Hijaz in Saudi Arabia (Medina, Mecca, and Jeddah). Overall, the children responded well to the Hijaz dialect of MAIN when piloting. Additionally, we tested the MAIN version on a few children who spoke Yemeni Arabic, and the experiment was successful. The tester could understand the children, and they followed the prompts, responded to comprehension questions, and correctly completed the narrative tasks. However, a version of the Yemeni-dialect MAIN must be created in its final form and piloted prior to its deployment.

Regarding the questionnaire, some parents had difficulties filling it out because the researchers and parents used different versions of Microsoft Word, and some words were altered when the questionnaire was moved between the different versions of the program.

Therefore, an online questionnaire should be created to make it easier for parents to complete the questionnaire. Additionally, the questionnaire used is lengthy and some questions are inappropriate for monolinguals (e.g. for example, Is your child exposed to an L2? Which language does your child speak best?). With this in mind, the Alqahtani has designed an online monolingual questionnaire in which some questions in the original questionnaire have been modified.

7 Conclusion

MAIN is crucial in enhancing studies regarding Saudi children's development of language by offering a thorough and culturally attuned tool for evaluating narrative abilities. MAIN's pictorial design enhances narrative generation and understanding, irrespective of children's literacy levels, rendering it especially effective for evaluating oral narrative skills in linguistically diverse and diglossic contexts, notably within Arabic-speaking communities (Mahamid & Saiegh-Haddad, 2025). A bright prospect for the future implementation of MAIN in Saudi Arabia is its capacity to distinguish between normative language development and language deficits. Research employing MAIN has effectively demonstrated differences in storytelling macrostructure between children with usual language development and those with development language impairments (Kraljević et al., 2020). By modifying MAIN to consider the linguistic subtleties of Saudi Arabic – particularly the difficulties arising from the coexistence of regional dialects and Modern Standard Arabic – it would be feasible to create effective diagnostic instruments that guide early intervention initiatives in educational and clinical contexts. Moreover, MAIN's established adaptability in cross-linguistic environments, evidenced by its modification for languages like Urdu (Hamdani et al., 2020), indicates that analogous strategies are utilized to maintain its cultural and linguistic significance in the Saudi context. The adaptation process entails alterations to the narrative prompts, evaluation criteria, and normative standards to reflect the distinctive characteristics of Saudi narrative traditions and the impact of Arabic diglossia on narrative coherence and complexity. Thus, MAIN may function as both a research tool to enhance our theoretical comprehension of narrative development and a practical resource to inform language intervention and curriculum design in Saudi educational institutions.

In conclusion, the prospective application of MAIN in the examination of Saudi children's language presents potential in three principal domains. Initially, it serves as a diagnostic tool to detect language deficits by analyzing story macrostructure and microstructure. Secondly, its adaption to the Saudi Arabic setting may yield insights into the influence of diglossia on storytelling competencies. Third, by producing longitudinal data on narrative competency, MAIN can guide specific educational initiatives and governmental decisions designed to enhance language development in Saudi Arabia. These diverse uses establish MAIN as an essential asset in the continuous endeavour to improve language assessment and support for Saudi youngsters.

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Costly sentences, inhibitory control, and narrative abilities: an assessment with MAIN of Brazilian Portuguese-speaking children at risk of DLD

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This study investigates whether children's comprehension of costly syntactic structures, such as passives and relative clauses are linked to their performance in narrative tasks. It also explores possible correlations between linguistic, narrative and inhibitory control (IC) measures. Two groups of children speaking Brazilian Portuguese (BP) (mean age: 8;3) were tested: typically-developing children (TD) and children at risk of Developmental Language Disorder (DLD). A standardized linguistic assessment battery for BP (MABILIN) was used together with the BP version of MAIN, and two non-verbal IC tasks adapted for children (Flanker and Go/no-go). Significant group differences were observed for most of MAIN's measures of narrative macrostructure. Additionally, significant correlations were found between the number of correct responses in the syntactic battery and macrostructure in MAIN, particularly story structure and story comprehension. Correlations between MABILIN and the Flanker test were also obtained. These findings suggest that linguistic difficulties at the discourse level can be expected for children with DLD. Correlations between MABILIN and the Flanker test indicate that resistance to interference, a form of sustained attention, is required in the comprehension of syntactically costly sentences in a picture selection task.

1 Introduction

Developmental Language Disorder (DLD) is a neurodevelopmental disorder that affects 7–8.5% of school children worldwide (Auza et al., 2024; Calder et al., 2022; Tomblin et al.,1997; Norbury et al., 2016; Pham et al. 2019; Wu et al., 2023). The term DLD has recently replaced the widely used term SLI (Specific Language Impairment) as the result of a consensus in the CATALISE Consortium (Bishop et al., 2016, 2017).[1] DLD refers to a language disorder not associated with a known biomedical aetiology.[2] The symptoms of DLD are rather heterogenous, though difficulties in the syntactic and morphological domains characterize it (Leonard, 2014; Conti-Ramsden, Crutchley & Botting, 1997; Friedmann & Novogrodsky, 2008). Children with DLD have been shown to have difficulty comprehending syntactically costly structures (Contemori & Garraffa, 2010; Friedmann & Novogrodsky, 2008; Frizelle & Fletcher, 2015; Georgiou & Theodorou, 2023; Stavrakaki, 2001, Van der Lely & Battell, 2003), namely structures which involve more complex syntactic operations for their formation/generation. Regarding narrative abilities, children with DLD also show poorer performance than typically developing (TD) children, both in the macrostructure, i.e., the ability to produce a coherent, highly structured narrative, and the microstructure, i.e., the ability to produce a cohesive narrative, (Fey et al., 2004; Befi-Lopes et al., 2008; Blom & Boerma, 2016; Vaz, Lobo & Lousada, 2022). Although their narrative skills develop during childhood, their performance is below age-matched pairs, even in recall tasks (Reuterskiöld et al., 2011; Kraljevic et al., 2020; Favot et al., 2020).

Recent studies have identified correlations between the development of executive functions and language performance, encompassing both linguistic measures and narrative skills in children with typical and atypical language development (Kaushanskaya et al., 2017; Marini et al., 2020; Scionti et al. 2023). Executive functions include inhibitory control, working memory, and cognitive flexibility (Diamond, 2013; Miyake et al., 2000). The present study aims to examine whether children's ability to comprehend syntactically complex sentences predicts their performance in narrative comprehension, production, and recall. Additionally, it explores potential correlations between linguistic and narrative abilities and executive functions, more specifically, inhibitory control skills.

1.1 Costly sentences

According to generativist theory (Chomsky, 1995), costly sentences are those whose derivation involves a movement operation, that is, when an element appears in a position different from the one in which it is semantically interpreted, as in passive sentences (A-movement) (1), relative clauses (RCs) (2a, b), and WH-interrogatives (A-bar movement) (3a-d). In these

[1] The CATALISE consortium is a multinational and multidisciplinary study focused on identifying and defining language impairments in children. It utilized the Delphi method, an iterative process involving a panel of experts who rate statements and provide feedback, to reach a consensus.

[2] Biomedical conditions include: "brain injury, acquired epileptic aphasia in childhood, certain neurodegenerative conditions, cerebral palsy and oral language limitations associated with sensori-neural hearing loss (Tomblin et al., 2015) as well as genetic conditions such as Down syndrome […] autism spectrum disorder (ASD) and/or intellectual disability" (Bishop et al., 2017, p. 1071).

contexts, the element in question is said to be dislocated from its base position (where it is semantically required/interpreted) to the position in which it is phonologically realised (the subject position in passive sentences or the leftmost position in relatives and WH sentences).

(1) The boy was called __by the teacher.

(2) a) …the boy who __ called the teacher…

b) …he boy who the teacher called ___…

(3) a) Who __ called the teacher?

b) Who the teacher called __?

c) Which boy ___called the teacher?

d) Which boy did the teacher called __?

The asymmetry between subject (2a) and object (2b) RCs – the latter being the most demanding one – is widely attested in adults' and children's performance across different languages, and several proposals have been put forward to account for it (Lau & Tanaka, 2021). This asymmetry can also be observed in WH-interrogatives (3), though it is particularly noticeable in object Which-questions (3d), which are more demanding than object Who-questions (3b) (Augusto & Correa, 2023). In object Which-questions (3d), as in object RCs (2b), there is an intervening element (the subject of the RC or the interrogative sentence) between the left-most element and its original (object) position (the position in which the thematic role of patient/theme is assigned). In this context, an effect of featural intervention (Grillo, 2009; Friedmann, Belletti & Rizzi, 2009) or an effect of retrieval and/or encoding interference (Lewis & Vasishth, 2005; Van Dyke & McElree, 2006; Villata et al., 2018) would explain the greater demands.

Children with DLD have particular difficulty comprehending these costly sentences (for a scoping review, see Georgiou & Theodorou, 2023). The cause of this difficulty is still unclear. It has been ascribed to syntactic deficit, and working memory limitations (Montgomery, 2002; Van der Lely & Battell, 2003; Jakubowicz, 2011; Archibald, 2018). In the present study, children's comprehension of costly structures was evaluated by means of a standardized linguistic assessment battery for Brazilian Portuguese (BP) (MABILIN),[3] aimed at identifying children with syntactic impairment.

[3] MABILIN (Módulos de Avaliação de Habilidades Linguísticas) consists of a syntactic, a morphosyntactic, and a grammar-pragmatic module developed in LAPAL by the last author. The syntactic module is available on-line https://mabilin.biobd.inf.puc-rio.br/

1.2 Narrative skills

Narratives are the first extended discourse type developed by children (Westby, 1984) and have been used to evaluate fundamental discourse skills. Narrative texts can be either real or imaginary; they generally introduce an initial event that triggers the narrative itself, followed by a complication that causes a set of events or problems, the resolution, and the outcome (Adam, 1982). They can contain one type of text or several. For example, the same narrative text can include descriptive, dialogic, explanatory, or argumentative excerpts, which will directly influence the text's difficulty. That is, the greater the insertion of extra excerpts in the narrative, the greater the reader's difficulty in encoding and interpreting this text.

Narratives can be analyzed at macrostructure and microstructure levels (Liles et al., 1995). The macrostructure represents the story's thematic organisation, in which episodes are causally or temporally related (van Dijk, 1980). At the macrostructural level, there is the presentation of the initial situation of the story, the temporal and spatial location, the introduction of characters, the main stages of the development of the plot (the conflict, the climax, and the resolution, with the impact that it causes in the outcome of the story) (Beaugrande & Dressler, 1983). Therefore, all the general aspects that support the organization/coherence of the story are contained at this level. In contrast, the microstructure of a narrative plays a role in the use of a set of linguistic elements, such as lexical items, morphological and syntactic structures, necessary for characterisation of the characters, the presentation of the events and of the context in which they occur, in the development of the narrative. These microlevel elements reflect the cohesion of the text as a whole (Halliday & Hasan, 1976). At this level, aspects such as the variety of lexical items, the productivity and complexity of syntactic structures, the semantic relationships established among the narrated events, and the number of ungrammatical clauses used can all be analyzed.

The narrative production of children with DLD has been shown to be poorer than the production of TD children at the macrostructure level (Fey et al., 2004; Mäkinen et al., 2014; Norbury et al., 2014), though there is some controversy in this regard (Dodwell & Bavin, 2008; Tsimpli, Peristeri & Andreou, 2016), possibly due to methodological differences (Govindarajan & Paradis, 2022). Studies conducted with Portuguese-speaking children pointed out less detailed or precise characterisation of the characters, fewer complete or more incomplete episodes, and poor coherence in the narratives of DLD children, apart from differences in the microstructure level, which contributed to their overall poorer performance, such as the predominance of simple sentences and even the occurrence of agrammatical structures (Befi-Lopes et al., 2008; Vaz, Lobo & Lousada, 2022).

A more systematic analysis of children's narrative abilities across different languages has been provided by the use of the Multilingual Assessment Instrument for Narrative (MAIN; Gagarina et al., 2019). MAIN was developed by an interdisciplinary group of researchers within the framework of COST Action IS0804 as an instrument suitable for assessing children's narrative abilities, especially those of bilinguals. MAIN provides a protocol for measuring microstructure and macrostructure skills in both comprehension and production, as well as the production of internal state terms. It has been intended to assess narratives in both languages of

bilingual children, to identify children at risk for DLD, and has been widely used across different languages (Lindgren et al., 2023).

In a study conducted with Mandarin-speaking children, for instance, children at risk of DLD performed worse than the matched control children, considering both macrostructure scores and sentence complexity, and both groups had better performance in the retelling than in the telling tasks (Sheng et al., 2020). In Pham et al. (2019), MAIN was used to screen for DLD in Vietnamese children. They found that performance on vocabulary tasks was moderately to strongly related to sentence-level performance, while storytelling was correlated with the following linguistic measures: expressive and receptive vocabulary, mean length of utterances (MLU), grammaticality and subordination index. In a study conducted in Croatian comparing DLD and typically developing six-year-olds (Kraljević et al., 2020), a group effect and an elicitation mode effect were obtained; children with DLD had poorer performance than children with TD, and both groups had higher scores in the retelling condition. A two-phase study with Dutch-speaking children distributed in DLD and control (5–6-year-olds at the first assessment; 6–7-year-olds at the second one) was mainly concerned with the effect of language disorder at the macrostructural level (Blom & Boerma, 2016). In this study, the performance of the DLD group was poorer than the TD group at both narrative production assessments, but the magnitude of the effect became smaller with age. In comprehension, the performance of the TD group was better than the DLD group only at the first assessment. Correlations were obtained between macrostructure (comprehension and production tasks) and several linguistic (vocabulary, grammar) and cognitive measures (verbal memory, sustained attention) in the two groups, at both assessments, suggesting that cognitive factors and linguistic abilities contribute to children's performance on narratives at a macrostructure level. However, based on a mediation analysis aimed to detect causal relation between the impairment status (independent variable) and story generation (dependent variable), with sustained attention as the mediator variable, the authors conclude that sustained attention – the ability to keep focused on the task (a cognitive mediator variable) is a predictor of macrostructure outcomes in the production tasks, as it was weaker in the DLD than in the TD group.

Many recent studies have explored the relationship between linguistic, narrative, and cognitive skills in children. There is evidence of the role of cognitive measures in the development of oral language in both DLD and typically language-developing children (Woodard, Pozzan & Trueswell, 2016; Henry, Messer & Nash, 2012; Lukács et al., 2016; Ullman & Pierpont, 2005). This study contributes to this endeavour by presenting results from child speakers of Brazilian-Portuguese, correlating linguistic abilities (particularly the domain of more complex structures), narrative skills, and performance in inhibitory control tasks, one of the components of the executive functions (EFs).

1.3 Executive functions and linguistic abilities

"Executive functions" (EF) is an umbrella term for several cognitive processes related to thought and behaviour control (Diamond, 2013; Miyake et al., 2000). Inhibition, working memory, and cognitive flexibility are the core components of executive functions (Diamond, 2013). Recent studies have established correlations between EF skills and language

performance, measured on cognitive and linguistic tests, respectively. The linguistic tests assessed receptive and expressive language.

Kaushanskaya et al. (2017) investigated the relationship between nonverbal EF skills and language performance in typically developing English-speaking children (ages 8–11). They assessed inhibition, working memory (updating), and task shifting. Their findings showed that nonverbal working memory (updating) was associated with receptive language, while inhibition predicted children's syntactic abilities.

Marini et al. (2020) examined executive functions (updating and inhibitory control) alongside linguistic (articulatory and phonological discrimination skills, lexical production/comprehension, grammatical production/comprehension) and narrative abilities (discourse organisation and lexical informativeness) in Italian-speaking preschoolers with DLD and their TD peers. The DLD group showed weaker performance in executive function tasks and narrative skills, with moderate to strong positive correlations between the digit span recall and linguistic measures (articulation, phonological discrimination, and grammatical comprehension) as well as with narrative skills (lexical informativeness). Significant negative correlations were found between the inhibition task and linguistic measures such as phonological discrimination, grammatical comprehension, percentage complete sentences, as well as narrative skills such as lexical informativeness.

Everaert et al. (2023) reported significantly lower scores for the DLD group in all the non-verbal EF tasks used in the study (a visual selective attention task, a visuospatial short-term and working memory task, and a task gauging broad EF abilities), as well as in the language tests (vocabulary and morphosyntax). Children with DLD were outperformed by the TD group on all nonverbal EF tasks. These tasks were significantly correlated to morphosyntax in both TD children and children with DLD, but they were correlated to vocabulary only in the TD group.

A recent meta-analysis study (Scionti et al. 2023) aimed to explore the relationship between EFs and a multi-componential aspect of narrative competence (oral, written, micro and macrostructure levels), over development. They investigated how different EF skills (inhibition, working memory, flexibility, planning) relate to various aspects of narrative competence. A total of 30 studies with 285 effect sizes were analysed. There was a weak correlation between EFs and narrative competence measures, which decreased with age. The association between EFs and narrative skills were stronger in children with atypical development. In typical development, this relationship tends to weaken over development, with those cognitive and narrative abilities becoming more independent after the age of seven.

1.4 Aim of the study and research questions

The present research aims to verify whether children's ability to comprehend syntactically costly sentences can predict their performance in comprehending, producing, and recalling narratives. It also explores possible correlations between linguistic and narrative abilities and inhibitory control skills.

Assessing children's ability to comprehend costly structures contributes to the screening of DLD (Novogrodsky & Friedmann, 2009). However, it is unclear whether such an assessment

can predict children's performance in comprehending and recalling narratives. It is also unclear the extent to which the comprehension of costly structures and narrative abilities are related to inhibitory control skills. It has been argued that the relation between DLD and narrative skills is mediated by sustained attention (Blom & Boerma, 2016), which involves resistance to interference. It is our contention that the comprehension of costly sentences in a decision task crucially depends on focused attention by children as well.

A systematic analysis showed that oral narrative interventions may improve the narrative abilities of children with language impairment (Favot et al., 2020). Nevertheless, the possible role of children's linguistic ability at the sentence level on their narrative skills has not been explored so far. In the present study, the syntactic abilities of Brazilian Portuguese-speaking school children were assessed using a battery of tests (MABILIN) that focused on the comprehension of passive sentences, relative clauses and WH-questions in a picture-identification task. Possible correlations between these linguistic measures, narrative skills, and children's scores in inhibitory control tasks are explored. This opens up the possibility of sentence-level intervention procedures contributing to the development of discourse-level abilities. Our research questions are:

(1) Does the ability to comprehend linguistic skills/costly structures correlate with narrative skills in children at risk of DLD?
(2) Are there correlations between linguistic measures and measures of narrative macrostructure?
(3) Are there correlations between linguistic and inhibitory control measures?
(4) Are there correlations between narrative macrostructure and inhibitory control measures?

2 Methods

2.1 Participants

The data were obtained from a sample of 205 Brazilian Portuguese (BP) public school children in Rio de Janeiro, to whom the linguistic assessment instrument – MABILIN – was adminstered. It provided the means of distinguishing children at risk of DLD from those typically developing. Twelve children were identified as at risk of DLD (3 girls, 7;2–9;5; mean age: 8;3). Another 12 children of the same age range without difficulty in MABILIN were randomly selected from the same sample, constituting the control group of children with TD (4 girls, 7;8–9;4; mean age: 8;4). The 24 participating children were further assessed for their narrative skills, using MAIN (Gagarina et al., 2019).

2.2 Materials

2.2.1 MABILIN

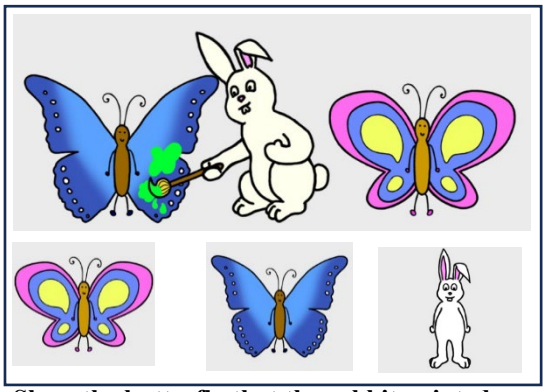
The syntactic module of MABILIN is an instrument, originally conceived in BP, standardised with almost 300 children (Correa, 2012), which has been used in several studies since then (Augusto & Correa, 2023; Correa, 2020; Correa & Augusto, 2021; Correa, Augusto & Bagetti, 2013; Rodrigues et al., 2024; Vicente, 2024). This battery was also adapted to Rioplatense

Spanish (Dotti et al, 2018). It focuses on the comprehension of costly sentences employing a picture identification task. It consists of three blocks. The first block presents active and passive sentences; the second block, right-branching relative clauses, Who-questions and Which-questions; and the third block, centre-embedded relative clauses with intransitive and transitive verbs in the main clause. A pre-test guarantees that the task is understood. The active sentences in block 1 constitute the baseline. The costly sentences, as defined in section 1, are presented in low and high-demand conditions, respectively: irreversible passives (in which a [- animate] subject makes it impossible for the agent role to be applied to it) (5); reversible passives (with reversible thematic roles) (6); subject and object right-branching relative clauses (7-8); subject and object WH-questions (who-questions (9-10); which-questions (11-12)); subject and object centre-embedded relative clauses with intransitive (13-14) and transitive verbs (15-16); subject and object centre-embedded relative clauses, with an intransitive main clause verb (13-14), and with a transitive main clause verb (15-16). There are a total of 13 conditions, with each condition having eight trials.

(4) *A maça foi comida pela formiga*.
'The apple was eaten by the ant'.
(5) *O elefante foi lavado pelo macaco*.
'The elephant was washed by the monkey'.
(6) *Mostra a tartaruga que limpou o macaco*.
'Show the turtle that cleaned the monkey'.
(7) *Mostra a borboleta que o coelho pintou*.
'Show the butterfly that the rabbit painted'.
(8) *Quem segurou o leão*?
'Who held the lion'?
(9) *Quem o porco chamou*?
'Who called the pig'?
(10) *Que urso puxou o leão*?
'Which bear pulled the lion'?
(11) *Que borboleta a abelha molhou*?
'Which butterfly did the bee wet'?
(12) *A tartaruga que molhou a zebra chorou*.
'The turtle that wet the zebra cried'.
(13) *O elefante que o tigre lavou dormiu*.
'The elephant that the tiger washed fell asleep'.
(14) *O porco que chamou o leão cortou o pão*.
'The pig that called the lion cut the bread'.
(15) *O coelho que o cachorro pegou derrubou a cerca*.
'The rabbit that the dog caught knocked down the fence'.

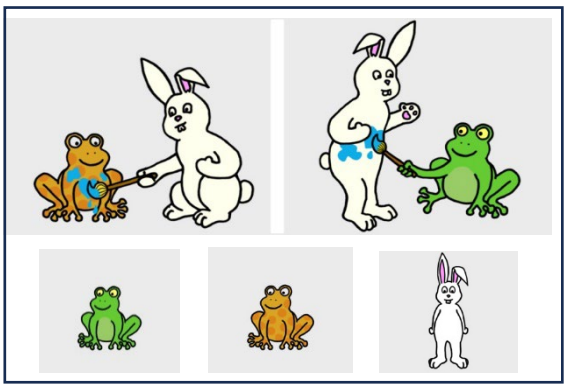
The visual material provides a background context with two tokens of the same type for the critical referent, enabling the felicitous use and interpretation of restrictive RCs and WH-questions, as argued in Correa (1995). The background image type (simple and complex) is counterbalanced for an overall assessment of the effect of the syntactic variables, and the effect

of the image complexity can be tested separately (Correa et al., 2022; Rodrigues et al., 2024). As illustrated in Figure 1, in the simple image condition, only one of the two characters of the same type is the actor or the patient in the background event. In the complex image condition (Figure 2), the two characters of the same type are involved in different events with reversed roles. Children are requested to point to one of the three images at the bottom of the screen, and the type of error can be analysed.[4]



Show the butterfly that the rabbit painted.

Figure 1. Right-branching object relative clause in the simple image condition.



Show the frog that the rabbit painted

Figure 2. Right-branching object relative clause in the complex image condition.

2.2.2 MAIN

The Brazilian Portuguese version of MAIN (Cunha de Aguiar & Martins dos Reis, 2020, Gagarina et al., 2019) was used in the present study. MAIN comprises four parallel picture-based stories (*Cat*, *Dog*, *Baby Birds*, *Baby Goats*), each containing six pictures. Three modes of elicitation are possible: telling, retelling, and telling after listening to a model story. In this assessment, two stories were used for the two elicitation procedures – telling and retelling: *Dog* and *Baby Goats*.[5]

2.2.3 Flanker and Go/no-go tasks

This study used versions of two Inhibitory Control tasks: the Flanker and Go/no-go tests, adapted to children and developed in the *Psytoolkit* experiment library (Rodrigues et al., 2024). Inhibitory Control tasks evaluate participants' ability to inhibit conflicting but irrelevant information. The Flanker test, originally described by Eriksen & Eriksen (1974), is intended to assess resistance to interference, whereas the Go/no-go test, developed by neuropsychologist Alexander Luria in the 1940–50s, evaluates response inhibition. To maintain engagement, both

[4] The incorrect choices are categorised as type 1 and type 2 errors, to be subsequently analysed. For instance, given a sentence such as the one in Figure 1, the type 1 error corresponds to choice of the non-target butterfly. In Figure 2, it corresponds to the non-target frog, suggesting that the information in the RC was not processed. Error type 2 is the choice of the rabbit in both figures, suggesting that children retrieved the most recent nominal element heard. The pattern of the errors can be informative to the kind of difficulty children face.

[5] The complete MAIN, including the pictures for the different stories, is available (after registration) from https://main.leibniz-zas.de/en/main-materials/main-materials/.

tasks were structured as a game where participants had to complete a specific objective. Each task included a training phase that provided feedback on response speed and accuracy. During the experimental phase, no feedback was given to the participants.

The Flanker task was designed as "the game of the fish family" (Rodrigues et al., 2024). There are three different situations: a neutral one, in which the leader fish (the fish in the middle) swims alone and the rest of the family are replaced by sea plants in the same position; a congruent one, in which all the family members swim in the same direction; an incongruent situation, the more challenging for the children, where the leader fish swims in the opposite direction of the rest of the group. Incongruent trials made up 25% of the total trials. The task consists of pressing, as quickly as possible, one of two keys on a computer keyboard (i.e., left vs. right) to indicate the direction of the middle fish. Figure 3 illustrates the three image possibilities: neutral, congruent, and incongruent.

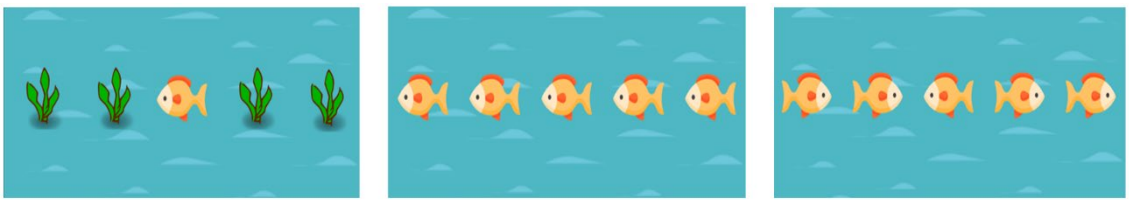


Figure 3. Images in Flanker for neutral, congruent, and incongruent conditions.

The Go/no-go task was also a simulation of a computer game. Participants are instructed to press a button when they saw a "go" signal and not respond when they saw a "no-go" signal. In this version, some toys are displayed: a small car, a teddy bear, a beach bucket, and a ball. All toys except the ball were "go" signals. Figure 4 shows the commands given to the children.[6]

Figure 4. Original instructions for the Go/no-go task.

2.3 Procedure

All tests took place in a quiet room of a public school in Rio de Janeiro over two or three sessions. MABILIN was the first instrument applied. If children were not tired, the inhibitory control (IC) tasks were also applied. A notebook with the programs installed was used to

[6] The instructions are the following: The game is as follows: Pedro is a very messy boy, and his mother always asks him to put away the toys he is not going to use. Among his favourite toys are a toy car, a teddy bear, a small bucket, and a colourful ball. Today, Pedro decided to play with his ball. You must help him put away the other toys. To do this, you should press the space bar on your computer keyboard. But remember: Pedro wants to play with the ball. So, when the ball appears, you must not press the space bar.

administer both the linguistic and the IC tasks. A subsequent session was dedicated to the MAIN protocol, for which a tablet was used.

2.3.1 MABILIN

Children were invited to play a game on the computer screen. They were told they would see some pictures and had to point to the picture that matched what the experimenter said. No children failed the pre-test. The three blocks were presented sequentially, with the test sentences randomized within each block. The whole session took about 20 minutes.

2.3.2 MAIN

A tablet was used to present the PowerPoint sequence and images for MAIN. At first, a character who was "super excited to hear you/us telling a story" was introduced. For the story telling task, the child chose an envelope out of three to see the pictures of the story. The whole sequence of six pictures was displayed. Then, the experimenter asked if the child was ready to tell the story. The two first pictures were shown, and the child was encouraged to start telling "the best story he/she can tell". When s/he finished discussing the first two pictures, the next slide was shown, and pictures 3 and 4 joined the first two. The process was repeated for pictures 5 and 6. When the child finished, s/he was praised for the story told, and the 10 comprehension questions were asked. For the retelling task, the experimenter then invited the child to choose a new envelope with a new story. At this time, the child was told that the experimenter would first tell a story that the child must then retell. In the end, the 10 narrative comprehension questions were asked. The order of the presentation of the telling and retelling tasks was counterbalanced across participants. The whole session took about 25 minutes. The session was recorded for transcription and analysis.

2.3.3 Inhibitory Control tasks: Flanker and Go-no go

For the inhibitory tasks, the child sat in front of the laptop and was invited to play a computer game. The instruction given to the child was that s/he should press certain keys on the keyboard according to each game. For the Flanker task, the S and L keys should be pressed if the leader fish was swimming to the left or the right, respectively. In Go/no-go, the space bar was used to store the toys, except for the ball, when no key should be pressed. Both tasks took about 10 minutes.

2.4 Coding and Analyses

The statistical analyses were carried out using the JASP 0.18.1.0 statistical software.

2.4.1 Linguistic skills: MABILIN

The test uses a Java program that provides the number of correct responses and errors. The number of correct responses obtained in each condition is automatically compared with the mean correct responses obtained with typically developing children in the same age group in the standardisation of the test (Correa, 2012). Children whose responses are 2 SD below the

mean in at least two conditions out of the total 13 conditions tested are identified as at risk of DLD, and the degree of difficulty (moderate, expressive, and severe) is characterised based on the number of conditions where the child's performance is 2 SD below the mean. The total number of correct answers per condition and the total number of correct answers in the test are also provided. As previously mentioned, the 12 children composing the group at risk of DLD were identified by MABILIN as showing a moderate risk. Twelve other children, identified as not showing difficulties, were paired by age and sex with the DLD group, forming the TD group.

2.4.2 Narrative skills: MAIN

The MAIN protocol scores macrostructure and microstructure elements in the narratives (Gagarina et al., 2019). For *Story Structure* and *Story Complexity*, single elements, such as internal states (IS), Goals (G), Attempts (A), and Outcomes (O), are examined. These elements form episodes. There are three episodes in each story. For the *Story structure* score a maximum of 17 points can be awarded, for the production of a setting (time + place, max=2), and IS as an initiating event, goal, attempt, outcome, and IS as the reaction in each of the three episodes (max=15 points, 3x5 components). *Story complexity* was measured by the ability to combine the elements G, A, and O, forming complete episodes, i.e., GAO-sequences (max=3 for the total story). The number of *Internal State Terms* (IS) was also counted. *Story Comprehension* is assessed with 10 questions (Max = 10). Three questions pertain to the understanding of the three goals, six questions target the characters' internal states, and one question assesses the understanding of the entire plotline.

The MAIN protocol also offers some guidance on measuring the narrative microstructure. Regarding narrative length and lexis, we considered the total number of types and tokens and the *type/token ratio*. We also present the 12 most frequent words used in each group for either telling or retelling, for which we used the ANTCONC program (version 4.2.4) (Anthony, 2023). Regarding syntax complexity, the distribution of *types of sentences* – simple main clauses, coordinating and subordinating constructions for each story produced - was also quantified. That is, considering all the clauses produced, the percentage of each type of sentence was calculated: simple main clauses (16), coordinated clauses (17), and subordinate clauses (18).

(16) *Um dia, um cachorro bem alegre viu um rato*.
"One day a very happy dog saw a mouse".

(17) *... deixou a sacola, uma sacolinha no chão* ***e foi vê o balão***.
"…left the bag, a small bag on the floor **and went to see the balloon**".

(18) *ele não vai se importar* ***se eu comer algumas salsichinhas***.
"he won't mind **if I eat some little sausages**".

The performance of both groups in all these measures was submitted to non-parametric tests. Comparisons within the group, contrasting the performances in the telling and retelling modes, were statistically analysed using the Wilcoxon non-parametric test. Comparisons between groups were statistically analysed using the Mann-Whitney non-parametric test.

2.4.3 Inhibitory Control tasks

The Inhibitory Control tasks (IC) tasks inform the child's answer and response time for each trial. For the Flanker task, we considered the total number of correct responses and the general response time, and also the number of correct responses and response time for the incongruent condition, which is the most challenging for the children. For the Go-no go task, we considered total accuracy, no-go responses, and reaction time. The performance of both groups in all these measures was compared using Mann-Whitney statistical analyses.

2.4.4 Correlations

Additionally, correlation analyses were also performed. Since the data was not normally distributed, we ran the Spearman correlation test. We considered MABILIN's total correct responses and the MAIN measures for macrostructure for both telling and retelling modes of elicitation. We also correlated these measures with the Flanker and Go-no-go tasks for correct responses and response time.

3 Results

3.1 MABILIN

The total score of correct responses measured linguistic abilities for the present purposes, with a maximum score of 104. Table 1 presents the descriptive statistics.

Table 1. Correct responses in MABILIN per group.

	DLD	**TD**
Mean	79.6	93.1
SD	5.9	5.4
Median	81	92
Min	69	86
Max	87	104

A significant difference between the groups was obtained in the independent sample Mann-Whitney test ($U = 2$, critical value of $U = 37$, $z = -4.01$, $p < .001$), with the group at risk of DLD showing more difficulty.

3.2 MAIN

As far as the macrostructure is concerned, the comparison of both groups in *story structure* (max score=17) revealed a lower performance of the group at risk of DLD compared to the TD, for both telling and retelling modes (telling: $Mdn_{DLD} = 7$; $Mdn_{TD} = 9$; retelling: $Mdn_{DLD} = 9$; $Mdn_{TD} = 12$). Nevertheless, both groups showed better performance in the retelling mode. Mann-Whitney tests showed a statistically significant difference between groups in both elicitation procedures (telling: $U = 27.5$, critical value of $U = 37$, $z = -2.54$, $p = .01$; retelling: $U = 22.5$, critical value of $U = 37$, $z = -2.82$, $p = .01$). Wilcoxon tests showed that the effect of elicitation procedure was significant only for the TD group (TD: $z = -2.04$, $p = .04$; DLD: $z =$

-1.78, p = .08), suggesting that the group at risk of DLD did not benefit from the model story presented by the examiner in the retelling mode, while the TD group did, as shown in Table 2.

Table 2. Descriptive statistics for story structure in MAIN.

	DLD		TD	
	Telling	Retelling	Telling	Retelling
Mean	6.9	8.6	9.4	11.6
SD	1.8	2.6	2.0	1.9
Median	7	9	9	12
Min	4	5	7	7
Max	10	14	13	14

Descriptive statistics for *story complexity*, that is, the production of GAO-sequences are presented in Table 3. The maximum score is 3, as there are three episodes in each story. Very few children produced GAO-sequences (telling: $Mdn_{DLD} = 0$; $Mdn_{TD} = 1$; retelling: $Mdn_{DLD} = 0$; $Mdn_{TD} = 2$). There was a statistically significant difference between the groups in the retelling mode (U = 33.5; critical value of U = 37, z = -2.19, p = .02), but not for the telling mode (U = 44, critical value of U = 37, z = -1.58, p = .11).

Table 3. Descriptive statistics for the production of GAO-sequences.

	DLD		TD	
	Telling	Retelling	Telling	Retelling
Mean	0.3	0.6	0.8	1.6
SD	0.6	1.0	0.8	1.0
Median	0	0	1	2
Min	0	0	0	0
Max	2	3	3	3

Table 4 shows descriptive statistics for the production of internal state terms.

Table 4. Descriptive statistics for the production of internal state terms.

	DLD		TD	
	Telling	Retelling	Telling	Retelling
Mean	1.9	2.5	2.5	4.5
SD	1.6	1.4	0.9	1.6
Median	2	2.5	3	4.5
Min	0	0	1	2
Max	6	5	4	8

A similar picture emerged regarding the use of internal state terms (IS (telling: $Mdn_{DLD} = 2$; $Mdn_{TD} = 3$; retelling: $Mdn_{DLD} = 2.5$; $Mdn_{TD} = 4.5$). A statistically significant difference between the groups was also obtained for the retelling mode (U = 24.5, critical value of U = 37, z = -2.71, p =.01). Once again, TD group benefited from the model story presented by the examiner in the retelling mode, while the group at risk of DLD did not.

Finally, we analyzed the children's story comprehension (Table 5). There were relatively high scores for both groups in both elicitation modes (telling: DLD_{mean} = 8.1; TD_{mean} = 9.2; retelling: DLD_{mean} = 8.3; TD_{mean} = 9.4). No statistical differences were obtained ($\chi^2(3) = 4.68$, $p < .19$).

Table 5. Descriptive statistics for comprehension assessment in MAIN.

	DLD		**TD**	
	Telling	Retelling	Telling	Retelling
Mean	8.1	8.3	9.2	9.4
SD	1.8	2.0	0.8	1.1
Median	8	9	9,5	10
Min	3	4	8	6
Max	10	10	10	10

Table 6 presents descriptive statistics for the Type-Token Ratio (TTR), one of the investigated microstructure measures. No statistically significant differences were found between groups, neither for telling (U = 283, critical value of U = 288, z = 0.09, p = .92) nor for retelling (U = 280.5, critical value of U = 288, z = 0.14, p = .88).

Table 6. Descriptive statistics for TTR in MAIN both for Telling and Retelling conditions across DLD and TD group.

	DLD		**TD**	
	Telling	Retelling	Telling	Retelling
Mean	0.5	0.5	0.5	0.5
SD	0.1	0.1	0.1	0.1
Median	0.5	0.4	0.5	0.5
Min	0.4	0.3	0.4	0.3
Max	0.6	0.6	0.7	0.6

In Table 7, we present the 12 most frequent words for each group in the two elicitation modes. Articles, prepositions, and pronouns were very frequent in both groups, but it is noticeable that: i) there were more lexical words within the twelve most frequent words in the group at risk of DLD; ii) there were more occurrences of the discourse marker *aí* 'then' in the group at risk for DLD; iii) the verb *ver* 'see' (used in the model provided by the examiner and which introduces embedded clauses) did not appear among the twelve most frequent words in the group at risk of DLD; iv) the element *que* 'that', which also introduces embedded clauses, only appeared in the 9th position in the group at risk of DLD in the retelling mode, while it occupied the 4th position in the TD group in both elicitation modes.

Table 7. The twelve most frequent words in the narratives per group.

	telling-DLD		**retelling-DLD**		**telling-TD**		**retelling-TD**	
	Types	Freq.	Types	Freq.	Types	Freq.	Types	Freq.
1	*e* 'and'	12	*o* 'the$_M$'	12	*o* 'the$_M$'	11	*o* 'the$_M$'	12
2	*a* 'the$_F$'	11	*e* 'and'	11	*e* 'and'	11	*e* 'and'	12
3	*o* 'the$_M$'	10	*a* 'the$_F$'	11	*a* 'the$_F$'	11	*ele* 'he'	11
4	*ele* 'he'	10	*ele* 'he'	11	***que* 'that'**	11	***que* 'that'**	11
5	*na* 'in'	8	*aí* 'then'	9	*foi* 'went'	9	*a* 'the$_F$'	10
6	*aí* 'then'	7	*na* 'in'	9	*na* 'in'	9	*viu* 'saw'	10
7	*uma* 'a$_F$'	7	*viu* 'saw'	8	*viu* 'saw'	9	*na* 'in'	10
8	*um* 'a$_M$'	7	*foi* 'was'	7	*ele* 'he'	8	*uma* 'a$_F$'	10
9	*foi* 'was'	7	***que* 'that'**	7	*um* 'a$_M$'	8	*estava* 'was'	9
10	*cachorro* 'dog'	6	*dele* 'his'	7	*árvore* 'tree'	8	*foi* 'was'	9
11	*raposa* 'fox'	6	*tava* 'was'	7	*uma* 'a$_F$'	8	*com* 'with'	9
12	*rato* 'mouse'	6	*cachorro* 'dog'	6	*com* 'with'	8	*da* 'of'	9

The distribution of different types of clauses (in percentages out of all clauses in each narrative provided) is shown in Table 8. Simple and coordinated main clauses predominated in both groups. Mann-Whitney tests revealed no statistically significant differences between the groups for each type of clause used. Wilcoxon tests showed no differences between the elicitation modes either.[7]

Table 8. Descriptive statistics for sentence types within each group.

	Telling						**Retelling**					
	Simple main clauses		Coordinated clauses		Subordinate clauses		Simple main clauses		Coordinated clauses		Subordinate clauses	
	DLD	TD	DLD	TD	DLD	TD	DLD	TD	DLD	TD	DLD	TD
Mean	54.9	46.4	23.5	30.4	21.6	23.3	51.5	42.5	30.9	28.2	17.6	29.3
SD	16.8	17.3	12.5	14.3	14.4	17	12.6	13.4	17.8	16.6	15	12.8
Median	52.8	47.8	25.5	30.4	17.2	21.8	53.6	41.4	27	30.2	21.8	28
Min	27.3	9	0	0	0	0	25	27.2	12.5	0	0	15
Max	84.6	57.1	38.8	45.5	45.4	62.5	71.4	69.2	42.8	54.5	38.8	45.4

3.3 Inhibitory Control tasks

3.3.1 Flanker

The means for the number of correct responses (CR) (max = 64) and the response time (RT) of the participants in all the three conditions (congruent, incongruent, and neutral) combined, as well as for the critical condition (incongruent) (max =16) are shown in Table 9. A Mann-Whitney test showed that there was no statistically significant difference between the groups for correct responses ($Mdn_{DLD} = 57.5$; $Mdn_{TD} = 62$). Regarding response time, the group at risk of DLD reacted slower ($t(22) = 2.13$, $p = .04$). Regarding the critical incongruent condition, a similar picture emerged: there were no statistically significant differences between groups for

[7] Mann-Whitney results: Simple main clauses (telling: $U = 218$, $z = 0.04$, $p = .96$; retelling: $U = 201.5$, $z = -0.70$, $p = .48$), coordinated clauses (telling: $U = 173.5$, $z = -1.36$, $p = .17$; retelling: $U = 219$, $z = -0.01$, $p = .99$), subordinate clauses (telling: $U = 206.5$, $z = 0.07$, $p = .93$; retelling: $U = 142$, $z = 1.57$, $p = .11$). Wilcoxon: Simple main clauses (DLD: $z = -0.39$, $p = .69$; TD: $z = -0.04$, $p = .65$), coordinated clauses (DLD: $z = 0.15$, $p = .87$; TD: $z = -0.26$, $p = .78$), subordinate clauses (DLD: $z = -0.53$, $p = .59$; TD: $z = -0.54$, $p = .58$).

correct responses (Mdn_{DLD} = 13; Mdn_{TD} = 15), but there was a statistically significant difference for response time ($t(22) = 3.49$, p =.002).

Table 9. Descriptive statistics for Flanker.

	Correct Responses (CR)		**Response time (RT)**		**Incongruent CR**		**Incongruent RT**	
	DLD	TD	DLD	TD	DLD	TD	DLD	TD
Mean	47.8	58.5	959.9	795.2	10.4	14.2	1068.5	801.4
SD	18.4	7.9	228.4	139.3	5.6	2.3	228.5	132.9
Median	57.5	62	978.2	777.4	13	15	1121.9	809.5
Min	16	35	613.9	585.7	1	9	687.4	592.4
Max	62	64	1384.4	1032.6	16	16	1271.0	973.8

3.3.2 Go/no go

The means for the number of correct responses (max = 60) and the reaction time of the participants in both groups for the two conditions (go and no-go) combined, as well as for the critical condition (no-go) (max =15), are shown in Table 10.

Table 10. Descriptive statistics for Go/no-go.

	Correct Responses (CR)		**Reaction time (RT)**		**No-go CR**		**No-go RT**	
	DLD	TD	DLD	TD	DLD	TD	DLD	TD
Mean	56.2	57	782.2	767.2	12.9	12.6	1190	1182.6
SD	4.32	3.4	85.9	63.5	2.4	2.3	124.3	117.7
Median	57.5	58	771.4	763.9	13.5	13.5	1216.8	1229.8
Min	45	50	666.8	631.2	7	8	922.3	960.4
Max	60	60	995.1	879.0	15	15	1300	1300

As observed in Table 10, the means were very close between groups. There were no statistically significant differences between the groups, either for correct responses (Mdn_{DLD} = 57.5; Mdn_{TD} = 58, U = 64.5, critical value of U = 37, z = -0.40, p = .68), or for reaction time ($t(22) = 0.49$, p = .63). Regarding the critical incongruent condition (the no-go condition), a similar picture emerged with no statistical differences between the groups neither for correct responses (U = 66, critical value of U = 37, z = 0.32, p = .75), nor for reaction time ($t(22) = 0.78$, p = .44).

3.4 Correlations

We conducted Spearman correlation analyses, considering the total correct responses in MABILIN, the macrostructures measures in MAIN, and for Flanker and Go-no go tasks, the correct responses and the general response time, and for the most demanding conditions: the incongruent one in Flanker and the no-go in Go-no go. Table 11 shows strong and moderate correlations obtained between MABILIN and the two main measures of MAIN, story structure and story comprehension in the telling and retelling elicitation modes. No correlation was found with GAO sequences. There was a correlation between MABILIN and Internal State (IS) terms in the retelling mode only. These results indicate that performance in MABILIN is mostly correlated with performance in MAIN.

Table 11. Correlations between MABILIN and MAIN.

		Spearman's *rho*	*p*
MABILIN	Story Structure (telling)	0.448	.028*
MABILIN	Story Structure (retelling)	0.735	<.001***
MABILIN	Story Comprehension (telling)	0.448	.03*
MABILIN	Story Comprehension (retelling)	0.464	.02*
MABILIN	GAO sequences (telling)	0.281	.18
MABILIN	GAO sequences (retelling)	0.387	.06
MABILIN	IS terms (telling)	0.240	.26
MABILIN	IS terms (retelling)	0.669	<.001***

Note. * $p < .05$, *** $p < .001$.

Regarding MABILIN and IC tasks, there were correlations between MABILIN and some measures in the Flanker task, but none with the Go-no-go task, as Table 12 shows. A positive correlation was found between MABILIN and the correct responses in the incongruent condition of the Flanker task, and there was also a negative correlation between MABILIN and the response time (in all three conditions) in the Flanker task. This suggests that the ability to resist interference contributes to the performance on the linguistic decision task (pointing to a particular picture).

Table 12. Correlations between MABILIN and Flanker and Go-no go tasks.

		Spearman's *rho*	*p*
MABILIN	Go- no go Correct responses	0.241	.257
MABILIN	No go – Correct responses	0.088	.683
MABILIN	Go-no go Response time	0.130	.544
MABILIN	Flanker Correct responses	0.571	.004**
MABILIN	Flanker Inc – Correct responses	0.512	.011*
MABILIN	Flanker Response time	-0.422	.04*
MABILIN	Flanker Inc – Response time	-0.199	.351

Note. * $p < .05$, ** $p < .01$.

As far as MAIN measures and ICs tasks are considered, Table 13 shows that no significant correlations were obtained.

Table 13. Correlations between MAIN measures and Flanker and Go-no go tasks.

		Spearman's *rho*	*p*
Story Structure (telling)	Go- no go Correct responses	0.044	.838
Story Structure (telling)	No go – Correct responses	-0.137	.524
Story Structure (telling)	Go-no go Response time	-0.238	.263
Story Structure (telling)	Flanker Correct responses	0.384	.064
Story Structure (telling)	Flanker Inc – Correct Responses	0141	.511
Story Structure (telling)	Flanker Response time	-0.221	.299

Story Structure (telling)	Flanker Inc – Response time	-0.296	.160
Story Structure (retelling)	Go- no go Correct responses	0.227	.287
Story Structure (retelling)	No go – Correct responses	0.246	.247
Story Structure (retelling)	Go-no go Response time	0.373	.073
Story Structure (retelling)	Flanker Correct responses	0.155	.468
Story Structure (retelling)	Flanker Inc – Correct Responses	0.230	.279
Story Structure (retelling)	Flanker Response time	-0.240	.258
Story Structure (retelling)	Flanker Inc – Response time	-0.372	.073
Story Comprehension (telling)	Go- no go Correct responses	0.276	.192
Story Comprehension (telling)	No go – Correct responses	0.184	.388
Story Comprehension (telling)	Go-no go Response time	0.167	.436
Story Comprehension (telling)	Flanker Correct responses	0.374	.072
Story Comprehension (telling)	Flanker Inc – Correct Responses	0.367	.078
Story Comprehension (telling)	Flanker Response time	-0.205	.336
Story Comprehension (telling)	Flanker Inc – Response time	-0.046	.831
Story Comprehension (retelling)	Go- no go Correct responses	0.127	.555
Story Comprehension (retelling)	No go – Correct responses	0.213	.317
Story Comprehension (retelling)	Go-no go Response time	0.148	.491
Story Comprehension (retelling)	Flanker Correct responses	0.147	.492
Story Comprehension (retelling)	Flanker Inc – Correct Responses	0.310	.141
Story Comprehension (retelling)	Flanker Response time	-0.323	.123
Story Comprehension (retelling)	Flanker Inc – Response time	-0.225	.290
GAO sequences (telling)	Go- no go Correct responses	0.081	.708
GAO sequences (telling)	No go – Correct responses	-0.022	.917
GAO sequences (telling)	Go-no go Response time	0.057	.792
GAO sequences (telling)	Flanker Correct responses	0.139	.516
GAO sequences (telling)	Flanker Inc – Correct Responses	0.016	.939
GAO sequences (telling)	Flanker Response time	-0.059	.785
GAO sequences (telling)	Flanker Inc – Response time	0.064	.768
GAO sequences (retelling)	Go- no go Correct responses	-0.120	.577
GAO sequences (retelling)	No go – Correct responses	-0.058	.788
GAO sequences (retelling)	Go-no go Response time	0.309	.142
GAO sequences (retelling)	Flanker Correct responses	-0.177	.408
GAO sequences (retelling)	Flanker Inc – Correct Responses	0.041	.851
GAO sequences (retelling)	Flanker Response time	-0.036	.868
GAO sequences (retelling)	Flanker Inc – Response time	-0.330	.115
IS terms (telling)	Go- no go Correct responses	-0.130	.546
IS terms (telling)	No go – Correct responses	-0.268	.205
IS terms (telling)	Go-no go Response time	-0.129	.547
IS terms (telling)	Flanker Correct responses	0.121	.573
IS terms (telling)	Flanker Inc – Correct Responses	-0.123	.566
IS terms (telling)	Flanker Response time	-0.193	.365
IS terms (telling)	Flanker Inc – Response time	-0.294	.163
IS terms (retelling)	Go- no go Correct responses	0.136	.527
IS terms (retelling)	No go – Correct responses	0.051	.813
IS terms (retelling)	Go-no go Response time	0.231	.278
IS terms (retelling)	Flanker Correct responses	0.271	.200

IS terms (retelling)	Flanker Inc – Correct Responses	0.131	.540
IS terms (retelling)	Flanker Response time	-0.234	.272
IS terms (retelling)	Flanker Inc – Response time	-0.313	.136

4 Discussion and conclusion

This study is an initial evaluation of possible relations between children´s performance in MABILIN, their narrative skills assessed by MAIN, and executive functions, particularly inhibitory control, assessed by a Flanker task and a Go-no go task. To our knowledge, this is the first study using MAIN in Brazilian Portuguese to compare TD children and children at risk of DLD. Children were grouped as TD or at risk of DLD based on their results in MABILIN, an instrument largely used in BP to identify children with syntactic impairment. This study addressed four research questions. Here, the results are described and discussed in turn.

(1) Does the ability to comprehend linguistic skills/costly structures correlate with narrative skills in children at risk of DLD?

The results for narrative macrostructure showed a difference between children at risk of DLD and TD for *story structure* in both elicitation modes (telling, retelling), with the TD group showing better performance. This aligns with previous studies in different languages (Blom & Boerma, 2016; Kraljević et al., 2020; Pham et al., 2019; Sheng et al., 2020). An effect of the elicitation procedure was also found, but only in the TD group, which performed better in the retelling mode. Previous results are somewhat mixed, but some studies found significantly higher scores in retelling (Roch et al., 2016; Otwinowska et al., 2020; Kraljević et al., 2020). In this study, TD group also performed better in the retelling mode regarding complete episodes (GAO-sequences) and internal state terms. Therefore, it seems that the group at risk of DLD did not benefit from the model presented by the experimenter.

As far as *story comprehension* is concerned, no differences were obtained between the groups. This is in accordance with the findings by Blom and Boerma (2016), who reported a difference in story comprehension between the DLD and TD groups at age 5-6, but not at age 6-7, suggesting that this difference disappears with age. Notably, our participants were older than seven and had not received special care or treatment.

Regarding narrative microstructure, the groups did not differ in terms of type/token ratio and percentages of types of sentences used. However, the subordinating element *que* 'that', which introduces subordinate clauses, was not part of the twelve most frequent words in the group at risk of DLD in the telling mode, and occupied the 9th position in the retelling model. In the TD group, it was the 4th most used word in both elicitation modes.

(2) Are there correlations between linguistic measures and measures of narrative macrostructure?

The correlations obtained between MABILIN score and MAIN measures (*story structure* and *story comprehension* in both modes of elicitation, and *IC terms* in the retelling mode) suggest an association between the mastery of complex structures and narrative skills.

(3) Are there correlations between linguistic and inhibitory control measures?

Regarding executive functions, the correlations between MABILIN and Flanker align with previous results (Kaushanskaya et al., 2017; Marini et al., 2020; Everaert et al., 2023),

indicating that resistance to interference can be a relevant factor for dealing with this comprehension task. Moreover, the ability to inhibit distracting information and to focus on a given target can be associated with sustained attention (Cowley, 2018).

(4) Are there correlations between narrative macrostructure and inhibitory control measures?

No correlations were found between MAIN measures and the executive functions tasks. In any case, Scionti et al. (2023) state that links between EFs and narrative skills are weakened after the age of 7, which may explain the absence of significant results in these groups of 8-year-old children.

In a nutshell, our results suggest that the ability to handle costly structures in a decision task can be related to children's performance at the macrostructure level of narrative tasks. Concerning microstructure, for future investigations, it would be valuable to incorporate costly sentences into the narratives used as retelling models to verify the extent to which children would reproduce them.

In sum, this first evaluation of the narrative skills of BP-speaking children using MABILIN and MAIN suggests that interventions targeting complex structures in decision tasks can contribute to language-impaired children's development across different language performance modes.

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Adapting MAIN to European Portuguese

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This paper presents the adaptation and translation of the Multilingual Assessment Instrument for Narratives (MAIN) to European Portuguese, addressing the need for linguistically and culturally relevant assessment tools in Portuguese-speaking contexts. Following an overview of European Portuguese and its unique linguistic features, we examine key distinctions from Brazilian Portuguese, to which MAIN had previously been adapted. We outline the adaptation process, which involved translation and expert review to ensure the instrument reads naturally for European Portuguese speakers and resonates with familiar linguistic patterns. This adaptation is essential for accurately assessing language abilities in multilingual and heritage language settings, where linguistic diversity can impact children's comprehension and engagement. Finally, we discuss the implications of providing separate European and Brazilian Portuguese versions of MAIN, emphasizing the importance of tailored language assessments that respect the distinct identities and linguistic experiences of Portuguese-speaking children.

1 Introduction

Portuguese is a Romance language spoken on four continents – Africa, Asia, Europe, and South America. European Portuguese (EP) is to be distinguished from Brazilian Portuguese (BP) and other varieties such as Portuguese spoken in Angola, Cape Verde, Guinea-Bissau, Mozambique, São Tomé and Principe, East Timor, and Macau, which each represent their own language community due to their distant geographical location, surrounding contact languages and contemporary history. Portuguese is thus understood as a pluricentric language. However, it has two 'normative centres' – Brazil and Portugal (Endruschat & Schmidt-Radefeldt, 2006, p. 232). The Portuguese language spoken in African and Asian countries is more closely aligned

with European Portuguese than with Brazilian Portuguese. This is partly due to Brazil's earlier emancipation, accompanied by formal independence since 1822. Thus, the direct influence of European Portuguese was present in the former colonies for almost 150 years longer. But there are efforts of unification: In 2009, the orthographic reform, which was already drafted in 1990, was ratified (with modifications) in all Portuguese-speaking countries (apart from Angola) with the aim of standardizing spelling. Fiorin (2009) argues that this reform was politically motivated. It was an attempt to bind the Portuguese-speaking countries together and to strengthen their political, cultural and linguistic identity. (Among other things, because this is not possible in any other form, for example in the areas of migration and economy, due to the different supranational alliances to which the various countries belong). In this respect, the spelling reform as a convention is the only linguistic means of binding the countries. The linguistic autonomy of the countries is not called into question by this. This is because phonology, grammar and lexis are determined by the specific composition of the populations and therefore cannot be standardised. This is why we consider it so important to adapt MAIN to European Portuguese, as we will try to demonstrate in Sections 3 and 4 (where we compare the Brazilian version with our proposal), after a short description of the most important traits of European Portuguese (Section 2).

2 A short description of European Portuguese

The 10.1 million inhabitants of Portugal represent only a fraction of a total of over 280 million speakers with Portuguese as their first or second language. Within Portugal, although European Portuguese (EP) is the predominant variety, there are also speakers of other Portuguese varieties, largely due to immigration from countries where Portuguese is an official language. The linguistic landscape thus includes not only EP but also shows influences from other Portuguese-speaking communities, such as those from Brazil, Angola, and Cape Verde. This diversity highlights a complex dynamic in which speakers may adopt elements of EP when in public settings, although the degree of linguistic adaptation may vary. In linguistic terms, EP is largely homogeneous (Holtus, 1999, p. 45) – encompassing regional dialects and accents which differ from each other especially regarding phonology and lexic. A distinction is made between the dialects in the northern part of the country (*setentrionais* 'septentrional') and other dialects that are geographically located centrally around the Coimbra area and further south (*centro-meridionais* 'central meridional'). Different dialects also exist in the Azores and Madeira (*insulares* 'insular').

Portuguese is an inflectional language: nouns, verbs, adjectives, articles, and pronouns are inflected for declination, conjugation and comparison (Endruschat & Schmidt-Radefeldt, 2006, p. 104). Two peculiarities are particularly interesting. The first concerns the subjunctive future tense, which is not only used in conditional sentences (e.g., *Se for possível, venho amanhã* 'If it should be possible, I will come tomorrow'), but also after conjunctions that concern the future, such as *quando* (e.g., Q*uando eu chegar a casa tomo logo um duche* 'As soon as I get home, I will take a shower', and *como* (e.g., *Faz como quiseres* 'Do as you like'). It can also be used in relative clauses in which statements are made about the future (e.g., *Podemos ir para onde quisermos* 'We can go wherever we want').

The second is the personal/inflected infinitive. Herget and Proschwitz (2009) consider this phenomenon to be a paradox, at least for German native speakers, since according to the use of basic grammatical terms, a verb form is either in the infinitive or conjugated. They claim that both at the same time are not possible, neither in the Germanic languages nor in the other Romance languages (ibid.). Endruschat and Schmidt-Radefeldt (2006, p. 107) highlight that when using the inflected infinitive, regular verbs are conjugated in the same way as the future subjunctive, but irregular ones are not. The inflected infinitive is used to clarify syntactic connections and to emphasize the personal facet of the utterance when for example a subordinate clause with a conjunction is omitted, as in *É importante estudarmos para o exame* 'It is important for us to study for the exam' vs. *É importante estudar para o exame* 'It is important to study for the exam'.

Portuguese also uses grammatical gender extensively, with nouns and pronouns classified as either masculine or feminine. Adjectives and articles agree with the gender of the nouns they modify, adding an extra layer of grammatical inflection. For instance, *o livro* 'the book' (masculine) contrasts with *a casa* 'the house' (feminine), and this gender distinction affects the form of both definite (*o*, *a*) and indefinite (*um*, *uma*) articles. Pluralization also impacts article-noun agreement, as in *os livros* 'the books' and *as casas* 'the houses'.

In terms of sentence structure, Portuguese is generally an SVO language, although rearrangements of the clauses are common in cases of negation or interrogative pronouns. As a pro-drop language, Portuguese allows for one-word sentences that imply an unstated subject, as seen in *Chove* 'It is raining' and *Acabou* 'It is over' (Endruschat & Schmidt-Radefeldt, 2006, p. 112). Because Portuguese is a null-subject language, subjectless utterances such as *Canta* 'He sings' can also be considered grammatically complete sentences (ibid., p. 117).

3 Why translate MAIN to European Portuguese?

Firstly, and according to official statistics, more than 5 million Portuguese have emigrated in the last 60 years and are living in another country, most of them in European countries, such as Germany, France, and Spain (Gabinete do Secretário de Estado das Comunidades Portuguesas, 2021). The Portuguese-speaking children living in a host country may represent first generation emigrants (who have recently migrated), second generation emigrants (sons or daughters of people that have migrated) or third generation ones (grandsons or granddaughters of migrants). For the children in the second and third generation, the Portuguese language assumes the status of a heritage language (Melo-Pfeifer & Schmidt, 2023), with significant influences from the host country's language. These children often are educated in multicultural settings, growing up with several languages in contact (idem).

There are few existing studies on European Portuguese usage as a Heritage Language in European primary school children, and these focus on specific phenomena: Rinke, Flores and Barbosa (2018) analysed null objects, Flores and Barbosa (2014) concentrated on the acquisition of clitics and Santos and Flores (2013) on verb phrase ellipsis. A comprehensive study of narrative skills in primary school children, as elaborated by the Mulitlingual Assessment Instrument for Narratives (MAIN; Gagarina et al., 2019) (observing the linguistic

phenomena (use of macro- and microstructures, transfer etc.) in plurilingual children while story telling) does not yet exist.

However, and taking into account both the Brazilian diaspora living and being educated in Europe and the similarity between EP and BP, it is fundamental to capacitate teachers, researchers and pupils regarding the unique features of each language, in order to: a) value the cultural and linguistic background of the learners, b) raise awareness towards that differences and c) respect the linguistic and cultural diversity in educational contexts.

4 Adapting MAIN to European Portuguese and differences to Brazilian Portuguese

The adaptation of MAIN to European Portuguese was based on the revised version (Gagarina et al., 2019). To ensure linguistic and cultural relevance, this adaptation process closely followed the structure and principles established in previous adaptations, particularly the Brazilian Portuguese version. The German version of MAIN was also consulted to facilitate cross-linguistic consistency. The adaptation process involved several stages, including translation, and expert review. Native European Portuguese speakers with expertise in child language acquisition translated the instrument, with a focus on creating a text that reads naturally for European Portuguese speakers. Special attention was given to idiomatic expressions and formulations that would resonate with children and feel authentic to native speakers, ensuring the text feels like an EP original that recalls familiar linguistic patterns from childhood. A panel of linguists and educators then reviewed the adapted materials to assess their cultural and linguistic authenticity, addressing any ambiguities or inconsistencies through iterative feedback sessions. This methodology aligns with the approaches used in recent adaptations (see *ZAS Papers in Linguistics*, Vols. 64 and 65).

Given the unique linguistic characteristics of European and Brazilian Portuguese, having separate versions of MAIN is essential for ensuring accurate and meaningful assessments. Although it may appear redundant to create two Portuguese versions, each variety exhibits distinctive phonological, syntactic, and lexical traits that impact children's comprehension and response to language tasks. This distinction is particularly important in Portugal, where a significant Brazilian immigrant population contributes to the linguistic diversity of the Portuguese-speaking community. According to the SEF – Serviço de Estrangeiros e Fronteiras (now renamed to AIMA – Portuguese Agency for Integration Migration and Asylum), over 230,000 Brazilian citizens reside in Portugal, making Brazilian Portuguese the most common foreign variety of Portuguese spoken in the country.

Providing MAIN in both European and Brazilian Portuguese not only respects these linguistic differences but also fosters an inclusive assessment environment. By offering the instrument in a familiar language variety, children—especially those at early developmental stages with limited vocabulary—are more likely to engage confidently and understand the assessment tasks fully. Familiar vocabulary, idiomatic expressions, and grammatical structures reduce potential confusion, ensuring that the narrative tasks elicit a child's natural linguistic abilities rather than a performance affected by unfamiliar language input. This approach enhances the reliability of the data collected on children's morphosyntax, lexical diversity, and

narrative structure, as it reflects their true linguistic competence without interference from linguistic variation.

Taking these aspects into account, a comparison between the two versions reveals significant differences between EP and BP.[1] The most relevant syntactic, morphosyntactic and lexical differences are mentioned here:

1. Forms of address – *Você* vs. *tu* 'you': Starting with the choice of how to address the child in an informal way, the use of *você* would be the correct choice in the BP text. However, it is very common that *você* coexists with the use of the 2nd person singular *te* 'you': *Primeiro olhe a estória toda.* ***Você*** *está pronto/a? Eu vou* ***te*** *contar a estória e depois você pode me contar novamente.* 'First look at the whole story. Are you ready? I am going to tell you the story and then you can tell it to me again'. With respect to EP, while the 3rd person singular form and the corresponding verb form are still used, the same level of informality is only possible using *tu*, the second person: *Primeiro olha para a história toda. (pausa) Estás pronto/a? Vou contar-****te*** *a história e depois podes contá-la novamente.* 'First look at the whole story. Are you ready? I am going to tell you the story and then you can tell it to me again'. In EP, *você* has a meaning that is not entirely clear, but in everyday language, the form might be understood as impolite at least in some regions of Portugal.
2. Clitics: The clitic system of EP and BP differs. In EP, it is possible for clitic pronouns to appear in both preverbal and postverbal positions and to show clear morphophonological differences depending on their position in relation to the verb linked with a hyphen (in enclitic position), e.g., *conta-me* 'tell me', whereas in BP, clitic pronouns are only found preverbally (*me conte* 'tell me') if they are not omitted or replaced altogether (Luís & Kaiser 2016). An example is *Me conte o que está acontecendo*. vs *Diz-me o que está a acontecer* 'Tell me what is happening'.
3. Imperative: In EP, the imperative is used in the 2nd person of the singular, the 2nd person of the plural or the formal 3rd person of the singular. In BP, the imperative is normally used in the *você*-form, as in ***Me diga*** *quando você tiver terminado* (BP) *vs.* ***Avisa-me*** *quando tiveres acabado* (EP) 'Tell me when you are finished.'[2]
4. Existential constructions with *ter* vs. *haver*: While BP favours the use of these kind of constructions with the verb *ter* 'to have' (e.g., *Olhe, aqui temos 3 envelopes.* ***Tem*** *uma estória diferente em cada envelope, escolha um e então você pode me contar uma estória.* 'Look, here are 3 envelopes. There is a different story in each envelope. Choose one and then I will tell you the story'), in EP the correct verb to use is *haver* 'to be' (e.g., *Olha, aqui estão 3 envelopes.* ***Há*** *uma história diferente em cada envelope. Escolhe um e depois eu*

[1] There are also less obvious differences, associated with the EP being a pro-drop language and the BP being considered a partial pro-drop (Barbosa et al., 2001, Sheehan, 2009). Also, there are differences in phonology and pronunciation – One of the biggest differences lies in the pronunciation between EP and BP. Although both include oral and nasal vowels, diphthongs and thriphthongs, the pronunciation in BP is more open and the EP more close-mid. In BP, the "L" turns often into a "U" at the end of the word (mil), whereas it is pronounced as a "U" in EP. Those differences were not taken into account as we are working with a written text, but they are of course relevant to conducting the study orally.

[2] The negative forms of these verbs in EP are different (*Não leias* 'Don't read').

conto-te a história. 'Look, here are 3 envelopes. There is a different story in each envelope. Choose one and then I will tell you the story').

5. Progressive form: To express a progressive event, you find the verb *estar* 'to be' followed by the gerund in BP, whilst the EP uses the verb *estar* followed by the preposition a with the infinitive, such as in *O que ele **está fazendo** aqui?* vs. *"O que **está** ele **a fazer** aqui* 'What is he doing here?' and *Quem **está correndo**?* vs. *Quem **está a correr**?* 'Who is running?'.
6. Articles with possessives: Another difference lies in the use of the article before a possessive, common in EP, but not used in BP (e.g., *No final, o gato estava muito satisfeito por comer um peixe tão saboroso e o menino estava feliz por ter **sua bola** de volta. / **Sua vez**... vs. No final, o gato ficou muito satisfeito por comer um peixe tão saboroso e o rapaz ficou contente por ter a bola de volta. / É **a tua vez*** 'In the end, the cat was very pleased to eat such a tasty fish and the boy was happy to have his ball back' / Your turn').
7. Contraction of the preposition *em* with the indefinite article *um*: While in EP it is common to use the preposition contracted with the article, in BP it is not, as in ***num** arbusto vs. **em um** arbusto* 'on a bush'.
8. Lexical level: Concerning the lexical level, there are many verbs in the Brazilian text that exist in EP, but are not used in the same way (e.g., *pegar* vs. *apanhar o peixe* 'grab the fish'; *assistir na TV* vs. *ver na TV* 'watch on TV'; *pular* vs *saltar* 'jump'). Some nouns used in the BP text might be unknown to a child who grew up in an EP-speaking environment, e.g., *grama* vs. *relva* 'grass', *ele se machucou* vs. *ele magoou-se* 'he hurt himself' or *vara de pescar* vs. *cana de pesca* 'fishing rod'.
9. Accents: In some words, the accents of the EP differ from the ones in BP, where there seems to be a higher tendency for using circumflex accents. Some words in EP are written with acute accents (e.g., *bebé* 'baby') and in BP with circumflex accent (*bebê* 'baby').

5 Conclusion

The adaptation of MAIN to European Portuguese underscores the importance of linguistic and cultural sensitivity in language assessment tools. By addressing the distinct phonological, syntactic, and lexical characteristics that differentiate European and Brazilian Portuguese, this project highlights the need for tailored approaches within language varieties. These adaptations are especially critical in Portugal, where a substantial Brazilian immigrant population adds to the linguistic diversity and emphasizes the relevance of providing assessments in both regional varieties. Such inclusivity not only respects cultural identities but also ensures more accurate and meaningful assessments that reflect children's authentic linguistic abilities.

The adaptation process – comprising translation and expert review – was designed to create a version that feels familiar and accessible to European Portuguese speakers, capturing nuances essential for engaging young language users. Special attention was given to idiomatic expressions, syntax, and narrative style that resonate with children and feel true to the language used in their daily lives. The result is a tool that preserves the integrity of the original MAIN structure while effectively serving the specific linguistic and cultural needs of European Portuguese speakers. This process provides a model for future adaptations, illustrating how

narrative assessment instruments can be customized to fit different linguistic contexts without losing their foundational framework.

The implications of this adaptation extend beyond Portuguese-speaking contexts. As the global landscape becomes increasingly multilingual, the need for culturally responsive and linguistically accurate assessment tools becomes more urgent. This project demonstrates how careful adaptation can bridge linguistic differences, fostering a deeper understanding of children's language abilities in diverse educational settings. It also highlights the value of narrative-based assessments like MAIN, which provide insights into not only grammatical and lexical knowledge but also into children's broader communicative and narrative competencies. Looking ahead, future research should investigate the use of MAIN among Portuguese-speaking children in various contexts, including heritage language settings and multilingual classrooms. Studies that compare the development of narrative skills across different Portuguese varieties could reveal further insights into the role of linguistic environment in language acquisition. Additionally, exploring how these adaptations impact the motivation and engagement of children from different linguistic backgrounds could contribute to best practices in educational assessment.

This adaptation of MAIN serves as a stepping stone toward a more comprehensive approach to language assessment in multilingual societies. By valuing the linguistic diversity within and across language communities, educators and researchers can develop tools that not only assess language proficiency but also affirm children's linguistic and cultural identities. Such efforts pave the way for more equitable and inclusive language education policies that recognize and celebrate the richness of linguistic diversity.

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Investigating Italian-Coriglianese bilinguals: a summary of the main findings from the partial adaptation of MAIN

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This paper presents some of the results from a doctoral research project that relied on the partial adaptation of the Multilingual Assessment Instrument for Narratives (MAIN) to Coriglianese, an Italian dialect spoken in Corigliano-Rossano (Cosenza, Calabria). MAIN's retelling scripts and instructions for administration were adapted, translated and employed for an investigation of the linguistic development of 85 Italian-Coriglianese bilingual children and teenagers aged 7 to 18 years. The analysis of narratives focused on the linguistic aspects (i.e., microstructure), namely subordination and instances of code-switching. Specifically, the study examined how internal (chronological age) and external factors (frequent usage of L1 and L2) influence L2 development, as reflected in the participants' elicited and semi-spontaneous production of complex syntactic structures (i.e., relative clauses, RCs). Linear regression analyses revealed that both the frequency of use of Coriglianese and age had a significant impact on participants' performance in both Italian and Coriglianese. The study provides a foundation for further research into Italian-dialect bilingualism.

1 Introduction

In sociolinguistics, the term "language" refers to a linguistic system adopted by a society as a model (or "standard") for grammar codification and formal education; conversely, the term "dialect" is used to define those non-standardized languages that are employed within a community of speakers in informal and vernacular contexts. Nevertheless, in Italo-Romance sociolinguistics this term is also used to refer to the so-called "primary dialects" (see Berruto, 2018; Coseriu, 1980; Regis, 2017), which, despite their subordination to Italian, cannot be considered as "regional varieties of Italian", but as "independent linguistic systems that evolved directly from Latin and present their own structural features" (Masullo, et al. 2024, p. 27). While many studies have explored the linguistic and cognitive development of bilingual children and adults, insufficient attention has been paid to bilectal acquisition, a specific kind of bilingualism resulting from simultaneous exposure to and mixed usage of two or more structurally related varieties of a standard language as their first (L1) or second (L2) language (Grohmann &

Leivada, 2012; Leivada et al., 2017). This paper presents an attempt of adaptation of the MAIN to Coriglianese, a Northern Calabrian dialect spoken in Corigliano Calabro (Calabria, Italy). The discussion begins by examining the methodological and theoretical considerations pertinent to the study of bilingualism in Italian and its regional dialects. Following this, the work provides a brief overview of the primary linguistic features of Coriglianese. The challenges encountered in adapting MAIN's retelling scripts to this dialect are then outlined. Finally, the paper presents some preliminary results from a PhD-research, in which MAIN was utilized to assess the narrative abilities of bilingual speakers of Italian and Coriglianese in both languages.

2 Peculiarities of Italian-dialects bilingualism

Recent statistical investigations indicate that the 32.2% of the Italian population regularly speaks both Italian and local dialects with their families, with percentages being even higher in some Northen (e.g., Veneto: 62%) and Southern regions (e.g., Sicily: 68.8%) (ISTAT, 2017). Many scholars have opposed the use of the term "bilectalism" to describe Italy's sociolinguistic situation, as most dialects spoken in this area cannot be labelled as varieties of Italian (Berruto, 1987, 2018). Instead, they are historically independent linguistic systems that have become structurally closer to Italian as a consequence of a long process of bidirectional convergence, stemming from their coexistence within the Italo-Romance repertoire (Cerruti, 2011). To highlight the main traits of Italian-dialect bilingualism, Berruto (2011, p. 5) proposed the definition of *bilinguismo a bassa distanza strutturale con dilalia* (bilingualism with low structural distance and dilalia): this describes a situation in which speakers within the same community (bilingualism) end up including several structurally close varieties (low structural distance) in their repertoire, adjusting their register and competence according to various social situations (*dilalia*). In this complex relationship with the standard language, dialects experience linguistic and cultural subordination to Italian, despite their frequent use in daily communication within familiar and informal contexts (Cerruti, 2011).

Like speakers of other minority languages, Italian-dialect bilinguals might face language attrition due to low exposure to input, rare usage of dialect as L1 and more frequent usage of Italian as L2 (Colonna Dahlman & Kupish, 2016). They typically display higher proficiency in Italian than in their local dialect (Sanfelici & Roch, 2021). This usually occurs because many parents choose not to impart dialectal competence to their children, because of a social stigma that associates dialects with lower socio-economic contexts (Mocciaro et al., 2012). Consequently, speakers frequently underestimate their daily use of dialects as L1 or L2,[1] reporting a greater frequency of Italian usage when interviewed during sociolinguistic

[1] It is important to address here that the labels of 'L1' and 'L2' should not be intended as indications of the order of acquisition. Despite early exposure to dialectal input and mixed usage of both varieties as languages of communication in familiar and informal context, Italian-dialects bilinguals often rely more on the standard language and display better competence in Italian than in the local dialect. This occurs because Italian is the standard language used for both academic/formal and informal communication, while dialects are only used in limited contexts and lack written standard, as well as official and educational recognition. For these reasons, some scholars tend to refer to dialects as 'L2', because of the different sociolinguistic status that Italian and dialects hold, respectively, as societal and vernacular languages (cf. Berruto, 2018; Sanfelici & Roch, 2021).

investigations (Sobrero & Miglietta, 2006). While studies investigating the language development of Italian-dialect bilingual children and adults have not found significant links between dialectal exposure and proficiency in Italian, they did observe frequent transfers from Italian (which is often the speakers' dominant language) in both spontaneous and elicited productions in dialect (Colonna Dahlman & Kupish, 2016; Sanfelici & Roch, 2021). Conversely, higher rates of usage and exposure to dialects have been associated with greater levels of proficiency and accuracy in dialect language tasks (Klaschik & Kupish, 2016; Kupish & Klaschik, 2017). To sum up, taking into consideration the full range of features associated with this complex phenomenon gives linguistic research a way to provide a punctual and comprehensive analysis of the language abilities of Italian-dialects bilinguals.

3 A brief description of Coriglianese, a Northern Calabrian dialect

Calabria is a Southern Italian region with approximately 2,000,000 inhabitants (ISTAT, 2023). It is one of the Italian regions with the highest rates of simultaneous and mixed usage of Italian and dialects, alongside with other Northern and Southern regions such as Campania (75.2%), Lucania (69.4%) and Trentino (54.9%). According to the latest survey on Italians' linguistic habits (ISTAT, 2017), the exclusive use of dialect as primary language in Calabria decreased from 40.4% to 24.1% between 2007 and 2017, while the prevalent use of Italian increased from 20.4% to 25.3%. However, 68.8% of the regional sample reported speaking both Italian and local dialects with family and close friends. Dialectological studies conducted by Trumper and colleagues (Trumper & Maddalon, 1988; Trumper et al., 1995; Trumper, 1997) proposed a division of Calabria's territory into four major dialect groupings: Group 1 (Southern Lucania and North Calabria), Group 2 (Northern Calabria), Group 3 (Central Calabria) and Group 4 (Southern Calabria).

Coriglianese is an Italo-Romance dialect spoken in Corigliano Calabro (Cosenza, Calabria). As a Northern Calabrian dialect, Coriglianese exhibits some typical traits from Group 2. It features [ə] as the neutral tonic vowel in word-final positions and shows nasal assimilation of [nd] and [mb] (e.g., *kuannə* 'when', *kjummə* 'plumber'). Pronouns are always proclitic, except after imperatives (e.g., *m'u rünə?* 'can you give it to me?' vs. *runamíllə!* 'give it to me!'). Enclitic possessive adjectives are used for singular kinship terms (e.g., *frätə* 'brother' vs. *frätəma* 'my brother'). Infinitive is employed for non-finite complement clauses with modal verbs like *vulïrə* 'to want', with exceptions for asyndetic coordinated constructions with motion verbs *venïrə* 'coming' and *ghïrə* 'going' (e.g., *vuej mangiärə* 'I want to eat' vs. *vaj mangiə* 'I go eating' and *vënə mangiə* 'come eating!'). Intransitive verbs can function as transitive (e.g., *trasa a mächina* 'enter the car!') and the present perfect is used instead of the preterite (cf. Trumper & Maddalon, 1988; Trumper et al., 1995; Trumper, 1997).

Coriglianese's lexicon and grammar have been deeply influenced by the contact with various languages. Contact with Greek (e.g., *masalikö̈ja* 'basil') arose from Corigliano's geographical proximity to Sybaris, one of the most important colonies of Magna Graecia in Calabria (VIII-V B.C.), as well as from religious and cultural influence of the Byzantine Church in the area (VIII-IX A.C.). As a result of Norman-Swabian (XI-XIII A.C.) and Aragonese domination (1442-1501), Coriglianese includes borrowings from French (e.g., *jardinə*

'garden'), Spanish (e.g., *sə spagnärə* 'to get scared') and Arabic (e.g., *lumingiäna* 'eggplant'). Most notably, Coriglianese's vowel system and syntax were influenced by Neapolitan (e.g., *guagnünə* 'boy'), as Calabria was under the jurisdiction of the Kingdom of Naples until 1860 (cf. De Luca, 1986).

4 Adaptation of the MAIN retelling scripts to Coriglianese

In this section, the partial adaptation of MAIN, which mainly consisted of creating story scripts for the retelling mode for the Cat and Dog stories, will be presented. MAIN's adaptation to Coriglianese was conducted as part of a PhD-research project aimed at investigating elicited and semi-spontaneous production of relative clauses (RCs) by Italian-Coriglianese bilingual children and teenagers (see Section 5.1). To the author's knowledge, there are no available tests for Coriglianese or other Italian dialects which are particularly aimed at evaluating dialectal speakers' narrative skills. MAIN was selected because it was developed to assess the narrative abilities of bilingual children with both typical and atypical development (Gagarina et al., 2019). Furthermore, a recent study employed this tool for the investigation of both comprehension and production skills by Italian-Vicentino bilingual children (see Sanfelici & Roch, 2021). The adaptation of MAIN to Coriglianese was carried out in order to collect information regarding Italian-Coriglianese bilinguals' language skills and to compare it with other data relative to other Italian-dialect bilinguals' narrative abilities.

The Coriglianese version was adapted from the Italian version. Translation was conducted by the author, a native speaker of Coriglianese. This process involved referring to works on Coriglianese' vocabulary and grammar (De Luca, 1986; Longo, 1978) collaborating with other native speakers interviewed during the research and consulting the adaptation guidelines outlined in the MAIN manual (Bohnacker & Gagarina, 2020; Gagarina et al., 2019). Retelling modality and stories were selected because the two scripts (*Cat*, *Dog*) feature protagonists (a cat, a dog, a boy) familiar to speakers from every sociocultural background and, more importantly, use nouns and verbs that are highly frequent in both Italian (*gatto*, *cane*, *ragazzo*) and Coriglianese (*gattə*, *känə*, *guagnünə*). Additionally, both stories take place in familiar settings (a pond, a countryside) and describe every-day actions (fishing, shopping) that are easily relatable to Italian-Coriglianese bilinguals.[2] For the translation of *Cat* story script, it was decided to set the story on a beach by the sea, so the sentence *a cheerful boy was coming back from fishing* was translated to *nu guagnünə sə stapja rikugghjennə kuntjentə i ru märə* 'a little happy boy was coming back from the sea'. This partial change of the story content, although deviant from the accepted adaptation procedure (cf. Bohnacker & Gagarina, 2020; Gagarina et al., 2019), was done so that participants could be more encouraged to draw on their personal experience and cultural context while engaging with the task.

Some difficulties arose in translating some of the internal state terms related to characters' states of mind and emotions, which are essentials for the understanding of episode structure built on characters' goals, attempts and outcomes, or macrostructure (Stein & Glenn,

[2] Corigliano's main economic resources stem from fishing and agrifood production, and one of the local specialities is dry spicy sausage, or *satsittsa*.

1979). For example, the English adjectives *playful* and *cheerful*, which are used in both scripts to introduce the main characters (cat/dog, boy), were translated into Italian with *giocoso* 'playful' and *allegro* 'merry, happy'. Initially, it was considered appropriate to translate both terms using the Coriglianese adjective *felicə* 'happy', due to its structural similarity to the Italian *felice*. However, it was later decided to choose *felicə* as equivalent for *cheerful*, while the item *playful* was translated with the Coriglianese *kurjiüsə* 'funny, lovable', which commonly used by native speakers to refer to animals, particularly pets, that display a quirky yet funny and joyful attitude.

Additional challenges emerged in translating English words such as *butterfly* and mouse, which correspond to *farfalla* and *topo* in Italian, respectively. In Coriglianese, there is no direct equivalent for *farfalla*, as this Italian term is commonly used by native speakers to refer specifically to butterflies. Ultimately, it was decided to use the term *palummella*, which is more frequent and familiar to native speakers and can be used to identify winged insects like butterflies or, more precisely, moths. For the translation of *topo* 'mouse', the Coriglianese equivalent *süricə* was initially considered; however, some native speakers noted that this term is mainly recognized and used by older speakers of Coriglianese. We ultimately chose to use the Italian loanword *tòpə*, which was deemed more appropriate to children and teenagers due to its structural similarity to Italian.

Since MAIN was used with the aim of collecting information regarding participants' spontaneous resort to RCs (see Section 5.1), specific attention was paid to scripts' linguistic content, or microstructure (cf. Gagarina et al., 2019). Table 1 shows the total number and type of words, sentences and coordinate and subordinate clauses in English, Italian and Coriglianese' scripts for the retelling mode (*Cat* and *Dog* stories).

Table 1. Number and type of coordinate and subordinate clauses in MAIN *Cat* and *Dog* (Gagarina et al., 2019).

	English (Gagarina et al., 2019)		**Italian (Levorato & Roch, 2020)**		**Coriglianese**	
Story script	*Cat*	*Dog*	*Cat*	*Dog*	*Cat*	*Dog*
N total words	178	174	164	165	172	175
N total sentences	34	34	33	33	33	33
N direct speech sentences	2	2	2	2	2	2
N coordinating constructions	5	5	5	5	5	5
N subordinating constructions	14	14	14	15	14	15
N subject relative clauses	4/14	4/14	4/14	4/15	4/14	4/15
N non-finite complement clauses	3/14	3/14	4/14	4/15	4/14	4/15
N finite complement clauses	2/14	2/14	1/14	2/15	1/14	2/15
N adverbial subordinate clauses	5/14	5/14	5/14	5/15	5/14	5/15

The Coriglianese scripts are equivalent to the English and Italian scripts in terms of number of coordinating and subordinating constructions. Italian and Coriglianese exhibit similar syntactic

properties regarding the derivation of complement, adverbial and RC. Both languages use unmarked complementizers *che* (Italian) and *ka* (Coriglianese) 'that' in finite complement clauses with perceptive verbs (e.g., *non si era accorto che il cane stava mangiando una salsiccia* vs. *unn si nn'era akkuertə ka u känə si stapja pijannə na satsittsa* 'he did not notice that the dog had grabbed a sausage') and subject RC (e.g., *un gatto giocherellone che vide una farfalla* vs. *nu gattə kurjüsə ka avja bbistə na palummella* 'a playful cat that saw a butterfly). They also feature non-finite complement clauses introduced by modal (e.g., *voglio prendere un pesce* vs. *vuej pijärə nu piššə* 'I want to grab a fish') and phrasal verbs (e.g., *si mise a piangere* vs. *s'è mmïsə a ciàngerə* 'he started to cry'). Casual subordinate clauses are introduced by adverbs like *perché* and *pirkì* 'because' (e.g., *fece un salto perché voleva prenderla* vs. *ge tsumpätə pirkì u vulja akkjappärə* 'he leaped forward because he wanted to catch it') or prepositions like *di* and *i* 'to' (e.g., *il gatto era molto contento di mangiare un pesce così gustoso* vs. *gera kuntjentə i si mangiärə nu bbjellə piššə* 'the cat was very pleased to eat such a tasty fish'). Temporal adverbial clauses are introduced by *quando* and *kuannə* 'when' (*quando vide la sua palla cadere…* vs. *kuannə a bbistə u pallünə ghïrə intra l'akkua…* 'when he saw his ball rolling into the water…').

5 Narrative abilities of Italian-Coriglianese bilinguals: Main results and findings

5.1 Introduction

I will now present part of the data collected for a doctoral study aimed at analysing production of RCs of school-aged Italian-Coriglianese bilinguals and the role of age and daily usage of dialect as L2 on participants' linguistic development. Studies about bilingual syntactic development revealed that bilinguals tend to resort more to subject RCs and to avoid object RCs in elicited and spontaneous production in L2; this might be due to lack sufficient syntactic knowledge and computational skills to process derivational features of object RCs (i.e., movement, cf. Friedmann et al., 2009), because of low exposure, infrequent usage of L2 and transfer from dominant L1 (cf. Andreou & Tsimpli, 2020; Schneidnes & Tuller, 2014, 2019). Studies that investigated comprehension and production of RCs in bilectal children and adults (see Covazzi, 2019 for Friulan-Italian and Garraffa et al., 2015; 2017 for Sardinian-Italian bilingualism) never found links between exposure to dialects and delays in development of syntactic capacities in Italian as standard language. However, other studies suggested that more frequent usage of Italian as dominant language and chronological age should be considered as key factors influencing individuals' proficiency in dialects as L2 (Klaschik & Kupish, 2016; Kupish & Klaschik, 2017). The aim of the study was to investigate if Italian-Coriglianese bilinguals resemble the same patterns of linguistic development of other bilingual and bilectal populations, and particularly regarding the production of RCs.

5.2 Methods

MAIN was administered to three groups of participants of different ages: a group of primary school children of 7–10-years-old (24 females, 12 males, mean age = 9;1, SD = 1;0), a group of middle school children of 10–13-years-old (12 females, 6 males, mean age = 11;9, SD = 1;1) and a group of high school students of 14–18-years-old (19 males, 12 females, mean age = 15;9,

SD = 1;3).[3] Participants and their families were asked to fill out a questionnaire (see Mattheoudakis et al., 2016) regarding daily language usage. The mean percentage of current usage of Italian and Coriglianese, shown in Table 2, were calculated following the same procedure used by Andreou et al. (2021) and Mattheoudakis et al. (2016). Specifically, points were given to each language (Italian and Coriglianese) based on the number of people interacting with participants on a daily basis. Italian or Coriglianese was given 1 point, depending on whether a certain person (parents, siblings, friends, teachers, etc.) was interacting with the participant in that one language, respectively. If a person interacted with the participant in both languages, the point was divided between the two languages (0.5 points each). This score was later normalized by calculating the percentage relative to the total number of individuals interacting with the child in Italian or in Coriglianese.

Table 2. Mean percentage of daily usage of Italian and Coriglianese for each group of participants.

Group	**Italian** M (SD)	**Coriglianese** M (SD)
Age 7–10	78.43% (17%)	21.57% (17%)
Age 10–13	50.39% (16%)	49.61% (16%)
Age 14–18	53.90% (19%)	46.10% (19%)

As seen in Table 2, each group of participants declared more frequent use of Italian as language for daily communication. While usage of dialect is particularly low between younger participants, Coriglianese finds a broader and more balanced use in older groups. This allows to attribute to Italian the status of participants' dominant L1, while Coriglianese should be seen as the weaker L2 (cf. Andreou et al., 2021; Colonna, Dahlman & Kupish, 2016).

The *Cat* and *Dog* stories were presented to participants following MAIN's guideline for administration and assessment for telling mode. The order of presentation was randomized regarding language (Italian, Coriglianese) and story (*Cat*, *Dog*), as suggested by the counterbalancing procedure in MAIN's manual (cf. Gagarina et al., 2019). Participants were tested in two separated sessions, one for Italian and one for Coriglianese. Instructions for administration were provided by the researcher herself in Italian or Coriglianese, according to the language under examination. First, participants were asked to sit on a table in front of the experimenter and to choose between three different envelopes, all containing the same story chosen for administration. They were instructed to keep the picture in front of them and visible to them only and explained that the experimenter did not know what story they were choosing, so they could be encouraged to be as much precise as possible while telling the story (cf. Tsimpli et al., 2016). They were asked to take a first look at the whole story and then to tell the story starting from the first two pictures. They were told to keep telling the story by unfolding the next pictures two by two until the full story was visible. Prompts and encouragements were given to participants from the beginning to the end of the task, especially when they were showing confusion or anxiety. Once the task was concluded, they were praised and asked to

[3] Participants were recruited within students from primary, middle and high schools in Corigliano's urban area. The overlap in age between Group 1 and Group 2 is due to the fact that two students enrolled in first class of middle school were slightly younger than their classmates at the time of testing.

answer to comprehension questions. This modality was chosen to observe participant's ability to generate narrative texts in Italian as L1 and Coriglianese as 2L1 or L2 (cf. Gagarina et al., 2019; Gillam & Carlisle, 1997).

The analysis involved narrative texts' microstructure and relied on the subordination index as measure for syntactic complexity (cf. Schneider et al., 2006), namely the ratio of subordinate clauses to the total number of C-units (i.e., one main clause with all dependent clauses, cf. Hunt, 1965), the ratio of RCs to the total number of subordinate clauses and the ratio of words in the target and non-target languages to the total number of words as measure for code-switching (cf. Gagarina et al., 2019). One-way ANOVAs and the non-parametric alternative to ANOVA, the Kruskal-Wallis rank sum test, were used to check for significant differences between the three groups and linear regression analysis was used to look for significant effects of explanatory variables (daily use of Coriglianese and age) on participants' performance.

5.3 Results

In Tables 3 and 4, results regarding analysis of narrative microstructure (i.e., Subordination index, subject RCs, and object RCs) for the three age groups in Italian and Coriglianese, respectively, are displayed.

Table 3. Means (M) and standard deviations (SD) of rates of subordination (subordination index, subject RCs and object RCs) in Italian narrative texts, per age group.

Group	**Subordination index** M (SD)	**Subject RCs** M (SD)	**Object RCs** M (SD)
Age 7–10	0.58 (0.33)	20.61% (15%)	0.17% (1%)
Age 10–13	0.73 (0.24)	25.94% (12%)	2.01% (6%)
Age 14–18	0.91 (0.41)	23.57% (10%)	2.99% (5%)

Table 4. Means (M) and standard deviations (SD) of rates of subordination (subordination index, subject RCs and object RCs) in Coriglianese narrative texts, per age group.

Group	**Subordination index** M (SD)	**Subject RCs** M (SD)	**Object RCs** M (SD)
Age 7–10	0.43 (0.27)	31.04% (25%)	3.17% (9%)
Age 10–13	0.58 (0.22)	22.36% (17%)	2.04% (5%)
Age 14–18	0.33 (0.63)	30.16% (23%)	4.60% (7%)

The statistical analyses revealed that oldest group (age 14–18) outperformed the youngest group (age 7–10) regarding the subordination index ratio in both Italian ($F(2, 82) = 4.63$, $p = .01$) and Coriglianese ($F(2, 82) = 4.26$, $p = .02$). They also outperformed younger participants in the production of object RC, but only in Italian ($K = 7.88$, $df = 2$, $p = .02$). It is also interesting to notice how both older and younger participants performed better in Coriglianese tasks regarding spontaneous production of object RCs. A linear regression analysis revealed a significant effect of age on the subordination index ($R^2 = 0.103$, $F(3, 81) = 3.092$, $p = .03$), confirming a relationship between this variable and a more frequent use on subordination in both Italian ($\beta = 0.270$, $p < .01$) and Coriglianese ($\beta = 0.192$, $p = .02$).

Table 5 shows the results regarding instances of code switching in the Coriglianese narrative tasks, and particularly the ratio of words in the target (Coriglianese) and non-target language (Italian) to the total number of words:

Table 5. Mean number of words and mean percentage words in the non-target (NT) and target (T) language in the Coriglianese narrative task, per age group.

Group	**Total words** M (SD)	**% NT** M (SD)	**% T** M (SD)
Age 7–10	90.94 (26.74)	43.08 % (34%)	56.92% (29%)
Age 10–13	113.17 (36.24)	27.19 % (22%)	72.81% (23%)
Age 14–18	99.03 (29.09)	19.30 % (22%)	80.70% (18%)

The youngest group (age 7–10) code switched more frequently to Italian during the Coriglianese narrative task than the older groups ($K = 14.52$, $df = 2$, $p < .01$), demonstrating weaker production abilities in this language and frequent transfers from their dominant L1. Middle school students (age 10–13), on the other hand, produced longer narrative texts than primary school children (age 7–10) ($F(2, 82) = 3.34$, $p = .04$), while high school students resorted more to Coriglianese compared to the younger participants ($K = 17.73$, $df = 2$, $p < .01$). These differences between the three groups were confirmed by a linear regression analysis, which highlighted a negative effect of daily usage of Coriglianese on the percentages of words in code-switching ($R^2 = 0.204$, $F(3, 81) = 6.92$, $\beta = -0.413$, $p < .01$) and a positive effect on the percentages of words in target language ($R^2 = 0.237$, $F(3, 81) = 8.39$, $\beta = 0.397$, $p < .01$). These results were employed to support the notion that more frequent usage of dialect correlates with higher levels of proficiency in that language (Klashick & Kupish, 2016; Kupish & Klashick, 2017).

6 Conclusions

The partial adaptation of MAIN to Coriglianese has provided valuable insights for the investigation of the syntactic abilities in both languages of Italian-Coriglianese bilinguals. Administration of MAIN's retelling scripts (*Cat* and *Dog* stories) for assessment of participants' narrative skills was helpful to understand how age and daily exposure to dialect significantly and differently impact proficiency in Italian L1 and Coriglianese L2, and particularly semi-spontaneous production of complex subordinate clauses (object RCs). The study also highlights the importance of recognizing and preserving dialectal heritage within the context of contemporary bilingualism, advocating for a more nuanced understanding of language acquisition that embraces both standard and non-standard varieties within the Italo-Romance repertoire.

Further results stemming from the PhD-dissertation will be published soon, including new research focused on comprehension and production of narrative story grammar (i.e., macrostructure). Other works will explore both quantitative and qualitative differences in the use of complex subordinate clauses in Italian and Coriglianese, such as prepositional RCs. Additionally, a complete adaptation of MAIN is planned to be conducted to ensure a more

reliable crosslinguistic comparison (cf. Gagarina et al., 2019). This will provide new evidence regarding the linguistic and cognitive development of Italian-Coriglianese bilinguals.

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Local reference data for the Multilingual Assessment Instrument for Narratives in Pristina, Kosovo

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Currently, there are no standardized or norm-referenced language assessment tools appropriately contextualized for use by speech-language therapists in Kosovo. In this community-based study in collaboration with the non-governmental organization Instituti Kosovar për Logopedi, local reference data for the Albanian adaptation of the Multilingual Assessment Instrument for Narratives (MAIN) were collected in Pristina, Kosovo. Participants were 58 school-aged children (ages 5;7–10;11), who completed tellings and retellings of two stories (Cat and Baby Goats) from the MAIN in Albanian. Information about the children's demographic and language history and environment was collected using parent-report questionnaires. Reference data for MAIN scores are provided with summary statistics and confidence interval estimates by age group (5–6, 7, 8, 9, and 10 years old). The results indicate that scores from the story structure and

comprehension sections of the retelling task may differentiate MAIN performance across age groups most effectively in this population.

1 Introduction and background

Narrative language skills, including the ability to comprehend and convey stories, are a major component of and can provide insights into the overall language development of school-aged children. Speech-language therapists use reference data on narrative language abilities as a tool in assessing receptive and expressive language, diagnosing language disorders, and identifying treatment needs for students. In Kosovo, a country in the Balkan region of Europe, there are not yet any normative data on school-age language development, including narrative language skills, to support evidence-based speech-language therapy. Additionally, the linguistic environment in Kosovo is unique (as described in section 1.3, below) and reference data from neighboring countries may not be generalizable to Kosovan populations. This study, conducted in partnership between the non-governmental organization *Instituti Kosovar për Logopedi* and the University of Iowa, seeks to support speech-language therapists in Pristina, Kosovo by collecting and analyzing narrative samples with the Albanian version of the Multilingual Assessment Instrument for Narratives (MAIN; Gagarina et al., 2019) from 58 school-aged children. In the remainder of Section 1, we review the existing literature on school-age language in Kosovo and provide historical context for language use in Kosovo. We then describe the planning and methodology of this community-based participatory research (i.e., Israel et al., 1998) to establish reference data collected for speech-language therapists in the context of Pristina, Kosovo (Section 2). Next, we describe the reference data (Section 3) and discuss how these data could be utilized in clinical practice through application to a case study (Section 4). Finally, we discuss the limitations of this study and future directions (Section 4).

1.1 Existing data on school-age language in Kosovo

Currently, only one study is known to describe the prevalence of speech and language disorders in Kosovo. Nešić, Minić, and Jakšić (2011) distributed surveys to 36 teachers in the northern regions of Kosovo (Mitrovica, Zveçan, Leposaviq, and Zubin Potok) and estimated the prevalence of speech and language disorders in 10- and 11-year-old children at approximately 7.64%, based on a written questionnaire distributed to 36 teachers of 3rd and 4th grade classrooms. This study collected data from teachers in a region of Kosovo with a high population of ethnic Serbs; therefore, the linguistic makeup of the sample group would likely not generalize to the ethnic Albanian majority (i.e., the Gheg Albanian-speaking areas of Kosovo, such as Pristina). More data is needed on Gheg-Albanian speaking school age children in Kosovo, as existing data is insufficient to serve the needs of speech-language therapists. The current study will begin to address this gap by providing initial reference data collected in the capital city, Pristina.

1.2 Reference data for MAIN in other populations

Several studies have utilized the MAIN to assess language abilities in school-aged children, providing reference data for distinct linguistic communities. Most studies have focused on ages 4-7, fewer having focused on ages 8 and older, and age effects have been found in monolinguals and bilinguals (see the review by Lindgren et al., 2023). For example, Lindgren (2019) investigated age effects in Swedish monolingual children and found that though there was a large increase in performance between 4 years 4 months and 5 years 10 months, performance seemed to plateau around 6 years old. Bohnacker (2016) found age effects in production and comprehension between 5- and 6-to-7-year-olds in Swedish-English bilingual children. Not all studies have found age effects for comprehension (Roch & Hržica, 2020). Studies documenting MAIN performance in Kosovo do not currently exist.

1.3 Language use in Kosovo

Diagnosis and treatment of language disorders is most effective when the cultural and linguistic context of the child and their environment is taken into consideration (Hyter & Salas-Provence, 2021). In Kosovo, the cultural and linguistic environment is unique, yet there are currently no diagnostic tools developed with data collected in Kosovo available to assess school-age language in Kosovan children.

Kosovo's unique linguistic landscape is a result of past language policy, a history of oppression, and a necessarily multilingual environment. The most widely spoken language in Kosovo is Albanian, specifically the Gheg dialect of Albanian. Gheg Albanian is mutually intelligible with Tosk Albanian, the other major dialect of Albanian spoken in Kosovo. Despite many similarities, there are substantial linguistic distinctions between the Gheg and Tosk varieties of Albanian. For example, a Tosk-Albanian speaker may say *Unë dua më shkoj* 'I want to go', whereas a Gheg-Albanian speaker would say *Unë du më shku* 'I want to go (Mëniku & Campos, 2011). Kosovo was an autonomous state of Yugoslavia when steps were taken to standardize Albanian. Tosk Albanian, the main dialect spoken in Albania, was established as the standard in Kosovo (alongside Serbo-Croation) two years after a 1972 congress on standard Albanian that was vetted and approved by both the governments of Yugoslavia and Albania. This decision was motivated by the geopolitics of Albania and Yugoslavia in the 1960s and 1970s. Currently, there exists diglossia among Gheg speakers such that Gheg is often spoken at home and in everyday life, but Tosk is taught in schools, printed in books and newspapers, and used in more formal settings (Kamusella, 2016).

Kosovo's unique linguistic environment is also heavily impacted by the conflicts of the past 50 years. The year 1989 marked the end of Kosovo's autonomy in Yugoslavia and led to the suppression of Albanian language and culture in Kosovo. Schools were segregated and students in Kosovo were forced into underfunded schools with very few resources or underground homeschools, taught by their community members. Books printed in the Albanian language were also destroyed by the Serbian military. Printed material was thus available only in Serbian, if available at all (Shahini, 2016). Additionally, many girls did not attend school at this time due to concerns for their safety. Consequently, as of 2001, 40% of the women between 16 and 35 years of age were illiterate, and nearly 80% of the surveyed women did not complete

the compulsory 8 years of Basic Education (Haneman, 2006). Literacy and language use among parents can affect the language development of their children; thus, the linguistic environment in Kosovo during and after the late 20th century is likely to still impact language use today (Regis College, 2023).

The linguistic and cultural suppression of Albanian in Kosovo has influenced the languages spoken in Kosovo and resulted in a dynamic multilingual environment with differing expectations on each generation. Prior to the oppression that began in 1989, Kosovan Albanian students learned Serbian in schools (Quell, 2017). However, with the political tension between Serbs and Albanians in present-day Kosovo, English has been increasingly used as a lingua franca between the two groups. English also serves as a lingua franca between Kosovo and the international community as it has globalized in the 21st century (Lohaj, 2018). Today, it is common for children in Kosovo to speak both Gheg and Tosk Albanian, in addition to English. It is common for their parents to speak Serbian in addition to these languages. Additionally, many Kosovans also speak Turkish and other European languages, contributing to a unique and diverse multilingual environment.

Although Kosovo formally declared independence from Serbia in 2008, not all countries currently recognize Kosovo's sovereignty, including Serbia, Russia, China, and five European Union (EU) member states (UK Parliament House of Commons Library, 2024). Kosovo is currently recognized as sovereign and independent by 90 countries, including 22 EU member states, Japan, Canada, and the United States (US Department of State, n.d.).

1.4 Community collaborator

The present study is a community-based participatory research project (following Israel et al., 1998) that was conceptualized, planned, and conducted based on the immediate needs identified by members of the community this research seeks to support. The community collaborator for this project is *Instituti Kosovar për Logopedi* (IKL), a non-governmental organization offering free speech therapy services in three public schools and an SOS Children's Village school, which primarily serves orphaned or abandoned children. IKL provides direct one-on-one services for children who have speech or language disorders primarily through student volunteers. Speech therapy in Kosovo is not widely accessible to children through public services, so IKL fills a necessary gap in care with their free services. Speech-language therapy is also a relatively new field in Kosovo, and IKL began its advocacy in 2016 and its free speech-language services in the schools started in 2022.

Speech-language therapists at IKL and the first author developed a reciprocal and collaborative relationship during the year in which this study was designed and conducted. The team at IKL identified the initial resources needed to strengthen the services provided by IKL. In subsequent discussions with the first author, a standardized language assessment tool with reference data collected locally in Pristina, Kosovo was identified as the priority to support the language-related needs of school-age children in their community. The team at IKL were integral to study design, participant recruitment, assessment administration, and reliable assessment scoring. Their collective knowledge of the community was crucial for the completion of this project in an effective and culturally responsive manner.

1.5 The present study

The unique linguistic environment of Kosovo is such that generalization of language development norms from nearby communities is not appropriate. Therefore, this project aims to collect local reference data to better understand and differentiate the language abilities of school-age children in Pristina, Kosovo. Given the localized, community-based nature of this study, the population served by IKL is sampled directly: Gheg Albanian-speaking children aged 5 to 10 years old attending urban-area schools in Pristina, Kosovo. The data collected consist of answers to parental questionnaires and expressive language samples in the form of narratives that were elicited using the Albanian adaptation of MAIN (Gagarina et al., 2019), as it is a dynamic and practical standardized tool for language assessment in this population. Using this narrative assessment, we seek to provide insight into the language development of school-age children in the urban capital city of Kosovo with direct application to language assessment and screening for developmental language disorder in speakers of Albanian.

2 Methods

This study was conducted in accordance with the ethical standards of the Helsinki declaration and its later amendments (World Medical Association, 1964). The research protocol was reviewed and approved by the Institutional Review Board (IRB) of the University of Iowa (IRB Approval Number: 202311500). Written informed consent from parents and verbal assent of children were obtained for all participants included in the study.

2.1 Participants

Participants were between age 5;7 and 10;11 (N=58, mean age=8.4). Packets containing an informed consent form, a Demographic Questionnaire, and a Home Language Questionnaire were distributed to the families of every child between the ages of 5 and 11 years old enrolled at the three sites. Sixty-two packets were returned. Of these 62, three participants did not assent to participating in the study; therefore, 59 subjects participated. Only one student in the oldest age group (11 years old) and two students in the youngest age group (5 years old) completed the MAIN. Initially, these participants with outlying ages were combined with the nearest age group (i.e., 5–6 years old and 10–11 years old). However, the 11-year-old participant had significantly different scoring from the 10-year-old group on the *Cat* story task (independent samples t-test, $p < .01$). Therefore, the 10- and 11-year-old data were not combined, and the singular 11-year-old data were excluded from this study. The 5- and 6-year-old data, however, were not significantly different on any of the MAIN sub scores ($p > .05$). Therefore, data from the two 5-year-old participants were included in a combined 5–6-year-old group. In total, one participant was excluded, and 58 participants were included in the study. Age ranges, age averages, and gender distributions groups are illustrated in Table 1.

Table 1. Participant breakdown by age and gender (n=58).

Age group	N (total)	n (male)	n (female)	Mean age (years)	Age range (years)
5–6	11	4	7	6.45	5.58–6.92
7	13	6	7	7.49	7.00–7.92
8	9	3	6	8.56	8.00–8.92
9	14	7	7	9.37	9.08–9.83
10	11	3	8	10.53	10.00–10.92

About 93% of parents reported their child's ethnicity to be Albanian; one child (i.e., 2%) was reported to be Albanian, Italian, and German, and 5% of parents did not respond to this item on the questionnaire. It should be noted that the ethnicity in Kosovo is estimated to be about 92.9% Albanian, 1.6% Bosniak, 1.5% Serb, 1.1% Turk, 0.9% Ashkali, 0.7% Egyptian, 0.6% Gorani, 0.5% Romani, and 0.2% other/unspecified (2011 estimate; CIA, n.d.). Thus, the current sample may be more representative of the population IKL directly serves (i.e., the Albanian population of Pristina, Kosovo), rather than the entire country. For instance, areas with a higher population of Kosovan Serbs would not be represented by these data, as they are more likely to use Serbian as a primary language at home and at school.

Before completing the MAIN, students completed a short task to estimate their primary spoken variety of Albanian. In the tasks, students were asked to name pictures of items that had distinct names in Gheg and Tosk Albanian (i.e., *green*, *phone*, *roof*, *jacket*). In Gheg and Tosk respectively, these words are "e gjelbert"/"e jeshile", "cellular"/"mobil", "çati"/"kulem" and "jakne"/"jaket". All students used Gheg Albanian to name each item and participants were thus considered to be speakers of Gheg Albanian.

2.2 Participants' language and demographics

A *demographic questionnaire*, written in Albanian, was sent home to parents in a packet with the informed consent. The questionnaire asked parents to report their age, their education level, and how long they had lived in Kosovo. The results of this questionnaire offered some information on the historical, cultural, and linguistic context of Kosovo that may have impacted our participants and their families.

The *Home Language Questionnaire* (Combiths, 2023) was adapted to Albanian for this study. The questionnaire asked parents to report the languages spoken by their child, their child's proficiency in these languages, and what languages their child was exposed to at home and at school for each year of their lives. This questionnaire also captured information on the child's language environment by asking the languages spoken by other people in the household and how often each person spends time with the child. Some limited developmental information was gathered about the children, such as when they spoke their first word, when they were first exposed to English, and an opportunity to express concerns about their child's language. These questions are displayed in Table 2.

Table 2. Questionnaire items related to speech-language development.

Item
How old was your child when they first started speaking words?
Do you have any concerns about your child's hearing?
How does your child express their needs?
Does your child talk like other kids in your community or in your family that are the same?
Do you have any concerns about your child's speech or language?
Do you have any concerns about your child's health or development?

2.3 Albanian adaptation of the Multilingual Assessment Instrument for Narratives

MAIN (Gagarina, et al., 2019) was developed by the Narrative and Discourse working group within COST (European Cooperation in Science and Technology) Action IS0804 as part of the set of assessment tools Language Impairment in a Multilingual Society: Linguistic Patterns and the Road to Assessment. It is part of a test battery known as the Language Impairment Testing in Multilingual Settings (LITMUS), also developed within COST Action IS0804. First published in 2012 and revised in 2019, MAIN assesses the child's ability to understand, tell, and/or retell a story using a sequence of six pictures for each of the four stories (*Cat*, *Dog*, *Baby Birds*, *Baby Goats*), which were designed to be age-appropriate and culturally relevant across different languages and cultures.

MAIN has been adapted into Tosk Albanian, the dialect primarily spoken in Albania, by Enkeleida Kapia based on the revised version in English. This is the version used in this study. Prior to beginning testing or recruitment, a meeting was held with the speech-language therapists at IKL to discuss adaptation of the MAIN to Gheg Albanian from the Tosk Albanian version. The consensus was that the MAIN did not need to be changed from its Tosk Albanian form to be administered in Kosovo. As described above, Gheg Albanian and Tosk Albanian are mutually intelligible. Tosk Albanian is also taught and used in schools and widely used in written contexts, such as textbooks and newspapers. Thus, Tosk Albanian is understood by Gheg-Albanian-speaking children attending school in Kosovo. Second, the scoring manual does not restrict the language variety children use in their responses, and thus children could provide responses in either Tosk or Gheg Albanian without restriction. During testing, children were encouraged to use whichever language variety was most comfortable. If children were hesitant to respond, examiners were instructed to prompt with: "Tell me just like you would talk at home".

2.4 Testing procedures

Each child completed the *Baby Goats* story as a retelling task followed by the *Cat* story as a telling task from the Albanian MAIN. Two examiners (university students studying speech-language therapy employed by IKL) administered the tasks to all children in a quiet room at their school. The administration procedures were followed as specified in the MAIN manual (Gagarina et al., 2019), with any differences specified below. The child sat opposite the examiner. Examiners began by building rapport with each child (asking about the child's favorite TV show). The picture stimuli were cut out as a sequence of story cards, presented as

three identical stacks of picture story cards. This is a slight deviation from MAIN manual procedures which suggest using three identical picture strips in envelopes. The child was asked to pick any one of the piles; however, all three piles contained six identical picture sequences of the same target *Baby Goats* story. The child thus believed they were making a meaningful choice between three possible stories but in fact would always begin with the *Baby Goats* story. This method minimized the effect of shared knowledge during the narrative task, encouraging the child to elaborate on the details of the story for a potentially unfamiliar listener (Gagarina et al., 2019). The cards were presented as the picture strips would have been presented per the manual, revealing part of the story at a time and not allowing the examiner to see the pictures. For the retelling task, the child was told the story by the examiner. For the telling task, the same methods were repeated using the *Cat* story cards, except that the child did not hear the examiner tell the story. After the child told or retold the story, comprehension questions as provided in the MAIN manual were asked of the child. The *Cat* telling task was administered immediately following the *Baby Goats* retelling task. All language samples were audio recorded using Tascam DR-07X portable audio recorders at a sampling rate of 44.1 kHz and saved in uncompressed WAV format for later review.

2.5 MAIN scoring

The MAIN assessments were scored according to the MAIN protocol. Examiners accepted lexical choices and syntactic structures in either Gheg Albanian or Tosk Albanian as correct responses. Inter-rater reliability of MAIN scoring was assessed for 9 out of 58 assessments (16% of the total sample) by having a second examiner, who did not have access to the original examiner's scores, independently rescore them. Agreement between the two examiners was 96%.

The MAIN produces four different scores for each child: a story structure score, a structural (or episodic) complexity score, an internal state terms score, and a comprehension score (Bohnacker & Gagarina, 2019). The first three scores are based on the child's narrative retelling or telling, and the comprehension score is determined from the child's ability to answer the ten comprehension questions about the story after the narrative portion is completed.

The MAIN stories presented to the participants consisted of three episodes, each with an initiating event, goal, attempt, outcome, and reaction. The *story structure score* was derived as a combined score of these sections, in which the child received one point for each component (initiating event, goal, attempt, outcome, reaction) they provided for each episode as well as up two to points for specifying setting (one point for time, one point for place). The maximum score for story structure was 17.

The *structural complexity scores* were determined by the story sequences the child produced (i.e., an attempt-outcome sequence, a goal-attempt sequence, a goal-outcome sequence, or a goal-attempt-outcome sequence). The structural complexity score was the total count of all attempt-outcome, goal-attempt, goal-outcome, and goal-attempt-outcome sequences. Thus, the more story sequences the child included, the higher their resulting structural complexity score. For example, a child who produced a goal-attempt-outcome, an attempt-outcome, or a goal-attempt sequence would receive 1 point for that episode. There were

three possible episodes in the story, so the maximum structural complexity score for a story was 3.

The *internal state terms score* was derived as a count of the number of words (i.e., tokens) the child used in their narrative to describe the internal states of the characters (e.g., *see, feel, thirsty, hungry, asleep, happy, sad, want, think, say, ask*). A child could produce any number of internal state tokens; therefore, there was no maximum *internal state terms score*.

The *comprehension* section began with a warm-up question ("Did you like the story?") that was not scored, followed by ten "why" and "how" questions about the story targeting goals and internal states (e.g., "Why does the cat grab the fish?"). The child received one point for each correct response with a maximum possible *comprehension score* of 10.

2.6 Analysis procedure

Data analyses were conducted using R, with all results grouped by age, scoring section sections (story structure, structural complexity, internal state terms, comprehension), and task (*retelling, telling*). Participants were grouped by year of age (e.g., the 7-year-old group included ages 7 years, 0 months through 7 years, 11 months). Exceptions to this were the youngest ages (5 and 6 years old), which were grouped together due to fewer participants in this age range (i.e., only 2 participants were 5 years old). The participant age groups were thus 5–6, 7, 8, 9, and 10 years old.

Descriptive statistics (i.e., mean, standard deviations, minimum score, maximum score, and quartiles) were generated using the *dplyr* package (Wickham et al., 2023). Confidence intervals for the means and standard deviations were estimated with bootstrapping using the *boot* package (Canty & Ripley, 2024). This non-parametric approach resamples the data with replacement to simulate the distribution of each descriptive statistic (Hinkley & Davison, 1997). For each measure, 5,000 samples were generated (R = 1000). The BCa (bias-corrected and accelerated) estimation method was used. This method adjusts for bias and skewness in the bootstrap distribution for more robust interval estimates with data that may not meet the assumptions of normality. To determine the effect of age group on MAIN scores in this sample, we conducted a one-way analysis of variance (ANOVA) for each of the four scores (story structure, structural complexity, internal state terms, comprehension) within each task (*retelling, telling*) using the *car* package (Fox & Weisberg, 2019).

3 Results

3.1 Demographic questionnaire

Fifty out of 58 parents completed the Demographic Questionnaire. 80% (40/50) reported that they have lived their entire lives in Kosovo, whereas 12 % (6/50) reported that they have not lived in Kosovo their entire lives, and 8% (4/50) did not respond to this item. Parents each reported their highest level of education with reports ranging from middle school completion to graduate degrees. About one quarter of parents completed middle school as their highest educational attainment. About half of parents who responded to this item completed a bachelor's degree or higher. The education levels of parents are shown in Table 3.

Table 3. Highest level education of parents reported in Demographic Questionnaire (n=50).

Parental Education Level	n	%
Middle school (up to year 8)	12	24
High school (up to year 12)	12	24
College (bachelor's degree)	12	24
Graduate degree (master's degree or above)	14	27

3.2 Home language questionnaire

Fifty-four out of 58 parents completed at least part of the Home Language Questionnaire. All 54 parents (100%) indicated Albanian as their child's first language. Fifty-one parents reported a proficiency level for their child's first language. Forty-nine parents reported Albanian as the child's first language with "Very good" proficiency. Two parents reported Albanian as the child's first language with "Good" proficiency, and both of these children were 5 years old. Three parents did not answer this question. All parents who filled out the questionnaire except one (98%) reported English as their child's second language.[1] The average age of initial exposure to English was 3 years, 2 months (range: 0-6 years; SD: 1.38).

Ten children were reported to also speak a third or fourth language. Third and fourth languages were reported as follows: five children spoke German, three children spoke Turkish, one child spoke Bulgarian, one child spoke Russian, one child spoke Bosnian, and one child spoke Arabic.

No parent reported concerns about their child's hearing. Parents reported their child's first words as early as 6 months old and as late as 3 years old (M= 1.37, SD= 0.57). In response to the question "Does your child talk like other kids in your community or in your family that are the same age?", 3 parents indicated "No" and 51 indicated "Yes".

Six parents reported developmental or language concerns on the questionnaire, as listed below:

- *Mendoj që nganjëherë nuk mund të shprehet shumë mirë në gjuhën shqipë, por mendon në gjuhë angleze pastaj e përkthem atë në trurim e saj.* 'I think that sometimes she can't express herself very well in Albanian, but she thinks in English and then translates it in her brain.'
- *Probleme me dialektin e Kosoves.* 'Problems with Kosovan dialect.' (from a family recently relocated)
- *Mos shqiptimi i mirë i fjalëve.* 'Not pronouncing words well.'
- *Sjellja ndaj tij me presion të lart resepcktivisht ton të lart ja humb -- aftësin për përgjigje adekuate.* 'Behaving towards him with high pressure or high tone, respectively, loses the ability for an adequate response.'
- *Është natyre më e ndishme, dhe ndonjeherë i duhet pak kohë që të shprehet me lirshe me përsona të panjohur për të.* 'He is more sensitive in nature, and sometimes takes a while to express himself freely with unfamiliar people.'
- *Unë shqetson pesha e ulët.* 'I'm worried about the low weight.'

[1] The English proficiency was reported as "Poor" (n=1), "Fair" (n=8), "Good" (n=20), "Very Good" (n=20), or no response (n=5).

3.3 MAIN results

All 58 children completed both MAIN narrative tasks. Narratives were elicited using the *Baby Goats* story as a retelling task and *Cat* story as a telling task. Children from all age groups were able to complete both tasks.

Descriptive statistics, with estimated confidence intervals where applicable, are provided by age group, narrative task (retelling, telling), and MAIN scoring section (story structure, structural complexity, internal state terms, and comprehension) in Table 4 for the retelling task and Table 5 for the telling task.

Table 4. Results for the narrative retelling task *Baby Goats* story.

Age	Score	M	M 95% CI	SD	SD 95% CI	Min	Q1	Med	Q3	Max
5–6 (n=11)	SS	5.60	3.60 – 7.70	3.50	2.53 – 5.25	0	3.25	6	7.75	12
	SC	1.10	0.70 – 1.30	0.57	0.42 – 0.92	0	1	1	1	2
	IST	1.40	0.50 – 2.1	1.35	1.07 – 1.58	0	0	1.5	2.75	3
	C	8.18	6.91 – 9.00	1.72	1.25 – 2.29	5	7	9	9.5	10
7 (n=13)	SS	6.54	5.46 – 7.46	1.90	1.35 – 2.77	3	6	7	7	10
	SC	1.15	–	0.38	–	1	1	1	1	2
	IST	1.92	1.08 – 2.46	1.32	0.99 – 1.69	0	1	2	3	4
	C	8.92	8.08 – 9.23	1.04	0.49 – 1.79	6	9	9	9	10
8 (n=9)	SS	8.00	6.11 – 9.56	2.78	1.81 – 3.74	4	7	8	10	12
	SC	1.22	–	0.44	–	1	1	1	1	2
	IST	2.22	1.22 - 2.78	1.20	0.71 – 1.79	0	2	2	3	4
	C	9.11	–	1.05	–	8	8	10	10	10
9 (n=14)	SS	8.46	7.23 – 9.38	1.98	1.55 – 2.56	5	7	9	10	11
	SC	1.23	–	0.44	–	1	1	1	1	2
	IST	2.92	2.23 – 3.54	1.32	0.99 – 1.73	1	2	3	4	5
	C	9.93	–	0.27	–	9	10	10	10	10
10 (n=11)	SS	9.11	7.89 – 10.89	2.26	1.27 – 3.50	7	7	9	10	14
	SC	1.56	–	0.53	–	1	1	2	2	2
	IST	3.00	1.35 – 4.44	2.50	1.87 – 3.05	0	1	3	6	6
	C	9.20	7.70 – 9.80	1.48	0.32 – 2.00	6	9.25	10	10	10

Note. *M* = mean, *CI* = confidence interval, *Q* = quartile, *Min* = minimum, *Med* = median, *Max* = maximum, *SD* = standard deviation, *SS* = Story Structure, *SC* = Structural Complexity, *IST* = Internal State Terms, *C* = Story Comprehension. Confidence intervals for the means and standard deviations were estimated with bootstrapping using the R *boot* package (Canty & Ripley, 2024). This non-parametric approach resamples the data with replacement to simulate the distribution of each descriptive statistic (Hinkley & Davison, 1997). For each measure, 5,000 samples were generated (*R* = 1000). The BCa (bias-corrected and accelerated) estimation method was used.

Table 5. Results for the telling task, the *Cat* story.

Age	Score	M	M 95% CI	SD	SD 95% CI	Min	Q1	Med	Q3	Max
5–6 (n=11)	SS	5.36	4.45 – 6.27	1.69	1.21 – 2.23	3	4	5	6.5	8
	SC	0.89	–	0.33	–	0	1	1	1	1
	IST	2.00	1.18 – 2.55	1.18	0.69 – 1.68	0	2	2	2.5	4
	C	8.09	6.73 – 8.91	1.92	1.27 – 2.82	4	7	9	9.5	10
7 (n=13)	SS	6.31	5.38 – 6.92	1.44	0.95 – 2.19	3	6	6	7	8
	SC	0.85	–	0.38	–	0	1	1	1	1
	IST	1.38	0.62 – 2.08	1.39	1.24 – 1.56	0	0	2	3	3
	C	8.85	7.62 – 9.46	1.63	1.04 – 2.36	5	8	10	10	10
8 (n=9)	SS	6.22	5.33 – 7.11	1.39	0.78 – 2.19	4	6	6	7	9
	SC	1.11	–	0.33	–	1	1	1	1	2
	IST	1.78	0.78 – 2 .33	1.20	0.73 – 1.51	0	1	2	3	3
	C	9.00	7.56 – 9.56	1.32	0.53 – 2.03	6	9	9	10	10
9 (n=14)	SS	8.23	7.23 – 9.15	1.92	1.39 – 2.77	5	7	8	10	12
	SC	1.08	0.69 – 1.31	0.64	0.41 – 0.86	0	1	1	1	2
	IST	2.92	1.75 – 3.75	1.83	1.27 – 2.50	0	2.5	3	4	6
	C	9.57	8.65 – 9.86	0.85	0.36 – 1.44	7	9.25	10	10	10
10 (n=11)	SS	8.67	6.33 – 11.00	3.77	2.35 – 6.15	2	8	8	10	16
	SC	1.11	–	0.33	–	1	1	1	1	2
	IST	1.33	0.33 – 3.50	1.97	0.52 – 2.74	0	0	0.5	1.75	5
	C	9.10	6.30 – 9.80	2.18	0.32 – 3.54	3	9.25	10	10	10

Note. *M* = mean, *CI* = confidence interval, *Q* = quartile, *Min* = minimum, *Med* = median, *Max* = maximum, *SD* = standard deviation, *SS* = Story Structure, *SC* = Structural Complexity, *IST* = Internal State Terms, *C* = Story Comprehension. Confidence intervals for the means and standard deviations were estimated with bootstrapping using the R *boot* package (Canty & Ripley, 2024). This non-parametric approach resamples the data with replacement to simulate the distribution of each descriptive statistic (Hinkley & Davison, 1997). For each measure, 5,000 samples were generated (*R* = 1000). The BCa (bias-corrected and accelerated) estimation method was used.

To determine if scores differed significantly between the age groups, we conducted a one-way analysis of variance (ANOVA) for each score of the two different tasks grouped by age (5–6, 7, 8, 9, and 10 years old). The results of these analyses are provided in Table 6. The story structure scores in both tasks (*Baby Goat* story retelling and *Cat* story telling) were, overall, significantly different between age groups. The structural complexity and internal state terms scores were not, overall, significantly different across age groups in either of the tasks. The comprehension scores only showed a significant effect of age in the retelling task.

Table 6. ANOVA results for each MAIN score by age group age (5–6, 7, 8, 9, and 10 years old).

Task	Score	*F*	*p*
Retelling (*Baby Goats*)	SS	3.46	.01*
	SC	1.37	.26
	IST	1.99	.11
	C	3.50	.01*
Telling (*Cat*)	SS	4.71	<.01*
	SC	0.93	.46
	IST	1.97	.12
	C	1.34	.27

Note. * indicates statistically significant differences between age groups (p <.05). SS = Story Structure, SC = Structural Complexity, IST = Internal State Terms, C = Story Comprehension.

4 Discussion and conclusion

The primary aim of this project was to provide the speech-language therapists at IKL with reference data for a language assessment tool to monitor language abilities over time and identify students who may need more support with language. Given the preliminary nature and community-based scope of this study, we recommend that these data be interpreted in conjunction with the range of potential values indicated by their confidence intervals, as illustrated in the case study provided below in Section 4.2. That is, a child's raw test score could be interpreted as a representing a possible range where their performance lies above or below the mean, and these data should be considered along with available non-standardized or criterion-referenced assessment techniques, including parent and teacher report (e.g., Alberta Language and Development Questionnaire; Paradis et al., 2010), language-general processing measures, such as nonword repetition tasks (Chiat, 2015; Ortiz, 2021), and language sample analysis (Ramos et al., 2022) to provide converging evidence of language disorder (Castilla-Earls et al., 2020). Analyses of variance between age groups (5–6, 7, 8, 9, and 10 years old) revealed overall significant differences in story structure scores across the age groups (5–6, 7, 8, 9, and 10 years old) for both the *Baby Goats* (story retell) task and the *Cat* (story telling) task. This suggests that the story structure scores in both story tasks may provide greater ability to differentiate performance across age groups in this sample when compared to the other three scores (structural complexity, internal state terms and story comprehension). Additionally, there was also a significant effect of age group on the comprehension scores from the *Baby Goats* retelling task. Taken together, these results indicate that the story structure scores from either story task are the most reliable indicators of different developmental levels of narrative ability in this sample, followed by the comprehension score from the *Baby Goats* story retelling task.

These results suggest that the Albanian adaptation of the MAIN assessed skills that improve as language and academic skills develop and may be useful to monitor progress over time in this population of children in Pristina, Kosovo. Additionally, the greater range of the story structure scores, and the stability of means and standard deviations across age groups that increased with age highlights this score as a diagnostically useful measure of language ability that is likely to capture developmental changes over time.

4.1 Comparison to previous research

This study contributes to a growing body of work that has adapted and localized the MAIN for different languages and populations (for an overview, see Lindgren et al., 2023). As previously mentioned, age effects have been found in performance on comprehension and production between ages 4;4 and 5;10 (Lindgren, 2019). In our study, significant age effects were found in comprehension performance for the retelling task, but not for the telling task. Significant age effects were also found in production for both telling and retelling (Story Structure score). Our findings align with previous studies in demonstrating age-related differences in narrative performance, though we did not directly compare specific age groups as in some earlier studies. Notably, we found a significant effect of age group on comprehension in the Baby Goats condition, but not in the Cat condition. This pattern is consistent with prior research indicating that contrasts like Baby Goats/Baby Birds tend to yield lower comprehension scores compared

to Cat/Dog, suggesting that the observed age effects may be driven in part by the stimulus material used (Lindgren, 2018).

4.2 Case Study: A practical interpretation of results

To illustrate how the data from the present study could be used in a clinical context, we will analyze one participant, which we refer to as Child A. In the Home Language Questionnaire (see Section 4.2), Child A's parents reported concerns about her language, writing, "I think that sometimes she can't express herself very well in Albanian, but she thinks in English and then translates it in her brain."

From the report given by the parents of this child, it is not clear whether the parents were referring to typical characteristics of multilingual language development, such as code-switching (Miccio et al., 2009) or concerns that may be indicative of language delay or impairment (Paradis et al., 2010). It is possible that this report may not indicate difficulty with expressive language. For discussion, we review the story structure and comprehension scores of Child A in relation to means and standard deviations for their respective age group, as shown in Table 4 and Table 5.

Child A was 9 years, 2 months old. Table 7 provides her story structure and story comprehension scores adjacent to the corresponding statistics for scores in her age group. For story structure, Child A's narrative retelling score was 6 and her telling score was 7 (out of a maximum of 17). Given the 95% confidence interval around the mean and standard deviation for the 9-year-old age group, Child A's story structure score in retelling would likely fall between 0.88 and 1.14 standard deviations below the mean for her age group. Her story structure score in telling would likely fall somewhere between 0.15 and 0.93 standard deviations below the mean for her age group. For comprehension, Child A scored 10 points (the maximum score) on both the narrative retelling and telling tasks.

Table 7. Story Structure (SS) and Story Comprehension (C) scores for Child A with group score statistics for her age group (Age 9).

Measure	Task	Score	*M*	M 95% CI
SS	Telling	7	8.46	7.23 – 9.38
	Retelling	6	8.23	7.23 – 9.15
C	Telling	10	9.57	8.65 – 9.86
	Retelling	10	9.93	-

Both of Child A's story structure scores were below the mean for the 9-year-old age group. Using the most conservative estimate, her scores would be 0.88 and 0.15 standard deviations below the mean on retelling and telling, respectively. Using ≥ 1 standard deviation below the mean as a typical cutoff, this would be considered on the lower end of the normal range but would not alone indicate the need for clinical intervention from a speech-language pathologist. At the opposite end of this possible range, her scores would be 1.14 and 0.93 standard deviations below the mean on retelling and telling, respectively. Depending on the paradigm applied, these could fall at or near a clinically significant level of low performance. In addition, Child A demonstrated strong receptive language abilities with maximum scores on both comprehension

tasks. Given the range of possible interpretations, follow-up with this child, including additional assessment measures to acquire a complete diagnostic view of expressive language abilities, would be warranted.

In sum, these reference data for the Albanian MAIN provide context for expected narrative language abilities in school-aged children living in Pristina, Kosovo. These data are most appropriately interpreted within this local context. Based on the current data, story structure scores may be the most informative scores for differentiating performance between age groups in this population. If individual performance is to be interpreted in the context of age group score statistics, the entire range of the confidence interval for a given reference value should be considered. Clinicians are encouraged to weigh clinical judgement, parent report, teacher report, and other available measures, along with these reference data, when evaluating language abilities.

4.3 Conclusion

More research must be conducted to understand school-age language development in Kosovo. The body of research on this topic is severely limited, which negatively affects students with language disorders who may be difficult to identify and consequently unlikely to receive support. Furthermore, a gold standard tool or set of tools for identification of developmental language disorder among children in Kosovo is not yet available, and only limited parental report data was collected in this study. Consequently, we highlight that the reference data presented here for the Albanian adaptation of the MAIN should be used for screening and/or in combination with additional language measures. Note that comparison to any group reference values in these data should consider the reported confidence interval for that value.

In this study, we collected reference data for the Albanian adaptation of the MAIN to aid in diagnostic decision-making and progress monitoring for speech-language therapists in Pristina, the capital city of Kosovo. Presently, no other comparable language assessment tool for school-age children in Kosovo exists. Across tasks, the story structure score was found to be the most reliable for differentiating narrative language performance across age groups (5–6 years, 7 years, 8 years, 9 years, 10 years). Comprehension scores on the *Goat* retell task also increased significantly with age. Together, these indicate a degree of construct validity and potential for these scores to be used to monitor progress over time and differentiate levels of language ability in this population. Completion of this community-based collaboration between the University of Iowa and *Instituti Kosovar për Logopedi* (IKL) and IKL's expanding provision of speech and language services in Pristina since 2020 highlight the recent growth of speech-language therapy in Kosovo and the urgent need for accessible and evidence-based speech and language assessment and intervention resources for the diverse communities within this country.

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Adapting the Multilingual Assessment Instrument for Narratives (MAIN) to Mizo

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This paper describes the adaptation of the Multilingual Assessment Instrument for Narratives (MAIN) to the Mizo language. Mizo is a vulnerable minority language spoken by a tribal population in Mizoram, which is situated in the northeastern part of India. A brief context about the region of Mizoram and an overview of the Mizo language are given in the paper, focusing on the language's distinct grammar and the interplay between the tonal and syntactic elements in shaping meanings in Mizo. Furthermore, it describes the adaptation process, the challenges faced with typological differences between Mizo and English, and the steps taken to fit the particular context. The MAIN Mizo adaptation offers an important tool to assess Mizo children in terms of their language development and narrative abilities.

1 Introduction and background

Narratives are an important part of many childhood speech acts, which makes them one of the most ecologically valid ways to assess communicative competence (Botting, 2002). The Multilingual Assessment Instrument for Narratives (MAIN; Gagarina et al., 2019) was created as part of the Language Impairment Testing in Multilingual Settings (LITMUS) battery developed by a working group that focused on Narrative and Discourse within the pan-European research network COST Action IS0804 (Armon-Lotem et al., 2015). MAIN is a reliable tool that was developed after examining and evaluating a variety of tasks used for eliciting narratives and identifying bilingual features in narrative discourse. The main feature of MAIN is its standardized procedure and use of four parallel picture sets (*Baby Birds*, *Baby Goats*, *Cat*, and *Dog*) that allow for the assessment of narrative skills and comparison across languages. MAIN has been adapted into a broad range of languages worldwide, including 11 Indian languages.

Although there have been numerous studies done on narrative development in children, the investigations are heavily biased toward English and the so-called WEIRD (Western, Educated, Industrialized, Rich, and Democratic) population (Von Suchodoletz & McNaboe,

2023). This leaves several linguistic communities unexplored. The Mizo language, spoken in the North Eastern part of India, is one of these unexplored linguistic communities.

India is the seventh-largest country by area, with a population of more than one billion, per the latest 2011 census (Bhattacharya, 2018). With its diverse population, India is home to a multi-ethnic and multilingual society. The Indo-Aryan languages dominate the North, West, and East of India, the Dravidian family of languages dominates the South of India, and the Tibeto-Burman language family dominates the Northeastern part of India (Mallikarjun, 2022). One of the states in the Northeastern part of India is Mizoram, a mountainous region home to the Mizo tribe. The region was formerly called Assam's Lushai Hills district until it became a Union Territory and later a state in 1987. Mizos are a minority group, recognized as Scheduled Tribe (ST) under the 6th Schedule of the Constitution of India. The term 'ST' refers to specific groups who are often geographically isolated from mainstream India and are recognized by the state of India as a Scheduled Tribe because of historical marginalization, limited access to social and economic opportunities. Tribal communities in India come from different ethnic backgrounds and speak languages from different families (Ambagudia, 2011).

The pre-colonial history of Mizoram is based on oral tradition and legends, which are passed on from one generation to another due to a lack of written records. Hence, there is not enough information to explain the origin and migration of the people (Lalchungnunga, 1994). Due to this, oral traditions and storytelling are deeply ingrained in the Mizo culture. It serves as a medium for sharing knowledge and values across generations. Mizo history became part of the Indian national narrative only after the military expansion into their territory. Research on this history is sparse, and existing accounts often suffer from colonial biases or a lack of reliability due to cultural and linguistic gaps.

The origins of the Mizos thus remain concealed in myths and oral narratives. One popular fable describes the Mizos as emerging from a massive rock called Chhinlung, while another suggests descent from the Chin Dynasty in China, with some Mizos believed to have been rebels who fled during a historical uprising. With no recorded history, these stories serve as cultural symbols for the community. Such myths are indicative of the challenges in reconstructing the history of a community that, until recent centuries, lived in relative isolation. Before British colonization, Mizos lived in small villages ruled by local chiefs. At the time, the region was called the "Lushai Hills" by colonial administrators. The arrival of English missionaries, known locally as Sap Upa and Pu Buanga, marked a shift in the history of the Mizos. These missionaries were instrumental in spreading Christianity and introducing formal education and literacy to the region (School Education Department, Government of Mizoram, 2024). According to some accounts, the Mizo language once had its script written on parchment. However, it was lost in a mythic tale involving a dog who ate the parchment. Subsequently, the missionaries devised a Mizo script using the Roman alphabet, making slight adaptations to fit the language's phonetic system. Their contributions to education and societal development are celebrated to this day in Mizoram.

Despite significant progress in education, Mizoram remains relatively unexplored in linguistic research. This has led to a growing need for tools that assess language skills in this context. As such, developing such tools will provide valuable resources for linguistic and

educational development and contribute to broader cross-linguistic studies. For instance, adapting a language assessment tool like MAIN to the Mizo language could make it more accessible and relevant while adding to the language versions of MAIN. This would also help linguists and educators take significant steps toward preserving the Mizo linguistic heritage and enriching the academic understanding of this understudied language.

2 A brief overview of the Mizo language

Mizo is the language spoken in the state of Mizoram in India. It belongs to the Tibeto-Burman group of the Sino-Tibetan language family. Although the language is classified as a Tibeto-Burman language, the exact sub-category within which Mizo belongs in the group varies from one analysis to another (Chhangte, 1986).

Before Mizo became the official language of Mizoram, each tribe spoke its own distinct language. These tribal languages were eventually replaced by the Lusei or Mizo language, which now serves as the lingua franca of the state. While various Kuki-Chin languages like Hmar, Lakher, Pawi, and Ralte are still present, many speakers have either forgotten or abandoned them in favor of Mizo, which unites its speakers (Lalsangpuii, 2015).

The Mizo language script was introduced in 1894 by the pioneer Christian missionaries Rev. J.H. Lorrain, known as 'Pu Buanga,' and Rev. F.W. Savidge, known as 'Sap Upa' amongst the Mizos. It was developed based on the Roman alphabet using the Latin script based on the Hunterian system of transliteration. It consists of 25 letters, which makes it slightly different from the standard English alphabet, which has 26 letters.

Mizo is a tonal language that includes four contrastive tones. These tones have been identified as High, Low, Rising, and Falling (Chhangte, 1986; Fanai, 2015). In Mizo, the meaning of words can be altered according to distinct tones. For example, the English word 'earth' translates to *lei* in Mizo. However, depending on the tone, the word *lei* can refer to a 'tongue', 'to buy something, or a 'bridge'. Similarly, the Mizo word *man* can mean 'catch', or 'price', depending on the tone.

Mizo has distinct typological features when compared to English, such as its SOV word order, as shown in (1), and the absence of definite and indefinite articles like (a/an/the). In Mizo, definiteness is inferred from context or marked by demonstratives such as *he* 'this', *chu* 'that', and the plural suffix *-te*, as shown in (2). In addition to this, tense and aspect in Mizo are indicated using particles, with *ta* marking the perfective aspect, as seen in (3), and *tum* expressing purpose or intention, as shown in (4). Negation usually occurs post-verbally, as seen with *lo*, as in (5) (Central Institute of Indian Languages, n.d.). Direct speech is conveyed with the quotative *a ti*, meaning 'said,' illustrated in (7). The Mizo language depends on clear and direct communication. It has simple word forms and a strict order where verbs are placed at the end of sentences.

(1) *Zawhte chuan phengphehlep a hmu*
Cat TOP butterfly 3SG see
'The cat saw a butterfly.'

(2) *sava* *note-te*
bird baby-DEF
'The baby birds.'

(3) *A* *tla* *ta*
3SG fall PST
'He fell.'

(4) *Man* *tum* *in* *a* *va* *zuang* *chhuak* *a*
Catch want/intend PURP 3SG DIR jump out PST
'He jumped out to catch it.'

(5) *A* *hmu* *hman* *ta* *lo*
3SG see PST PFV not
'He did not see it.'

(6) *Ui* *ka* *ball* *ka* *hlauh* *phah* *ta!* *a* *ti* *a*
Oh.no 1SG.POSS ball 1SG drop PFV PST 3SG say PST
'He cried: Oh no, I dropped my ball!'

Overall, the features of the Mizo language illustrated through the example sentences above show the syntactic patterns, such as the placement of descriptive elements, the verb-final SOV word order, and the use of particles and lexical verbs to express aspect, negation, and intention. These features depict the language's distinct grammar and shed light on the linguistic richness and the interplay between the tonal, morphological, and syntactic elements in shaping meanings in Mizo.

3 The adaptation of MAIN to Mizo

The adaptation of the MAIN Mizo version started in 2020, based on the revised MAIN English version (Gagarina, Klop, et al., 2019), and strictly followed the guidelines for adaptation (Bohnacker & Gagarina, 2019). It is important to note that adapting a linguistic tool to an understudied language presents a few challenges, particularly when there are insufficient resources and research. The present adaptation exemplifies such a case.

The first step taken before starting with the adaptation was eliciting the stories in the target language from 8 children, using the MAIN picture sequences. This step was crucial to help identify whether the characters and items in the original pictures were familiar to the children. Since some items in the original pictures did not fit the food habits and culture, some of the picture sequences were replaced with the modified versions.[1] For the *Dog* story, the picture sequence with the chicken legs instead of sausages was chosen to fit the context. Similarly, in the *Baby Goat* story, the picture with the brown fox was used. To serve the same purpose, for the *Cat* story, the author suggests that replacing the fishing rod with a fishing net would be more appropriate, considering the cultural familiarity of the learners in this context.

[1] The modified versions can be downloaded from the MAIN website: https://main.leibniz-zas.de/en/main-materials/main-materials/ (available after registration).

The adaptation involved numerous rounds of discussions and cross-checking to ensure the accuracy of the adapted Mizo version. After the author of this paper did the first draft of the adaptation from English to Mizo, the draft was sent to three native speakers for checking and proofreading. These individuals were Mizo language teachers, one with a Master's degree who was teaching in a school at the time, and the other two with Ph.D.'s, who were both teaching in colleges. One of these college lecturers also has expertise in English and Mizo language translations.

After receiving feedback, a revision was made with the suggested changes incorporated into the adaptation. Since the present adaptation would provide a valuable contribution to narrative assessment in the context, a decision was made to send the draft for final proofreading. A college professor with expertise in translation proofread and helped with the final revision. The adaptation of the Mizo MAIN reached its fruition due to the collaborative efforts of these individuals, who were open to helping and providing valuable feedback.

In the adapted version of MAIN Mizo, cultural and linguistic modifications were made to fit the context. For example, the word *thawnthu* 'story,' was added to the title of all four stories for the Mizo adaptation since this is how a story's title is conveyed in Mizo culture, and it appears more natural this way. For example, *Sava Note* 'Baby Birds' was renamed *Sava note te thawnthu* 'Baby Birds story'.

Furthermore, due to typological differences between Mizo and English, there are several instances where the lack of lexical and vocabulary equivalence, especially with regard to terminologies, poses a challenge. For example, some key terms like narratives, model stories, and internal state terms do not have direct lexical equivalents in Mizo. These were translated using close equivalents or by describing them. The term *sawi chi* 'narrative', which directly translates to 'to tell' was replaced with the word *thawnthu sawi* 'storytelling', which is more appropriate for the context since it is also deeply rooted in the culture. The 'model story' was translated as *thawnthu entawn*, meaning 'copying the story,' and internal state terms were described as *rilru a ngaihtuah sawina*, meaning 'to state what is being thought'.

English terms are retained in brackets to aid comprehension, especially for teachers or researchers who are most likely to use narrative assessment tools and are familiar with technical terminology. In the 'Protocol' section, the term 'counterbalancing' has been retained for methodological clarity. In this case, the Mizo equivalent term *inbuk rualna*, as per the English-Lushai dictionary,[2] does not fully convey the intended meaning. This prompted the authors to retain the English term. Apart from this, the terms 'scoring sheet' and 'assessment' have been preserved alongside their Mizo translation to clarify their usage. The word 'bilingual' was translated as *tawng chihnih thiam*, which means 'one who knows/speaks two languages' since there is no direct equivalent translation in Mizo.

Like many languages, Mizo vocabulary has been shaped by influences from other tongues. In the adaptation, some loan words from English, like *balloon* and *ball*, were used. Additionally, words related to merchandise and trade are often borrowed from Sanskrit-based

[2] The English-Lushai dictionary was written by J.F. Dailova and published in 1964. While there was other existing literature, this dictionary was his attempt to provide a more comprehensive resource, which was previously not available.

languages like Bengali or Hindi. Although the words 'store' and 'shop' both translate to *dawr* in Mizo, the original story used 'shopping,' which translates to the Hindi loan word *bazaar*. Hence, that word was used. These borrowed words have been retained in the translation of the story scripts. When possible, explanations rather than direct translations were provided, such as clarifying what 'audio recorder' means while keeping the English term. We included both the Mizo and the English word for 'envelope' since the English term is more commonly used today.

In some cases, more vocabulary options were added to make the context clearer. For example, in the 'Protocol' section, the options 'nursery' and 'Anganwadi' were added as alternatives to 'kindergarten.' This approach will help make the content easier to understand and relevant to the context while keeping the original material's meaning.

In sum, the process of adapting MAIN to Mizo first involved eliciting stories from the children using the picture sequences, modifying the picture sequences to make them culturally appropriate, and several revisions to maintain accuracy. Due to typological and lexical differences between Mizo and English posing a challenge in translation, certain terms were attributed with either their close equivalents or descriptions, all while retaining the original terms in brackets for cross-reference.

4 Concluding Remarks

The current paper briefly describes the significance of adapting MAIN to Mizo, including an overview of the social and cultural context of Mizoram and the Mizo language, as well as some challenges during the adaptation process. The Mizo MAIN can provide rich linguistic samples from Mizo speakers, which would provide valuable data to research language acquisition and development in a Mizo context, which is currently lacking.

Furthermore, the Mizo MAIN has a practical implementation in the teaching of both Mizo and the English language. Since oral narratives provide a rich source of data about a child's language in a relatively natural context, they can also be used as an oral part of a Mizo or English language proficiency assessment. Finally, as there is currently a growing scientific interest in studying minority languages worldwide, Mizo MAIN will provide a great opportunity to perform cross-linguistic comparisons with other languages. The author of this paper is currently piloting the Mizo MAIN in the telling elicitation mode as part of an ongoing Ph.D. project.

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Narrative macrostructure of Croatian 5–7-year-old preschoolers: the effects of receptive vocabulary, sentence comprehension and age

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Narrative skills start to develop during the preschool years. Significant growth in story structure and complexity is expected in older preschoolers, especially in the years just before they start school. This study aims to examine narrative macrostructure of Croatian preschoolers and the association between their core language skills and age on one side and narrative production abilities on the other side during the final preschool year (~ age of 6), when language and narrative skills develop rapidly. Receptive language skills were measured using standardized tests adapted for Croatian (PPVT-III-HR, TROG-2: HR) while narrative production was assessed through two macrostructure measures: story structure and episodic complexity (Croatian MAIN). The results show that the children primarily focus on objective events, such as attempts and outcomes, in their storytelling. They less frequently include goals, character intentions, perspectives, or internal states, showing a continued asymmetry between describing events and explaining causes and effects, especially those connected to the internal states of characters. Regarding episodic complexity, the children's narratives rarely contain complete episodic structures. The results also showed that receptive vocabulary, sentence comprehension, and age did not predict story structure. Other factors (such as task type, language, culture, the educational context, or expressive language skills) may have a greater effect on narrative production than these factors. The results highlight the need to research different contexts and

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conduct longitudinal and cross-linguistic studies to determine what is universal in narrative development and what may be attributed to other factors.

1 Introduction

In the early years of life, children's language development evolves from producing their first words to the ability to create meaningful discourse. One type of discourse particularly important in children's language development is narrative (storytelling). Narrative abilities are valuable for several reasons. First, narratives serve as an effective tool in fostering oral language development. Unlike everyday conversation, storytelling requires more complex language structures, including explicit vocabulary, clear use of pronouns, temporal and causal connectives, and organizing information in logical sequence. Through narratives, children gain opportunities to practice many advanced language abilities even before they start to read (Stadler & Ward, 2005). Moreover, narratives are considered a bridge to literacy. A large body of research has shown that oral narrative abilities in the preschool years are closely linked to emergent literacy or early reading abilities (Piasta et al., 2018), and later reading comprehension and writing skills (Griffin et al., 2004) in that way playing a significant role in later academic success (Boudreau, 2008; O'Neill et al., 2004).

Considering how early narrative abilities have been found to predict later language and academic outcomes, it is crucial to understand how these abilities develop throughout childhood and how they can accordingly be supported. The significance of narratives has been widely recognized, with many researchers investigating the progression of children's narrative abilities from early childhood through preschool and into years of formal school education, identifying key age-related milestones in narrative development. Throughout this period, considerable individual differences emerge among children's narrative abilities. These individual differences are shaped by numerous factors, including core lexical skills (e.g., Blom & Boerma, 2016; Khan et al., 2021; Tilstra & McMaster, 2007; Uccelli & Páez, 2007), cognitive development (e.g., Blom & Boerma, 2016; Duinmeijer et al., 2012), education, parental and peer interactions (e.g., Haden et al., 1997; Peterson & McCabe, 1994; Reese & Newcombe, 2007), cultural background (e.g., Melzi, 2000; Wang & Leichtman, 2000), socioeconomic status (e.g., Alt et al., 2016; Mozzanica et al., 2017), individual temperament and personality (e.g., Kucker et al., 2021). Age is often highlighted as one of the most important factors that predicts narrative abilities (e.g., Khan et al., 2016; Lindgren, 2019). Many studies have examined narrative abilities in children aged 4 to 7. However, less is known about developmental changes within narrower age ranges, particularly around the age of six. This developmental period around the age of 6 is marked by significant growth in narrative skills, highlighting the importance of exploring the interaction between age and language development. This study focuses on Croatian speaking children in their final preschool year to address this area.

1.1 Development of narrative abilities

The development of children's narrative abilities unfolds in several stages, typically spanning from early childhood to the beginning of the school years, but also during school years, adolescence and adulthood. Throughout preschool period, children make progress in multiple aspects of narrative abilities including the capacity to express the structural organization of the narrative, referred to as macrostructure and the use of specific linguistic elements, or microstructure (e.g., Berman & Slobin, 1994, Khan et al., 2016).

Numerous studies indicate that macrostructure develops extensively from age 3 to 7 (Berman & Slobin, 1994; Bohnacker, 2016; Lindgren, 2019). For instance, children's narratives between the ages of 2 and 3 usually involve just naming objects and people without forming connections between them but already by ages 3 to 4, although their stories often remain centered around a single topic without temporal or causal relationships, children begin to expand their narratives by listing perceptual attributes or character actions (Stadler & Ward, 2005). At the macrostructural level, one way to observe clear developmental progression in children's narrative abilities between the ages of 3–7, in both monolinguals and bilinguals, is through the measurement of story structure (Berman & Slobin, 1994; Bohnacker, 2016; Castilla-Earls et al., 2015; Khan et al., 2016; Lindgren, 2019; 2023). Story structure refers to the organization of a narrative into its essential components, such as the setting, characters, initiating events, goals, attempts, and outcomes. For example, findings from Khan et al. (2016) demonstrate age-related progress, with 5- and 6-year-old English-speaking children showing significantly stronger story-structure forming abilities compared to 3- and 4-year-olds. Similarly, Lindgren (2018) found that Swedish monolinguals and bilinguals at age 6 outperformed 5-year-olds, who, in turn, achieved higher scores than 4-year-olds on the same measures, including vocabulary, character introduction, and narrative macrostructure. Bohnacker (2016) reported that Swedish-English bilinguals aged 6 to 7 performed better than those aged 5, regardless of language, and similarly, Kunnari et al. (2016) found significant age-related improvements in story structure among Finnish monolinguals and Finnish–Swedish bilinguals aged 5 to 6;7. On the contrary, Lindgren's longitudinal (2019) study showed a large improvement in story structure from age 4;4 to 5;10, but no significant development from age 5–6 to 6–7, aligning with findings from a longitudinal study by Blom and Boerma (2016). This pattern suggests that narrative structure may undergo the most rapid development up to age 6, after which its progress stabilizes. As Stadler and Ward (2005) note, around age 6, children begin to produce narratives that contain a clear plot, including a problem that is resolved at the end. These stories follow a logical sequence of events, feature character development, and link the motivations and goals of the characters with the unfolding plot. However, Košutar et al. (2022) found significant differences between Croatian-speaking monolinguals aged 6 and 8, indicating that narrative abilities in this group continue to develop even after the age of 6. Similarly, Lindgren (2023) found comparable results with respect to the effect of age for both telling and retelling, suggesting continued development of narrative skills beyond age 6. Specifically, Swedish-speaking children aged 8 outperformed 6-year-olds on both storytelling and retelling tasks, further supporting the notion of ongoing narrative development during this

period. Thus, there seems to be greater agreement among research findings on early narrative development than on later stages, particularly between the ages of 5 and 7 and beyond.

1.2 Narrative abilities of children aged 5 to 7 years

Previous research has shown that, around the age of 6, children's narratives become more complex, and there is considerable variability in narrative production even within narrow age groups (Fiorentino & Howe, 2004). Describing narrative skills in detail at specific points in time, such as before entering school, provides valuable information not only for understanding narrative development but also for language assessment procedures.

Narrative macrostructure consists of various components, each serving different functions. When analyzed within story grammar models (e.g., Stein & Glenn, 1979), a narrative typically includes elements such as setting (time and place) and episodes. Each episode contains a central goal, which is considered a key element, along with additional components. According to the model presented in The Multilingual Assessment Instrument for Narratives (MAIN; Gagarina, Klop et al., 2019), these episodic components include an initiating event (internal state), goal, attempt, outcome, and reaction (internal state). By the age of five, children begin to produce attempts and outcomes more frequently (Lindgren, 2018; Trabasso & Nickels, 1992), and goals start to appear, though they are still infrequent (Soodla & Kikas, 2010; Trabasso & Nickels, 1992). At age six, children improve in their ability to mark settings and use internal state terms as initiating events (Lindgren, 2018), but their progress in marking goals (Lindgren, 2018; Soodla & Kikas, 2010) and internal state terms as reactions remains limited (Lindgren, 2018).

In terms of *episodic complexity*, specifically in producing sequences of core macrostructural components such as goals, attempts, and outcomes, research indicates that younger children, particularly those under the age of 5, often struggle to incorporate goals into their narratives (Khan et al., 2016). They tend to produce loosely linked descriptive and action sequences, connected using simple connectives (e.g., Berman & Slobin, 1994; Košutar & Hržica, 2021). By the age of six, narratives still rarely contain complete episodic structures, which within the MAIN framework consist of a goal, attempt, and outcome for a given episode, but children produce some kind of sequences like goal-outcome or goal-attempt. Lindgren (2018) reports that only 18% of the six-year-olds fail to produce any sequence. Five- and six-year-olds even occasionally produce complete episodes (attempt – goal – outcome), although this is rare as it occurs in only 11% of cases.

Finally, results from earlier studies (for an overview, see Lindgren, 2018; 2019) indicate that age-related development is not the same for different types of macrostructural components, and that it is important not only to analyze narratives in terms of an overall score for macrostructure but also to look more closely at different components of children's narratives. Given some overlaps but also some differences in the research findings on narrative development and the fact that many factors can influence this development, we should be cautious about generalizations without confirming existing research findings in different contexts, including different languages and cultures.

1.3 The relationship between core language skills and narrative development

Core language skills refer to the foundational abilities that underpin the comprehension and production of language, namely, grammar and vocabulary (e.g., Wilson & Bishop, 2022). There are different perspectives regarding the role of core language skills in the development of successful narrative. One widely accepted view argues that the macrostructure of a story – its overall organization and coherence – is closely related to both vocabulary and syntactic development (Bohnacker et al., 2020; Fiani et al., 2020; Hickmann, 2003; Karmiloff & Karmiloff-Smith, 2002; Sénéchal et al., 2008, Silva & Cain, 2024; Yang et al., 2023). This perspective suggests that children's ability to structure a narrative depends significantly on their language proficiency, particularly in vocabulary and grammar. On the other hand, a contrasting view posits that narrative macrostructure is less dependent on language-specific skills and more heavily influenced by broader cognitive abilities, such as memory and general problem-solving processes (Berman, 2001; Paradis et al., 2011; Trabasso & Nickels, 1992).

Despite this ongoing debate, a growing body of research strongly supports the idea that vocabulary and syntax are crucial in shaping the quality of young children's narratives. Lexical knowledge, in particular, plays an important role in enabling children to produce narratives that are clear and coherent, with appropriate references to characters, actions, and events (Uccelli & Páez, 2007). A richer vocabulary allows children to express ideas with greater precision, contributing to the overall clarity of their stories. Moreover, advanced grammatical knowledge, such as the ability to use complex sentence structures, helps children construct sentences that are logically connected and effectively organized. The use of appropriate connective devices, for instance, aids in creating a narrative flow, linking events in a way that is easy for listeners or readers to follow (Berman & Slobin, 1994; Eisenberg et al., 2008; Hickmann, 2004).

De Villiers and de Villiers (2000) argue that the ability to comprehend and convey causal and temporal relationships between events in a story may only develop after children acquire specific syntactic constructions. These constructions, such as subordinate clauses, are crucial for encoding complex relationships between events, allowing children to express how and why things happen in a narrative. For example, understanding how to link events causally (e.g., "because" or "so that") or temporally (e.g., "before," "after") can significantly enhance the coherence and depth of a story.

In sum, research consistently shows that as children's language skills, including both vocabulary and grammar, improve, there is a corresponding improvement in the quality, organization, and complexity of their oral narratives (Fiorentino & Howe, 2004; Khan et al., 2023; Sénéchal et al., 2008). Therefore, while cognitive processes undoubtedly play a role, the development of narrative macrostructure appears to be closely intertwined with language skills, especially during early childhood. In addition, some studies point out that the contribution of core language skills might differ with language status and age (e.g., Košutar et al. 2022; Lindgren & Bohnacker, 2020; 2022; Roch & Hržica, 2020) and that around six years of age narrative skills become more linked to overall language competence, including vocabulary and syntax.

2 Aim and research questions

Although studies have examined the development of story macrostructure through specific components, many rely only on composite scores. While findings are now available for several languages, general information on story structure and episodic complexity, as well as detailed descriptions of individual components, remains limited, particularly for underrepresented languages such as Croatian. Additionally, there are diverse perspectives on the role of core language skills in the development of effective narrative abilities. Some studies suggest that this relationship changes with age and development, and that around six years of age, narrative skills become more closely linked to overall language competence, including vocabulary and syntax. However, this shift requires further empirical investigation.

The current study aims to present the narrative skills of children in the final year before school (aged 5–7)[1] and to examine the effect of children's core language skills and age on their narrative abilities. The following research questions are asked:

- **RQ1**: What are the components of story structure that appear in the narratives produced by preschool children (aged 5–7), and what is their average story structure score?
- **RQ2**: How structurally complex are the narratives produced by preschool children (age 5-7)?
- **RQ3**: To what extent does receptive vocabulary, sentence comprehension, and age predict story structure in preschool children (aged 5–7)?

3 Method

3.1 Participants

The children in their final kindergarten year were recruited from kindergartens in Zagreb, Croatia. They were all monolingual children with typical language development (TD). To ensure the typical development of all participants, members of the kindergarten expert team, including a psychologist and a speech and language pathologist, were consulted. To additionally ensure that only TD children were included in the sample, those who scored two standard deviations below the average mean on standardized tests used in this research were excluded from the analysis ($N = 8$). The study thus ultimately included 38 children, all in their final preschool year (aged 5–7). Demographic characteristics of the participants can be found in Table 1.

[1] In Croatia, children typically begin primary school at the age of 6 or 7, depending on their birth date and developmental readiness. Consequently, the final year before school entry usually occurs between the ages of 5 and 7. This variation arises because children who are potential school enrollees and are born earlier in the calendar year (e.g., January to March) generally start school at age 6, while those born later (e.g., from April onward) are often considered for school entry in the following school year, thus beginning at age 7. Additionally, parental request or professional recommendations may sometimes lead to delays in school entry. By referring to 5–7 years of age as the final year before school entry, this paper accounts for the age variability within the Croatian educational system and captures the developmental stage immediately prior to formal schooling.

Table 1. Demographic characteristics of the participants

N_{total}	**Chronological age** (year; month)			**Gender**	
	M	***SD***	**Range**	**m**	**f**
38	6;3	0;6	5;1–6;11	20	18

3.2 Material

All children were assessed using two standardized language tests: the Croatian version of the *Peabody Picture Vocabulary Test* (PPVT-III-HR; Dunn et al., 2010, Kovačević et al., 2009) and the Croatian version of the *Test for the Reception of Grammar* (TROG-2: HR; Bishop et al., 2013, Kuvač Kraljević et al., 2014). The PPVT-III-HR assesses receptive vocabulary knowledge, i.e., vocabulary comprehension, while the TROG-2: HR test evaluates syntactic comprehension, specifically the understanding of sentences with varying syntactic complexity. Narrative samples were collected using the *Multilingual Assessment Instrument for Narratives* (MAIN; Gagarina, Klop et al., 2019), adapted to Croatian (Hržica & Kuvač Kraljević, 2020). The MAIN is part of the LITMUS battery, developed within COST Action IS0804, *Language Impairment in a Multilingual Society: Linguistic Patterns and the Road to Assessment* (Armon-Lotem, et al., 2015). Originally designed to assess narrative skills in children aged three to ten years, the instrument has also been shown to be suitable for adult assessment, with adults often not achieving maximal scores (e.g., Gagarina, Bohnacker et al., 2019; Hržica & Kuvač Kraljević, 2022; Leko Krhen et al., 2023). Thus, MAIN has proven effective in capturing developmental changes across different life stages in both research and clinical contexts. The instrument includes four stories designed to assess narrative comprehension and production through standardized procedures. Narrative production is evaluated through storytelling based on a visual template consisting of six separate images, which together form a cohesive picture story, allowing the child to create a narrative that integrates the individual images into a unified whole. Narrative comprehension is assessed via questions related to the story. In the present study, only narrative production was evaluated.

3.3 Procedure

The Croatian Ministry of Science and Education and the participating institutions (kindergartens) approved the study. Written informed consent was obtained from the parents, and the children provided verbal assent to participate. Children were tested individually in a quiet room. Only the participant and the examiner were present to minimize noise and interference from other children or external activities. The study procedure differed from that outlined in the MAIN manual (Gagarina, Klop et al., 2019). Instead of presenting paper versions of the stories, the assessment was done using a computer screen. The procedure was similar to the online testing procedure recommended on the MAIN website (e.g., Hamdani et al., 2021), but children were tested in-person. Each child chose a story from four colored squares displayed on a 15.60-inch screen. The child clicked on his or her choice of square, which initiated a PowerPoint® presentation. The setup was designed so the child believed the examiner did not know which story would be chosen. The child clicked on a square to select, with help from the examiner if needed. In reality, the examiner had already preselected the story. The same story

would be behind each of the squares the child would choose. Half of the participants were presented with the *Baby Goats* story, and the other half with the *Baby Birds* story. Only one of the two stories was used because the MAIN stories are carefully designed to align in linguistic and cognitive complexity (Gagarina, Klop et al., 2019). Although some studies (e.g., Lindgren, 2019) found higher story structure scores on *Baby Goats* than on *Baby Birds*, most of them (see Bohnacker & Lindgren, 2021; Lindgren, 2018) did not detect differences in narrative production between two stories. Furthermore, although Lindgren (2019) found that story structure scores were different, narratives told to the two stories had similar levels of episodic complexity. To control the effects of shared knowledge and joint attention, only the child was able to view the picture prompts during the storytelling. At the beginning of the task, the child viewed the entire set of six pictures in the middle of the screen. All the pictures were the same size. The sequence was then displayed across subsequent slides (two pictures at a time): first showing the initial two pictures, followed by the next two, and concluding with the final two. All that time the examiner pretended not to know the story. This mimicked the offline (paper) MAIN procedure. Unlike the paper version of MAIN or Kawar's et al. (2023) online procedure and following the procedure used by Košutar et al. (2022), the children could only view the two pictures currently on the screen. This decision was based on the author's clinical experience. In assessments with the online version of MAIN, younger children – especially those with short attention spans – often playfully press the buttons and jump from slide to slide. This behavior can disrupt the order of their stories. It can lead to incoherence by adding details about pictures whose plot the child has already explained. Preventing them from going back can help them to focus more on the task itself than on the means (e.g., the computer keyboard) used to set it. However, it was important to note that the child was told in advance that they would not be able to go back to the previous pictures. The stories produced by children were audio recorded.

3.4 Data analysis

All audio recordings were transcribed and analyzed using the CHAT system and the CLAN program from CHILDES (MacWhinney, 2000). Transcription and coding were done by trained native Croatian speakers. Repetitions, fillers, code-switching, nonwords, and hesitations were specially coded and excluded from analysis. All transcripts passed the CHECK function in the CLAN program. Inter-transcriber reliability was tested and found to be almost 90%, showing strong consistency in the transcription and coding process.

In the MAIN protocol, the story structure is assessed based on several key components, with a maximum of 17 points being awarded. Up to 2 points can be given for the setting, depending on how well the child establishes the time and place of the action, with 1 point awarded for stating the place and 1 point for stating the time in which the story takes place. The expression of the internal states as initiating events, goals, attempt, resolution and internal states as reaction are each worth up to 3 points each in the MAIN protocol. One point can be awarded for each of these components in all three situations that make up the entire story. Therefore, the five components (internal state as initiating event, goal, attempt, outcome, and internal state as reaction), each of which can appear and receive a point up to three times (i.e., in three different story situations), contribute a total of 15 points. Together with 2 points for the situation, for the

story structure one can achieve a maximum score of 17 points. The internal state as an initiating event sets the plot of the story in motion, leads the characters towards their goal and provides the framework for the narrative. This initiates the characters' journey or the unfolding of events. Next, the characters make attempts to reach their goal, and in the end the situation (or problem) is resolved – the goal is either reached or not. The internal states as reactions describe how the characters respond to the resolution of the story and reflect their emotional or psychological reactions.

In analysing episodic complexity, the highest episodic complexity reached by the child (out of three episodes) was assessed, as suggested by Gagarina, Klop et al. 2019. This focuses on the types of sequence children can produce rather than how many times they have produced the structure. This approach is important because a child may understand less of a particular episode or may have had difficulty paying attention during the task. Our goal was to determine only the highest level of episodic complexity that a child can achieve in storytelling: a child can produce no sequences, a two-element sequence not including Goal (Attempt-Outcome), Goal without other components (Attempt and/or Outcome), a two-element sequence including Goal (Goal-Attempt or Goal-Outcome) or a complete Goal-Attempt-Outcome sequence. Receptive vocabulary and sentence comprehension were assessed using standard scores from standardized tests. All analyses were performed in IBM SPSS version 26.0 (IBM, 2019). A linear regression analysis was performed to investigate the effect of age, receptive vocabulary and sentence comprehension on the story structure score. All prerequisites for the regression analysis were met: the relationships between all variables were linear, there was no multicollinearity among the explanatory variables (all variance inflation factors (VIFs) were less than 2, and the tolerance values were higher than 0.2), the residuals followed a normal distribution and were homoscedastic. The Durbin-Watson statistic was 2.1, supporting the assumption of independent errors and adding confidence to the model's robustness. During the preparation of the analysis, one outlier was identified: a child with a story structure score of 2. As this is only a single score and the results are generally close together due to the small age range of the participants, this outlier is likely to be noticeable but will probably not significantly affect the results of the analysis. Therefore, this score was not excluded from further analysis.

4 Results

This section first presents the results of the descriptive statistics, including the participants' receptive language skills and the characteristics of the macrostructure of the narratives they produced. The results of the linear regression analysis are then presented, showing the effects of language skills (vocabulary and sentence comprehension) and age on the story structure of the produced narratives.

4.1 Descriptive statistics

Here, the participants' receptive language skills and the characteristics of the macrostructure of narratives they produced are described.

4.1.1 Receptive language skills

Receptive language skills were assessed using the previously described standardized tests. Table 2 shows the results of the 38 children who passed these tests, achieving scores within ±1 SD. Results are expressed as standard values (scores).

Table 2. Receptive language skills result of participants measured by standardized tests[2]

Standardized language test	Language skills test measures	Standardized score		
		M	***SD***	**Range**
PPVT-III-HR (*M*=100, *SD*=15)	vocabulary comprehension	118.63	11.73	96-141
TROG-2:HR (*M*=100, *SD*=15)	syntactic comprehension	100.83	8.89	86-115

4.1.2 Narrative production skills

Total scores of story structure and scores of story structure by episode can be seen in Table 3. Out of a total score of 17, participants average score on story structure was *M* = 5.73 with standard deviation of *SD* = 1.90. Narrative production scores of story elements in each episode can be found in Table 4. It is evident that the children of the observed age in this study focus more on the objective events in the story (attempts and outcomes) and less on the characters' perspective of their goals and internal states that motivate their behavior or arise as a consequence of the outcomes. The results indicate that participants achieved the highest success in the third episode, possibly again demonstrating the children's peak focus on the story's resolution and outcome. The results for the episodic complexity categories can be found in Figure 1. At the level of descriptive results, the findings are grouped according to the categories available in the MAIN protocol (complexity categories listed on the scoring form). As described earlier, the highest level of complexity achieved by the child is reported, beginning with the Attempt-Outcome sequence, followed by Goal, then Goal combined with another component (e.g., Goal-Attempt or Goal-Outcome), and finally the most complex category, full Goal-Attempt-Outcome sequence (full episode). Most participants are at the lowest level of episodic complexity, typically expressing the link between attempt and outcome without specifying the characters' internal states and goals leading to these attempts, or the internal states that follow them.

Table 3. Descriptive statistics for the story structure score

	Story structure score		
	M	***SD***	**Range**
Setting (Max = 2)	0.03	0.16	0–1
Episode 1 (Max = 5)	1.50	0.95	0–3
Episode 2 (Max = 5)	2.05	1.01	1–5
Episode 3 (Max = 5)	2.16	0.72	1–3
Total score (Max = 17)	**5.73**	**1.90**	**2-10**

[2] Please note that ±1SD, i.e. standard scores between 85 and 115, are considered average, which means that the child has passed the test. Scores below 85 and above 115 reflect results that are below and above average, respectively.

Table 4. Frequency of macrostructural components produced in narratives

Story element (possible score range)		**0** ($n_{participants}$)	**1** (n+%$_{participants}$)
Setting (A1)	Time of action (0-1)	37	1 (2.63%)
	Place of action (0-1)	38	0 (0.00%)
Episode 1 (A2-A6)	A2: Internal state as initiating event (0-1)	27	11 (28.95%)
	A3: Goal (0-1)	31	7 (18.42%)
	A4: Attempt (0-1)	21	17 (44.74%)
	A5: Outcome (0-1)	16	22 (57.89%)
	A6: Internal state as reaction (0-1)	38	0 (0.00%)
Episode 2 (A7-A11)	A7: Internal state as initiating event (0-1)	32	6 (15.79%)
	A8: Goal (0-1)	23	15 (39.47%)
	A9: Attempt (0-1)	10	28 (73.68%)
	A10: Outcome (0-1)	12	26 (68.42%)
	A11: Internal state as reaction (0-1)	35	3 (7.89%)
Episode 3 (A12-A16)	A12: Internal state as initiating event (0-1)	35	3 (7.89%)
	A13: Goal (0-1)	37	1 (2.63%)
	A14: Attempt (0-1)	1	37 (97.37%)
	A15: Outcome (0-1)	11	27 (71.05%)
	A16: Internal state as reaction (0-1)	23	15 (39.47%)

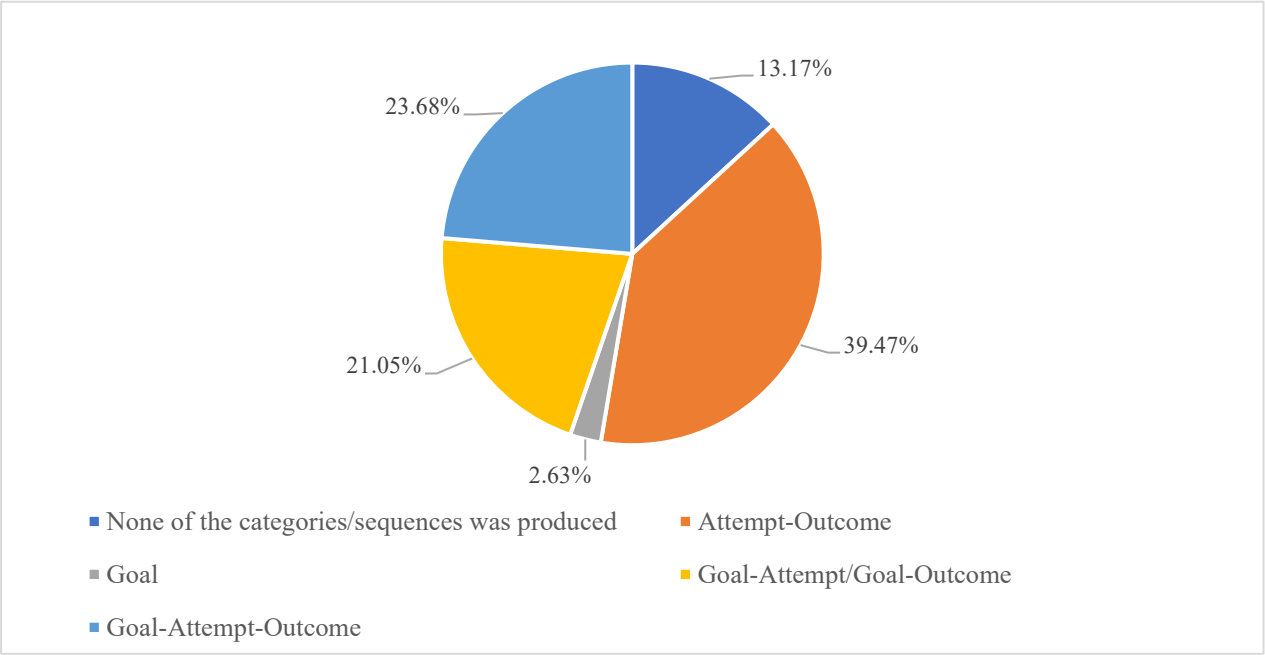

Figure 1. Percentage of participants reaching each category of episodic complexity

4.2 Effects of language skills and age on story structure

In the model, receptive vocabulary, sentence comprehension and age were entered as predictors and story structure as dependent variable. Receptive vocabulary, sentence comprehension or age are not independently statistically significant predictors of the story structure score. Furthermore, even entered together as predictors they do not explain a significant part of the

variance in the dependent variable, i.e., story structure score. For details of the model, see Table 5.

Table 5. Model specification for the effects of age and language skills on the story structure score

Predictors	*B (SE)*	*β*	*t*	*p*	Model Summary
receptive vocabulary	.03 (.04)	.16	.941	.35	$R = .38$
sentence comprehension	.00 (.03)	.00	.026	.98	Adj. $R^2 = .12$ $F(3, 34{,}37) = 1.486$
age	.09 (.05)	.27	1.590	.12	$p = .24$

5 Discussion

This study examined the narrative abilities of 38 monolingual Croatian children during the final preschool year period (age 5 to 7), a period of time marked by rapid development in language and storytelling. We focused on the story structure score as well as the different components of story structure and on episodic complexity. Additionally, the predictive role of children's receptive language skills and age for narrative macrostructure was investigated. Receptive language skills were measured using standardized tests translated and adapted for Croatian (PPVT-III-HR, TROG-2: HR), while narrative production was assessed story structure measures based on the MAIN instrument (Gagarina, Klop et al., 2019), translated and adapted to Croatian (Hržica & Kuvač Kraljević, 2020).

The results showed that our participants, children in their final preschool year in Croatia, aged 5 to 7, still rely heavily on objective events – such as attempts and outcomes – when storytelling. They express goals, character intentions, perspectives, and internal states less frequently. At this age, an asymmetry remains in their storytelling between what happened (events) and why it happened, including reasons, explanations, and the emotional consequences certain events evoke. These results are consistent with findings from previous studies (Lindgren, 2018; Stadler & Ward, 2005; Trabasso & Nickels, 1992), which report that as narrative skills develop gradually, children aged 5 to 6 begin to produce stories that follow a logical sequence of events with a clear plot, including a problem that is resolved at the end. In contrast to Lindgren (2018), we found that children more frequently produce internal states as reactions rather than as initiating events. In her study, children produced outcomes more frequently than children in this study, although the results varied significantly depending on the group, considering the age and language(s) of her monolingual and bilingual participants. The monolingual groups of 5- and 6-year-old Swedish children in her study, which were the best comparison to our participants due to their alignment in both age and language background (being monolingual), expressed outcomes in more than 80% of cases. In contrast, our participants expressed outcomes in just over 40% of cases. This discrepancy could be attributed to cultural, linguistic, and educational factors, suggesting that Croatian children sometimes tend to present internal states as reactions, treating them as effects in the cause-effect structure of their narratives, and therefore sometimes produce them instead of outcomes themselves. What is surprising is that only one child in our study specified a single component of the setting. A further comparison with the monolingual participant group in Lindgren (2018) showed that although the younger children in her study often omit details about the setting, older children

incorporate this element into their narratives with increasing frequency (from around 10% at the age of 4 to around 30% at the age of 6). This development reflects a growing understanding of narrative structure and the importance of context in storytelling. However, this trend could, among other linguistic and cultural peculiarities that might impact these differences, also suggest that the inclusion of setting components depends on storytelling experience and education about narrative structure. The fact that this was not the case in our study may be related to the absence of instruction on narrative structure, even in its spontaneous, implicit, and experiential forms. The narratives of the children who participated in this study differed from those in previous research in terms of the usage of story structure components, possibly due to the cultural and linguistic context of the study. As Neuman and Dickinson (2001) emphasize, narrative development is shaped by cultural norms and educational practices, with formal education systems playing a significant role in fostering or constraining these opportunities. Unlike other countries (e.g., Finland, Australia), in the Croatian education system, narrative skills are not explicitly highlighted in the preschool curriculum. This may lead to stories lacking certain components, such as the setting.

In terms of episodic complexity, many children in our sample (39.47%) produced Attempt-Outcome sequences as their highest level of complexity. This supports the idea that young children often struggle to incorporate goals into their narratives (Khan et al., 2016). The fact that only 2.63% of children in our sample produced only the goal(s) suggests that once children can produce goals, they quickly integrate them into more complex sequences or combine them with attempts and/or outcomes. Consequently, 21.05% of children in our sample were able to produce Goal-Attempt-Outcome sequences. However, 23.68% of our participants were still at the level of Goal-Attempt or Goal-Outcome sequences, indicating that even at around age 6, many children's narratives still rarely contain complete episodic structures, as also shown in previous research (Lindgren, 2018). Additionally, some children around that age still produce no sequences or goals (as seen in our research, 13.1%).

In the present study, receptive vocabulary, sentence comprehension and age did not predict story structure. The results of this study contrast with those studies that found an impact of age on story structure (Berman & Slobin, 1994; Bohnacker et al., 2022; Fiorentino & Howe, 2004; Lindgren, 2019; Lindgren & Bohnacker, 2022). One possible explanation for this finding is that, in our context, considering the specific characteristics of both the language and the educational system, children aged 5 to 7 years may not yet show clear developmental differentiation, i.e. statistically significant changes in narrative production, as reported in previous studies. This may be because, in Croatia, kindergarten education is not mandatory, and even those who do attend preschool are exposed to a curriculum that lacks clear guidelines and expectations for supporting and developing narrative abilities. Since children usually begin formal schooling at the age of 7, and explicit instruction in narrative skills is not systematically provided before that, it is possible that the developmental gains observed in studies conducted in other educational contexts, where schooling starts earlier or narrative abilities are more actively fostered in preschool, are not yet present in our sample. In the Croatian context, more substantial changes in narrative abilities may occur between ages 7 and 8, following the start of formal education, which may also explain why Košutar et al. (2022) found differences between

Croatian children aged 6 and 8, with eight-year-olds outperforming six-year-olds in measures of narrative macrostructure. It is possible that if a wider age range had been included in this study, age would have played a more significant role. Lindgren and Bohnacker (2022), for example, in their research that included children aged 4–6, observed that age-related effects on the macrostructure of narratives were more pronounced in bilingual children when younger children were compared with older children. It is possible that within the age range of 5 to 7 years, other factors such as individual language skills, task demands or exposure and engagement in storytelling have a greater influence on narrative production than age alone.

It is important to note that our participants all came from a few different kindergartens (all located in the same city), which means that they were exposed to similar programs, activities and interactions with their peers. This homogeneity of the sample limits the generalizability of our findings to the wider population. Including children from different preschools with different programs and environments could provide more diverse data and allow for a better understanding of narrative skill development in a broader context. This suggests that while age is an important factor, its influence on narrative development may be less pronounced whereas other variables such as language proficiency and language exposure (Bohnacker et al., 2022) and (pre)school experience play a greater role. Furthermore, the influence of age on narrative production may depend on the type of narrative task used. As Lindgren and Bohnacker (2021) argue, narrative tasks that involve complex language structures or require greater cognitive effort may not show age-related effects unless the children have reached a certain threshold in their linguistic and cognitive development. The MAIN protocol used in our study captures narrative skills that may be influenced by the demands of the task (Lindgren, 2023), which vary depending on each child's experience with storytelling.

Results from the present study indicate a need to consider other perspectives, i.e., factors that could have an effect on storytelling. For example, that could be general cognitive abilities like memory and problem-solving rather than language-specific skills (e.g., Berman, 2001; Paradis et al., 2011; Trabasso & Nickels, 1992). Moreover, it should be taken into account that vocabulary and grammar are complex skills and that general measures such as standardized tests used in this study might not be precise enough to capture aspects of core language skills relevant for narrative production. For example, the Croatian receptive vocabulary test PPVT-II-HR used in this study has been standardized. However, Kuvač Kraljević et al. (2015) reported slightly skewed results in their validation study when compared to the national preschool population the test was originally standardized on. Their sample showed an average standard PPVT score of 112.19, which contrasts with the scores of the population used to validate the Croatian version of the test. Over time, it seems that the PPVT-II-HR has become less sensitive, likely due in part to language and cultural changes. As a result, children often achieve relatively high scores for their age group (e.g., Hržica & Roch, 2020). Silva and Cain (2024) suggest using measures such as knowledge of discourse markers or coherence relations that may be more sensitive in capturing narrative production changes in children. It is also important to note that many studies, including this one, often search for a connection between receptive language abilities and narrative production skills. However, the level and extent of vocabulary and

syntactic production might serve as better predictors of narrative production than receptive skills alone.

Finally, results of this study highlight the need to monitor early literacy development and to identify and support children with language difficulties at an early stage, especially given the importance of narrative skills for later academic success. The age range of the children who took part in our study is of crucial importance in the Croatian education system, as it corresponds to the period in which children are assessed before they start school. By recognizing the expected level of narrative abilities at this age, we can identify and differentiate children at risk for later difficulties at school age, which may help prevent language disorders or reduce their severity.

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Adaptation and validation of MAIN for Ukrainian: Insights into story structure and story complexity in Ukrainian-Russian bilinguals

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The present paper focuses on the adaptation and validation of the Multilingual Assessment Instrument for Narratives (MAIN) for Ukrainian, drawing on data collected from 18 typically-developing Ukrainian-Russian bilingual children aged six to nine years (mean age = 7;7). Data were collected between August and September 2022, with all participants arriving in Germany after the onset of the full-scale war in Ukraine in February 2022. The paper has two main objectives. First, it outlines the process of adapting MAIN to Ukrainian and, using data from both Ukrainian and Russian, it addresses the systematic challenges encountered during analysis that may also apply to other languages. Second, the paper presents findings related to macrostructure measures—specifically, story structure and story complexity—in the children's narratives across both languages. Importantly, this study offers valuable insights into the macrostructural skills of the children, considering not only the languages themselves but also the role of language dominance.

1 Introduction

Since its initial development, the Multilingual Assessment Instrument for Narratives (MAIN) has been adapted to numerous languages. As of May 2025, MAIN is available in 92 languages (Multilingual Assessment Instrument for Narratives, 2025). Yet, until 2022, no Ukrainian version existed. With the large-scale displacement of Ukrainians across the globe, particularly to Europe and North America in 2022, there arose an immediate demand for an adaptation of the instrument into Ukrainian.

This paper has two main objectives.[1] First, it describes the process of adapting MAIN to Ukrainian, addressing specific linguistic challenges and proposing adjustments to the scoring protocols. During our analysis of Ukrainian and Russian data, we identified several recurring issues that require further discussion, which we believe may be relevant for other languages as well. Second, using data from 18 Ukrainian-Russian bilingual children assessed with MAIN, we present findings on two macrostructural measures – story structure and story complexity – across both languages. In doing so, we aim to contribute to the ongoing research on bilingual children's narrative skills across their two languages, addressing the contradictory findings of previous studies.

The article is structured as follows. In Section 2, we present a brief overview of the Ukrainian language. Section 3 explores bilingualism in Ukraine, discussing the historical reasons behind its development and describing current language attitudes and the state of bilingualism in the country. In Section 4, the adaptation of the MAIN to Ukrainian is discussed, highlighting the challenging cases encountered during the analysis of Ukrainian and Russian productions. Section 5 reviews previous research on narrative skills in bilingual children. Following this, Section 6 outlines the aims of the study. The methodology, including participant demographics, materials, and procedures for calculating language dominance and story complexity, is described in Section 7. Section 8 presents the results regarding story structure and story complexity in Ukrainian-Russian bilingual children, analyzed by both language – Ukrainian and Russian – and language dominance. Finally, Section 9 offers a discussion of the findings, concluding that the results on the macrostructural skills of Ukrainian-Russian bilingual children align with much of the existing research suggesting that narrative skills are acquired universally and can be transferred between languages.

2 Ukrainian

Ukrainian is an East Slavic language belonging to the larger Indo-European language family and is written using the Cyrillic alphabet. There are several theories as to the emergence of the Ukrainian language. In the Soviet times, the prevailing view was that the beginning of the Ukrainian language, like those of Russian and Belarusian, dated back to the 13th–14th centuries, and the three languages emerged from the Old East Slavic language (Filin, 1972; Medvedev, 1955). However, modern linguists criticize this theory and argue that Ukrainian developed from the Proto-Slavic language, independently from Belarusian and Russian (Shevelov, 1994; Pivtorak, 2019). In terms of lexical similarity, Belarusian is the closest language to Ukrainian, with 84% shared vocabulary, followed by Polish (70%), Slovak (68%), and Russian (62%) (Pivtorak, 2019). Ukrainian morphology is characterized by a rich system of inflection, where nouns, pronouns, and adjectives are marked for case, number, and gender, leading to a high degree of syntactic flexibility. Ukrainian is a language with free word order, but the typical word order is SVO, where variations mostly occur for emphasis or stylistic reasons (Press & Pugh, 1999).

[1] Parts of this paper originate from one of the author's unpublished Master's thesis.

3 Bilingualism in Ukraine

Bilingualism in Ukraine has deep historical roots shaped by centuries of sociopolitical dynamics, including the influences of imperial rule, Soviet policies, and complex cultural exchanges. From the 17th to the 20th centuries, the territory of modern Ukraine was divided between various states and empires, in particular the Polish-Lithuanian Commonwealth, the Austro-Hungarian Empire, the Russian Empire, and later the USSR, all of which enforced policies aimed at assimilating the Ukrainian population and suppressing the Ukrainian language and culture (see Plokhy, 2005, 2015; Portnov, 2020). The Russian Empire's territorial expansions in the 18th and 19th centuries introduced significant Russification policies, which continued under Soviet rule. For instance, the 1938 Soviet decree enforced the study of Russian in all schools across Soviet republics, including Ukraine, further establishing Russian as the language of administration, education, culture, and public life. These policies resulted in widespread bilingualism, with many Ukrainians becoming proficient in both Ukrainian and Russian, and established Russian as a dominant linguistic presence across many regions, particularly in urban centers, the eastern and southern parts of Ukraine (see Bilaniuk & Melnyk, 2008; Shevelov, 1987; Masenko, 2005; Sokolova, 2022).

After gaining independence in 1991, Ukraine pursued policies to reestablish Ukrainian as the primary language of public life, education, and administration. This was formalized with the 1989 declaration of Ukrainian as the state language, followed by independence-driven reforms aimed at increasing Ukrainian usage in education and media (Bowring, 2011; Azhniuk, 2017). However, Russian continued to have significant influence in the eastern and southern parts of the country, while Ukrainian remained prevalent in the western parts, creating a bilingual environment where language use varied by region and context (see Taranenko, 2007; Bilaniuk, 2010, 2018; Kulyk, 2015; Lakhitova, 2017).

The sociopolitical and linguistic landscape changed notably after the 2014 Euromaidan protests, Russia's annexation of Crimea, and the war in Donbas, culminating in the full-scale Russian invasion on February 24, 2022. This has led to a number of legislative measures that have established Ukrainian as the primary language in public sectors while also protecting linguistic rights of ethnic minorities (see Place & Everett, 2024; Masenko, 2019a).

The political events have also reflected on language attitudes and language use in Ukraine (Kulyk, 2016, 2018, 2024; Bilaniuk, 2018; Barrington 2022; Racek et al., 2024). Recent surveys indicate a positive shift toward Ukrainian, particularly since 2014, while attitudes toward Russian have generally declined (e.g., Ilko Kucheriv Democratic Initiatives Foundation & Razumkov Centre, 2022; KIIS, 2019, 2022). This, in turn, has led to increased usage of Ukrainian. For instance, Figure 1 shows that the percentage of people using Ukrainian in their daily lives increased from 2017 to 2022 (KIIS, 2022).

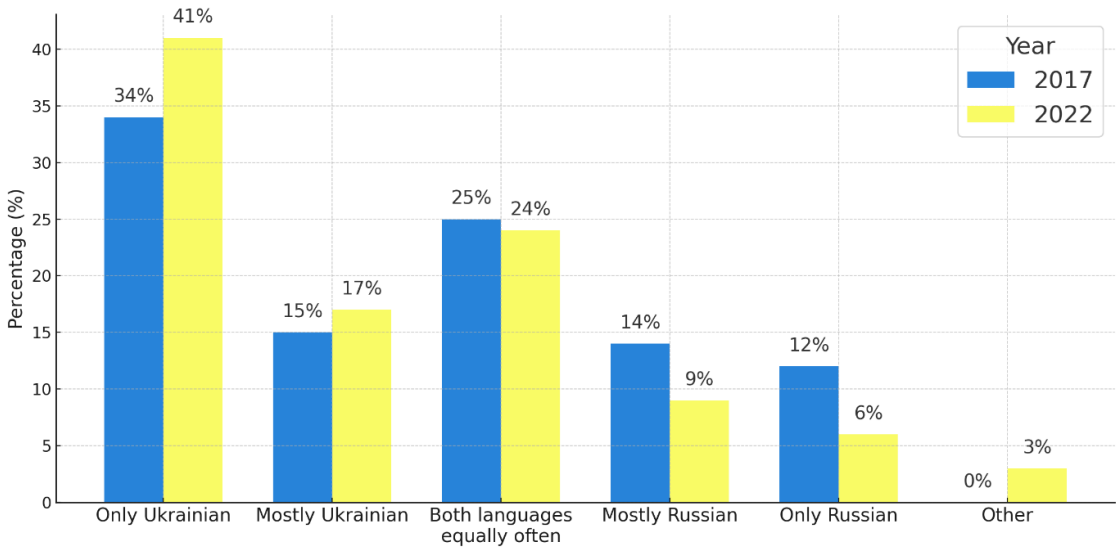

Figure 1. Languages spoken in everyday life in Ukraine (2017 vs. 2022) (KIIS, 2022).

Despite this shift, many Ukrainians continue to use both languages. As shown in Figure 1, while 41% of respondents reported using only Ukrainian and 6% only Russian in 2022, over 50% indicated that they use both languages. However, these percentages vary significantly across different regions of Ukraine, as illustrated in Figure 2 (KIIS, 2019). In the western regions of the country, 80% of respondents speak only Ukrainian. The central and southern regions show significant use of both Ukrainian and Russian, with 32.8% in the central regions and 32.1% in the southern regions using both languages equally often. In the eastern part of the country, 36.3% use both languages, while Russian remains dominant in the Donbas region, the main part of which was already occupied by the year when the survey was conducted.

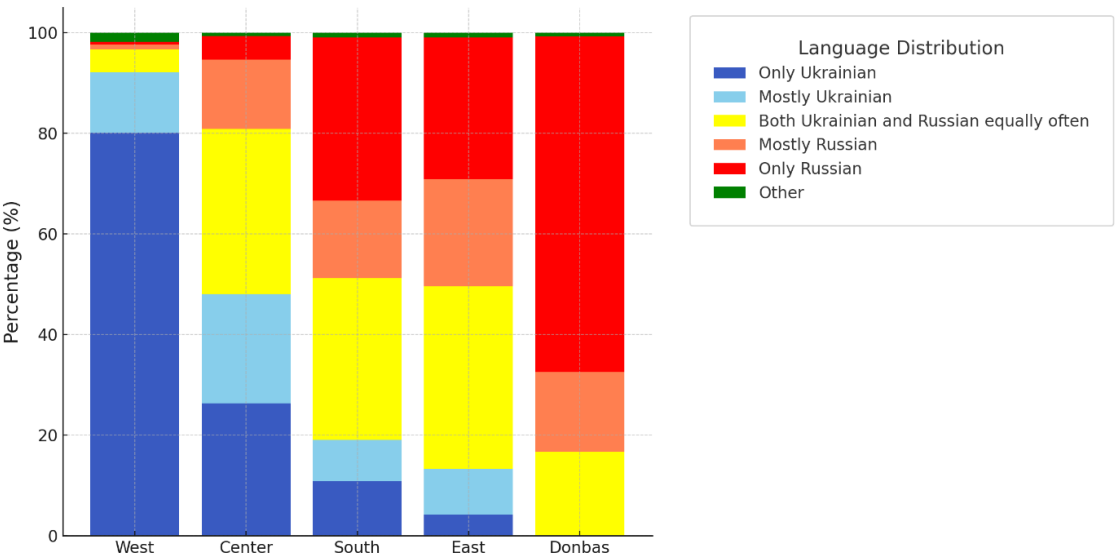

Figure 2. Languages spoken with close relatives in Ukraine by region (KIIS, 2019).[2]

[2] In 2014, following the Euromaidan protests and the overthrow of the Yanukovych government, Russia annexed Crimea. In the same year, pro-Russian separatists declared the self-proclaimed 'Donetsk People's Republic' (DNR) and 'Luhansk People's Republic' (LNR) (cf. Katchanovski, 2016). Thus, survey data from Donec'k and

Nevertheless, despite diverse language preferences and attitudes, approximately 80-90% of Ukrainians report high proficiency in both Ukrainian and Russian (Sokolova, 2021). While proficiency levels vary by region, the majority of Ukrainians indicate that they speak both languages well or very well, as illustrated in Figure 3.

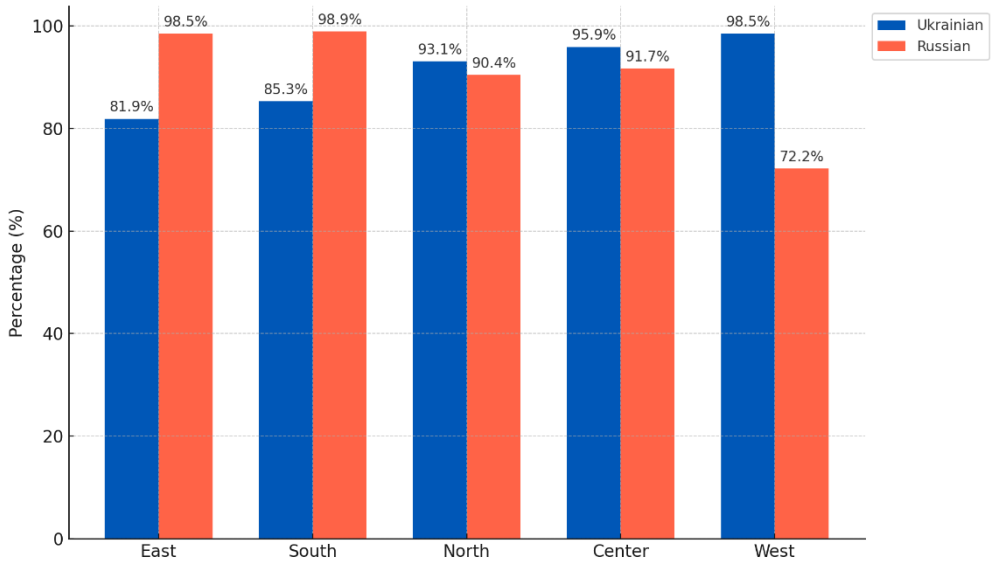

Figure 3. Self-reported proficiency in Ukrainian and Russian by region in Ukraine (survey 2017). Percentages represent the combined total of responses rated as "very good," "good," or "satisfactory" to the question: "How would you assess your level of proficiency in Ukrainian/Russian?" (Sokolova, 2021).

The information and figures above discuss Ukrainian and Russian separately. However, when discussing the linguistic situation in Ukraine, one cannot overlook the phenomenon of *Suržyk*, a fused lect that blends elements of both languages (cf. Del Gaudio, 2010; Hentschel & Palinska, 2022). Despite its informal status and occasional stigma, *Suržyk* is widely used, especially in central, southern and eastern regions of Ukraine, and reflects a linguistic adaptation to Ukraine's bilingual reality (cf. e.g., Bilaniuk, 2004; Del Gaudio, 2010; Hentschel & Taranenko, 2021; Hentschel 2024; Masenko 2019b).

4 Adapting MAIN to Ukrainian

The Ukrainian version of MAIN was adapted from the revised English version of MAIN (Gagarina et al., 2019), following the guidelines for creating new language versions (Bohnacker & Gagarina, 2019). For consistency and cross-language comparability, other Slavic-language versions (Russian, Polish, Croatian, Czech, Serbian and Slovak), as well as the German version, were used as reference points.

The translation and adaptation were conducted by the authors, who are Ukrainian native speakers, and reviewed by a professor of linguistics, a Ukrainian language university lecturer, a speech therapist, and a philology graduate. Following its publication in 2022, the Ukrainian

Luhans'k regions include only areas controlled by the Ukrainian government, and data from southern region exclude Crimea.

MAIN was implemented in Germany with Ukrainian children and their parents (primarily mothers) who had relocated to Berlin due to the full-scale war in Ukraine.

The remaining parts of this section address specific linguistic challenges in translating and adapting the Ukrainian MAIN. Additionally, using data from both Ukrainian and Russian, Section 4.3 explores the systematic challenges encountered during the analysis, which may also be relevant to other languages.

4.1 Linguistic translation nuances

In the translation process, we encountered several terms that were rarely used in Ukrainian, e.g. *internal state terms, elicitation, code-switching, piloting, production, perception.* We evaluated potential Ukrainian equivalents (e.g., *«перемикання» мовних кодів («peremykannja» movnych kodiv)* 'code-switching', following the English term provided in brackets; *опис внутрішнього стану (opys vnutrišn'oho stanu)* 'internal state terms') and English borrowings (e.g., *еліцитування (elicytuvannja)* 'elicitation', *продукція (produkcija)* 'production', *перцепція (percepcija)* 'perception') by comparing usage frequency and context to select terms that would be accessible to a broad audience.

4.2 Lexical choices for characters

One of the main challenges during the adaptation process was finding suitable words for characters in the MAIN stories, given that Ukrainian has a variety of synonyms, a grammatical gender system, and rich diminutive morphology. For instance, Standard Ukrainian has two neutral terms for 'dog': *пес (pes)* and *собака (sobaka)*. Regional language contact plays a role: in Polish, the term for 'dog' is *pies*, while Russian uses *собака (sobaka)* as a general term and *пёс (pës)* for male dogs. Therefore, *sobaka* might be more commonly used in the eastern regions of Ukraine, while *pes* could be preferred in western regions of Ukraine. To confirm usage trends, we reviewed titles of Ukrainian folk tales (e.g., *Українські народні казки* (*Ukraïns'ki narodni kazky*) 'Ukrainian folk tales'; *Дитячі книги з малюнками українською* (*Dytjači knyhy z maljunkamy ukraïns'koju*) 'Children's picture books in Ukrainian') and found *pes* to be used more frequently than *sobaka*. Taking this into account, we chose *pes* for the MAIN dog character.

Similar considerations applied to *cat*, where Ukrainian also has two neutral words: *кіт (kit)*, masculine, and *кішка (kiška)*, feminine. The masculine *kit* is more commonly used in children's stories and was therefore selected to refer to the character.

Ukrainian has a rich system of diminutive suffixes, widely used in children's literature and their everyday language (Samoylenko, 2020; e.g., *Демінутиви української мови (Deminutyvy ukraïns'koï movy*) 'Diminutives in the Ukrainian language'. For instance, the word *птаха (ptacha)* for the mother bird sounds too formal for the MAIN picture stories. The diminutive *пташка (ptaška)* conveys a gentle, approachable quality commonly used in children's literature, making it the preferred choice. This decision was supported by reviews of Ukrainian children's stories and linguistic consultations.

4.3 Challenging cases in the scoring protocols

This section discusses challenging cases in the MAIN scoring guidelines for the production section. The current discussion draws on the observations from narratives in Ukrainian and Russian produced by the children in our study (see Sections 6–8). The aim was to ensure accurate evaluation of children's responses by considering specific linguistic features in both languages, patterns in how children interpreted pictures pragmatically, and developmental factors, such as age, that may affect the detail and precision of their narratives. Key challenges include annotating internal state terms (ISTs) that are not explicitly listed in the guidelines, clarifying criteria for assessing ambiguous cases in narrative components – particularly distinctions between goals (G), attempts (A), and outcomes (O) – and handling incomplete responses and self-repairs. These cases are discussed here, but they were not incorporated into the scoring protocols of the Ukrainian MAIN. However, we suggest considering them for the instrument's next revision.

4.3.1 Evaluating Internal State Terms (ISTs)

Internal State Terms (ISTs) express the inner or mental states of story characters (Gagarina et al., 2019). While evaluating ISTs as initiation events or reactions within the story structure, we encountered some productions that differentiate from the MAIN scoring protocols and show certain patters.

The first challenge involves the pragmatic interpretation of pictures in the *Cat* and *Dog* stories. For example, according to the guidelines, an internal state term (IST) as a reaction (A6) should relate to a reaction of the cat or the butterfly in the *Cat* story and a reaction of the dog or the mouse in the *Dog* story, while an IST as an initiating event (A7) should express the boy's reaction to the ball or balloon. However, some children used an IST as an initiating event related to either the cat or the dog, or in a way that made it unclear whether it referred to the cat/dog or the balloon/ball. For example, in (1), while the boy's reaction is expressed as fear or surprise, it does not directly involve the ball. Instead, the surprise stems from the dog hitting itself, causing the boy to drop the ball. Therefore, we classify the IST as an initiating event (A7) and assign a corresponding score.

(1)

А	*в*	*то*	*время*	*мальчик,*	*увид-ев,*	*как*	*собака*	
A	*v*	*to*	*vremja*	*mal'čik,*	*uvid-ev,*	*kak*	*sobaka*	
and	at	that	time	boy.NOM.M.SG	see-PST.PTCP	how	dog.NOM.F.SG	

удар-и-л-а-сь,	*он/*	*у*	*него*	*был*	*в*	*рук-ах*	
udar-i-l-a-s',	*on/*	*u*	*nego*	*byl*	*v*	*ruk-ach*	
hit-PFV-PST-F-REFL	he/	at.POSS	3SG.M.GEN	be.PST	in	hand-LOC.PL	

шарик	*жёлтый*	*и*	*в*	*рук-ах*	*пакет*	*с*
Šarik	*želtyj*	*i*	*v*	*ruk-ach*	*paket*	*s*
balloon.NOM.M.SG	yellow	and	in	hand-LOC.PL	bag.NOM.M.SG	with

сосиск-ами.	*Он*	*испуг/*	*Он*	*удив-и-л-ся*	*и*
sosisk-ami.	*On*	*ispug/*	*On*	*udiv-i-l-sja*	*i*
sausage-INS.PL	he	fear/	he	surprise-PFV-PST.M-REFL	and

отпуст-и-л	*шарик*
otpust-i-l	*šarik*
let.go-PFV-PST.M	balloon.ACC.M.SG

'At that moment, the boy, seeing the dog get hit, was holding a yellow balloon and a bag of sausages. He got scared. He was surprised and let go of the balloon.'

(17CHIDRUS)[3]

Although the number of such examples is low in our data, with only six occurrences identified among the 18 children in both languages, we believe it is important to account for such instances, as they provide a more comprehensive view of children's production of inferred components. After consulting with the Cost MAIN team, we decided to document these cases and assign scores accordingly.

The second challenge was evaluating ISTs when they were expressed through synonyms or descriptions that differed from those in the MAIN protocol. We assigned scores to instances that clearly showed the expected emotion or feeling behind the reaction. For example, in (2), where a negative reaction, such as the baby bird's fear, is expected, the child conveyed this using the verb 'to shout', intensifying it with the phrase *на всё дерево (na vsyo derevo)* 'all over the tree', which serves to underscore the intensity and loudness of the shout.

(2)

И	*потом*	*она*	*с-лов-ил-а*	*одн-ого*	*из*	*птен-чик-ов*
I	*potom*	*ona*	*s-lov-il-a*	*odn-ogo*	*iz*	*pten-čik-ov*
and	then	she	PFV-catch-PST-F.SG	one-ACC.M.SG	of	bird-DIM-GEN.PL

и	*он*	*ор-ал*	*на*	*вс-ё*	*дерево*[4]
i	*on*	*or-al*	*na*	*vs-yo*	*derevo*
and	he	scream-PST.M.SG	on	all-ACC.N.SG	tree.ACC.N.SG

'And then she caught one of the baby birds, and it screamed all over the tree.'

(02CHIBBRUS)

However, we cannot assign a score for ISTs as reactions if the reaction is only implied and not verbalized, as in (3).

(3)

козенятко	*по-бєж-ав*	*к/ к*	*мам-є*
kozenjatko	*po-bjež-av*	*k/ k*	*mam-je*
baby goat	PFV-run-PST.M.SG	to	mother-DAT.F.SG

'The baby goat ran to its mother.' (12CHIBGUKR)

In (3), we may infer that the baby goat feels safe as it immediately returns to its mother. However, since the internal state is not explicitly verbalized, we cannot assign a score for this.

[3] The interpretation of the participants' codes: Participant number: 0–25; Participant group: CHI for child; Story: C for Cat, D for Dog, BB for Baby Birds, BG for Baby Goats; Language of elicitation: RUS for Russian, UKR for Ukrainian.

[4] The examples feature the original language forms used by the participants of the study, which have not been normalized to conform to Standard Ukrainian or Russian.

4.3.2 Differentiating Attempts and Outcomes

When analyzing the components of macrostructure, a common challenge involved differentiating between attempts and outcomes. Grammatical aspect can be particularly helpful in this regard. In Ukrainian and Russian, like in many Slavic languages, nearly every verb belongs to an aspectual pair: imperfective and perfective. The imperfective aspect expresses general, ongoing, or repetitive actions, while the perfective aspect denotes actions that are completed, one-time occurrences, or otherwise limited in scope (Press & Pugh, 1999; Grønn 2015; Borik, 2018). For instance, consider the example from the *Dog* story shown in (4).

(4)

Коли	*хазяїн*	*діста-ва-в*	*шарик,*	*то*
Koly	*chazjajin*	*dosta-va-v*	*šaryk,*	*to*
when	owner.NOM.M.SG	get.out-IPFV-PST.M.SG	balloon.ACC.M.SG	then

пес-ик	*уже*	*пачті*	*діста-в*	*свою*
pes-yk	*uže*	*pačti*	*dosta-v*	*svoju*
dog-DIM.NOM.M.SG	already	almost	get.out-PFV.PST.M.SG	POSS.F.ACC

їжу.	*І*	*коли*	*хазяїн*	*діста-в*
jižu.	*I*	*koly*	*chazjajin*	*dosta-v*
food.ACC.F.SG	and	when	owner.NOM.M.SG	get.out-PFV.PST.M.SG

шарик,	*він*	*вже*	*все*	*з'ї-в.*
šaryk,	*vin*	*vže*	*vse*	*z'ji-v.*
balloon.ACC.M.SG	he	already	all.ACC.N.SG	eat-PST.PFV.M.SG

'When the owner was getting out the balloon, the little dog had already almost taken out his food. And when the owner got out the balloon, he had already eaten everything.' (04CHIDUKR)

In (4), the action of getting something out is initially expressed using the imperfective form *dostavav* 'he was getting (something) out', emphasizing the unfinished nature of the action. According to the Russian version of the MAIN guidelines (Dog, A9), this instance should be annotated as an attempt. Immediately afterward, the child uses the perfective form *dostav* 'he got (something) out', which marks the completion of the action. Following the Russian guidelines (Dog, A10), this instance is annotated as an outcome. Although both forms stem from the same lexical verb, the distinction between imperfective and perfective aspects leads to their classification as attempt and outcome, respectively.

In contrast, English does not express aspect morphologically as Slavic languages do. Instead, aspectual distinctions are primarily encoded grammatically through *periphrastic constructions* with auxiliaries. In the corresponding English version of the MAIN, these aspectual nuances are often conveyed not only through such constructions, but also through *lexical choices*. For example, where Russian uses a single verb with aspectual variation (*dostavav* vs. *dostav*) for attempt and outcome, English may employ different lexical verbs altogether (e.g., *was trying to pull out* vs. *got*), which results in a *lexical rather than morphological realization* of aspectual contrast.

The Russian version of the MAIN guidelines documents several instances where annotation differences are based on aspect. However, it is not always clear whether verbs in the

imperfective aspect should be annotated as an attempt or an outcome. Consider (5) from our data.

(5)

А	*в*	*то*	*время*	*кот*	*или*	*кошка*	*взя-л*
A	*v*	*to*	*vremja*	*kot*	*ili*	*koška*	*vzja-l*
and	in	that	time	cat.NOM.M.SG	or	cat.NOM.F.SG	take-PST.M.SG

или	*взя-л-а*	*рыб-у.*	*И*	*она*	*в*	*то*	*время*	*или*	*он*
ili	*vzia-l-a*	*ryb-u.*	*I*	*ona*	*v*	*to*	*vremja*	*ili*	*on*
or	take-PST-F.SG	fish-ACC.F.SG	And	she	in	that	time	or	he

е-л	*её*	*или*	*е-л-а.*
e-l	*ejo*	*ili*	*e-l-a.*
eat-PST.M.SG	it.ACC.F.SG	or	eat-PST-F.SG

‘And at that time, the cat (male) or the cat (female) took the fish. And she or he was eating it at that time.’ (13CHICRUS)

In (5), the action of eating is expressed with the help of the imperfective form *el/ela* ‘(he/she) was eating’. Even though the cat was eating the fish, the imperfective aspect highlights the unfinished action. Also, the verb *to begin* in such cases could signal an action that is initiated but remains unfinished, i.e., *она начала есть рыбу (ona načala est' rybu)* ‘she began to eat the fish’. In Russian, the perfective form of the verb ‘to eat’ is *съесть (s"est')* ‘to eat up’ (i.e., *он съел рыбу (on s"el rybu)* ‘he ate the fish’) which would mark a completed action. Alternatively, the outcome could be expressed semantically with structures like *было пусто (bylo pusto)* ‘was empty’*, рыбы не осталось (ryby ne ostalos')* ‘no fish left’. Therefore, such instances like in (5) were annotated as an attempt and not an outcome. It is important to note that the rule is not straightforward, as the semantic meaning must also be considered. For instance, the Ukrainian verb *спробувала* (*sprobuvala*) or the Russian verb *попыталась* (*popytalas'*) ‘tried’ indicates an attempt, despite being in the perfective form.

Another challenge was interpreting ingressive verbs – perfective verbs that encode the beginning of an event but, unlike telic perfective verbs, do not express its result (Stoll, 2005) – when children used them in contexts where telic perfective verbs would typically be expected. For instance, verbs with the prefix *по-,* such as the Ukrainian verb *побігти (pobihty)* ‘to start running’ (6) are perfective, yet they do not confirm the final outcome; rather, due to the prefix *по-*, they indicate that the action was initiated or directed toward an endpoint (for a discussion, see Gagarina, 2004; Kalko, 2013; Stoll, 2005). Stoll (2005) argues that the telic *Aktionsart* is the most frequent and context independent *Aktionsart*, i.e. it occurs in all communicative contexts. Consequently, it is acquired by children earlier than the more context-sensitive ingressive *Aktionsart*. Thus, these findings lead us to interpret these cases as outcome*s*, provided that the lexical verbs were used in accordance with the protocol.

(6)

а	*потім*	*кіт [...]*	*по-біг,*	*А*	*собака*	*за*
a	*potim*	*kit [...]*	*po-bih,*	*A*	*sobaka*	*za*
and	then	cat.NOM.M.SG	PFV-run.PST.M.SG	And	dog.NOM.M.SG	after

ним *по-біг-л-а*
nym *po-bih-l-a*
he.INS PFV-run-PST-F.SG
'And then the cat [...] ran, and the dog ran after him.' (01CHIBBUKR)

4.3.3 Differentiating Goals and Attempts

Some examples were challenging when differentiating between goals and attempts. Consider the two examples below.

(7) *Довго* *думаючи,* *малий* *поліз* *на* *дерево* *за*
Dovho *duma-jučy,* *malyj* *po-liz* *na* *derevo* *za*
long think-CVB boy PFV-climb.PST.M.SG on tree after
ці-єю *кульк-аю*
ci-jeju *kul'k-aju*
this-INS balloon-INS.F.SG
'Thinking for a long time, the boy climbed up the tree after this balloon.' (12ADUDUKR)

(8) *І* *поки* *хлопчик* *діст-авав* *т-ого*
I *poky* *chlopčyk* *dist-avav* *t-oho*
And while boy.NOM.M.SG take.out-PST.M.SG that-GEN.SG.M
м'яч-а, *дум-ав,* *як* *же* *його* *дістати…*
m'jač-a, *dum-av,* *jak* *že* *joho* *dist-aty…*
ball-GEN.SG.M think-PST.M.SG. how Q it.ACC.SG.M take.out-INF
'And while the boy was pulling the ball, he was thinking how to get it...' (02ADUCUKR)

In these examples, constructions that involve the verb 'to think' – such as *довго думаючи (dovho dumajučy)* 'thinking for a long time' in (7) and *думав, як же його дістати (dumav, jak že joho distaty)* 'was thinking how to get it' in (8) – can be regarded as goals or parts of complex attempts. What is crucial here is the order in which these actions occur. Thus, in (7), the boy was thinking about performing the action, and this thought process is directly followed by an attempt. Therefore, we classified *довго думаючи (dovho dumajučy)* 'thinking for a long time' as a goal (Dog, A8). On the other hand, in (8), the boy was also thinking about how to get the ball. However, since this thinking is preceded by the attempt *хлопчик діставав того м'яча (chlopčyk distavav toho m'jača)* 'the boy was pulling the ball', it indicates that he had already decided to act beforehand. Therefore, it is not annotated as a goal and is part of a complex attempt.

4.3.4 Flexibility in scoring incomplete responses

Children's narratives can often be fragmented, i.e., with omissions of objects or descriptive elements. In such cases, evaluators might still assign a score if the essential meaning of responses aligns with the MAIN scoring protocol, suggesting a lenient approach, particularly

when assessing younger children.

(9) *Но собака поміти-л-а та кусну-л-а його за*
No sobaka pomity-l-a ta kusnu-l-a jeho za
but dog.NOM.M.SG notice-PST-F.SG and bite-PST.F.SG him for
хвіст
chvist
tail.ACC. M.SG
'But the dog noticed and bit him on the tail.' (01CHIBBUKR)

In (9), the verb *pomitila* 'noticed' lacks an explicit object, leaving it unclear what exactly the dog saw. According to the MAIN protocol, the expected object would indicate that the bird was in danger or that the cat caught/got the bird. However, if the broader scene of the event has been established earlier in the narrative, one point can still be assigned for an IST as an initiating event (BB, A12). In this example, the child elaborated on the scene: *Коли пт/ кіт поліз на пташенят, коли мама принесла їду/ їжу, та він схопив одново із птенчоков (Koly pt/ kit poliz na ptašenjat, koly mama prynesla jidu/ jižu, ta vin schopyv odnovo iz ptenčokov)* 'When the cat climbed after the baby birds, when the mother brought food, he grabbed one of the baby birds'. Therefore, we assigned a point in this instance.

4.3.5 Self-Repairs

The last challenging point was how to deal with self-repairs, especially when children self-corrected their responses by modifying a whole story component or even several components. For instance, if a child says, 'The cat caught the bird... no, the cat tried to catch the bird', this adjustment reflects the child's recognition of an attempt rather than a result. Self-corrections should be marked in transcripts, with evaluators considering the last version of what the child said, as it is the most accurate representation of the child's intended meaning.

By addressing these instances, we aim to highlight challenging cases in the scoring guidelines to better capture the developmental nuances in children's narrative production. We believe that many of these challenges are language-independent and can be effectively incorporated into the manual.

5 Narrative skills in bilinguals' languages

Next, we turn to the second aim of the paper, which is to contribute to the ongoing research on story structure and story complexity in children's both languages, by providing evidence from Ukrainian-Russian bilingual children.

There is evidence that macrostructure is universally acquired across languages, including by bilingual children in both their first and second languages (e.g., Gutiérrez-Clellen et al., 2008; Iluz-Cohen & Walters, 2012; Pearson, 2001; Uccelli & Páez, 2007, as cited in Gagarina, 2016). However, Gagarina (2016) indicates that narrative skills, such as story structure, story complexity, and the use of internal state terms (ISTs), follow different developmental paths, pointing to a more nuanced differentiation within these macrostructure measures.

For instance, while most studies on story structure conclude that bilingual children perform similarly in both languages (Altman et al., 2016; Bohnacker, 2016; Bohnacker et al., 2022; Fiani et al., 2022; Fichman et al., 2022; Kunnari et al., 2016; Rodina, 2017, as summarized in the review by Lindgren et al., 2023), some research have found differences between the two. For example, several studies on story structure in sequential bilinguals have found that children score higher on story structure in their L1 than in their L2 (Kapalková et al., 2016; Roch et al., 2016; Tribushinina et al., 2022). According to Lindgren et al. (2023), these differences are likely due to children's lower proficiency in their L2. For simultaneous bilinguals, studies by Lindgren (2018) and Lindgren & Bohnacker (2022) show higher scores in the societal language compared to the home language, which Lindgren et al. (2023) again attribute to the children's greater proficiency in the societal language.

Regarding story complexity, studies have found that children produce stories of similar complexity in both languages (Bohnacker et al., 2022; Fiestas & Peña, 2004; Gagarina, 2016; Kunnari et al., 2016; Lindgren, 2018). Studies showed that certain factors play a significant role in the development of narrative skills in children. Thus, for example, Gagarina (2016) argues that narrative complexity is sensitive to formal education, meaning that if it is taught in one language, it may not transfer immediately to the other language. Furthermore, Haman et al. (2017) showed that language input and exposure have influence on the narrative development in children, specifically for story structure, although other studies did not find such an effect (Bohnacker et al., 2022; Lindgren & Bohnacker, 2022; Tribushinina et al., 2022). With regard to the effect of language dominance, no effect of language dominance has been reported on the development of narrative skills (Fiani et al., 2022; Fichman et al., 2022). Hence, Lindgren et al. (2023) summarize that factors such as input, length of exposure, age of onset and language dominance need to be investigated further in future studies.

6 Objectives of the study

Building on the findings of previous studies, our research has the following objectives: Using data from Ukrainian-Russian bilingual children, we aim to assess whether these children demonstrate similar performance on two macrostructural measures – story structure and story complexity – across both languages, Ukrainian and Russian. Furthermore, we take language dominance into account and categorize the languages as dominant and weaker. This distinction is grounded in the observation, as explained in Section 3, that children's exposure to Ukrainian and Russian varies depending on their region of residence in Ukraine. Hence, some are primarily exposed to Ukrainian both at home and in the broader society, leading to their dominance in Ukrainian, while others receive substantial input in Russian and may therefore be dominant in Russian.

Drawing on the findings of most previous research, we anticipate that children will perform similarly in both Ukrainian and Russian regarding story structure and story complexity. However, given that the impact of language dominance has not been thoroughly examined, we may observe higher scores in the dominant language for both story structure and story complexity.

7 Methodology

7.1 Participants

To validate the Ukrainian version of the MAIN, we collected data from 25 children,[5] eliciting data in both Ukrainian and Russian to accurately capture the linguistic experiences of the participants. As outlined in Section 3, the linguistic landscape in Ukraine is complex, with Russian being widely spoken across various regions. In many of these areas, Russian is the language used at home, while Ukrainian serves as the primary language of instruction in educational settings and official contexts. Even in the western regions of Ukraine, where Ukrainian is commonly spoken both at home and in the society, historical factors — such as the Soviet era, during which Russian was a compulsory subject in schools — have contributed to an enduring proficiency in Russian among the population (Masenko, 2005; Bilaniuk & Melnyk, 2008; Sokolova, 2022). Although Russian is no longer mandatory in schools, many children in Ukraine continue to encounter the language through social networks and media, enabling them to communicate in Russian to varying extents.

Data were collected between August and September 2022, with all participants arriving in Germany after the onset of the full-scale war in Ukraine in February 2022. Hence, at the time of testing, participants had been living in Germany for a maximum of six months. The children were recruited from the Berlin area through personal connections and advertisements on social networks. Ethical approval for data collection was obtained through the German Linguistic Society (*Deutsche Gesellschaft für Sprachwissenschaft*, *DGfS*), and informed consent was secured from the children's legal guardians prior to their participation in the study.

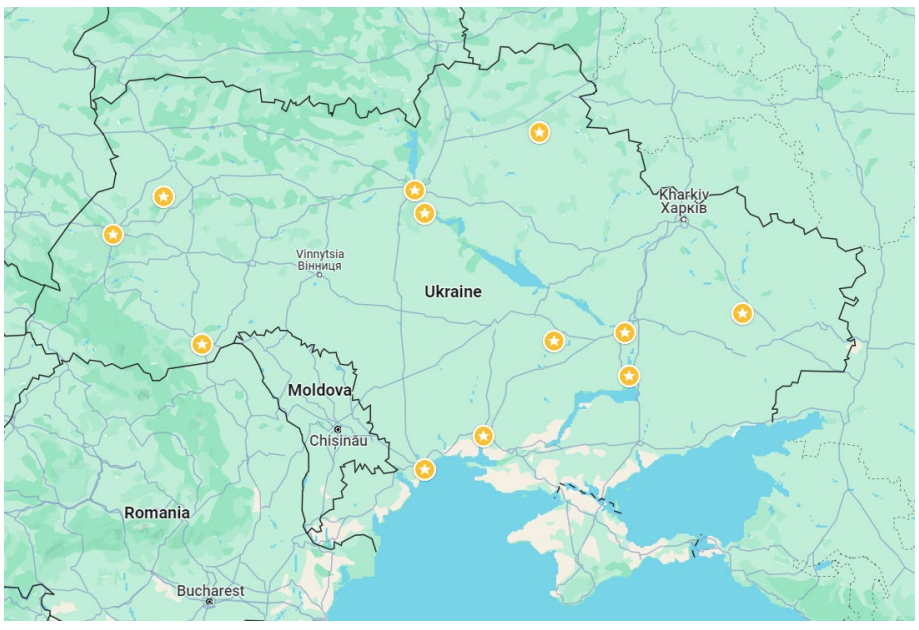

Figure 4. Children's place of residence in Ukraine before relocation to Germany, indicated with stars.

The current study focuses on the results from 18 typically-developing Ukrainian-Russian bilingual children, comprising 11 females and seven males, aged six to nine years (mean age =

[5] Data were also collected from 21 adults, 20 of whom were mothers of the children and one was a grandmother; however, these are not included in the analysis in this study.

7;7). Prior to their relocation, the children lived with their families in various regions of Ukraine, as shown in Figure 4. Consequently, the amount of input and exposure to Ukrainian and Russian, as well as their dominance in these languages, varied. Based on the calculation of input and exposure, described in Section 7.2.1 below, 11 out of the 18 children in our study were identified as Russian-dominant, whereas seven were Ukrainian-dominant.

7.2 Materials and procedure

Narratives were elicited using the LITMUS-MAIN instrument to assess bilingual children's narrative abilities (Gagarina et al., 2019). Children were asked to narrate a story based on picture stimuli, followed by ten comprehension questions. All four stories— *Dog*, *Cat*, *Baby Birds*, and *Baby Goats*—were administered, with two stories presented in each language. The children were tested in both Ukrainian and Russian during sessions conducted on the same day. Each language session was led by a different investigator, both of whom were native speakers of Ukrainian and Russian, and each language was tested in a separate room. The stories and the order of the languages were counterbalanced. More information on the procedure, including the warm-up questions before the elicitation, picture stories, as well as the comprehension questions can be found in Gagarina et al. (2019).

During the elicitation of the children's narratives, their parents were asked to complete a questionnaire designed to gather comprehensive background information. The questionnaire used in this study was an adapted version of the LITMUS Parental Bilingual Questionnaire (PABIQ) (Tuller, 2015). In addition to information about the child, the questionnaire included a section with questions about the parents' information, such as place of birth, educational qualification, and language practices.

7.3 Transcription, coding and analyses

After data collection, the recordings were cut using Audacity (Audacity Team, 2023) and automatically transcribed with Whisper from OpenAI (see Radford et al., 2023). For this purpose, Whisper was installed locally, and after testing various models, the large model was selected due to its higher transcription accuracy. Despite its generally high accuracy, Whisper tended to normalize the data, for instance by omitting hesitation markers and self-repairs. Additionally, it often translated code-switched or mixed segments into the primary language of narration and occasionally produced hallucinations. Therefore, each transcription was manually reviewed and corrected by native speakers of Ukrainian and Russian.

7.3.1 Scoring of narrative macrostructure

The annotation of macrostructure measures was completed manually using the MAIN scoring guidelines (Gagarina et al., 2019). Two measures of macrostructure were analyzed: story structure and story complexity. The story structure measure had a maximum score of 17 points. Each picture set depicted a story with three episodes, and for each episode, points were allocated for the inclusion of goals, attempts, outcomes, and internal state terms (ISTs) used as either initiating events or reactions (one point per component), totaling up to 15 points across the three

episodes. Additionally, if the setting was mentioned at the beginning of the story, a maximum of two points could be awarded—one for place and one for time.

The second measure—story complexity—focuses on goals (G), attempts (A), and outcomes (O) and is based on Westby's (2005) binary tree model. However, there are different methods for calculating it. For instance, Bohnacker (2016) distinguished between two categories: complete GAO episode and no GAO. Other approaches, like those used by Gagarina (2016) and Yang et al. (2023), assigned zero points if no elements were realized, one point if only A or O (or both) were present, two points if G was realized alone or in combination with A or O, and three points for a full GAO sequence. Furthermore, Tribushinina et al. (2022) used a different approach, assigning zero points for A or O, but one point for G, arguing that goals develop later and are more complex than attempts or outcomes (see Bohnacker, 2016; Trabasso & Nickels, 1992). Combinations of two elements, regardless of whether they included G, received two points, and three points were awarded for the complete GAO sequence. Finally, a fourth method (Gagarina et al., in prep.) is similar to Tribushinina et al.'s (2022) but assigns two points for an AO combination, three points for combinations that include G (GA or GO), and five points for a full GAO sequence, giving more weight to the complete episode. In the present study, we followed the latest method (Gagarina et al., in prep.).

Furthermore, one of the challenges in analyzing the data was the presence of *Suržyk*, a fused lect that blends elements of both Ukrainian and Russian (Del Gaudio, 2010; Hentschel & Taranenko, 2021; Hentschel & Palinska 2022). One child narrated the stories in *Suržyk*, which made it difficult to classify those productions as the ones in Ukrainian or in Russian. The productions of this child were not included in the current study.

7.3.2 Calculation of language dominance

Language dominance was calculated using an input/exposure index derived from the PABIQ questionnaire. Following the approach of Mieszkowska et al. (2017) and Abbot-Smith et al. (2018), the input was divided into two categories: at-home input and outside-of-home input.

At-home input included language use by mother, father, younger and older siblings, grandparents, as well as the interaction between the parents. For each source of input, parents rated how frequently each language was used toward the child on a scale from 0 to 4 (0 = never, 1 = rarely, 2 = sometimes, 3 = usually, 4 = always). Input from parents and siblings was given twice the weight of input from other sources. The rationale behind this is that children spend more time with their immediate family (Mieszkowska et al., 2017). Thus, each child could receive up to 4 points per language from each immediate family member (mother, father, and younger or older siblings), resulting in a maximum total of 32 points. Input from grandparents and parental interactions (mother-to-father and father-to-mother) could contribute a maximum of 4 points each, totaling 12 points. Important to note is a child's score increased if more members of the household spoke a given language to them, whereas it decreased in situations such as having no siblings.

Outside-of-home input was calculated based on the child's interactions with friends (rated on a scale of 0 to 4), and engagement in various activities such as reading, watching TV/movies, storytelling, listening to music, podcasts, audiobooks, and writing, all rated on a

scale of 0 to 2 (0 = never, 1 = at least once a week, 2 = every day), totaling 14 points for these external activities. The language predominantly spoken in the region where the child lived before moving to Germany was assigned 8 points, and the language used at the child's school or kindergarten in Ukraine received a weight of 12 points. Thus, the outside-of-home input for each language could reach a maximum of 34 points.

To determine the proportion of input for each language, the scores for at-home and outside-of-home input were combined, and the total was expressed as a percentage, with the two languages together equaling 100%. Children were then categorized as either Ukrainian-dominant or Russian-dominant, using 50% as the threshold for dominance. The results were then compared to parents' responses about which language the child felt more comfortable using: Russian or Ukrainian. Our analysis of language dominance aligned with the parents' answers, showing consistent results across both measures.

7.3.3 Statistical analyses

The statistical analyses were conducted in R (R Core Team, 2024). Data manipulation and visualization were performed using the *tidyverse* package (Wickham, Hadley et al., 2023), and linear mixed-effects regression models were run using the lmer-function of the *lme4* package (Bates et al., 2015).

8 Results

8.1 Story structure

In this section, we present the findings from our analysis of story structure and story complexity. For both measures, we start by describing the quantitative results, reporting outcomes separately for the children's two languages: Ukrainian and Russian. Furthermore, as the children in this study come from various regions in Ukraine, they are dominant in either Ukrainian or Russian. Therefore, it is important to analyze the languages based on their dominance, classifying them as either dominant or weaker.

Figure 5 below displays the results for the story structure score on the *y*-axis and the languages on the *x*-axis. The line inside each box shows the median, while the larger red dots indicate the mean score. Additionally, each smaller dot reflects the score each child received for each story, resulting in two dots per child for each language. Visually, the figure shows that the children score nearly similarly in Ukrainian (M = 7.68, SD = 1.66) and Russian (M = 7.32, SD = 2.21). Furthermore, variation is slightly greater in Russian than in Ukrainian, with scores ranging from 1 to 12.

To check the reliability of the descriptive results, we performed a linear mixed-effects model analysis. The dependent variable was the Story Structure Score, a discrete numeric variable, while the independent variable (fixed effect) was Language, treated as a binary variable (Russian vs. Ukrainian). We also included Participant, represented by the code assigned to each child, and Story (e.g., Baby Birds, Baby Goats, etc.) as random effects in the model to account for individual variability in the data. The analysis results are presented in Table 1.

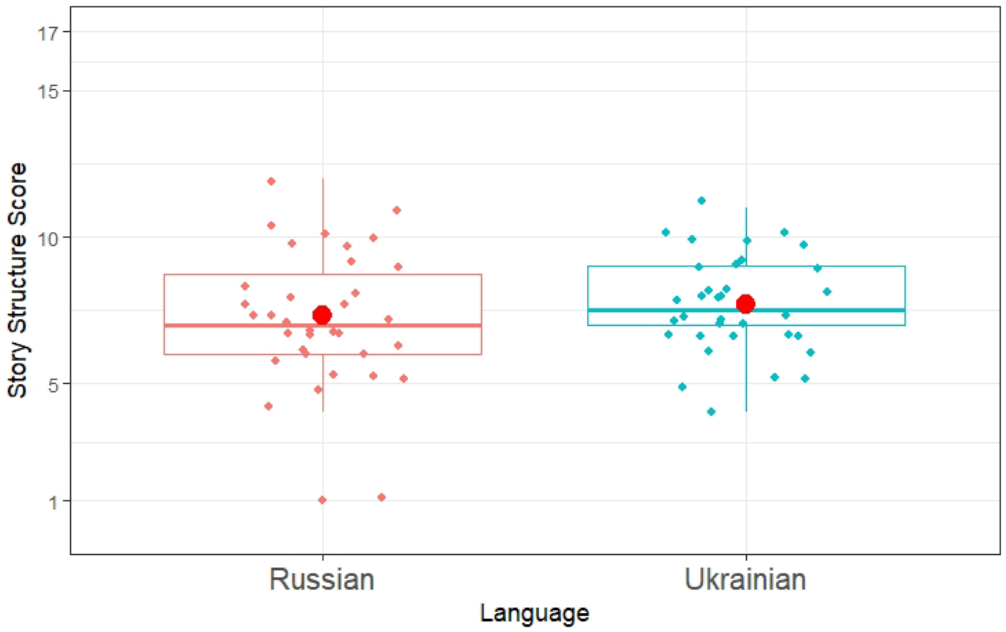

Figure 5. Story structure across the children's both languages.

Table 1. Results of the linear mixed effects model for story structure in Ukrainian and Russian (random and fixed effects)

Random effects	**Variance**	**SD**			
Participant	1.50	1.22			
Story	0.56	0.74			
Residual	1.93	1.39			
Fixed effects	***β***	***SE***	***df***	***t***	***p***
Intercept	7.32	0.53	7.92	13.67	< .001***
Language (Ukrainian)	0.35	0.34	47.49	1.03	.30

Note. *** = p < .001; SD = standard deviation; SE = standard error; df = degrees of freedom.

The results of the model showed that the story structure scores were not significantly influenced by language (Ukrainian vs. Russian) (β (σ) = 0.35 (0.34), p = .30). Random effects for the model revealed variability among participants and stories, with variances of 1.50 (SD = 1.22) and 0.56 (SD = 0.74), respectively. These findings suggest that story structure scores for Ukrainian-Russian bilingual children do not differ significantly between the two languages, although there is variability attributable to individual differences among participants and the specific stories used in the analysis.

Next, we classified the languages based on dominance to determine whether story structure scores differed between the children's dominant and weaker languages. The results are presented in Figure 6. The languages are categorized not by the languages themselves but by dominance. As indicated in Section 7.1, 11 out of the 18 children were identified as Russian-dominant, while seven were identified as Ukrainian-dominant. Similar to the figure above, the line within each box shows the median, while the larger red dots indicate the mean score. Besides, each smaller dot shows the score each child received for each story, resulting in two dots per child per language. Visually, there is considerable individual variation, with scores ranging from a low of 1 point to a high of 12. However, the mean scores indicate that there is

no difference in the children's performance between their dominant language (M = 7.68, SD = 1.82) and their weaker language (M = 7.32, SD = 2.08).

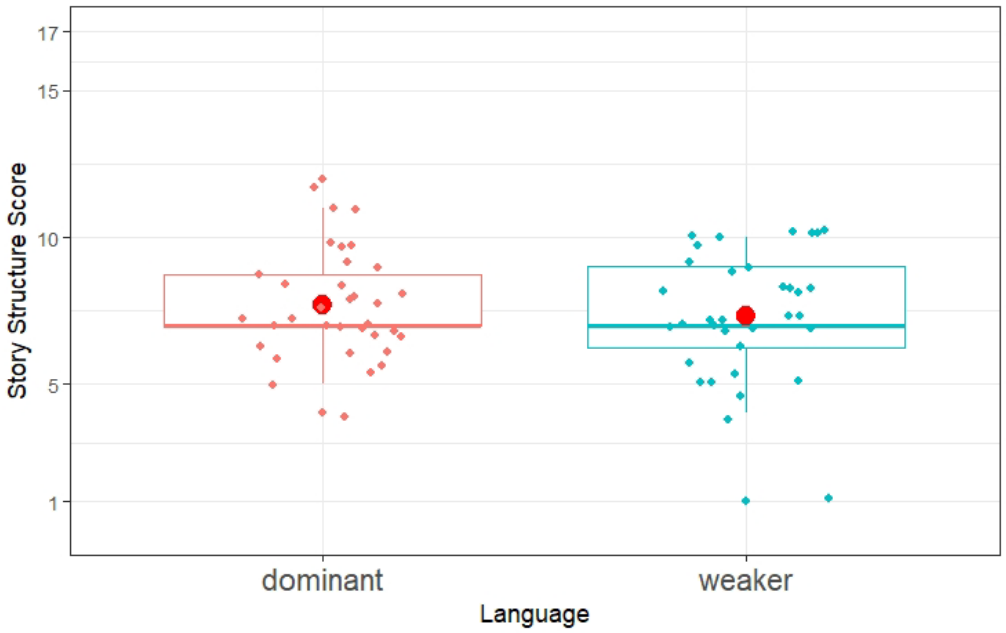

Figure 6. Story structure across the children's both languages, based on language dominance.

To verify the reliability of our descriptive statistics, we conducted a linear mixed-effects model analysis. The dependent variable was the story structure score, a discrete numeric variable, while the independent variable (fixed effect) was Language, represented as a binary variable (dominant vs. weaker). Additionally, Participant, represented by the code assigned to each child, and Story (e.g., Baby Birds, Baby Goats, etc.) were added as random effects to the model to account for individual variation within the data. The results of the analysis can be found in Table 2.

Table 2. Results of the linear mixed effects model for Story Structure, based on language dominance (random and fixed effects)

Random effects	**Variance**	**SD**			
Participant	1.50	1.22			
Story	0.54	0.73			
Residual	1.95	1.39			
Fixed effects	***β***	***SE***	***df***	***t***	***p***
Intercept	7.64	0.53	8.03	14.35	< .001***
Language (Weaker)	-0.29	0.34	47.73	-086	.39

Note. *** = p < .001; SD = standard deviation; SE = standard error; df = degrees of freedom.

The model revealed that the effect of language dominance on scores was not statistically significant (β (σ) = -0.29 (0.34), p = .39). This suggests that the scores in children's weaker language were not significantly different from those in their dominant language. The random effects showed variability across the groups, with the variable Participant contributing a variance of 1.50 (SD = 1.22) and Story contributing a variance of 0.54 (SD = 0.73). Overall, these findings suggest that while there is considerable variability in story structure scores

among individual children, with less variability across different stories, their language dominance does not significantly influence performance on the story structure measure.

8.2 Story complexity

We now turn to the results of the story complexity analysis. As with the previous findings, we first present the results by language, classifying them into Russian and Ukrainian, followed by an analysis based on language dominance, categorizing the languages as dominant and weaker.

Figure 7 displays the story complexity scores, with the y-axis representing the scores and the x-axis indicating the languages. The figure indicates that, based on the means (represented by the larger red dot), the children perform similarly in terms of story complexity in both Russian M = 5.47, SD = 2.67) and Ukrainian (M = 5.62, SD = 2.17). Additionally, as with the previous analyses, the data reveal considerable individual variation across both languages.

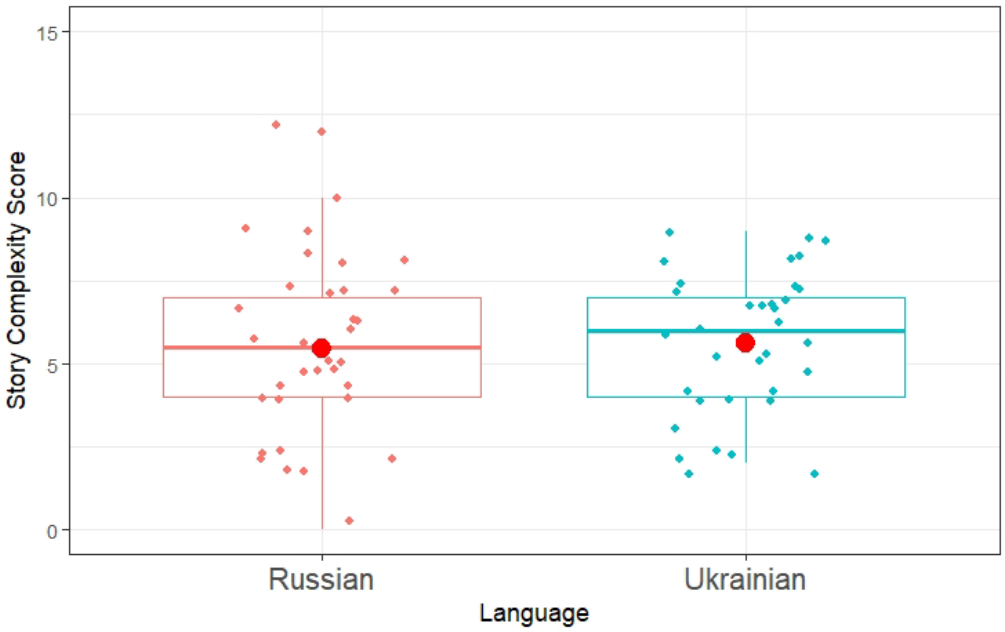

Figure 7. Story complexity across the children's both languages.

As the next step, we ran a liner mixed-effects regression model, with the dependent variable Story Complexity Score, a discrete numeric measure, while the independent variable (fixed effect) was Language, coded as a binary variable (Russian vs. Ukrainian). Participant, represented by the code assigned to each child, and Story were included as random effects to account for individual variability within the dataset. The results of the analysis are presented in Table 3. The results of the analysis indicated that language did not significantly influence the story complexity scores (β (σ) = 0.14 (0.51), p = .77). The random effects revealed variability among participants and stories, with variances of 1.27 (SD=1.12) and 0.28 (SD=0.53), respectively. Overall, these findings suggest that the children's story complexity scores do not differ significantly between Ukrainian and Russian, despite some individual variability in the data.

Table 3. Results of the linear mixed effects model for story complexity in Russian and Ukrainian (random and fixed effects)

Random effects	**Variance**	**SD**			
Participant	1.27	1.12			
Story	0.28	0.53			
Residual	4.53	2.12			
Fixed effects	***β***	***SE***	***df***	***t***	***p***
Intercept	5.47	0.59	2.74	9.25	.003**
Language (Ukrainian)	0.14	0.51	49.00	0.28	.77

Note. ** = p < .01; SD = standard deviation; SE = standard error; df = degrees of freedom.

Next, we present the results of the story complexity scores based on language dominance. Figure 8 illustrates these findings, with the y-axis showing the scores and the x-axis displaying the languages categorized by dominance. The line within each box represents the median, while larger red dots show the mean scores. Additionally, each smaller dot marks the individual score each child received for each story, resulting in two dots per child per language. Visually, there is substantial individual variation, with scores ranging from 2 to 12. The mean scores indicate that the children's performance in their dominant language (M = 5.97, SD = 2.49) is slightly better than in their weaker language (M = 5.12, SD = 2.29).

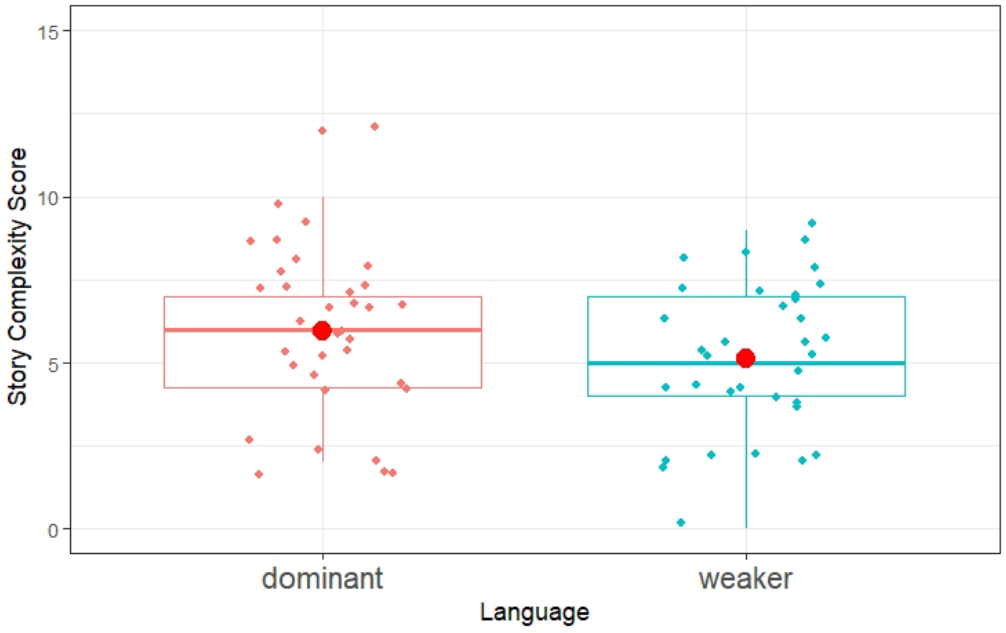

Figure 8. Story complexity across the children's languages, based on language dominance.

To assess the reliability of our descriptive statistics, we performed a linear mixed-effects model analysis. The dependent variable was story complexity score, a discrete numeric measure, while the independent variable (fixed effect) was Language, coded as a binary variable (dominant vs. weaker). Participant, represented by the code assigned to each child, and Story were included as random effects to account for individual variability within the dataset. The results of the analysis can be found in Table 4.

Table 4. Results of the linear mixed effects model for Story Complexity (random and fixed effects).

Random effects	**Variance**	**SD**			
Participant	1.34	1.16			
Story	0.29	0.54			
Residual	4.29	2.07			
Fixed effects	***β***	***SE***	***df***	***t***	***p***
Intercept	5.97	0.59	2.74	10.10	.002**
Language (Ukrainian)	-0.85	0.50	49.00	-1.69	.09

Note. ** = p < .01; SD = standard deviation; SE = standard error; df = degrees of freedom.

The model indicated that language dominance did not have a significant effect on the children's story complexity scores (β (σ)= -0.85 (0.50), p = .09). This implies that the complexity scores in children's weaker language were not significantly different from those in their dominant language. The random effects revealed variability within the groups, with the Participant contributing a variance of 1.34 (SD = 1.16) and Story contributing a variance of 0.29 (SD = 0.54), meaning that variability is more pronounced at the individual level than across different stories. These results suggest that, while there is notable individual variability in story complexity scores, the influence of language dominance on story complexity is not statistically significant.

9 Discussion and conclusion

The present paper had two main objectives. The first was to highlight some challenging and ambiguous yet systematically occurring cases in the scoring protocols during the adaptation of MAIN. Key challenges include capturing internal state terms (ISTs), particularly when pragmatic interpretations deviate from the standard protocol, as well as clear guidelines for scoring implied reactions. We also propose refined criteria to distinguish between attempts and outcomes by focusing on aspectual cues in verbs, and a closer examination of goals versus attempts, taking into account the sequence in which they occur. Furthermore, we suggest flexibility in scoring incomplete responses, particularly when assessing younger children, and recommend documenting self-repairs to reflect children's final intended narratives. By implementing these adjustments, we aim to enhance the accuracy and sensitivity of the scoring guidelines of the MAIN protocol. Importantly, future research should consider that our scoring, described in Section 4.3, deviates slightly from the standard protocol, and this should be taken into account for valid comparisons.

The second objective was to offer insights into the macrostructural skills of the children across their two languages, specifically focusing on story structure and story complexity. Following the approach used in most previous studies with the MAIN, we started by examining the children's narratives based on language. The analysis revealed no significant effect of language on the scores for story structure or story complexity, indicating that the children performed similarly in both Ukrainian and Russian across these measures. These findings align with the majority of prior research on narrative abilities in children using the MAIN (Altman et al., 2016; Bohnacker, 2016; Bohnacker et al., 2022; Fiani et al., 2022; Fichman et al., 2022; Kunnari et al., 2016; Rodina, 2017, as summarized in the review by Lindgren et al., 2023), and

highlight that narrative skills are acquired universally and can be transferred between languages.

It is important to note that analyzing the data solely based on the specific language used is not entirely accurate in this context. Children in Ukraine, particularly those in preschool and elementary school, are typically bilingual and hence dominant in either Russian or Ukrainian, depending largely on the region they come from. Since the children in our study came from various regions in Ukraine, it is more appropriate to classify the languages as dominant and weaker. Using responses from the parental questionnaire, we categorized the children into two groups: Russian-dominant and Ukrainian-dominant. Of the 18 children, 11 were identified as Russian-dominant, while seven were classified as Ukrainian-dominant. The results for both story structure and story complexity showed no significant differences in performance across the children's languages, irrespective of language dominance. While relatively few studies have explored the impact of language dominance on children's narrative abilities, our findings align with the existing research (Fiani et al., 2022; Fichman et al., 2022).

In sum, the adaptation of the MAIN to Ukrainian is particularly significant given the displacement of millions of Ukrainian children due to the ongoing war. The highlighted challenges in the scoring protocols aim to improve the instrument's accuracy and sensitivity. Additionally, the findings support the broader research consensus that narrative skills are acquired universally and can transfer across languages, as evidenced by the children's similar performance in story structure and story complexity in both Ukrainian and Russian, regardless of the language. Furthermore, the study included the important variable of language dominance, revealing that it does not significantly influence the children's narrative abilities. However, given the considerable individual variation in scores for both macrostructure measures, further research is necessary to explore the potential factors contributing to this variability. Future studies for this language pair should also include larger samples to ensure the findings are more broadly applicable. Additionally, integrating microstructural analyses —such as examining lexical diversity, syntactic complexity, and other linguistic features—would provide deeper insights into the narrative skills of Ukrainian-Russian bilinguals. Finally, testing children across different age groups could reveal developmental differences in their narrative abilities.

Abbreviations

ACC – accusative

CVB – converb

DAT – dative

DIM – dimunitive

F – feminine

GEN – genitive

INF – infinitive

INS – instrumental

IPFV – imperfective

LOC – locative

M – masculine

N – neuter

NOM – nominative

PL – plural

PFV – perfective

POSS – possessive

PST – past

PTCP – participle

REFL – reflexive

SG – singular

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Adapting the Multilingual Assessment Instrument for Narratives to use as a Narrative Dynamic Assessment (MAIN-DA)

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Dynamic assessment, including a mediated learning experience, exemplifies evidence-based language evaluation practices for culturally and linguistically diverse students. Despite this, standardized assessments normed on monolingual English speakers are overwhelmingly used to assess the language skills of bilingual/multilingual students in the United States, placing these students at risk for misdiagnosis of a developmental language disorder. The adaptation of the Multilingual Assessment Instrument for Narratives (MAIN) to a narrative dynamic assessment (MAIN-DA) provides users with an effective language evaluation tool for culturally and linguistically diverse children. Dynamic Assessment evaluates the student's response to language instruction rather than their prior language learning experiences. Dynamic Assessment uses a test-teach-retest format while the examiner simultaneously attends to the student's modifiability and responsiveness to instruction. This paper focuses on the MAIN-DA procedures and scoring.

1 Introduction

Dynamic Assessment (DA) incorporates various approaches to evaluate a child's learning potential when given support by an examiner (Gellert & Arnbak, 2020; Petersen et al., 2020). The level of support needed by the child provides essential information about the strength of the student's learning ability (Denman et al., 2021). Rather than assessing a child's suspected communication competence, DA considers a child's capacity to learn language skills when given guided instruction by the examiner. A standard DA methodology is the test-teach-retest design. During the initial testing phase, a baseline is established, and areas of language weakness are identified. This pretest is a starting point to determine what language skills will be addressed in the teaching phase. When the student is retested after the teaching phase, the posttest has a structure and format similar to the pretest in order to make a reasonable comparison and reveal the amount of learning achieved. DA may be conducted in a child's L1 or L2 by an examiner fluent in the language of administration. Several studies have confirmed

the efficacy of DA in evaluating areas such as narrative skills, syntax/morphology, and vocabulary development of culturally and linguistically diverse (CLD) populations (Henderson et al., 2018; Kapantzoglou et al., 2012; Peña et al., 2014). DA differs from standardized assessments, which may presume the bilingual/multilingual student has had the same prior language experiences as their monolingual peers (Hunt et al., 2022; Orellana et al., 2019). Consequently, DA minimizes the effect of cultural and linguistic bias. In this paper, the MAIN-DA is introduced and a mediated learning experience is defined. Child modifiability is explained by expounding on the child responsiveness factors used in the modifiability worksheet of the MAIN-DA. Finally, the procedure for administering the MAIN-DA using *Baby Goats* as pretest and *Baby Birds* as posttest is described.

2 DA: Mediated Learning Experience (MLE) and modifiability

Although methods of DA vary by design and language task, a distinctive feature is embedded instruction; a teaching phase (Lidz, 2014; Petersen et al., 2020). This teaching phase is a mediated learning experience (MLE). Consider what a mediator does. A mediator acts as a "go-between" to bring two things into agreement or settle a difference. The heterogeneous nature of CLD students with suspected developmental language disorder (DLD) may be at odds with the homogeneous, uniform nature of static, standardized assessment. With DA, the examiner acts as a mediator between the bilingual child and the monolingual standardized assessment tasks. During the MLE, the examiner provides instruction, allowing the student to interact more successfully with the assessment materials (Feuerstein et al., 1979; Kramer et al., 2009).

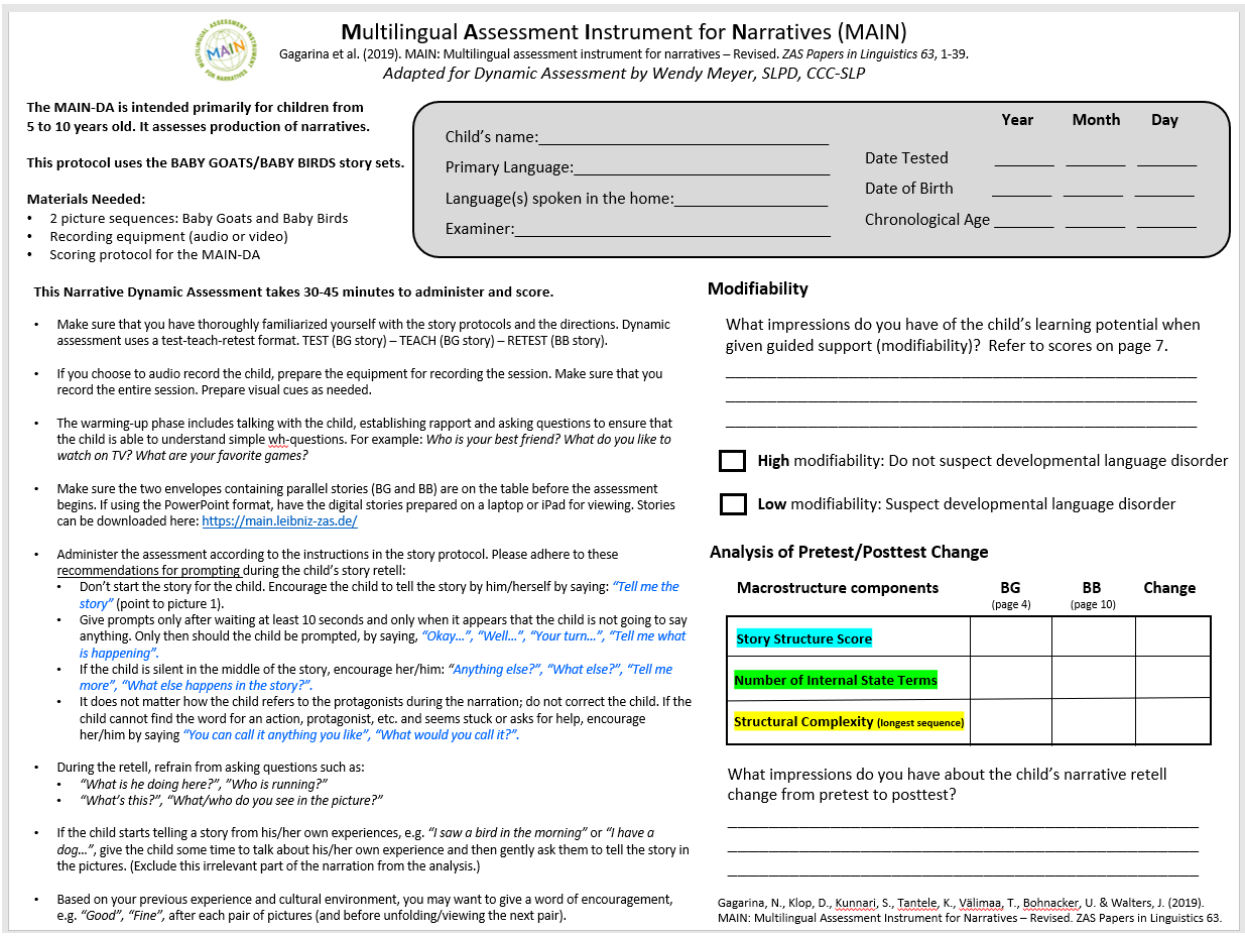
Modifiability is the level of responsiveness and ease with which a child grasps the concepts being taught by the examiner during the teaching phase of DA. Concerning modifiability, several studies agree that weakness in compliance, difficulty with task orientation, and poor metacognition during the teaching phase of DA are associated with language impairment (Castilla-Earls et al., 2020; Fiestas et al., 2020; Peña et al., 2014; Petersen et al., 2017). Using a narrative DA, Henderson et al. (2018) examined Navajo preschoolers with and without language impairment and found that those with language impairment demonstrated *less* responsiveness during the teaching phase of DA and required *more* support through examiner effort than the typically developing children. During the MLE, low child responsiveness plus maximal examiner effort equals low modifiability. When a child demonstrates low modifiability, DLD may be suspected. Conversely, high child responsiveness plus minimal examiner effort during the MLE equals high modifiability, evidencing well-developed language skills.

A child's level of modifiability is evaluated using a rating scale. Several versions exist and often assess child responsiveness in areas such as motivation, problem-solving, frustration, metacognition, flexibility, compliance, and attention (Castilla-Earls et al., 2020; Fiestas et al., 2020; Peña et al., 2014; Petersen et al., 2017). Areas of child responsiveness have typically been rated on a 5-point scale or 3-point scale, depending on the design of the modifiability rating scale. Lower scores represent greater difficulty or poor performance with assessment tasks. In the adaptation of MAIN for use as a narrative dynamic assessment (MAIN-DA, see Section 3), the child modifiability worksheet was modeled after the Mediated Learning

Observation form (MLO) created by Peña and colleagues (2007). Lam et al. (2024) recently affirmed the validity and internal consistency of the MLO for the assessment of monolingual and bilingual student modifiability.

3 Adapting MAIN as Dynamic Assessment (MAIN-DA)

The MAIN assessment guidelines (Gagarina et al., 2019) state that assessors may choose which elicitation mode (telling; retelling; model story) and story (*Cat/Dog; Baby Birds/Baby Goats*) is most suitable for their purpose in evaluating a child's narrative skills. This versatility is ideal for the test-teach-retest format of DA. MAIN consists of four wordless stories, each depicted by six pictures. Due to the parallelism of the stories in macrostructure and microstructure, their cognitive and linguistic complexity, and cultural appropriateness, the four stories are ideal for pretest/posttest narrative analysis. Each story begins with a setting statement, which gives time and place and introduces the protagonist. This component is followed by three episodes. Each episode consists of i) a goal statement for the protagonist, ii) an attempt by the protagonist to reach the goal, iii) an outcome of the attempt in terms of the goal, and iv) internal states which initiate the goal and express reactions (Gagarina et al., 2012, p.11). The MAIN-DA (see the cover page in Figure 1) couples *Baby Goats* (pretest) and *Baby Birds* (posttest) or *Dog* (pretest) and *Cat* (posttest) to compare story structure components, internal state terms, and structural complexity, also known as episodic complexity.



Multilingual Assessment Instrument for Narratives (MAIN)

Gagarina et al. (2019). MAIN: Multilingual assessment instrument for narratives – Revised. *ZAS Papers in Linguistics 63*, 1-39.

Adapted for Dynamic Assessment by Wendy Meyer, SLPD, CCC-SLP

The MAIN-DA is intended primarily for children from 5 to 10 years old. It assesses production of narratives.

This protocol uses the BABY GOATS/BABY BIRDS story sets.

Materials Needed:
- 2 picture sequences: Baby Goats and Baby Birds
- Recording equipment (audio or video)
- Scoring protocol for the MAIN-DA

Child's name:_____
Primary Language:_____
Language(s) spoken in the home:_____
Examiner:_____

	Year	Month	Day
Date Tested			
Date of Birth			
Chronological Age			

This Narrative Dynamic Assessment takes 30-45 minutes to administer and score.

- Make sure that you have thoroughly familiarized yourself with the story protocols and the directions. Dynamic assessment uses a test-teach-retest format. TEST (BG story) – TEACH (BG story) – RETEST (BB story).
- If you choose to audio record the child, prepare the equipment for recording the session. Make sure that you record the entire session. Prepare visual cues as needed.
- The warming-up phase includes talking with the child, establishing rapport and asking questions to ensure that the child is able to understand simple wh-questions. For example: *Who is your best friend? What do you like to watch on TV? What are your favorite games?*
- Make sure the two envelopes containing parallel stories (BG and BB) are on the table before the assessment begins. If using the PowerPoint format, have the digital stories prepared on a laptop or iPad for viewing. Stories can be downloaded here: https://main.leibniz-zas.de/
- Administer the assessment according to the instructions in the story protocol. Please adhere to these recommendations for prompting during the child's story retell:
  - Don't start the story for the child. Encourage the child to tell the story by him/herself by saying: *"Tell me the story"* (point to picture 1).
  - Give prompts only after waiting at least 10 seconds and only when it appears that the child is not going to say anything. Only then should the child be prompted, by saying, *"Okay…", "Well…", "Your turn…", "Tell me what is happening"*.
  - If the child is silent in the middle of the story, encourage her/him: *"Anything else?", "What else?", "Tell me more", "What else happens in the story?"*.
  - It does not matter how the child refers to the protagonists during the narration; do not correct the child. If the child cannot find the word for an action, protagonist, etc. and seems stuck or asks for help, encourage her/him by saying *"You can call it anything you like", "What would you call it?"*.
- During the retell, refrain from asking questions such as:
  - *"What is he doing here?", "Who is running?"*
  - *"What's this?", "What/who do you see in the picture?"*
- If the child starts telling a story from his/her own experiences, e.g. *"I saw a bird in the morning"* or *"I have a dog…"*, give the child some time to talk about his/her own experience and then gently ask them to tell the story in the pictures. (Exclude this irrelevant part of the narration from the analysis.)
- Based on your previous experience and cultural environment, you may want to give a word of encouragement, e.g. *"Good", "Fine"*, after each pair of pictures (and before unfolding/viewing the next pair).

Modifiability

What impressions do you have of the child's learning potential when given guided support (modifiability)? Refer to scores on page 7.

_____
_____
_____

☐ **High** modifiability: Do not suspect developmental language disorder

☐ **Low** modifiability: Suspect developmental language disorder

Analysis of Pretest/Posttest Change

Macrostructure components	BG (page 4)	BB (page 10)	Change
Story Structure Score			
Number of Internal State Terms			
Structural Complexity (longest sequence)			

What impressions do you have about the child's narrative retell change from pretest to posttest?

_____
_____
_____

Gagarina, N., Klop, D., Kunnari, S., Tantele, K., Välimaa, T., Bohnacker, U. & Walters, J. (2019). MAIN: Multilingual Assessment Instrument for Narratives – Revised. ZAS Papers in Linguistics 63.

Figure 1. MAIN-DA protocol cover page: *Baby Goats/Baby Birds* (Gagarina et al., 2019)

The child modifiability worksheet in the MAIN-DA (see Figure 2 below) measures task orientation, metacognition, compliance, flexibility, and examiner effort on a 5-point scale (Peña et al., 2007):

- *Task orientation*: The task is storytelling. Does the child understand the task they are being asked to do? How much prompting do they need to go on telling the story? A score of 5 means the child completely understood the task. A score of 1 means they did not understand the task.
- *Metacognition*: When a child understands what s/he knows and what s/he can do and has a sense of what s/he does not know and what s/he cannot do, s/he is using metacognition. Children demonstrate metacognition by making personal connections to the story, noticing related information, making an inference, or engaging in self-correction. A score of 5 means the child was aware of all their errors. A score of 1 means they were unaware of any errors.
- *Compliance*: What is the child's level of cooperation? Are they impatient or frustrated? Are they cooperative or confident? A score of 5 means the child was cooperative. A score of 1 means they refused to participate.
- *Flexibility*: Is the child flexible enough to restart their story or make corrections using the prompts given by the examiner? Do they persist with their failing strategy or use what has been taught to improve their storytelling? A score of 5 means the child readily used multiple strategies. A score of 1 means they persisted with one strategy, regardless of the outcome.
- *Examiner Effort*: How much support does the child need from the examiner? How much do they rely on visual or gestural prompts and cues? A score of 5 means that little support was needed by the child, whereas, a score of 1 means that the child required total assistance.

Simultaneously Note the Child's Modifiability

HIGHER SCORES = HIGHER MODIFIABILITY

Child Responsiveness Factors	Scores	Examples
Task Orientation: ***The performance and effort in learning a task.***		
5 Completely understood the task of story retelling		
4 Mostly understood the task (75% of the time)		
3 Understood some of the task (50% of the time)		
2 Often did not understand the task (25% of the time)		
1 Did not understand the task		
Metacognition: ***The awareness of one's thinking.***		
5 Aware of all errors		
4 Aware of most errors		
3 Aware of some errors		
2 Unaware of most errors		
1 Unaware of any errors		
Compliance: ***The child's behavior in response to instruction.***		
5 Cooperative		
4 Insecure		
3 Hesitant		
2 Uncooperative		
1 Refused		
Flexibility: ***Generating different strategies when problem-solving.***		
5 Readily used multiple strategies		
4 Had preferred strategies; could change when necessary		
3 Occasional use of more than one strategy		
2 Limited strategies/Unaware of alternative strategies		
1 Persisted with one strategy regardless of outcome		
Examiner Effort: ***Amount of examiner support or redirection.***		
5 Little support needed		
4 Required minimal support		
3 Required moderate support		
2 Required maximal support		
1 Required total assistance		

Figure 2. MAIN-DA: Modifiability Worksheet (adapted from Peña et al., 2007)

3.1 Testing phase using the Baby Goats story

DA uses a test-teach-retest format. The retelling elicitation mode of MAIN is used with the MAIN-DA[1] because the child retells the pretest story during both the testing and the teaching phase of DA. The child retells the posttest story during the retesting phase. When using the MAIN-DA protocol in clinical practice, the speech-language pathologist (SLP) may choose to use either *Baby Goats* as pretest and *Baby Birds* as posttest or *Dog* as pretest and *Cat* as posttest. Or a clinician may opt to assess a student twice, using one story set for the first administration and the alternative story set for the second administration. If used for other purposes, any combination of story sets may be used as pretest or posttest for narrative DA. In the following example, the testing phase will use *Baby Goats* for the pretest. The teaching phase will also use *Baby Goats* for the MLE. The retesting phase will use *Baby Birds* for the posttest.

To begin the testing phase, the examiner tells the *Baby Goats* story using the script provided. The examiner then asks the child to retell the story, saying, "Now it's your turn to tell the story. Look at the pictures and try to tell the best story you can". During the testing, the examiner makes note of any areas of weakness in storytelling to determine the focus of the MLE. If the child's narrative has been recorded, the SLP could refer to the recording at a later time to further analyze their narrative production. Deficiencies in story-retelling may include omission of setting or location, misuse of character titles or pronouns, neglecting to reference to the problem/solution in the story, incomplete goal-attempt-outcome story structure, and/or limited use of internal state terms.[2]

The protocol is scored for *Baby Goats* by totaling the number of story structure elements produced by the child, totaling the number of internal state terms used by the child, and assessing episodic complexity by determining the child's most complex sequence used. Episodes within the stories are classified as either no sequence (only one or none of the component's goal, attempt and outcome were produced within the episode), attempt–outcome sequence (AO, action/reaction sequence), goal–attempt/goal–outcome sequence (GA/GO, incomplete episode), or complete episode: goal–attempt–outcome sequence (GAO) (Lindgren, 2019, p. 422).

3.2 Teaching phase using the Baby Goats story

During the MLE, the teaching phase of DA, the examiner explains to the child the purpose and goal of the teaching session and why the lesson is relevant by saying: "Now we're going to practice telling even better stories. We tell stories all the time, don't we? We tell stories to our teachers, our friends, and our family. We need to learn to tell complete stories so other people can understand what we are trying to tell them. For example, what if you were on the playground

[1] The MAIN-DA protocols can be downloaded from the MAIN website by registered users at https://main.leibniz-zas.de/en/main-materials/main-materials/

[2] In a narrative, internal state terms generally describe a character's thoughts and emotions. Developmentally, children use these kinds of words to describe their own internal state before describing the internal state of others. This is the antecedent of perspective-taking and evidence of the emerging theory of mind. Research shows that bilingual students with DLD use fewer types of internal state terms than children with typically developing language skills (Altman et al., 2024; Boerma et al., 2016).

and someone got hurt? You would need to tell your teacher a complete story so she could understand what happened, right?" The examiner then asks the child, "What could happen if we didn't know how to tell a story?"

Next, the child retells the *Baby Goats* story again, but this time with support. The examiner informs the child, "Now you're going to tell the story again, but this time I'm going to help you." Areas of weakness in storytelling from the testing phase are the focus of the MLE. The child is given prompts as needed during their second story-retell (e.g., "Oh, no, you didn't tell me where the story is happening.", "Don't forget to tell how the baby goat feels.", "What does the fox want to do (its goal)? Why?", "What is the bird thinking?", "What happened to the fox in the end?", "How does the mama goat feel now?"). The examiner may choose to use visual cues (e.g., icon/picture of a house to represent location/setting, a heart icon/picture to represent the feelings of the characters, a question mark icon/picture to represent a problem in the story, etc.) to support the child in not only remembering story content, but also in gaining a deeper understanding of story constituents.

3.2.1 Measuring child modifiability during the teaching phase

During the MLE, it is critical that the examiner simultaneously attend to the child's level of modifiability and the amount of examiner effort needed. In the MAIN-DA, the four areas of child responsiveness measured on a 5-point scale are task orientation, metacognition, compliance, flexibility. These areas of child responsiveness may overlap. For example, a child might show a lack of flexibility when asked to make an addition to the story and then refuse to continue the story, showing limited compliance.

It is equally important to note the amount of examiner effort or redirection necessary during the story retelling. Remember, low child responsiveness plus maximal examiner effort equals low modifiability, while high child responsiveness plus minimal examiner effort equals high modifiability.

Before moving on to the retesting phase, the examiner assesses the child's understanding of what they were taught by saying, "Tell me why it's important to know how to tell a complete story. What did you learn about good storytelling? When will you tell good stories? How are you going to remember what I taught you for the next story?"

3.3 Retesting phase using the Baby Birds story

The examiner tells the *Baby Birds* story using the script provided. This story script contains the same macrostructural components as the *Baby Goats* story. The examiner then asks the child to retell *Baby Birds* independently and scores the narrative for story structure, internal state terms, and episodic complexity. The research study by Meyer et al. (2025) asserts that the administration of the MAIN-DA by school-based speech-language pathologists can be completed in less than 20 minutes when using the MAIN-DA protocol. It took the SLP-participants approximately 20 more minutes to analyze and score the protocol. In total, the MAIN-DA was administered and scored in less than 45 minutes.

3.4 Scoring

For the final scoring, pretest/posttest change is evaluated by comparing the child's story structure, internal state terms, and episodic complexity on their *Baby Goats* retelling to their *Baby Birds* retelling. Child modifiability is also analyzed by considering the child's learning potential during the teaching phase, when given guided support by the examiner. Although a number of studies have found that child modifiability scores accurately identify typical versus atypical language development (Lam et al., 2024; Petersen et al., 2017; Peña et al., 2014), clinical judgments of modifiability reside with the individual clinician, who may be influenced by their experience, culture, inclinations, or expectations (Hasson & Joffe, 2007; Petersen et al., 2017). Thus, it is recommended that a converging evidence approach be adopted by using the pretest/posttest change score in conjunction with child modifiability scores to make a clinical decision (Castilla-Earls et al., 2020; Hunt et al., 2022).

4 Conclusion

Research suggests that narrative language skills are critical for academic success, social interactions, and literacy skills (Fiestas & Peña, 2004; Stadler & Ward, 2005); therefore, assessing the narrative-retelling abilities of children with suspected DLD contributes to a greater understanding of their communication competence. The MAIN-DA uses a test-teach-retest format to evaluate a child's language learning potential. Through an MLE, the student is instructed in storytelling elements to improve their narrative skills. Simultaneously, child modifiability is analyzed by attending to the levels of student responsiveness and examiner effort during the teaching phase of DA. When modifiability ratings are used in conjunction with pretest-posttest change scores, both 'process' and 'product' information (Hunt et al., 2022) are instrumental in discerning language disorder versus language difference. Comprehensive assessment practices, including narrative DA, reduce the likelihood of misdiagnosis based on language differences.

The MAIN-DA protocols can be downloaded from the MAIN website by registered users at https://main.leibniz-zas.de/en/main-materials/main-materials/. Studies intending to utilize the MAIN-DA should cite the assessment protocol and this article in the following way:

- Gagarina, N., Klop, D., Kunnari, S., Tantele, K., Välimaa, T., Bohnacker, U. & Walters, J. (2019). MAIN: Multilingual Assessment Instrument for Narratives – Revised. *ZAS Papers in Linguistics, 63*, 1–36.
- Meyer, W. R. (2025). Adapting the Multilingual Assessment Instrument for Narratives to use as a Narrative Dynamic Assessment (MAIN-DA). *ZAS Papers in Linguistics*, *66*, 131–139.

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Specific patterns of referential use in Mandarin-Italian bilingual children

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In a recent study on Mandarin-English bilingual children, Zhou et al. (2022) identified two specific patterns in Mandarin productions: the overuse of demonstrative NPs in referent reintroductions among bilinguals compared to monolinguals and the preference for preverbal order when introducing new referents. The present study explores the narrative productions of ten Mandarin-Italian bilingual children (ages 4–8), elicited in both languages using MAIN. In order to determine whether the two patterns identified by Zhou et al. (2022) are also observed in the bilingual group of the present study, comparisons with an Italian monolingual group as well as with Mandarin monolinguals are drawn. The results indicate that, like in Zhou et al. (2022), when reintroducing referents, the Mandarin-Italian bilingual children produce more demonstrative NPs than their monolingual peers in both languages. As for referent introductions, when using existential constructions, Mandarin-Italian bilingual children prefer postverbal NPs. However, with motion and position verbs, which also require VS order in both languages, they exclusively produce preverbal NPs. Both patterns are regarded as typical bilingual strategies to reduce cognitive load during the processing of complex structures.

1 Introduction

The acquisition of referential expressions, such as definite and indefinite noun phrases (NPs), personal pronouns, and demonstrative NPs, is a late-acquired phenomenon in both monolingual and bilingual children (Salazar Orvig, 2019). The late mastery of referential forms, especially in extended discourse such as narratives, has been documented across several studies, with errors in referential use observed up to the age of ten, but with substantial variation across languages (Hickmann et al., 2015). The production of appropriate referential expressions depends on various interrelated factors, including the development of morphosyntactic skills in the target language, sensitivity to language-independent pragmatic principles (Rozendaal, 2008), and the development of executive functions, particularly perspective-taking (De Cat, 2015). As for bilingual children, the literature provides mixed results: some research has shown differences with monolingual peers in the use of referential expressions (Torregrossa & Bongartz, 2018; Torregrossa et al.,2021), while in others no difference has emerged (Andreou

et al., 2015; Lindgren et al., 2022; Topaj, 2010). Several factors have been considered to explain the referential behavior of bilinguals, such as language input (Torregrossa et al., 2021) and language combination, especially when the referential systems of the two languages are very different from each other (Lindgren & Bohnacker, in press). However, there are also studies that show no effect of linguistic experience (Lindgren et al., 2022), nor of the language pair on the referential behavior of bilingual children (see Torregrossa & Bongartz, 2018).

Research on referential expressions in narrative production usually examines these expressions in relation to three discourse functions: the *introduction* of a referent for the first time, the *maintenance* of reference to a character already mentioned in the immediately preceding discourse and still in focus, or the *reintroduction* of a referent after an intervening shift in focus to another referent (Hickmann et al., 2015). The referent is new in the first case, while should be marked as given in the second and third cases.

To signal whether a referent is new or already known within a discourse, all languages use strategies that distinguish between entities with varying degrees of accessibility. These mechanisms generally fall into two categories: local markings, which apply directly to the noun phrase, and global markings, which affect the entire clause. However, languages vary in how they employ these strategies. In some languages, local markings are obligatory, while global ones are optional, and in others, the opposite is true (Hickmann, 2003, p. 59). Word order frequently contributes to the marking of newness/givenness following two common principles found across many languages: given information is often positioned at the beginning of a sentence, whereas new information typically appears at the end, known as the *given-first* and *new-last* principles, respectively. Additionally, in some languages, subject-verb inversion allows speakers to position noun phrases introducing new subjects after the verb instead of at the start of the sentence (Hickmann, 2003, p. 62). Children must learn to use both local and global encoding strategies, gradually mapping forms to functions and developing sensitivity to the syntactic, semantic, and discourse-pragmatic constraints specific to the target language. This process is especially complex when two target languages are involved, as in bilinguals, and even more demanding when the two referential systems are very different from each other.

In a recent study, Zhou et al. (2022) examined referential production in Mandarin-English bilingual children (aged 4-6 years) growing up in Singapore and identified two specific patterns in the bilinguals' use of referring expressions in Mandarin, one at the level of local markings and one at the level of global markings: a higher use of demonstrative NPs by bilinguals compared to their monolingual peers, and the preference by bilingual children for the preverbal position when introducing new referents. In the present study, the use of referring expressions in narratives by 10 Mandarin-Italian bilingual children aged 4 to 8 is analyzed, to determine whether the same two specific patterns identified by Zhou et al. (2022) are observed when the language in contact with Mandarin is Italian. The study also included 11 age-matched monolingual Italian children as a control group.

The paper is structured as follows: Section 2 provides an overview of the local and global markings for information structure in Italian and Mandarin and reviews the literature related to the two specific patterns identified by Zhou et al. (2022) in Mandarin-English bilingual

children. Section 3 describes the present study, while Sections 4 and 5 are dedicated to presenting the results and discussing the findings, respectively.

2 Literature review

2.1 Local and global markings of givenness in Italian and Mandarin

This section provides a brief overview of the main features of Italian and Mandarin Chinese regarding the use of local and global strategies to mark the information status of a referent. Italian and Mandarin differ in their reliance on local versus global markers for indicating the information status of a referent. Specifically, determiners are grammatically required in Italian, while, they are optional in Mandarin, that mainly relies on word order to indicate distinctions in newness or givenness.

As for local marking strategies, both languages use an indefinite determiner whose form is similar to the numeral for one to mark the introduction of a new referent. In Italian, the indefinite article is the preferred encoding tool for newness, regardless of the position of the indefinite NP in the clause. In Mandarin the numeral *yi* is still in the process of grammaticalization but is increasingly taking on many functions typical of an indefinite article (Chen, 2004). In referent reintroduction, where the referent needs to be marked as given and identifiable to the listener, the tools available in the two languages are only partially shared. The most notable difference is that Italian primarily relies on the use of a definite article, an element that is absent in Mandarin. Another local marking device, common to both languages and of particular interest here, is the demonstrative determiner,[1] though its use and frequency vary between Italian and Mandarin. In Mandarin, a demonstrative may lose its deictic meaning in certain contexts (Chen, 2004), instead functioning as a determiner akin to the definite article in languages such as Italian, English, or Spanish (Gundel et al., 1993). Gundel et al. (1993, pp. 284–285) classify Mandarin demonstrative NPs as the linguistic forms that in Mandarin correlate most strongly with the cognitive state of "uniquely identifiable", which in English and Italian corresponds to definite NPs. In (1a) and (1b), Mandarin and Italian translations of the sentence *The dog next door was barking* are given (with the relevant element in bold). It can be observed that the Mandarin demonstrative *nèi* corresponds to the definite article in both the English (*the*) and the Italian (*il*) sentences.

(1a) *Gébi-de* ***nèi*** *tiáo gòu jiáo de lìhai.*
next-door that CL dog bark ADV extremely.
'**The** dog next door was barking.'
(Gundel et al., 1993, p. 285)

(1b) ***Il*** *cane d-el vicin-o stava abbaiando.*
the.M.SG dog of-the.M.SG neighbour-M.SG was barking.
'**The** dog next door was barking.'

[1] It should be specified that both languages can convey the identifiability of the referent through a series of nominal expressions whose identifiability can be inferred by the listener: kinship terms, noun phrases with a possessive (which in Italian still require a definite article), noun phrases with an adjectival modifier, or relative clauses.

Following Chen (2004), it should be added that Mandarin demonstratives are akin to the definite article in English or Italian in certain contexts, such as noncontrastive anaphoric reference and restrictive relative clauses. Otherwise, the preferred means of conveying identifiability and givenness in Mandarin are bare nominals in preverbal position (Chen, 2004).

Regarding global markings, both Italian and Mandarin use the noun phrase's position relative to the verb to indicate distinctions in newness or givenness. In Mandarin, the preverbal position is typically reserved for identifiable, given referents, while postverbal position signals new referents (Chen, 2004) (see 2a and 2b). Thus, introductions frequently appear postverbally, sometimes marked locally with a numeral (e.g., using the [*yi* + classifier + NP] structure). VS (Verb-Subject) structure, a common presentative strategy, is used to place new referents in postverbal position, but this is restricted to certain position (e.g., sit), and motion verbs (e.g., come, arrive). Italian also employs global encoding structures, such as the VS structure shared with Mandarin (see 3), to mark the newness of referents (Sparvoli, 2017). Although not obligatory, this structure is preferred for new referents and is triggered by factors similar to those in Mandarin, such as verb semantics (especially unaccusative verbs, such as those expressing motion or position), the referent's topicality (the VS order is more frequent with new or non-topical subjects), and text type (the VS order appears more frequently in spoken than in written language) (Andorno, 2012). Both Italian and Mandarin employ existential constructions (see 4 and 5). These structures function as specific presentative structures that languages commonly use to mark newness (Hickmann, 2003). Existentials follow the same principle as inversions, where new information appears postverbally, but have distinct features, such as particular verbs (*essere* 'to be' in Italian and *you* 'to have' in Mandarin), usually within easily identifiable constructions (Hickmann, 2003). It is noteworthy that the Italian's typical existential construction, [*c'è* + NP] is also used for reference maintenance (especially when a referent is reintroduced after not being at the center of discourse for a while). In that case, the NP includes a definite determiner (see 6).

(2a) rén lái le
person come PFV
the persons have come
(Li & Thompson, 1981)

(2b) lái le rén le
come PFV person PERF
some persons have come
(Li & Thompson, 1981)

(3) Arriv-a un-a volpe
Come-3.SG a-F.SG fox
A fox comes

(4) yǒu yī zhī gôu
have one CL dog
There is a dog.

(5) C'è un-a volpe
There is a-F.SG fox
There is a fox

(6) C' è la volpe
There is the.F.SG fox
The fox is there

In both languages, postverbal position can also be achieved through less specialized means, particularly when a new entity is introduced in relation to another previously mentioned referent

(Hickmann, 2003). Thus, in both Italian and Mandarin, a referent may be introduced as an object noun phrase within a canonical SVO structure. Table 1 summarizes the main coding strategies for marking givenness in the two languages under study, focusing specifically on the introduction and reintroduction of referents through lexical NPs.

Table 1. Givenness and newness markings in Mandarin and Italian

Given/new	Linguistic Form	Position	Mandarin	Italian
NEW	Bare noun	postverbal	+	-
	Indef.NP	postverbal	+	+
	Indef. NP	preverbal	-	+
	Numeral	postverbal	+	+
	Numeral	preverbal	-	+
GIVEN	Bare nouns	preverbal	+	-
	Def. NP	preverbal	-	+
	Def. NP	postverbal	-	+
	Demonstratives NP	Pre/postverbal	+	+
	Numeral	preverbal	+	-
	Def.det + numeral	Pre/postverbal	-	+

2.2 Specific patterns of referential use by Mandarin-speaking bilingual children

As noted in section 1, a recent study by Zhou et al. (2022), which serves as the basis for this study, identified two specific patterns in Mandarin referring expressions use within narratives of Mandarin-English bilingual children born and raised in Singapore: the overuse of demonstrative NPs when reintroducing referents and a preference for preverbal position in referent introduction. These findings align with previous studies on both Mandarin and other languages (Aalberse et al., 2017; Chen et al., 2020; Mai et al., 2021; Narasimhan & Dimroth, 2008; Polinsky, 2006). Zhou et al. (2022) studied bilingual preschool children who speak Mandarin Chinese and English in Singapore, a multilingual society where both English and Mandarin are widely spoken. The children in the study grew up in Singapore, and according to parental observations, 42.9% of the children were balanced between the two languages, 38.1% had greater proficiency in English than Mandarin, while 19% had greater proficiency in Mandarin than English. When assessed by using standardized proficiency tests in both languages (see Zhou et al., 2022 for more details in this regard), bilingual children were generally more advanced in English than in Mandarin.

Regarding the first pattern (the overuse of demonstrative NPs in referent reintroduction), Zhou et al. (2022, p.17) found that Mandarin-English bilingual children displayed a high frequency of demonstrative NPs, particularly a construction with the distal demonstrative [*na* + classifier *ge* + noun] to overtly signal referent definiteness, where a bare noun would be more appropriate (see 2.1). Comparing their results to the findings of the study of Sah (2018), which involved typically developing monolingual Mandarin-speaking children (aged 6–9 years), Zhou et al. (2022) found that the percentage of demonstrative NPs used by the bilingual children in their study to reintroduce previously mentioned referents was significantly higher than the percentage of demonstrative NPs used by the monolingual peers. Zhou et al. (2022) suggest that the overuse of demonstratives by bilinguals may be explained by hypothesizing that the

Mandarin demonstrative has been reanalyzed as a definite article under the influence of English, where a definite article is obligatory in similar contexts (anaphoric). In their study, such a use of the demonstrative NPs appears only in Mandarin productions and not in English, where the use of *that/this* + NP for the reintroduction function was very rare. The direction of cross-linguistic influence (hereafter CLI) is from English to Mandarin, that is, from the language with a dedicated definiteness marker to one without such a marker. These findings align with similar studies focusing on referent reintroduction, involving the same language pair (Mai et al., 2021) as well as studies examining other language pairs, one of which has definite articles while the other does not. In Aalberse et al. (2017), Dutch-Chinese bilingual speakers (aged 15–27) showed a significantly higher proportion in demonstrative NPs usage; the authors similarly attribute this result to CLI from Dutch to Chinese. The possibility that, when referring to previously mentioned referents, the demonstrative determiner may be reanalyzed as an article in languages lacking dedicated definiteness morphology is also evidenced in studies on Ambon Malay and Dutch (Moro, 2016), as well as on Slavic languages like Russian (Polinsky, 2006) and Polish (Otwinowska et al., 2020) in contact with English. One point worth highlighting is that these studies consider bilinguals in contexts where the article-less language is the home language and the language with articles is the societal language, comparable to the conditions of growth of the children in the present study. By contrast, Zhou et al. (2022) examined children growing up in Singapore, a multilingual society where both languages had similar degrees and contexts of exposure. Another potential explanation advanced by the authors for the demonstrative pattern is the tendency of bilinguals to excessively use linguistic forms to overtly mark definiteness, compared to their monolingual peers, as a strategy likely aimed at avoiding ambiguity and easing processing demands (Sorace et al., 2009).

The second specific pattern observed by Zhou et al. (2022) in the bilinguals' Mandarin productions is the non-adult-like preference for preverbal order when introducing new referents, as Mandarin typically favors a verb-subject (VS) structure to signal newness. Zhou et al. (2022) propose two potential explanations. The first states that children tend to prioritize novelty over accessibility in the initial position of the sentence, thereby structuring utterances according to a new-before-old order. In contrast, adults arrange elements in utterances following the old-before-new order, regardless of the language, guided by the principle of conceptual prominence (see Bock & Irwin, 2004, for a discussion of this point). The preference for the new-before-old order in children has been also found in other studies involving both Mandarin-speaking children and those speaking other languages (Ceja del Toro et al., 2016; Chen & Narasimhan, 2018; Narasimhan & Dimroth, 2008; Semsem & Chen, 2019). Hickmann et al. (1996) analyzed the marking of newness in stories told by monolingual preschool children as well as those aged 7 and 10 across several languages: English, French, German, and Mandarin. In Mandarin, while postverbal forms are required to mark the introduction of a new referent, the authors found that preverbal forms remain common even at age ten. Although children begin using postverbal forms more consistently by the age of seven, preverbal forms still appear frequently in their speech at later stages. This is consistent with Wu et al. (2015), who examined the referential choices in the narratives of monolingual Mandarin-speaking children, focusing on the syntactic positions required for different noun phrases expressing

(in)definite reference. The study involved 160 monolingual Mandarin-speaking children, divided into four age groups (3, 5, 7, and 9 years, 40 per group), along with an adult control group (mean age: 21 years). In their study, Wu et al. (2015) found that the correspondence between syntactic position marking and newness is acquired relatively late by Mandarin monolingual children. Preschool-aged children frequently place bare nouns in preverbal position regardless of whether the referent is new or known. The same pattern was found by Chen et al. (2020), who examined the narrative productions of 24 monolingual Mandarin children aged 4-5 years, comparing them to narratives produced by 25 adults aged 19–32. They found significant differences in word order between the two groups, with adults preferring the old-before-new order, while children disprefer it or show no preference for that order. In a study by Chen and Narasimhan (2018) involving English-speaking children (ages 3;10–5;1) and adults, it was noted that, although children were less likely to utilize the old-before-new word order compared to adults, they did not exhibit a significant preference for the new-before-old order, when introducing new referents. A preference for new-before-old order has also been observed among German-speaking children (Narasimhan & Dimroth, 2008), Spanish-speaking children (Ceja del Toro et al., 2016), and Arabic-speaking children (Semsem & Chen, 2019). However, results from other studies found different results (MacWhinney & Bates 1978; Stephens, 2010). Stephens (2010) suggests that English-speaking children may prefer the old-before-new order, whereas MacWhinney and Bates (1978), in a study involving three groups of monolingual children speaking English, Hungarian and Italian respectively, did not find any correlation between word order and information status for any of the languages considered. From this brief review of the studies, it emerges that research on children's reliance on word order to express the new-given distinction has yielded mixed results so far.

The second possible explanation by Zhou et al. (2022) posits that the preference for preverbal order is a result of cross-linguistic influence from English to Mandarin. Indeed, English primarily employs pitch accent to mark focus (generally the new information), resulting in a more rigid word order (Fanselow, 2014). In contrast, Mandarin relies mainly on constituent order as the primary means to indicate focus, allocating postverbal position for this purpose (Chen et al., 2016). However, in contrast to the findings of Zhou et al. (2022), Jia and Paradis (2015) found that Mandarin-English bilingual children do not differ from Mandarin monolingual peers as for the selection of postverbal position in introducing new referents. Jia and Paradis (2015) studied the linguistic means used for the first mentions of referents in a narrative task by Mandarin-English bilingual children (aged 6;9–10;10), raised in Edmonton, Canada, and with Mandarin as their heritage language. The results of their study show that, bilingual children were able to use postverbal NPs appropriately in the first mentions similar to Mandarin monolinguals. The authors therefore excluded the possibility of CLI on the word order from English to Mandarin, since the use of postverbal NPs is a Mandarin-specific way of introducing referents and for this reason cannot be transferred from the bilingual children's English knowledge. A study by Serratrice (2006) considered a different language combination, namely English and Italian, where Italian, like Mandarin, favors postverbal positioning for NPs introducing new referents. Serratrice (2006) investigated the referential choices of eight-year-old English-Italian bilingual children, comparing them with both Italian-speaking and English-

speaking monolingual peers. The results aligned with the findings of Zhou et al. (2022). For referent introduction, the Italian monolingual children used postverbal subjects at twice the rate of the bilingual children (although the difference between the two groups did not reach statistical significance). This result was interpreted as an effect of CLI from English, which has a more rigid word order and requires preverbal position even in contexts of newness. Investigating bilinguals with Italian and Mandarin as a language pair can be useful in disentangling the issue of the higher frequency of preverbal order in bilingual children's introductions: whether it reflects a preference for a new-before-old order or is the result of CLI.

3 The present study

This exploratory study seeks to examine whether the specific patterns identified by Zhou et al. (2022) in the Mandarin narrative productions of bilingual Mandarin-English children are also present in bilinguals with a different language pair, namely Mandarin-Italian. The patterns under examination are:

1. the overuse of demonstrative NPs for referent reintroduction;
2. the preference for preverbal order when introducing new referents.

In order to investigate this issue, the study examines the referential choices of 4–8-year-old Mandarin-Italian bilingual children (N=10) for introduction and reintroduction in oral narratives. A comparable analysis was conducted with an age-matched group of monolingual Italian children (N=11), while no group of monolingual Mandarin-speaking children was included. For comparison with Mandarin monolinguals, reference was made to the findings of previous similar studies (see Section 4 below).

4 Methods

4.1 Participants

The participants were 10 children aged 4 to 8 years (M_{age} = 6;9) born and raised in Italy by families immigrated from the People's Republic of China and 11 children aged 4 to 8 years (M_{age} = 6;4) born and raised in Italy by monolingual Italian-speaking families. The children were recruited from two schools in the city of Bologna (Italy). The data were collected between November 2021 and March 2022. None of the children included in the study were reported by their teachers to have a history of speech disorders. All parents provided their consent to participate by signing a consent form. This study was reviewed and approved by the Ethics Committee of the University of Bologna. Table 2 provides descriptive statistics for the ages of the two groups. A Wilcoxon test showed that here was no significant difference in age between the two groups (W=41, p = .34).

Table 2. Descriptive statistics of age by language group.

Group	n	Mean (sd)	Range
Monolinguals	11	6;3 (1;0)	4;0 – 7;6
Bilinguals	10	6;7 (0;9)	4;5 – 8;0

A questionnaire (designed specifically for this study) was given to parents to assess exposure to the two languages. All children had been exposed to Italian from at least the age of three, coinciding with their entry into kindergarten. Italian is the only language spoken at school, and none of the bilingual children had attended an Italian language course as a second language at school at the time of data collection. The questionnaire revealed that the bilingual group has an average exposure to Italian of 47.62%, indicating a fairly balanced input. The questionnaire also aimed to gather information on the mothers' educational background, which some studies highlight as a relevant measure of input quality (Paradis, 2011, 2023). Among the mothers of bilingual children, 70% (7/10) reported holding a high school diploma, suggesting a mid-socioeconomic status background. One mother reported having attended only the primary school, while two did not provide any information. The questionnaire for the monolingual families was fully completed by only 36% of the families (4/11). Among these, three mothers reported having a university degree, and one reported holding a high school diploma. However, the data are too limited to draw any conclusions about the socioeconomic background of the monolingual group.

4.2 Materials and procedure

For the collection of narrative productions, two stories from MAIN (Gagarina et al., 2019) was used: the *Baby Goats* story was used to gather productions in Italian from both the monolingual and the bilingual group (Levorato & Roch, 2020), while the *Baby Birds* story was used to collect stories in Mandarin from the bilingual group (Luo et al., 2020).[2] MAIN has been effectively employed to elicit oral narratives from children across various languages, including Mandarin (Sheng et al., 2020) and Italian (Roch et al., 2016). The two stories have parallel episodic structures and are comparable in terms of actions and emotions of the characters. Each narrative involves five characters: a mother goat/bird, two baby goats/birds, a fox/cat, and a crow/dog. The stories are organized into three episodes, with each episode illustrated by two pictures.

Data collection was organized into two sessions, the first conducted in Italian and the second in Mandarin,[3] all administered by native speakers and videotaped. An interval of four to seven days was maintained between the two tasks. During the task, the children were asked to observe the pictures and narrate the story to an interlocutor who could not see the images, in order to avoid knowledge sharing that could influence referential choices. In the present study, the child was presented with one picture at a time, differing from the procedure recommended by the MAIN protocol.

[2] In this study, the same story was used for all participants within each language, rather than counterbalancing the stories across languages. However, it should be acknowledged that this method does not fully align with the counterbalancing recommendations of the MAIN procedure.

[3] Due to the availability of native Mandarin speakers and restrictions related to the Covid-19 emergency, the randomization of the languages for the tasks was not possible.

4.3 Transcription, coding and analysis

The stories were transcribed verbatim using the CHAT format (MacWhinney, 2000), and all NPs that referred to the characters were extracted and coded by native speakers.[4] The unit of analysis was the clause, defined based on the presence of a verbal predicate (Serratrice, 2007). All incomprehensible utterances, direct speech, nominal predicates, and sentences without predicates were excluded from the analysis. Following Zhou et al. (2022), each reference to a character was coded in terms of referential form, discourse function, and syntactic position (only for the introduction function). For the purposes of this study, referential forms were classified as either demonstrative NP or other, in both Italian and Mandarin. The syntactic position of the NP for the introduction of new referents was coded as either preverbal or postverbal, while the discourse functions considered in the annotation were introduction (INTRO), referring to the first mention of a character, and reintroduction (REINTRO), referring to a character whose previous mention was not in the immediately preceding discourse (the reintroduction coding follows Zhou et al. 2022, who refer to Colozzo & Whitley, 2014 and Serratrice, 2007). Expressions used for referent maintenance were also coded but were not considered for the purpose of the present study.

In order to assess children linguistic competence in both languages, the following measures were extracted from the narratives:

- *Sentence Complexity*: two measures of sentence complexity were computed:
  - the mean length in morphemes of each child's five longest utterances (MLU5) (see MacWhinney, 2000).
  - the ratio of the total number of main and subordinate clauses to the total number of sentences (SubIndex) (based on the procedure described in Restrepo et al., 2010).
- *Lexical Diversity:* two measures of lexical diversity were computed:
  - vocabulary diversity derived from Type/Token ratio (VOCD) (computed as explained in MacWhinney, 2000 and Malvern et al., 2004).
  - the number of different verb types (NDV) (see Hadley et al., 2016).
- *Grammaticality* (GRAM) was computed as the proportion of grammatical sentences over the total number of analyzable sentences per individual (see Simon-Cereijido & Gutierrez-Clellen, 2007). Grammaticality was judged by one native speaker linguist per language.

For the calculation of MLU5, VOCD, and NDV, the MOR software in CLAN (MacWhinney, 2000) was run on the transcriptions, whereas SubIndex and GRAM were calculated manually.

5 Results

The results of the analyses are presented below. This section is organized in three subsections: Section 5.1 presents the results of linguistic measurements for each language, while Section 5.2 deals with one of the two specific patterns under investigation, namely the overuse of

[4] The coding was conducted by a single native speaker for each language. Therefore, it is not possible to provide a measure of inter-annotator agreement.

demonstrative NPs in referent reintroduction, and Section 5.3 with the other, namely the preference for preverbal position in introducing new referents.

5.1 Linguistic competence

In this subsection the measures of children proficiency in both languages are presented. Table 3 below shows the descriptive statistics of linguistic measures in Italian both for monolingual and bilingual children.

Table 3. Descriptive statistics of proficiency measures in Italian by language group.

Measure	Monolinguals		Bilinguals	
	Mean (sd)	Range	Mean (sd)	Range
MLU5	21.45 (3.24)	14.8 – 26.8	14.26 (2.47)	9.25 – 17.8
SubIndex	0.74 (0.08)	0.59 – 0.85	0.81 (0.19)	0.46 – 1.00
VOCD	28.84 (7.54)	19.36 – 46.02	19.30 (7.30)	10.09 – 32.18
NDV	21.45 (4.67)	17 – 32	12.30 (3.91)	5 – 17
GRAM	0.9 (0.09)	0.7 – 1.0	0.2 (0.4)	0.0 – 0.8

A Wilcoxon test was conducted to compare the two groups on each measure. The results show that the bilingual group is significantly less proficient in Italian than the monolingual Italian-speaking group in all measures except for the SubIndex (MLU5: $W = 106$, $p < .001$; SubIndex: $W = 36$, $p < .08$; VOCD: $W = 90$, $p < .01$; NDV: $W = 109$, $p < .001$). Since Italian and Mandarin are typologically distant languages, particularly from a morphological perspective, the MLU5 and SubIndex measures were used exclusively for within-language comparisons (Italian) and not for cross-language comparisons (Italian vs Mandarin). To compare the bilingual group's proficiency in Italian and Mandarin, only the grammaticality of the sentences produced in the two languages and the two measures of vocabulary richness were considered. Table 4 presents the descriptive statistics for the proficiency measures in the home language (Mandarin) of the bilingual group.

Table 4. Descriptive statistics of proficiency measures in Mandarin.

Measure	Bilinguals	
	Mean (sd)	Range
VOCD	32.12 (10)	49.93 – 21.71
NDV	26.90 (6.9)	35 – 19
GRAM	0.8 (0.1)	0.7 – 1.0

A Wilcoxon test was conducted to compare each measure across the two languages. The results indicate that the bilingual group is significantly less proficient in Italian than in Mandarin in all measures (GRAM: $W = 97$, $p = .004$; VOCD: $W = 87$, $p = .003$; NDV: $W = 100$, $p < .001$).

5.2 Pattern 1: overuse of demonstratives

To verify whether the same pattern observed in Zhou et al. (2022), namely overuse of demonstrative NPs for referent reintroduction, is also present in the Mandarin-Italian bilingual group, all demonstrative NPs used to introduce and reintroduce story characters were extracted from the narratives and coded for their discourse function: introduction or reintroduction. The results are reported in table 5.

Table 5. Demonstrative NPs in Italian and Mandarin narratives.

Language	Monolinguals		Bilinguals	
	INTRO	**REINTRO**	**INTRO**	**REINTRO**
Italian	0% (0/49)	3% (5/170)	0% (0/48)	12% (18/150)
Mandarin	N/A	N/A	4% (2/55)	21% (30/140)

The results show that, in Italian, neither the monolingual group nor the bilingual ever use demonstrative NPs to introduce story characters. However, for referent reintroduction, bilingual children seemed to produce demonstrative NPs more frequently compared to their monolingual peers (12% vs. 3%). A Fisher's exact test was conducted to examine whether the use of demonstratives for referent reintroduction differed significantly between monolinguals and bilinguals. The test did not reach a significant difference (p=.45 odds ratio = 3.00 (95% CI: 0.03 to 260.72)). Examples in Italian are provided below from the productions of a monolingual child (7), who uses a definite NP, and a bilingual child (8), who uses a demonstrative NP, to refer to the fox in the *Baby Goats* story.

(7) ***la*** ***volpe*** *saltò*
the.F.SG **fox** jumped
'**the fox** jumped'

(8) ***quest-a*** ***volpe*** *vuole mangi-are*
this-F.SG ***fox*** *wants eat-INF*
'**this fox** wants to eat'

This study does not include monolingual Mandarin children but follows the approach of Zhou et al. (2022) and makes comparisons with results obtained in similar studies involving monolingual Mandarin children. Specifically, the study by Hickmann et al. (1996) with preschoolers and the one by Wu et al. (2015) with five-year-old children are used to make comparisons for the introduction function, while the study by Sah (2018) is used to as comparison for referent reintroduction. A comparison will also be made with the results obtained by Zhou et al. (2022) as an additional bilingual group. Table 6 below shows the percentage of demonstratives produced by monolinguals and bilinguals in Mandarin, in each of the aforementioned studies as well as in the present study.

Table 6. Percentages of demonstrative NPs in Mandarin narratives by monolingual and bilingual children.

	Hickmann	**Wu et al.**	**Sah (2018)**	**Zhou et al.**	**Present**
N	10	40	16	21	10
INTRO	17%	0–4%	N/A	35.37%	4%
REINTRO	N/A	N/A	8.7%	57.14%	21%

As shown in table 6, for the introduction function in Mandarin, the bilingual children in the present study produced very few demonstrative NPs (4%), with a percentage similar to that of the monolingual Mandarin children in the study by Wu et al. (2015). Mandarin-Italian bilinguals produce fewer demonstrative NPs than both the monolingual preschoolers in Hickmann et al. (1996) and the Mandarin-English bilinguals in Zhou et al. (2022). In the reintroduction function, bilingual children in the present study produced 21% demonstrative NPs compared to other forms of encoding, yielding results that fall between the monolinguals in Sah (2018) and the bilinguals in Zhou et al. (2022).

5.3 Pattern 2: preference for preverbal position

The second pattern under examination is the preference for the preverbal position in referent introduction. To address this question, only NPs used to introduce story characters were coded for their position relative to the verb. Table 7 below presents percentages and raw figures of preverbal and postverbal NPs (regardless their grammatical role) used by the children in Italian and Mandarin to introduce a new referent in the story.

Table 7. Number of preverbal and postverbal NPs in Italian and Mandarin narratives.

Language	Monolinguals		Bilinguals	
	Preverbal	**Postverbal**	**Preverbal**	**Postverbal**
Italian	33% (16/49)	67% (33/49)	58% (28/48)	42% (20/48)
Mandarin	N/A	N/A	24% (13/55)	76% (42/55)

Table 7 shows that for character introductions in Italian, the bilingual children exhibit a preference for the preverbal position (58% vs. 42%), while the monolingual children show a stronger preference for the postverbal position (67% vs. 33%). In contrast, in Mandarin, the bilinguals demonstrate a clear preference for the postverbal position compared to the preverbal position (76% vs. 24%). A Fisher's exact test was conducted to examine whether the word order preferences for referent introduction differed significantly between monolinguals and bilinguals. The test reached significance (p = .01, odds ratio = 0.35 (95% CI: 0.14 – 0.86)).

Comparisons between the present study and results obtained in similar studies involving monolingual Mandarin children are made. In this case the study by Hickmann et al. (1996) with preschoolers and the study by Wu et al. (2015) with five-year-old children are used to compare data of bilingual Mandarin-Italian children to Mandarin monolinguals. The results obtained by Zhou et al. (2022) are used as an additional bilingual control. Table 8 below shows the percentage of preverbal and postverbal NPs produced by monolinguals and bilinguals in Mandarin, by each of aforementioned studies.

Table 8. Percentage of preverbal and postverbal NPs in Mandarin by monolingual and bilingual children.

	Hickmann et al. (1996)	**Wu et al. (2015)**	**Zhou et al. (2022)**	**Present Study**
N	10	28	21	10
Preverbal	56%	64.68%	72%	24%
Postverbal	44%	35.32%	28%	76%

Table 8 shows a difference between the Mandarin-Italian bilinguals in this study, who have a clear preference for the postverbal position, and the patterns shown by both Mandarin monolingual children and Mandarin-English bilinguals, whose first mentions were more frequently preverbal than postverbal.

In order to get a clear picture of the word order patterns shown by the children of the present study, a qualitative analysis of to the types of structures where postverbal NPs occur was conducted.[5] Recall that, both Mandarin and Italian, in order to appropriately introduce a new referent, require the VS order in existential/presentative sentences, as well as with motion or position verbs (see section 2.1). In the Italian narratives of the monolingual children, 70% (23/33) of postverbal NPs were found in existential constructions with *c'è* 'there is' (recall 5), 15% (5/33) with motion verbs (recall 3) and 15% (5/33) are postverbal objects (whose canonical position in Italian is indeed postverbal). In the Italian narratives of the Mandarin-Italian bilingual children, 75% (15/20) of the postverbal NPs occurred in existential structures, 15% (3/20) were canonical postverbal objects, and 10% (2/20) appeared after the transitive verb *vedere* 'see', resulting in NPs whose grammatical role (subject or object) is ambiguous. It is worth noting here that, in the Italian narratives of the bilingual children, no NPs in postverbal position were found with motion or position verbs. In contrast, 11% (3/28) of the preverbal NPs were subject NPs of motion or position verbs, resulting in less appropriate structures (see 9 below).

(9) *e* ***mucca*** *più* *piccol-a* *arriv-o* *a acqua*
and **cow** more small.F.SG come.1.SG to water
'And a smaller **cow** comes to the water.'

In the Mandarin narratives by the bilingual children, 59% (25/42) of the postverbal NPs occurred in existential constructions featuring the verb *you* 'have' (see example 10 below), while 41% (17/42) are postverbal objects (canonical in Mandarin). Similarly to the productions in Italian, also in Mandarin, for cases involving verbs that require VS order (motion and position verbs, presentative constructions), bilingual children placed the NP in the preverbal position. This is shown in (11) with the motion verb *lái* 'come' and in (12) with the presentative verb *chūxiàn* 'show up', where a more appropriate structure in Mandarin is VS order.

(10) *yǒu* ***yī-ge*** ***māomī***
have **one-CL** **cat**
'There is **a cat.'**

(11) *Ránhòu* ***yī-ge*** ***xiǎo gǒuguò*** *lái* *le*
then **one-CL** **little dog** come LE
'Then **a little dog** came.'

(12) ***gǒugou*** *chūxiàn* *le*
dog show up LE
'A dog showed up.'

[5] For the purpose of this study the type of local marking on the NP was not taken into consideration, but it should be acknowledged that it indeed interacts with global markings in coding the givenness/newness of the referent, especially in Italian.

It therefore seems that when introducing a new referent, in both their languages, the bilingual children in this study exhibit a preference for the VS order only with existential constructions. In contrast, the preverbal position is preferred with other types of presentative constructions and with motion and position verbs, for which the VS order is more appropriate both in Italian and Mandarin. Considering these structures, the behavior of the Mandarin-Italian bilingual children in Mandarin seem to align with the preference shown by their monolingual and bilingual peers in previous studies.

6 Discussion and conclusion

This study was based on the findings from Zhou et al. (2022), which investigated bilingual children speaking English and Mandarin aged 4-6 years and found two specific patterns in their Mandarin productions: the overuse of demonstratives in character reintroductions and the preference for preverbal order when introducing new referents. In this study, the narrative productions of 10 bilingual Mandarin-Italian children (aged 4–8 years) born and raised in Italy by immigrant families from the People's Republic of China were analyzed to verify whether the same patterns could be found. An age-matched monolingual Italian group was also included, but not a monolingual Mandarin group; for the comparison with Mandarin monolinguals, reference was made to the results of previous studies (Hickmann et al., 1996; Wu et al., 2015; Sah, 2018; Zhou et al., 2022).

Regarding demonstrative NPs in referent introductions, the children in this study seem to have learned that a demonstrative NP is not appropriate for introducing a new character. In reintroduction, the bilingual children in the present study produced demonstrative NPs to a larger extent than both the Italian monolinguals included in the study (although the difference between the two groups did not reach statistical significance) and the Mandarin monolinguals from previous studies (Sah, 2018), but fewer than the bilingual peers speaking English and Mandarin from Singapore in the study by Zhou et al. (2022). Thus, it appears that the Mandarin-Italian bilingual children occupy an intermediate position between monolinguals and the balanced bilinguals from Singapore studied in Zhou et al. (2022).

The bilingual group in the present study produced a higher proportion of demonstrative NPs than both monolingual groups (Italian and Mandarin). This seems to suggest that the bilinguals' use of demonstrative NPs is not primarily driven by cross-linguistic influence, but rather by bilingualism itself. In Zhou et al. (2022), the children produced almost no demonstrative NPs in English, pointing to a clear direction of CLI and the reanalysis of demonstratives as definite articles in Mandarin, shaped by English. Considering the data of the present study, the CLI hypothesis can explain the overuse of demonstrative NPs in Mandarin compared to monolingual peers, attributed to the influence of the Italian definite article. However, it fails to fully account for the observed difference with monolingual Italian peers. Consequently, the explanation of cross-linguistic influence from a language with articles to one without does not seem sufficient to explain the data collected.

The hypothesis of a general effect of bilingualism leading to the overuse of demonstrative NPs in reintroducing referents appears preferable. The fact that demonstrative NPs serving as a local marking for definiteness is an option present in both languages seems to

facilitate its acquisition and use. Demonstrative NPs may constitute the easiest and fastest processing route, being less ambiguous for marking referent identifiability. Torregrossa and Bongartz (2018) argues that bilingual children with unbalanced proficiency, like those in the present study, exhibit slower and less efficient processing of the morphosyntactic options available in the target language. In Italian, given the children's lower proficiency compared to the monolinguals, demonstratives are likely to be the quickest and most efficient option to process, compared to the definite article as a local marker of definiteness (see also De Lange et al., 2009). In Mandarin, the child should rely on the global marker, which, however, as shown by psycholinguistic studies, is more challenging to manage and heavier to process (Hickmann, 2003); in this case, demonstrative NPs would also be a cognitively 'lighter' option. This aligns with studies on the referential expressions of bilinguals across different language combinations, which attribute their divergent referential patterns to processing efficiency—favoring cognitively less demanding strategies that still avoid referential ambiguity (Sorace & Filiaci, 2006; Sorace et al., 2009; Torregrossa et al., 2021).

Turning to the second phenomenon, children's preference for preverbal order for introducing new referents, the Mandarin-Italian bilinguals in the present study showed a preference for preverbal word order in Italian, unlike their monolingual peers, who preferred postverbal word order. In Mandarin, however, bilingual children demonstrated a preference for postverbal word order. This appears to be inconsistent with previous studies, where both Mandarin monolingual and bilingual children showed a preference for preverbal order (Hickmann et al., 1996; Wu et al., 2015). However, a further qualitative analysis of the structures in which postverbal NPs occur, revealed a more nuanced picture. The Mandarin-Italian bilingual children place NPs after the verb only in existential constructions, while they use the canonical SV order with motion and position verbs in both of their languages. These findings reveal that differences between monolinguals and bilinguals in Italian pertain specifically to motion and position verbs, with bilingual children making discourse-pragmatically less appropriate choices with these verbs. In Mandarin, with motion, position, and presentational verbs other than *you* 'there is', Mandarin-Italian bilingual children exhibit a preference for preverbal order, showing a behavior partially similar to their monolingual peers.

The Mandarin-Italian bilingual children, therefore, followed different patterns depending on the specific structures requiring VS order, and these patterns were identical across their two languages. They appear more prone to positioning the NP after specific existential markers (Italian *c'è* 'there is', Mandarin *you* 'to have') but not after other verbs that require postverbal position as well. Previous studies with Mandarin-speaking monolingual children have shown that structures involving non-canonical word order take longer to be acquired (up to 10 years), with acquisition timelines varying across structures (Hao et al., in press; Hickmann & Liang 1990; Ji et al., 2023). For example, Hickmann and Liang (1990) indicated that the production of postverbal subjects with motion verbs in Mandarin monolingual children occurs only after the age of five, suggesting a slower acquisition process compared to existential constructions, which, by contrast, emerge earlier. Furthermore, psycholinguistic studies have shown that global newness markings present additional difficulties, requiring that children disentangle the discourse and grammatical functions of clause structure (Hickmann, 2003,

p.136) and are therefore cognitively more demanding. It thus seems plausible that the preference for preverbal word order with motion verbs observed in the Mandarin-English bilingual children in Zhou et al. (2022) is not due to the influence of English, but rather to processing factors. Even bilingual children with a different language combination, like those in the present study (where Mandarin was paired with Italian, a language that requires the same word order for the same types of verbs as Mandarin) showed the same preference for preverbal position. Therefore, considering the greater cognitive demands of global strategies for marking newness and the Mandarin-Italian bilingual children's lower proficiency in Italian, the lack of postverbal position in Italian can be reasonably attributed to the challenges of mastering such structures in their weaker language. On the other hand, existential constructions possess particular properties that likely reduce their complexity in both languages: they involve clearly identifiable verbs (*essere* 'to be' in Italian, *you* 'to have' in Mandarin), are highly frequent in the input, and therefore are acquired early by monolingual children (Hickmann, 2003). These features could explain why they do not pose significant challenges for bilingual children either.

In conclusion, the specific patterns observed in bilingual children, both in the present study and in Zhou et al. (2022), seem to be linked to strategies aimed at reducing processing demands. This study represents just an initial step based on a small sample, and further research with a larger sample is necessary to obtain more comprehensive data and insights into the referential choices of Mandarin-Italian bilingual children. Future research would also benefit from examining the use of Mandarin demonstratives in Mandarin bilingual children with referents beyond characters. While Chinese demonstratives serve functions typically associated with the definite article in other languages, it does not serve this function when the referent is identifiable through other sources than previous mentions (e.g., identifiability based on general knowledge; see Chen, 2004). Therefore, it would be interesting to explore whether the overuse of Chinese demonstratives extends to non-anaphoric contexts. Additionally, examining language pairs with both languages having a rigid word order for introducing new referents could offer new useful insights. Also, a key methodological consideration emerges from this small-scale study, which is the importance of using consistent methodologies and comparable tools across studies. The MAIN, in this regard, offers valuable opportunities for future research, as it is available in multiple languages and provides a standardized method for studying referential abilities across diverse linguistic and cultural backgrounds.

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The Adaptation of the Multilingual Assessment Instrument for Narratives (MAIN) to Faroese

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This paper describes the adaptation of the Multilingual Assessment Instrument for Narratives (MAIN) to Faroese. It first provides a brief overview of the Faroese language and language learning context in the Faroe Islands, and then the adaption process is described. The use of MAIN in the Faroe Islands until now is outlined as well as the future research contexts in which the use of MAIN could be valuable.

1 Introduction

Children's narrative skills provide rich insights into their language development during childhood (Boudreau, 2008; Andreou & Lemoni, 2020). Extensive research on narratives has been conducted across different populations, including comparisons between monolingual and multilingual children, investigations of both (or more) languages of multilinguals (Bohnacker. 2016; Gagarina et al., 2016; Lindgren & Bohnacker, 2020, 2022), and studies including both typical and atypical populations (Altman et al., 2016; Lindgren et al., 2023 for an overview). These studies have provided important and valuable knowledge about children's narrative skills, demonstrating that narratives are not only useful tools for assessing children's language skills, but they can also adequately identify language impairment in both monolingual and multilingual children (Boerma et al., 2016; Peña et al., 2020; Tsimpli et al., 2016). Monolingual children, as well as multilingual children with Developmental Language Disorder (DLD), have been found to differentiate from typically developing children in their production of narratives, namely in the linguistic aspects, such as limited lexical diversity and fewer morpho-syntactically complex sentences (Andreou & Lemoni, 2020). It is important to be able to differentiate between multilingual children with a lack of language experience and multilingual children with DLD (Hamdani et al., 2024), allowing early support and interventions that can help develop language skills and reduce long-term impact on language development.

Narrative skills can be assessed with the tool named the Multilingual Assessment Instrument for Narratives (MAIN; Gagarina et.al., 2019). MAIN is a picture-based assessment tool that has been developed by international researchers to sample, analyze, and assess children's comprehension and production of narratives. MAIN has been adapted to more than

90 languages around the world. It is developed and designed to assess narratives in children from multilingual and multicultural backgrounds by carefully choosing the story scripts, characters, and pictures that are neutral and suitable for children from a variety of different cultural backgrounds, and it is adapted for socio-linguistical features. This was done so that the pictures can reflect the different regions and cultural environments of the children (e.g., on the pictures chicken legs are depicted instead of a sausages) and so that they can recognize the color of particular animals (revised version Gagarina et.al., 2019). The MAIN instrument consists of four parallel picture sequences that constitute the MAIN stories: *Cat*, *Dog*, *Baby Birds*, and *Baby Goats* with six pictures each. A scoring sheet has been developed for calculating the macrostructure dimensions (i.e., story structure, story complexity) and the number of internal state terms produced in a story. It also allows the assessment of narrative comprehension questions.

Narratives generate naturalistic-like samples of language skills, making MAIN a valuable tool in data collection as well as for clinical settings. The tool affords insight into a multilingual person's languages, allowing to analyze and compare the narratives produced by people who learn more than one language (Gagarina & Lindgren, 2020). For further readings regarding the MAIN material see De Cat (2022) which highlights the usefulness of MAIN as well as opportunities and challenges in the analysis of MAIN in her article (De Cat, 2022).

The current paper gives a brief overview of Faroese and the language learning context of the Faroe Islands. It describes the adaptation process as well as insights gained from using the MAIN material in a small pilot study in a Faroese context.

2 The language learning context in the Faroe Islands

Faroese is the language spoken in the Faroe Islands. The population of the Faroe Islands is 54.648 (Statistics Faroe Islands, 2024), and an estimated number of 21,000 speakers are living abroad (Norðuratlantsbólkurin á Fólkatingi, 2009). Faroese is the language used in everyday communication and societal aspects, but due to the historically close language contact, Danish has played a role in the language environment especially in written context, e.g., in church services, contact with Danish authorities, in some of the school textbooks, but also in films in the television and cinemas, text on imported goods, etc. (Petersen, 2010). Children attend compulsory school from the age of 6–7 to 16, and most children attend daycare from around the age of one year old. Both Danish and English are obligatory subjects in compulsory school from the age of around 9 years old. Although children are exposed to Danish and English partly through digital platforms and partly through teaching later, on an individual level toddlers and young children can be considered monolingual since they do not use Danish or English in everyday communication.

The Faroese society has to a large extent been monolingual, with the exception of the contact with Danish and English, but during recent years, there has been a growing migration (from 1.5% to 5.5% of the population) from countries other than the Nordic countries (Hayfield, 2024). This has resulted in a more diverse linguistic landscape with a larger part of the population being multilingual than earlier. This is also the situation in daycare and schools, which now include more children learning Faroese as a second language than before. Faroese

as an additional language is a newly developing field. Just recently (2024) the first teachers of Faroese as a second language have received their diplomas while teaching materials, legislation, curriculums, courses, and evaluation materials are being developed and improved at this stage.

These circumstances give a rather unique language learning environment for several reasons. First, the number of speakers of the language is small compared to other languages. Second, research on the acquisition of Faroese as a mother tongue is limited as well as the quantity of materials provided in Faroese (e.g., books, cartoons, radio- and television programs, offers on digital media, teaching materials, etc.). In addition, the situation with the increasing immigration number highlights the need for research and development on a wide range of materials regarding both first and second language acquisition.

3 A brief description of Faroese

Faroese is a North-Germanic language deriving from Old Norse. Faroese shares several similarities with other Nordic languages, and typological and structural studies characterize Faroese as the 'Central Nordic language' among the Nordic languages (Jacobsen, 2022; Petersen, 2011).

A simplified overview of Faroese is provided here (see Thráinsson et al., 2023, for a comprehensive description of Faroese). Faroese has a relatively more complex grammar than English regarding inflectional morphology (e.g., the case system). In Faroese, verbs fall into two main classes: weak and strong, and they are inflected for person, number, and tense. Nouns are inflected for two numbers: singular and plural, and four cases – nominative, accusative, dative, and genitive (only the first three are fully productive in Faroese today), and fall into three grammatical genders: masculine, feminine, and neuter. Nouns can be indefinite or definite which is added as a suffixed article. Table 1 shows inflections for the word *kúgv* 'cow'.

Table 1. Inflections for the word *kúgv* 'cow' from www.sprotin.fo (online dictionary for Faroese).

Number	Case	Indefinite	Definite
Singular	nominative	kúgv	kúgvin
	accusative	kúgv	kúnna
	dative	kúgv	kúnni
	genitive	kúgvar	kúgvarinnar
Plural	nominative	kýr	kýrnar
	accusative	kýr	kýrnar
	dative	kúm	kúnum
	genitive	kúgva	kúgvanna

The inflections affect the words phonologically (e.g., the /ú/ is manifested as different sounds). These changes of the word can pose a challenge for children to identify different inflections of the same word form (Rasmussen & Bleses, 2018). This could also be the case for new speakers of Faroese; specifically, these stem changes and irregularities can pose an initial challenge in learning the language. Another feature regarding Faroese language concerns modification of word forms used in Child Directed Speech (CDS). Specifically, there is a frequent use of 'baby-word forms' e.g., *mua* for the adult word form *kúgv* 'cow', which is derived from the sound the

cow makes, but is also seen in other words not originating from sounds as in *geggar* for *skógvar* 'shoes'. This simplification of the target word forms is used in communication with toddlers, possibly to assist learning inflected words where the former mentioned stem changes and irrregularities occur (Rasmussen & Bleses, 2018). However, research in this area is still in its early stages. Future studies will enhance our understanding of learning Faroese as an additional language.

Regarding lexicon, it is mostly Germanic with loanwords from other non-Germanic languages (Jacobsen, in press). As mentioned in the introduction, the Faroese language reflects the influence of its historical contact with Danish. This is evident in many Danish loanwords, primarily in spoken language, which are often combined with Faroese pronunciation and inflections. However, there is also an effort to create new Faroese words to replace these loanwords (Jacobsen, 2001; in press). This results in there often being two variants for different concepts, one often more spoken variant and one used more in written language. This results in quite a difference in which words are used in spoken and written language in Faroese.

4 Adapting MAIN to Faroese

The translation and adaptation of the Faroese version was conducted based on the revised English version of MAIN (Gagarina et al., 2019) and followed the guidelines for adapting MAIN to other languages (Bohnacker & Gagarina, 2020). The Icelandic (Ragnarsdóttir, 2020) and Danish (de López & Knudsen, 2020) versions were examined to analyze their approaches to the adaptation process. The author of this paper translated the version into Faroese. Then, two linguists and native speakers of Faroese checked and revised it in terms of consistency and the use of adequate concepts; but there were a few issues on word forms left to take a position on. The new version was then used in a pilot study comprising four children (described in Section 5) and revised with some minor language changes resulting in the present version.

No cultural adaptations were required, as the stories and context were suitable for children in the Faroese context. The challenges related to translation and adaptation primarily involved deciding which word to use when addressing the child, particularly when two different terms existed for the same concept. The goal was to select the word variant most likely to be familiar to the child.

It is important to choose the right word forms with respect to CDS, and it must be taken into consideration that the prompts in MAIN are based on words that are used in oral communication, and not to choose word forms that might have been more appropriate in written language. The following words (in English) were predicted to give some challenges for the children: 'butterfly', 'bush', 'water', and possibly 'fishing rod', but for different reasons. The word 'butterfly' has two variants in Faroese *firvaldur* and *summarfuglur.* The former is one of the replacement words (neologisms) with inspiration from Icelandic (old Norse), and the latter is a loan from Danish. Both words are used in Faroese, but the former might be used more frequently in writing. Regarding the word 'bush', there is a word for this concept in Faroese *runnur*, but the Danish loanword *buskur* could also be heard in speech. The word *runnur* is predicted not to be a part of small children's vocabulary, at least not for all children. Regarding the word 'water' (as in the sentence 'the ball is rolling into the water') the natural wording

according to the picture would be *bólturin rullar á sjógv* 'the ball is rolling into the sea', but *rullar út í vatnið* 'the ball is rolling into the water' could also be used. The Faroese word for 'fishing rod' is *tráða*, but it might be expressed as *fiskistong* by some children, inspired by the Danish word *fiskestang*. However, this is more speculative than the other words (see Jacobsen, in press, for more on this topic). Moreover, the word *fuglur* 'bird' has in Faroese also the baby-word form *bibbur*, which could be expected to be used by some children. Since the instrument can be used with children as young as three, and children at that age often already use adult-like word forms, baby words are not expected to be common – but their occasional use may still occur (Rasmussen & Bleses, 2018). In English the stories begin with 'One day…', but in Faroese, they begin with *Einaferð var tað*... 'Once there was', which is the classical way to begin a story or a fairytale, making it more suited to children than the literal translation. However, the primary concern is to ensure that the words used in the story scripts and comprehension questions are translated appropriately to Faroese in a way that they accurately reflect the intention of the original instrument and are appropriate for the target population - rather than focusing on the words the children themselves use. The adaptation process has taken the above considerations and improvements into account.

The Faroese version of the translated story scripts (for the Model Story and/or Retelling mode) are a little bit shorter than the original stories counted in words. One of the factors that affects the length of the stories is the addition of suffixes, such as the definite article that was mentioned earlier. An example of this is the Faroese translation of the English sentence 'The cat let go of the baby bird' (8 words) which becomes *Kettan slepti fuglaunganum* (3 words) in Faroese. A similar structure is observed in Icelandic MAIN *Kötturinn sleppti unganum* (Ragnarsdóttir, 2020). However, the adaptations are comparable both between the two parallel stories *Cat* and *Dog*, and between *Baby Goats* and *Baby Birds*, and to the original stories with regards to the story components and direct meaning of the sentences as recommended when adapting the instrument (Bohnacker & Gagarina, 2020).

Another challenge related to the translation of the manual was choosing words for the description of the material, and instructions on how to administer MAIN. Both the word *assessment* and *narrative* posed certain challenges because it is difficult to translate into words that cover the content precisely. Ultimately, the words *meting* 'assessment' and in some instances *kanna/kanning* 'to test/a test', and the word *frásøgn* 'narrative' (which also encompasses meanings like 'report', 'story', and 'announcement'), were chosen. Following Bohnacker and Gagarina (2020), who advise that the adapted version should be "worded in a way that is authentic and idiomatic" (p. xx), we chose these words to capture the content of the instrument as closely as possible.

5 Preliminary results using MAIN in the Faroe Islands

The Faroese version of MAIN was used in a Bachelor thesis (Persson, 2023), which serves as a pilot study of the adaptation. This preliminary investigation of the MAIN was administered by a skilled native Faroese speaker, following the guidelines regarding settings, recordings, and ethical considerations. The pilot comprised four monolingual Faroese speaking children from

age 3 to 7 years old. The telling mode was chosen to elicit stories from three of the children, while the model story was used with one child (the youngest one).

The issues that arose from the pilot study concerned the questions of spoken/written language and the Danish loanwords/Faroese replacement words: both *summarfuglur* 'butterfly' and *firvaldur* 'butterfly' (replacement word) were used by the children, three of them using *summarfuglur* and one *firvaldur*. Regarding the word 'bush' on the pictures, it is complicated because some might say *buskur*, which is a Danish loanword, with the according Faroese word *runnur*. The problem with *runnur* is that the word might not be commonly used in CDS. In the pilot study, one child says *runnur* and one says *buskur*. Another child uses *buskur*, but explains: *á einari blómu, í einum træi, ella einum sovorðnum buski* 'on a flower or in a tree or like a bush'. Another child used the word *grein* 'branch' for the concept 'bush'. Regarding the word *tráða* 'fishing rod', only one child used a resembling form, namely *fiskitráða*, which is a kind of reduplication of the word. This shows some insecurity regarding the word form, and the fact that none of the other children are using *tráða* 'fishing rod' underpins that this word might not be a part of the vocabulary, at least for the youngest children. Concerning the word 'water' and which form to choose, the data showed that one of the children used a third form *havið* 'ocean'.

To address these issues more objectively, a frequency list was consulted, indicating that *firvaldur* and *runnur* appeared more frequently. However, it did not necessarily help much, as the list is based on written language intended for adults rather than spoken language or CDS. The use of baby-word forms e.g., *bibbur* for *fuglur* 'bird' was not noted in these data.

The results showed that the children understood the wordings and comprehended the questions, which is important to ensure relevant responses. The questions regarding the translations were as expected mainly with respect to the different word forms, but regarding the comprehension questions, this can be tackled by letting the child name the concept first, e.g. saying *summarfuglur*, and keep going with that word form (not using *firvaldur*, because the child could perceive this as a correction of the speech).

To sum up, the pilot study showed that it will not affect the narratives, if some choose to say *firvaldur* and some *summarfuglur*. However, if the children put a restraint on themselves not to say for example *buskur* or *fiskistong*, because they have an internal feeling of this being 'wrong' wordings, the narratives speculatively could be shorter or more imprecise. But the data demonstrates that children actually use the word forms, also the imperfect ones.

MAIN has also been used to gather data regarding children learning Faroese as an additional language e.g., in assignments during the training of teachers in Faroese as a second language. They used the pilot version in their assignments to elicit data in both Faroese and the child's additional language and found it very useful. Here, the strength of the instrument testing children in both Faroese and their mother tongue in a structured way was affirmed and they found the tool very valuable to assess child language.

6 Revision process

The pilot study confirmed some issues, which led to a revision of the adaptation. Two words were changed in the process of revising the instrument according to the results from the pilot study. Although there were only 4 children in the pilot study, the language samples

demonstrated the same issues that were in play when adapting the instrument. Another word that was revised was the word for 'butterfly'; results from a study in Faroese children's vocabulary acquisition (Rasmussen & Bleses, 2018) as well as the language samples in the pilot study confirmed that the children used the word *summarfuglur* rather than *firvaldur*. Therefore *summarfuglur* was chosen to be included in the present version. This also follows the guidelines for adapting the story script, which states to choose words that are not only simple and frequently used but also acquired early.

7 Future directions

The preliminary results of MAIN from the pilot study should be further investigated in future studies as more data will strengthen the version. As a small language facing unique challenges, it is highly valuable to adapt instruments that can be utilized in both clinical settings and research. There is an immense lack of instruments and materials to assess the language skills of both monolingual and multilingual children in the Faroe Islands. Evaluation and assessment of children's language abilities are very important for their future language skills and education. Hence, all tools are valuable – as well as sharing them is of great importance with the viability of improving them over time. Hopefully, the adaptation of MAIN will be used in the work with multilinguistic children and can be one of the factors to improve the diagnosis of language impairment. Consequently, Multilingual Assessment Instrument for Narratives will be beneficial in future research expanding our knowledge of Faroese as an additional language.

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The narrative abilities of 4-year-old monolingual Afrikaans- and Xhosa-speaking children from low socio-economic status environments in South Africa

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Children's language, literacy, and narrative development are influenced by their home and social environments. Early language experiences are a key factor in the disparities in language development associated with low socio-economic status (SES). Narrative assessments offer clinicians valuable insights into a child's language and conceptual development, as well as their understanding of story structure. Including children from diverse socio-economic backgrounds in study samples helps researchers identify authentic peer groups and understand typical performance within subgroups of multilingual children. In this study, we examined the narratives of monolingual Afrikaans- (n=116) and Xhosa-speaking (n=112) children, aged 4-5 years, from low SES communities in South Africa. Narratives were collected using the Cat and Dog stories from the Multilingual Assessment Instrument for Narratives (MAIN) in the story generation mode. We first provide descriptive results on their performance in story structure and comprehension, focusing on the macrostructural complexity of their MAIN narratives. We then compare our results with previous MAIN studies that investigated the same age group and elicitation mode. Finally, we discuss the differences between our language groups, the insights gained from our findings and offer recommendations for future research.

1 Introduction

Identifying the language difficulties of children from low socio-economic status (SES) communities during early preschool years is crucial. Early detection allows for timely and targeted interventions, potentially preventing a downward spiral of poor education, lack of academic progress and reduced life opportunities (Dore et al., 2023; Hjetland et al., 2020;

Hulme et al., 2024; Larson et al, 2020; Pace et al., 2017; Romeo et al., 2022). The assessment of narrative skills is one way to identify preschool children at risk for academic difficulties because the connection between early narrative competence and academic progress is well documented. Longitudinal studies have shown that preschool children's narrative production and comprehension skills significantly impact their early and later reading comprehension and achievement (Babayiğit et al., 2021; Hjetland et al., 2020; Schick & Melzi, 2010). The reason for this is that reading comprehension depends on constructing mental representations of texts. Higher-order language skills, such as inference-making and reasoning, enable readers to connect different text elements and link these elements to their background knowledge (Kendeou et al., 2009; Oakhill & Cain, 2012). Similarly, narrative competence involves not only understanding or producing interconnected sentences or discourse but also reflects a child's ability to create meaningful representations of spoken or written discourse.

Well-developed narrative abilities enable children to use language to make sense of the world around them, understand temporal cues and cause-effect relations in connected discourse, and make inferences (Kendeou et al., 2009; Trabasso & Rodkin, 1994; Van den Broek et al., 1996; Westby, 2012). Psychological inferencing in the context of children's narratives refers to the process by which children make sense of the thoughts, feelings, and motivations of characters within a story. This involves using clues from the narrative to infer what characters might be thinking or feeling, and why they act in certain ways. The ability to understand and report story characters' goals and intentional behaviours reflect children's social cognition and grasp of psychological cause-effect relationships, reflecting their theory of mind abilities (Hedberg & Westby, 1993; Trabasso & Rodkin, 1994: Van den Broek et al., 1996). Fostering narrative competence in early preschool years is therefore essential for supporting children's overall language development, particularly for those from low SES communities who may be at risk for academic failure.

Narrative assessments are considered less biased and more ecologically valid for assessing children's language skills and can reveal communication strengths and weaknesses that may be overlooked by traditional, domain-specific, and standardised norm-referenced assessments (Gagarina et al., 2012; Goodrich et al., 2023). Furthermore, narrative assessment provides clinicians with insights into a child's language and conceptual development, as well as their understanding of the structural organisation of a story (Hedberg & Westby, 1993; Trabasso & Rodkin, 1994; Van den Broek et al., 1996; Westby 2012). This approach enables focused interventions to enhance, not only narrative skills but also verbal reasoning and inference-making, which are essential for academic success and reading comprehension development (Oakhill & Cain, 2012; Schick & Melzi, 2010; Westby, 2012).

In our study, we used the Multilingual Assessment Instrument for Narratives (MAIN; Gagarina et al., 2012, 2019) to assess the narratives of preschool children. This instrument was designed to assess narrative skills of children in multilingual and multicultural contexts. The developers aimed to create a culturally neutral instrument, suitable for evaluating children's narrative production and comprehension skills regardless of their linguistic, socio-economic and cultural backgrounds. The working hypothesis behind MAIN's development was that story structure is invariant across languages, with similar understanding of story events and causality

and similar awareness of the intentions and goal-directed behaviour of the protagonists (Gagarina et al., 2012, 2019). Currently, there are 92 language versions of MAIN available in over 60 countries, providing the scientific community with data on mono- and bilingual children from various cultures and language groups (Lindgren et al., 2023).

Lindgren et al. (2023) conducted a comprehensive review that reported age effects and developmental trends in story structure and comprehension skills from numerous MAIN studies. However, they noted that few researchers have considered socioeconomic status (SES) as a variable. To date, only one study by Wehmeier (2019) investigated the impact of SES and a child's home learning environment on their narrative development. This oversight may be because most MAIN studies were conducted in high-income countries in the Global North. For example, in Sweden, SES is rarely investigated in language studies because household income has a minimal impact on children's educational opportunities, and parental education levels are generally high (Bohnacker, 2016).

Lindgren et al. (2023) recommended that future research focus on the pooling of resources from researchers to establish at least referential norms for the acquisition of different narrative skills in mono-and multilingual children. Our interest in early identification of language difficulties lead us to examine the available data on story generation and story comprehension skills in monolingual children aged 4-5 years. We found only four MAIN studies that reported results for this age group using story generation to elicit narratives from monolingual children (Lindgren, 2019; 2022; Rodina, 2017; Wehmeier, 2019). There is therefore a lack of MAIN studies in low-SES populations and limited data about story generation skills in young monolingual children. The purpose of our study was to address this gap by investigating the story generation and comprehension skills of children aged 4–5 years from low SES communities.

1.1 Early narrative development

The macrostructural complexity of children's narratives develops along an age-related continuum. Children exposed to stories in their home and school environments learn that these stories have plots in which characters engage in goal-directed behaviour, and they internalise these structural rules (Hedberg & Westby, 1993). Typical stories, according to Stein and Glenn's (1979) story-grammar model, includes an initiating event that prompts the main character to form a goal plan, an attempt to achieve the goal, and the outcome or consequence of the attempt. Between ages 3 and 7, they actively develop knowledge of story structure, both in terms of the components of a story and how these components link to together to form a coherent plot (Trabasso & Nickels, 1992; Trabasso et al., 1992).

Initially, from age 2, children's stories consist of isolated descriptions where they label objects and actions, followed by descriptive sequences where their descriptions cluster around a central idea. The next developmental stage shows their awareness of chronological order, allowing them to describe the actions of characters in temporally linked sequences (Applebee, 1978; Stein & Glenn, 1979; Peterson & McCabe, 1983).

As children become aware of physical cause-effect relationships between actions and story events, they produce stories where actions and outcomes are linked. They still tend to

focus on concrete observable actions and physical causality between actions. Their understanding of causality is conveyed by linking events and feelings as direct consequences of reactions to initiating events (Applebee, 1978; Hedberg & Westby, 1993; Kendeou et al., 2009). However, these story sequences do not yet express planning or goal-directed behaviour by characters.

A significant transition in narrative competence occurs around age 4 when children begin to convey their awareness of psychological causality and the intentions and goals of characters (Hedberg & Westby, 1993; Stein & Glenn, 1979; Trabasso et al., 1992). At this stage, they begin to encode character's actions in terms of their relevance to the goal plan, even though they may not yet make this explicit in their narration. Goal-based narratives typically emerge around ages 6 and 7, when children begin to understand psychological causality and become aware of characters' intentions and goals. Initially, they often do not include all the elements of a complete episode. A story may include a single goal statement, without describing attempts to achieve goal resulting in an incomplete episode. The goal statement may also be linked to either an attempt or a consequence statement, resulting in an abbreviated episode. By age 9, most children produce narratives that comprise of complete episodes and continue to develop their narrative abilities to later produce complex, interactive and embedded episodes (Hedberg & Westby, 1993; Peterson & McCabe, 1983; Stein & Glenn, 1979; Stein et al., 1997).

There is considerable variation in the reported ages at which monolingual children can produce goal-based narratives and the proportion of 4- to 5-year-old children that can produce complete episodes. This variation is due to differences in stimulus materials, elicitation methods and variations in the macrostructural models for analysis. Westby (2012) found that 16% of preschool children are already able to produce complete episodes. Using the telling mode in the *Frog*-story, Trabasso et al. (1992) found that 50% of 4–5-year-olds produced complete episodes. Khan et al. (2016) using a wordless picture book retelling task found that 45% of 4-year-olds, 66% of 5-year-olds could produce complete episodes.

With regard to studies using MAIN, a longitudinal study by Lindgren (2019) of monolingual Swedish children (N=17), using the story generation mode and the Baby Birds/Baby Goats stories found that 60.8% of the 4-year-old group and 27.5% of the 5-year-olds produced no sequences, in other words they did not combine any Goal (G), Attempt (A) or Outcome (O) elements in any of the three possible episodes. At age 4 years, 31% produced AO-sequences, and only 5.9% produced GAOs. By age 5, 60.8% produced AO-sequences, and 7.8% produced GAOs. Lindgren's (2019) analysis were based on all three episodes in all narratives and not the highest level reached at least once in the narratives. Rodina (2017) used the same elicitation method and stories, but reported the highest macrostructural level reached per narrative. In this study, monolingual Russian (N=16) and Norwegian (N=16) children aged 4 years, mostly produced AO-sequences as their highest level of complexity (Russian: 56%; Norwegian: 66%), and fewer GAOs (Russian: 24%; Norwegian: 20%).

The occurrence of complete episodes in MAIN narratives in this age group seems low in comparison with patterns observed by e.g., Trabasso et al. (1992) and Khan et al. (2016), but Lindgren (2018, p. 249) points out that the MAIN definition of a complete episode is stricter than the one employed in analyses based on Stein and Glenn's (1979) story grammar model. In

the Stein and Glenn model, a character's internal responses to a problem can serve as an indication of goal-directed behaviour, allowing narratives without explicit goal statements to be classified as complete episodes. In MAIN, the goal statement is specified as the first component in a full episode denoted as GAO and requires an explicit goal statement. From this perspective, a child's psychological awareness and ability to infer a character's goal plan are essential for understanding that actions are driven by goals and have effects and outcomes related to those goals (Kendeou et al., 2009; Stein et al., 1997; Trabasso & Rodkin,1994; Westby, 2012).

1.2 Environmental and socio-economic influences on narrative development

Children's language, literacy and narrative development are directly influenced by their home and social environment. Differences in early language experiences are a primary cause of SES-related disparities in children's language development. Children from low SES backgrounds often have significantly lower vocabularies (Hart & Risley, 1995; Hoff, 2003), less developed language skills (Golinkoff et al., 2019; Fernald et al., 2011; Hoff, 2013; Pace et al., 2017) and lower executive functioning skills (Burris & Brown, 2014; Romeo et al., 2023) compared to their peers from more advantaged backgrounds. Consequently, they enter school with a significant disadvantage in terms of language development and cognitive skills. This initial gap can have long-term implications as early language abilities are predictive of later academic progress, particularly in reading comprehension (Fernald et al., 2011; Hulme et al., 2024).

SES is a multidimensional construct that refers to a family's economic and social status, typically based on measures of household income, and parental education and occupation. Pace et al., (2017) identified three main pathways through which SES can impact language development during childhood: individual child characteristics, the quality and quantity of input in parent-child interactions, and the availability of age-appropriate materials at home and enriching experiences beyond the home environment. In high-income countries, levels of parental education are generally high, the quality of childcare and education is not directly linked to family income and all children have equal access to education (Dore et al., 2023; Raikes et al., 2023). In contrast, in lower- and middle-income countries, children's educational opportunities and access to early childhood programmes depend on family income and their socio-economic environment, with many parents having lower levels of formal education (Dore et al., 2023; Fernald et al., 2011; Hall et al., 2024; Raikes et al., 2023). In South Africa, a middle-income country in the Global South, children from low-SES communities often face extreme poverty, food insecurity and health-related problems due to poor living conditions and inadequate access to health care. They often have limited educational resources at home and are less likely to have access to formal early childhood learning programmes (Giese et al., 2022; Hall et al., 2024; Moses & Van den Berg, 2023). These challenges can negatively affect their overall development, including cognitive and language skills, as well as their mental well-being.

The quantity and quality of child-directed speech in households are linked to maternal education levels (Babayiğit et al., 2021; Fernald et al., 2011; Golinkoff et al., 2019; Hoff, 2013) and maternal stress due to economic hardship (Dore et al., 2023). Parents living in poverty often

work long hours, which reduces the time they can spend engaging in quality language and learning activities with their children. Environmental disadvantages linked to low SES include limited access to learning materials and literacy resources, which negatively impact the development of receptive vocabulary, oral language skills, and early print awareness skills. In contrast, high-SES households are more likely to provide children with developmentally appropriate resources such as books, toys and enriching experiences beyond the home (Dawes, et al., 2020; Golinkoff et al., 2019; Hoff, 2003; Moses & Van den Berg, 2023).

It should be kept in mind that SES and cultural aspects are often conflated in studies on culturally and linguistically diverse children's narrative and literacy development, and this can obscure the distinct contributions of each factor (Hoff, 2013). In many countries, non-mainstream cultural communities are also more likely to experience poverty and economic hardship (Schick & Melzi, 2010). As a result, research may attribute differences in language and literacy skills to SES when they are, in fact, influenced by cultural practices intertwined with SES.

Only one MAIN study, by Wehmeier (2019), investigated the development of narrative macrostructure and the links between narrative skills and aspects of socio-economic status and home learning environment (HLE). This study of 198 monolingual German children aged 4;6 to 5;11, investigated correlations between MAIN results and aspects of the children's HLE, parental education and household income. The HLE measures included the frequency of book exposure and shared reading experiences, the duration of daily exposure to books and the total number of books at home. Wehmeier found that the impact of SES and HLE measures on narrative macrostructure was small or non-existent. However, this study reflected the effect of SES indicators of a high-income country, and the findings cannot be generalised to contexts in the Global South where many children grow up in conditions of extreme poverty that has a direct and pervasive impact on their home language and learning environment and educational opportunities.

1.3 The present study

Our study examined the narrative performances of monolingual Xhosa-speaking (n=112) and Afrikaans-speaking (n=116) children,[1] aged 4-5 years, from low-SES communities in South Africa.[2] We elicited MAIN narratives from the children using the story generation mode with the Cat and Dog stories.

We were particularly interested in the patterns of macrostructural complexity in our populations. From a clinical and remedial perspective, the main purpose of assessment is to gain insight into participants' abilities and provide information that can guide focused interventions. Qualitative analyses of macrostructural patterns can reveal the nature and extent

[1] Afrikaans and Xhosa are two of South Africa's 12 official languages, with respectively 7.2 million and 8 million native speakers. Xhosa is a Southern Bantu language with a very rich system of agglutinating morphology. Afrikaans is a West Germanic language that evolved from 17th-century Dutch. Both languages use the Latin alphabet.

[2] The data was part of the pre-intervention assessment battery for a study evaluating the efficacy of a story-based programme aimed at improving early language and literacy skills in preschool children from low-SES backgrounds and under-resourced environments. For more details on this project, see Cain et al. (2024).

of children's higher-order language skills, such as inference-making and understanding of physical and psychological cause-effect relationships. This enables the design of targeted interventions to enhance these skills, ultimately supporting children's overall language, cognitive, and social development. Additionally, we aimed to contribute to the limited existing information on MAIN performances in this age group and socioeconomic status (SES).
This paper addresses the following research questions:

i. How do 4–5-year-old monolingual Afrikaans- and Xhosa-speaking children from low-SES communities perform on the MAIN in terms of story structure, comprehension, use of internal state terms, and macrostructural complexity?
ii. How do the narrative performances of the study participants compare to those reported in previous studies on children of a similar age group?
iii. Are there significant differences in the MAIN results between the two language groups?
iv. Do the Cat and Dog stories elicit different performances in terms of story structure, comprehension and the use of internal state terms?

2 Method

2.1 Ethical considerations

The study was approved by the Ethics Committee of Health Sciences, Stellenbosch University, (N21/05/047). Written informed consent was obtained from the parents, and verbal assent was given by each child participant before the study began.

2.2 Participants

In South Africa, preschool attendance only becomes compulsory at age 6, starting with a preparatory Grade R year before formal education begins in Grade 1. Children younger than 6 years from low-SES communities mostly attend Early Childhood Development (ECD) centres run by non-governmental organisations or non-profit community programmes, or they do not attend any form of preschool programme at all. ECD centres receive small state subsidies per child if the child's household income is below a predetermined level. To determine the participants' SES, we used the monthly fee charged at the ECD centre and whether the centre receives a state subsidy per child. Our participants were recruited from centres with similar lower-range fee structures, where at least 50% of the children receive state subsidies.

We selected ECD centres where the language of learning and teaching was either Afrikaans or Xhosa. The 27 Afrikaans-language centres were in Paarl-East and Wellington in the Cape Winelands district and the 28 Xhosa-language centres were in Khayelitsha, a township in the Cape Town metropole. Five children, per classroom were randomly selected from each centre to participate. The final study sample comprised of monolingual Afrikaans-speaking children (N = 116, mean age: 4;6 years, SD: 0;3) and Xhosa- speaking children (N = 112, mean age: 4;5 years, SD: 0;3).

2.2.1 Home Learning Environment

The ELOM Home Learning Environment Questionnaire (Dawes et al., 2023) was used to provide information about participants' home learning environment and education levels of the main caregiver. In some of the households the children did not live with their parents and the main caregiver was a grandparent or a family member. The questionnaire was completed through telephonic interviews with children's main caregivers in their home languages.
This tool includes three categories of home learning environment (HLE) indicators:

i. Early learning resources: The availability of books, games, and activities at home.
ii. Home learning activities: Activities that promote learning and literacy, such as telling stories and reading books.
iii. Caregiver time for learning and literacy activities with the child: The amount of time caregivers spends with their children during the week and weekends.

The HLE questionnaire was conducted with 42% of the Afrikaans-speaking caregivers. Their average age was 33 years, and 68% reported completing secondary school as their highest educational level. No caregiver had tertiary education qualifications. Caregivers reported an average of five picture books in their homes (range = 0–30) and 14% said that they had no children's books in their home, 60% had between one and five books, and 26% said that they had more than five books. Regarding time spent on home learning activities, 4% reported that they spend no time with their children, 18% never read books to them, and 18% never tell stories.

The HLE questionnaire was conducted with 46% of the Xhosa-speaking caregivers. Their average age was 44 years, and 53% reported completing secondary school as their highest educational level. None of the caregivers had tertiary education qualifications. On average, caregivers reported having one picture book in their homes (range = 0–4). Additionally, 47% of caregivers said they had no children's books at home, while 53% had between one and four. Regarding time spend on home learning activities, 66% reported that they spend no time with their children, 66% never read books to them, and 62% never tell stories.

2.3 Narrative assessment procedure

Participant narratives were elicited by assessors that were trained by the authors in the use of MAIN during a one-day workshop prior to the assessments. The workshop included theoretical orientation about MAIN, demonstrations, role-playing, and problem-solving exercises, with opportunities to ask questions. The assessors were all native speakers of Xhosa and Afrikaans and conducted the assessments in the participants' first languages.

Assessments took place in quiet rooms at the ECD centres. All narratives were audio-recorded using Samsung Galaxy Tab A7 Lite 8.7 tablets. To enhance the clarity of recordings and transcription accuracy, Logitech H111 headsets with microphones were used. The microphones, positioned near the mouth, were loosely fitted around the children's necks. After each testing day, the recordings were uploaded to an encrypted OneDrive folder for backup and

analysis. This process allowed us to monitor the data collection process and ensure adherence to testing protocols.

The Cat and Dog stories were used in the story generation mode following the standardized MAIN procedure (Gagarina et al., 2019). Half of the children were tested with the Cat story, and the other half with the Dog story. Assessments began with a warm-up question. The picture sequence was presented to the child without the examiner seeing it in the prescribed fold-out manner to mitigate joint attention and shared knowledge effects. Participants first viewed all six pictures to familiarise themselves with the story, then narrated it two pictures at a time. After storytelling, the 10 comprehension questions were asked. Each assessment followed the same procedure and lasted about 15 minutes.

2.4 Data transcription, coding and analysis

All narratives were transcribed and analysed for story structure components (SS), internal state terms (ISTs), and structural complexity (SC) following the MAIN protocol and guidelines (Gagarina et al., 2012; 2019). The SS components (setting, IST as initiating event (IE), goal, attempt, outcome, IST as reaction (R)) were coded for each of the three episodes in the story. Each participant's total score, out of a maximum of 17, was recorded on the test form. For ISTs, all perceptual state terms (e.g., *see, hear*), physiological state terms (e.g., *hungry, hurt*), consciousness terms (e.g., *alive, awake*), emotion terms (e.g., *hungry, angry*), mental verbs (e.g., *want, decide*), and linguistic verbs (e.g., *say, call*) in their narratives were recorded.

To analyse SC, we used the MAIN scoring protocol (Gagarina et al., 2019) and the Westby (2012) binary decision tree to classify each of the three episodes in the narratives into one of five levels of macrostructural complexity, ranging from least to most complex:
No sequence: Contains none of the SS components, or only IE and/or R, or either an attempt (A) or outcome (O), but not both A and O (and no goal).

i. AO: Includes both A and O components in an episode, but no goal (G) (Reaction sequence).
ii. G: An isolated G statement (Abbreviated episode).
iii. GA or GO: G is linked to either A or O in an episode, but not both (Incomplete episode).
iv. GAO: G is linked to both A and O in an episode (Complete episode).
v. The SC for each participant was recorded as the highest level of macrostructural complexity reached across the three episodes.

Following the guidelines by Hedberg and Westby (1993), Hughes et al. (1997) and the Westby (2012) binary decision tree, we also analysed the narratives in the 'no sequence' category qualitatively to provide more information about the developmental patterns and differences between the language groups. We coded narratives that contained labels and isolated descriptions (e.g., *a cat, the boy has a stick, fish in the bucket*) or a series of descriptions that are related but without chronological order or causal relationships (e.g., *the dog jumps, he is big, he is brown*) as descriptive sequences. Narratives that contained actions that were

chronologically ordered but not causally linked, were classified as action sequences (e.g., *the cat jumps, then the butterfly flies, and then the boy walks by the river, then his ball fell in*).

The MAIN comprehension section comprises 10 open-ended questions that assess understanding of the goals and ISTs in the stories. Additionally, one question assesses understanding of the overall story meaning and theory of mind. Each correct answer is awarded one point, with a total possible comprehension score of 10. Each participant's comprehension score was recorded as the total number of correct responses out of a maximum of 10 for the comprehension questions.

The first author, a native speaker of Afrikaans and experienced in the use of MAIN, transcribed and analysed all the Afrikaans narratives from the recordings. The second author re-transcribed 12 randomly selected samples (10%) of the data and word-level agreement was 99%, suggesting a high level of reliability. All samples (100%) were independently analysed by the second author and interrater agreement for story structure score was 88%, for narrative comprehension 98%, for ISTs 96%, and for structural complexity 91% agreement. Disagreements were resolved through consultation.

A research assistant fluent in Xhosa transcribed the narratives from the recordings. All the transcriptions and coding decisions were then verified by a second research assistant, a native speaker of Xhosa who is familiar with different dialects spoken in rural areas. Disagreements were resolved by consulting with a third native speaker of Xhosa until all disagreements were resolved.

Statistical analysis was conducted using *Ime4*-package in R. Statistical significance was determined using a 5% significance level ($p < .05$) as the guideline. A Type III ANOVA was used to evaluate the significance of differences between factors and their interactions, while Cohen's d was calculated to measure effect sizes.

3 Results

In this section we first present descriptive statistics and comparisons between the Afrikaans- and Xhosa- speaking groups regarding story structure, comprehension, inclusion of internal state terms, and macrostructural complexity. We also examine the effects and interactions between language groups and stories for these variables to determine if there were significant differences between the groups and if the story influenced the narrative performance. Finally, we compare our findings with other studies that used the story generation mode to assess MAIN performances in monolingual children aged 4–5 years.

3.1 Story structure

The story structure (SS) scores for the two language groups are shown in Table 1. The scores, out of a maximum of 17, were generally low and 16% of the Afrikaans group and 29% of Xhosa group scored 0 out of 17.

Table 1. Descriptive statistics for the story structure score (mean, SD, range) by language group

Group	M	SD	Range
Afrikaans	2.7	2.0	0 – 8
Xhosa	1.9	1.7	0 – 7

A 2 x 2 (language group x story) Type III ANOVA showed that language group significantly affected the SS scores, $F(1, 224) = 12.06$, $p < .01$, with the Afrikaans group scoring higher than the Xhosa group. However, there was no significant main effect of story, $F(1, 224) = 0.21$, $p = .65$, nor a significant interaction between language and story, $F(1, 224) = 0.10$, $p = .75$. A post hoc analysis showed a medium effect size for the difference between the two language groups (Cohen's $d = 0.7$).

3.2 Macrostructural components

To explore the significant differences in SS scores between the Afrikaans and Xhosa groups we examined the distribution of macrostructural components in their narratives. The proportion of each type of macrostructural component, excluding the Setting, in all three episodes in the participant narratives is shown in Figure 1.

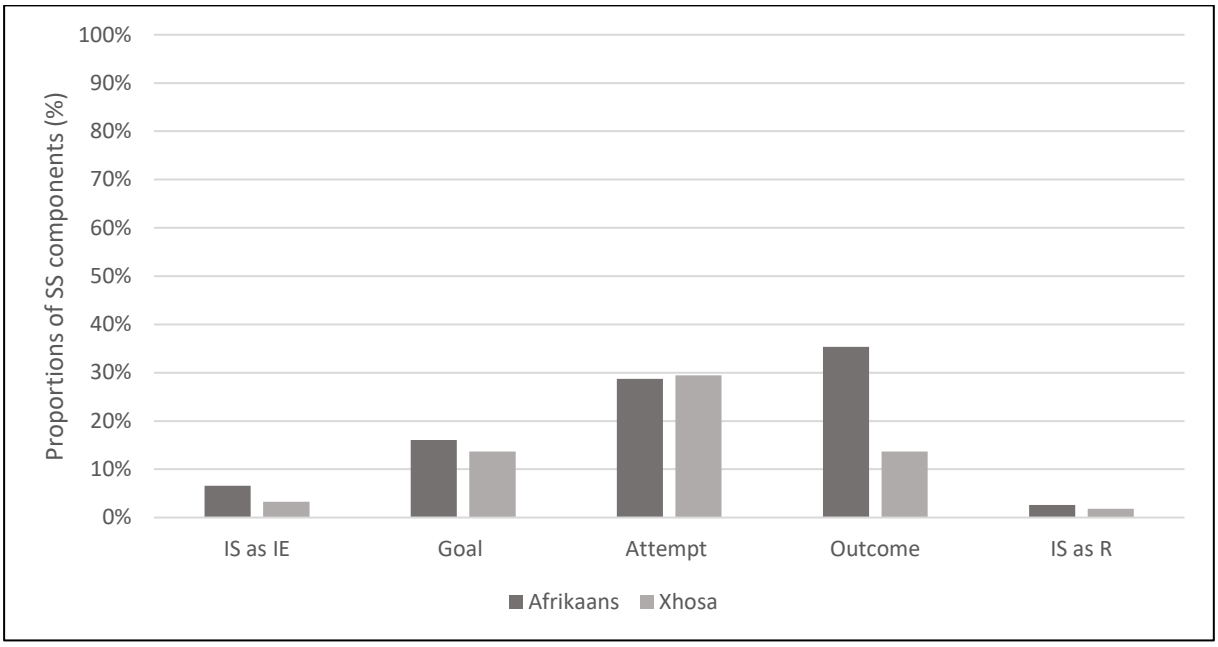

Figure 1: Distribution of story structure components in all episodes by language group.

Each participant had three opportunities to produce each SS component, which means the reported proportions are cumulative accounts for the total number of components across all episodes. Similar patterns were observed in the distribution of SS components in both groups, except for Outcomes (Afrikaans: 35%, Xhosa: 14%) and Internal States as Initiating Events (Afrikaans: 7%, Xhosa: 3%).

To further explore these patterns, we analysed the distribution of SS components per episode, as shown in Figure 2.

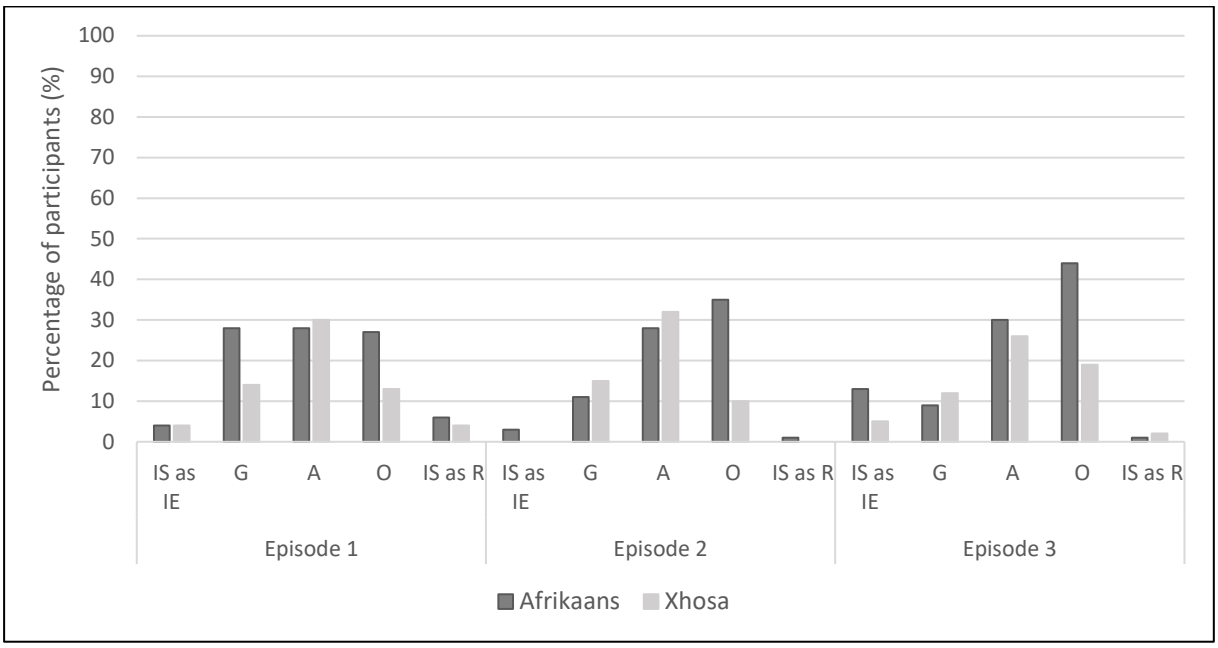

Figure 2: Distribution of story structure components in each episode by language group

The Attempts across episodes were similar, but the Afrikaans group included considerably more Outcomes across all episodes. It appears that the Xhosa-speaking participants who included Attempts in the three episodes, did not link these with the Outcomes of the actions. The Afrikaans group (28%) also included twice as many Goals than the Xhosa group (14%) in Episode 1, but a similar proportion of Goals in episode 2 (Afrikaans: 11%, Xhosa: 15%) and episode 3 (Afrikaans: 9%, Xhosa: 12%). Less than 6% of participants included IS as IE or Reaction across episodes, except for episode 3 where 13% of the Afrikaans group included the IS as IE. In sum, the significant difference in SS scores between the two groups can be attributed to the Afrikaans group's overall higher inclusion of Outcomes.

3.3 Internal state terms

All occurrences of ISTs, including repeated ones, were counted in the narratives. Table 2 presents the mean (M), standard deviation (SD), and range for the number of ISTs included in the Afrikaans and Xhosa narratives.

Table 2. Descriptive statistics for the number of ISTs (mean, SD, range) by language group

Group	M	SD	Range
Afrikaans	1.3	1.4	0 – 7
Xhosa	1.1	1.8	0 – 10

The occurrence of ISTs was low and 41% of Afrikaans and 56% Xhosa narratives contained no ISTs. A language group x story (2x2) Type III ANOVA revealed no significant main effects for language group, $F(1, 224) = 0.70$, $p = .40$, or story, $F(1, 224) = .27$, $p = .60$. Additionally, the interaction between language group and story was not significant, $F(1, 224) = 0.08$, $p = .78$.

3.4 Macrostructural Complexity

The SC for each participant was recorded as the highest level of macrostructural complexity that they reached in any of the episodes, in other words, at least once in their narratives. The results of the proportion of SC levels attained by participants are displayed by language group in figure 3.

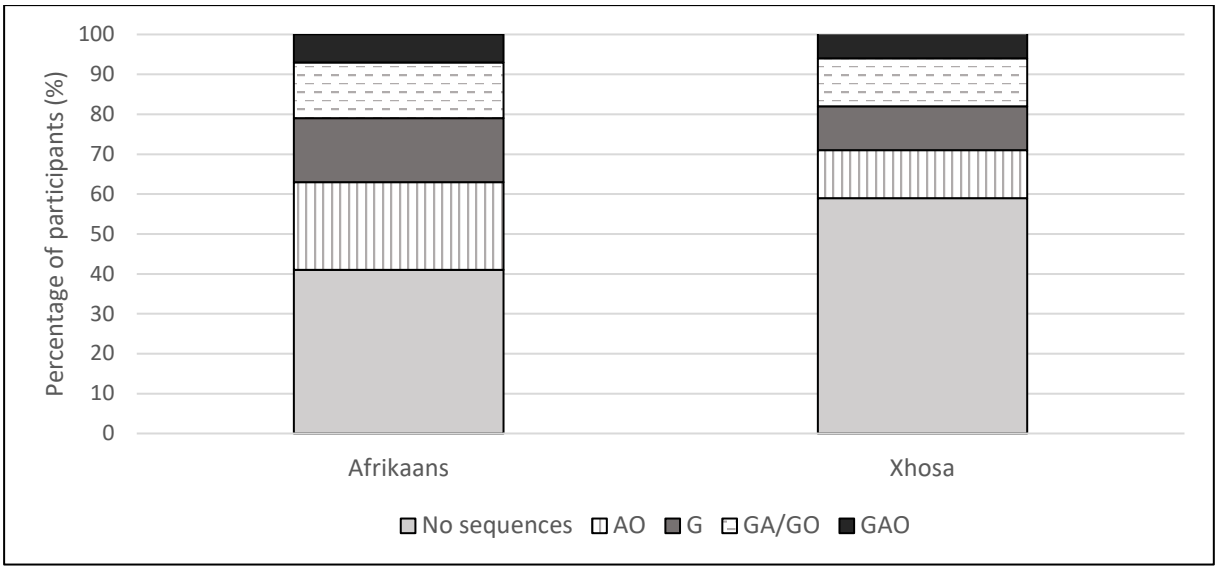

Figure 3: Proportion of the participants who reached the different macrostructural complexity levels, by language group

Most of the narratives of both groups consisted of 'no sequences' (Afrikaans: 41%, Xhosa: 59%). The same proportion of children in both groups (7%) produced at least one complete episode (GAO-sequence) per narrative. Similar patterns for G only (Afrikaans: 16%, Xhosa: 11%) and GA/GO (Afrikaans: 14%, Xhosa: 12%) were also observed. A notable difference was that for 22% of the Afrikaans compared to 12% of the Xhosa group, the AO-sequence (reaction sequence) was the highest SC level attained.

Our qualitative analyses of the narratives classified as 'no sequence', using the Westby (2012) decision tree classification and guidelines in Hedberg and Westby (1993), found that 19% of Afrikaans and 24% of the Xhosa narratives were at the descriptive level. The remaining 'no sequence' narratives, (Afrikaans: 22% and Xhosa: 35%) were at the action sequence level. These participants described actions in the stories in chronological order, but did not establish causal links between the actions or other story components.

3.5 Story Comprehension

Participants' story comprehension (SC) scores are shown in Table 3. The scores, out of a maximum of 10, were generally low and 2% of the Afrikaans group and 8% of Xhosa group had no correct answers.

Table 3. Descriptive statistics for story comprehension (mean, SD, range) by language group

Group	M	SD	Range
Afrikaans	4.5	2.4	0 – 10
Xhosa	2.9	1.9	0 – 9

A language group x story (2x2) Type III ANOVA revealed a significant main effect for language group, $F(1, 224) = 27.32$, $p < .01$, indicating that the groups differed significantly with regard to story comprehension with higher scores in the Afrikaans group. Post hoc analyses indicated a medium effect size (Cohen's d = 0.7). There was no significant interaction between group and story, $F(1, 224) = 0.11$, $p = .74$.

3.6 Comparisons with previous studies

In this section, we compare our findings with results from other MAIN studies involving monolingual children aged 4–5, using the Baby Birds/Baby Goats or Cat/Dog stories in the story generation (telling) mode.[3] Descriptive data for story structure and comprehension scores from the four studies that met our criteria are presented in Table 4. Similar trends can be observed, such as higher scores for comprehension than story structure. A notable exception is Wehmeier (2019), which reported lower scores for comprehension than production.

Table 4. Comparisons of MAIN story structure and comprehension scores in monolingual 4–5-year-old children, using story generation

Study	Participants (language, age)	Story	Story structure score / 17	Story comprehension score /10
Rodina (2017)[4]	Russian (n=16) mean age 4;5 (SD 0;4)	Baby Birds/Baby Goats for story structure, Cat/Dog for comprehension	M=7.2 (SD 1.9) range 4 – 12	M=7.5 (SD 1.8) range 3 – 10
	Norwegian (n=16) mean age 4;5 (SD 0;5)	Baby Birds/Baby Goats for story structure, Cat/Dog for comprehension	M=6.8 (SD 1.7) range 4 – 10	M= 7.9 (SD 1.9) range 3-10
Lindgren (2019)	Swedish (n=17) mean age 4;4 (SD 0;3)	Baby Birds/Baby Goats	M=5.2 (SD 2.3) range 2 – 10	M= 5.3 (SD 2.5) range 1 – 9
Lindgren (2022)[5]	Swedish (n=17) mean age 4;4 (SD 0;3)	Cat/Dog	M=4.7 (SD 1.2) range 3 – 7	M=7.1 (SD 2.7) range 2 – 10
Wehmeier (2019)	German (n=56) mean age 4;7 (SD 1;6)	Baby Birds	M=6.3 (SD 2.1)	M=3.8 (SD 1.6)

[3] Only studies using the telling mode were included as significant differences have been found for story structure and story comprehension scores between telling, retelling and model story modes of elicitation (see Otwinowska et al., 2020; Roch et al., 2016; Wehmeier, 2019).

[4] In this study, comprehension questions immediately preceded production and may have had a priming effect on story structure.

[5] The participants in Lindgren (2022) were the same as in Lindgren (2019).

The present study	Afrikaans (n=116) mean age 4;5 (SD 0;3)	Cat/Dog	M=2.7 (SD 2.0) range 0 – 8	M=4.5 (SD = 2.4) range 0 – 10
	Xhosa (n=112) mean age 4;6 (SD 0;3)	Cat/Dog	M=1.9 (SD 1.7) range 0 – 7	M=2.9 (SD = 1.9) range 0 – 9

As shown in Table 4, our participants' average SS and comprehension scores were considerably lower, with a smaller range of scores, compared to participants in other studies. No participant in the studies by Lindgren (2019; 2022) or Rodina (2017) had zero scores for story structure and comprehension (Wehmeier did not report ranges). None of the studies included ISTs and thus no comparisons could be made for this measure. Due to methodological differences in scoring and reporting, we could also not make direct comparisons with the other studies regarding episodic complexity.

4 Discussion

The present study examined the narratives of monolingual Afrikaans- (n=116) and Xhosa-speaking (n=112) children, aged 4-5 years, from low SES communities in South Africa. The narratives were collected using the Cat and Dog stories from the Multilingual Assessment Instrument for Narratives (MAIN; Gagarina et al., 2012; 2019) in the story generation mode. Our participants were randomly selected from ECD centres with similar low-range fees that receive child subsidies based on household income; a proxy used to determine child SES in South Africa. Our aim was to contribute to the existing data on narrative abilities in this age group, focusing on story structure, comprehension, the use of internal state terms, and macrostructural complexity. This study is the first to use MAIN to examine the narratives of children from low socio-economic communities in the Global South.

First, we provide an overview of our results and compare them with the findings of previous MAIN story generation studies on children of a similar age group (Lindgren, 2019; 2022; Rodina, 2017; Wehmeier, 2019). The average story structure and comprehension scores of our participants were considerably lower compared to those of other language groups of the same age. The range of scores was also smaller, indicating less variability in the performances within our groups. In contrast to previous studies, some participants in both language groups had zero scores for story structure and comprehension. We found no differences between the Cat and Dog stories regarding story structure, the use of internal state terms, or story comprehension.

Regarding the types of story structure elements, our participants included more Attempt and Outcome statements than Settings, Goals and ISTs over all three episodes. This pattern was also observed in other studies (see Lindgren et al., 2023). One explanation is that Goals and ISTs are less overtly portrayed in the pictures and require more inferencing from the child, while Attempts and Outcomes are linked to observable actions happening in the story, and therefore more evident in the pictures (Lindgren et al., 2023). However, previous studies have shown that children in this age group mainly focus on concrete observable actions and physical causality between actions and are less aware of psychological causality and characters'

intentions and goals. They seldom describe the thoughts, feelings, and perceptions of characters within a story and that the understanding of and mastery of internal state terms only occur later (Trabasso & Rodkin, 1994: Van den Broek et al., 1996; Westby 2012). This is confirmed by our analyses of all the ISTs included in the narratives, showing that 41% of Afrikaans and 56% of Xhosa narratives contained no ISTs.

The story complexity level for each participant was analysed as the highest level of macrostructural complexity that they reached in any of the episodes, in other words, at least once in their narratives. Most narratives were classified as 'no sequences', in other words, their narratives contained no story structure components, or ISTs as IE and/or R, or isolated Attempts or Outcomes. Unlike Lindgren (2019) we did not include narratives with a single G in the 'no sequence' category. We believe that the creation of a goal statement, even if it is not connected to other story elements, indicates that a child can infer a character's intentions and goal-directed behaviour. Instead, we classified single Goals as abbreviated episodes, following the guidelines of Gagarina et al. (2012; 2019). From a macrostructural development perspective, these abbreviated episodes are considered more advanced than the 'no sequence' or AO levels. Our interest was in determining how many participants reached this level of macrostructural complexity. We found that similar proportions of our participants produced single G (Afrikaans: 16%, Xhosa: 11%) and GA/GO (Afrikaans: 14%, Xhosa: 12%). An interesting finding was that for 22% of the Afrikaans group, the AO-sequence was their highest macrostructural level, compared to 12% of the Xhosa group. The Attempts across episodes were similar for the two groups, but the Afrikaans-speaking participants included considerably more Outcomes across all episodes. It therefore appears that fewer Xhosa-speaking participants were able to infer causal links between Attempt and Outcomes.

Our qualitative analyses of the narratives in the 'no sequence' category, using the Westby (2012) decision tree classification, revealed that 19% of Afrikaans and 24% of Xhosa narratives were at the descriptive level. This indicates that the children did not make any inferences about the pictures or the storyline. Instead, they provided words or phrases to label and describe characters, actions, and objects, or offered a series of descriptions in no chronological order. This finding raises clinical concern, as the lack of inferences in their narratives may reflect difficulties in higher-level cognitive and linguistic processing required for cohesive storytelling.

Finally, we considered the differences between the Afrikaans and Xhosa groups. All participants were randomly recruited from similar ECD centres and according to the same SES indicators. We expected similar results in both groups because of the invariance of MAIN across languages that allows assessment of narrative skills in children from diverse linguistic backgrounds in a comparable way. The significantly higher scores of the Afrikaans-speaking group for story structure and comprehension were therefore unexpected. A possible explanation for the lower performances in the Xhosa-speaking participants could be differences in the home learning environment. The HLE questionnaires indicated that their main caregivers had lower education levels and spend less time with their children on learning and literacy activities. There were also fewer books in their homes and 47% of the respondents reported that there are no

books in their homes. We will explore correlations between HLE indicators and narrative performances in more depth in subsequent publications.

The influence of environmental and socio-economic influences on language and narrative development is well documented. Most of our participants came from impoverished communities. Our background information revealed a lack of books in their homes and that many caregivers seldom engage in activities that promote language and literacy with their children. Our participants had lower story structure and comprehension scores compared to participants in high-income countries in the Global North. Many of their narratives comprised of very basic descriptions without any inferences about the story content. Our findings also indicate that the significant performance differences between Afrikaans-speaking and Xhosa-speaking participants may be attributed to variations in the home learning environment. We therefore conclude that home learning environment and low SES factors affected our participants' narrative competence substantially, highlighting the urgent need for early identification of and targeted interventions to support language development in disadvantaged communities.

Our study would have been enhanced by also including Afrikaans and Xhosa-speaking participants from higher SES environments. This would help to further disentangle the roles of SES and home learning environment on narrative abilities. Previous studies have shown that narrative ability levels improve substantially between the ages of 3 and 7 years (Khan et al., 2016; Lindgren, 2019, 2022; Trabasso et al., 1992). A longitudinal study design, following our participants over time, would also have provided deeper insights into their narrative abilities and developmental patterns. We recommend that more MAIN studies include low SES participants to provide information about the impact of SES and home learning environmental factors on narrative competence and development.

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Papers in Bantu Grammar and Description. Contributions by Leston Buell, Lisa Cheng, Laura J. Downing, Ahmadi Kipacha, Nancy C. Kula, Lutz Marten, Anna McCormack, Sam Mchombo, Yukiko Morimoto, Derek Nurse, Nhlanhla Thwala, Jenneke van der Wal and Sabine Zerbian.

ZASPiL 44 Christian Ebert & Cornelia Endriss (eds.):

Proceedings of the Sinn und Bedeutung 10. Contributions by Stavros Assimakopoulos, Maria Averintseva-Klisch, Kata Balogh, Sigrid Beck & Arnim von Stechow, Adrian Brasoveanu, Ariel Cohen, Paul Dekker, Ljudmila Geist, Wilhelm Geuder, Wilhelm Geuder & Matthias Weisgerber, Elsi Kaiser, Elsi Kaiser & Jeffrey T. Runner & Rachel S. Sussman & Michael K. Tanenhaus, Dalina Kallulli, Mana Kobuchi-Philip, Sveta Krasikova & Ventsislav Zhechev, Eric McCready, Telmo Móia, Karina Veronica Molsing, Fabrice Nauze, Francesca Panzeri, Doris Penka, Daniel Rothschild, Florian Schwarz, Torgrim Solstad, Stephanie D. Solt, Tamina Stephenson, Rachel Szekely, Lucia M. Tovena, Anna Verbuk, Matthias Weisgerber, Hedde Zeijlstra, Malte Zimmermann and Eytan Zweig.

ZASPiL 45 Sabine Zerbian:

Expression of Information Structure in the Bantu Language Northern Sotho.

ZASPiL 46 Ines Fiedler & Anne Schwarz (eds.):

Papers on Information Structure in African Languages. Contributions by Klaus Abels & Peter Muriungi, Enoch O. Aboh, Robert Carlson, Bernard Caron, Klaudia Dombrowsky-Hahn, Wilfrid H. Haacke, Angelika Jakobi, Susie Jones, Gregory Kobele & Harold Torrence and H. Ekkehard Wolff & Doris Löhr.

ZASPiL 47 Barbara Stiebels (ed.):

Studies in Complement Control.

ZASPiL 48 Dagmar Bittner & Natalia Gagarina (eds.):

Intersentential Pronominal Reference in Child and Adult Language. Proceedings of the Conference on Intersentential Pronominal Reference in Child and Adult Language. Contributions by

Jeanette K. Gundel, Dimitris Ntelitheos & Melinda Kowalsky, H. Wind Cowles, Peter Bosch & Carla Umbach, Gerlof Bouma & Holger Hopp, Petra Hendriks, Irene Siekman, Erik-Jan Smits & Jennifer Spenader, Dagmar Bittner, Natalia Gagarina, Milena Kühnast and Insa Gülzow & Natalia Gagarina.

ZASPiL 49 Marzena Zygis & Susanne Fuchs (eds.):

Papers in Phonetics and Phonology. Contributions by Claire Brutel-Vuilmet & Susanne Fuchs, Marzena Zygis, Laura Downing, Elke Kasimir, Daniel Recasens, Silke Hamann & Susanne Fuchs, Anna Bloch-Rozmej, Grzegorz Nawrocki and Cédric Patin.

ZASPiL 50 Hristo Velkov:

Akustische Analysen zur koartikulatorischen Beeinflussung des frikativischen Teils stimmloser Plosive im Deutschen und im Bulgarischen.

ZASPiL 51 Anton Benz & Reinhard Blutner (eds.):

Papers on Pragmasemantics. Contributions by Anton Benz, Reinhard Blutner, Michael Franke, Elena Karagjosova, Tom Lenz and Henk Zeevat.

ZASPiL 52 Melanie Weirich & Stefanie Jannedy (eds.):

Papers from the Linguistics Laboratory. Contributions by Laura J. Downing, Scott Grimm, Stefanie Jannedy, Karsten Koch, Bernd Pompino-Marschall & Marzena Zygis, Blake Rodgers & Susanne Fuchs, Melanie Weirich and Marzena Zygis.

ZASPiL 53 Laura Downing, Annie Rialland, Jean-Marc Beltzung, Sophie Manus, Cédric Patin & Kristina Riedel (eds.):

Papers from the Workshop on Bantu Relative Clauses. Contributions by Laura J. Downing, Annie Rialland, Cédric Patin, Kristina Riedel, Jean-Marc Beltzung, Martial Embanga Aborobongui, Lisa L.-S. Cheng, Al Mtenje, Larry M. Hyman, Francis X. Katamba, Shigeki Kaji, Charles W. Kisseberth, Emmanuel-Mossely Makasso, Sophie Manus and Sabine Zerbian.

ZASPiL 54 Natalia Gagarina, Annegret Klassert & Nathalie Topaj (eds.):

Sprachstandstest Russisch für mehrsprachige Kinder. Sonderheft.

ZASPiL 55 Laura J. Downing (ed.):

Questions in Bantu Languages: Prosodies and Positions. Contributions by Martial Embanga Aborobongui, Jean-Marc Beltzung, Laura J. Downing, Fatima Hamlaoui, Larry M. Hyman, Francis X. Katamba, Charles W. Kisseberth, Emmanuel-Mossely Makasso, Al Mtenje, Cédric Patin, Annie Rialland and Kristina Riedel.

ZASPiL 56 Natalia Gagarina, Daleen Klop, Sari Kunnari, Koula Tantele, Taina Välimaa, Ingrida Balčiūnienė, Ute Bohnacker & Joel Walters:

MAIN: Multilingual Assessment Instrument for Narratives (Part 1).

ZASPiL 57 Fatima Hamlaoui (ed.):

Proceedings of the Workshop BantuSynPhonIS: Preverbal Domain(s). Contributions by Lisa L.-S. Cheng & Laura J. Downing, Martial Embanga Aborobongui, Fatima Hamlaoui & Annie Rialland, Rozenn Guérois, Maarten Mous, Jasper De Kind, Joseph Koni Muluwa & Koen Bostoen, Lutz Marten and Fatima Hamlaoui.

ZASPiL 58 André Meinunger (ed.):

Byproducts and side effects – Nebenprodukte und Nebeneffekte. Contributions by Fatima Hamlaoui & Laurent Roussarie, Thomas McFadden, Dagmar Bittner & Jeruen E. Dery, Olga Steriopolo, Beste Kamali, Julia Winkler and André Meinunger.

ZASPiL 59 André Meinunger (ed.):

Im Mittelpunkt Deutsch. Contributions by André Meinunger, Federica Masiero, Werner Frey & Federica Masiero, Ewa Trutkowski and Katarzyna Stoltmann.

ZASPiL 60 Sauerland, Uli & Stephanie Solt (eds.):

Proceedings of Sinn und Bedeutung 22, Volume 1. Contributions by Márta Abrusán, Nicholas Asher & Tim Van de Cruys, Dorothy Ahn, Sascha Alexeyenko, Pranav Anand & Natasha Korotkova, Pranav Anand & Maziar Toosarvandani, Curt Anderson & Sebastian Löbner, Muriel Assmann, Daniel Büring, Izabela Jordanoska & Max Prüller, Corien Bary, Daniel Altshuler, Kristen Syrett

& Peter De Swart, Itai Bassi & Ezer Rasin, Andrea Beltrama, Andrea Beltrama, Erlinde Meertens & Maribel Romero, Anton Benz, Carla Bombi & Nicole Gotzner, Anton Benz, Nicole Gotzner & Lisa Raithel, M. Ryan Bochnak & Martina Martinović, David Boylan, Saskia Brockmann, Sara McConnell, Valentine Hacquard & Jeffrey Lidz, Sebastian Bücking, Nattanun Chanchaochai, WooJin Chung, Ava Creemers, Jérémy Zehr & Florian Schwarz, Virginia Dawson, Michael Deigan, Maria Esipova, Danny Fox, Yosef Grodzinsky, Galit Agmon, Kedem Snir, Isabelle Deschamps & Yonatan Loewenstein, Andreas Haida, Luka Crnič & Yosef Grodzinsky, Stefan Hinterwimmer & Cornelia Ebert, Sunwoo Jeong and Elsi Kaiser, Justin Nichols & Catherine Wang.

ZASPiL 61 Uli Sauerland & Stephanie Solt (eds.):

Proceedings of Sinn und Bedeutung 22, Volume 2. Contributions by Carina Kauf, Peter Klecha, Petr Kusliy & Ekaterina Vostrikova, Jess H.-K. Law, Haoze Li & Diti Bhadra, Julia Lukassek & Alexandra Anna Spalek, Qiongpeng Luo & Zhiguo Xie, Fabienne Martin, Gabriel Martínez Vera, Melania S. Masià, Jon Ander Mendia, Ralf Naumann,Wiebke Petersen & Thomas Gamerschlag, Pritty Patel-Grosz, Patrick Georg Grosz, TejaswineeKelkar & Alexander Refsum Jensenius, Ethan Poole, Claudia Poschmann, Claudia Poschmann, Sascha Bargmann, Christopher Götze, Anke Holler, Manfred Sailer, Gert Webelhuth & Thomas Ede Zimmermann, Tom Roberts, Vincent Rouillard & Bernhard Schwarz, Yağmur Sağ, Hiroaki Saito & Adrian Stegovec, Katrin Schulz, Bernhard Schwarz & Alexandra Simonenko, Radek Šimík, Ryan Walter Smith & Ryoichiro Kobayashi, Frank Sode, Chao Sun & Richard Breheny, Robert Van Rooij, Jérémy Zehr & Florian Schwarz, Linmin Zhang and Sarah Zobel.

ZASPiL 62 Oliver Weber, Josefin Lindgren & Natalia Gagarina (eds.):

Narrative texts by children and adults: insights into their organization through a prism of language system and environmental factors. Contributions by Oliver Weber, Ute Bohnacker, Josefin Lindgren, Natalia Gagarina, Kristin Haake, Irina Mikhaylina, Carina Marie Wehmeier, Maria Antonietta Osso, Natalie Sürmeli, Olga Vorobyeva & Stefanie Düsterhöft.

ZASPiL 63 Natalia Gagarina, Daleen Klop, Sari Kunnari, Koula Tantele, Taina Välimaa, Ute Bohnacker & Joel Walters:

MAIN: Multilingual Assessment Instrument for Narratives – Revised.

ZASPiL 64 Natalia Gagarina & Josefin Lindgren (eds.):

New language versions of MAIN: Multilingual Assessment Instrument for Narratives – Revised. Contributions by Ute Bohnacker & Natalia Gagarina; Ute Bohnacker & Rima Haddad; Eva Meier & Milena Kuehnast; Angel Chan, Kelly Cheng, Rachel Kan, Anita M.-Y. Wong, Roxana Fung, Janice Wong, Timothy Cheng, Amelie Cheung, Karen Yuen, Barbie Chui, Joyce Lo & Natalia Gagarina; Alondra Camus & Melina Aparici; Gordana Hržica & Jelena Kuvač Kraljević; Kristine Jensen de López & Hanne B. Søndergaard Knudsen; Elma Blom, Tessel Boerma & Jan de Jong; Reili Argus & Andra Kütt; Evelyn Bosma & Jelske Dijkstra; Vasiliki Chondrogianni & Morna Butcher; Uma Maheshwari Chimirala ; Ianthi Maria Tsimpli, Maria Andreou & Eleni Peristeri; Manish Madappa, Yozna Gurung & Madhavi Gayathri Raman; Hrafnhildur Ragnarsdóttir; Mary-Pat O'Malley & Stanislava Antonijevic; Chiara Levorato & Maja Roch; Wenchun Yang, Angel Chan & Natalia Gagarina; Constanze Weth & Cyril Wealer; Jin Luo, Wenchun Yang, Angel Chan, Kelly Cheng, Rachel Kan & Natalia Gagarina; Yulia Rodina; Karolina Mieszkowska, Agnieszka Otwinowska, Marta Białecka-Pikul, Dorota Kiebzak-Mandera, Marcin Opacki & Ewa Haman;Laís Vitória Cunha de Aguiar & Micaela Nunes Martins dos Reis; Ljiljana Jeličić, Ivana Bogavac & Alexandra Perovic; Svetlana Kapalková & Monika Nemcová; Daleen Klop & Monique Visser; Maria José Ezeizabarrena & Isabel García del Real; Kathleen Kay Amora, Rowena Garcia & Natalia Gagarina; Qurbonidin Alamshoev & Aleksandra Trifonova; Zubair Torwali; İlknur Maviş, A. Müge Tunçer & Semra Selvi Balo; Saboor Hamdani, Rachel Kan, Angel Chan & Natalia Gagarina; Tue Trinh, Giang Pham, Ben Phạm, Hien Hoang & Linh Pham; Yulia Androsova & Aleksandra Trifonova.

ZASPiL 65 Josefin Lindgren, Freideriki Tselekidou & Natalia Gagarina (eds.):

Multilingual Assessment Instrument for Narratives: Recent developments and new language adaptations. Contributions by Maria Dorbert & Alena Nikitina; Miroslava Nováková Schöffelová, Lucie Saicová Římalová, Marína Mikulajová & Kamila Homolková; Blessing

Ntokozo Ndlovu & Daleen Klop; Ineta Dabašinskienė & Laura Kamandulytė-Merfeldienė; Celestino Oriikiriza & Sigal Uziel; Daniela Gatt & Raquel Borg Cutajar; Kannan Abinayaa, Lakshmi Venkatesh, P Arul Nehru & Madhavi Gayathri Raman; Sha Wang & Wenchun Yang; Katrin Bente Karl; Josefin Lindgren, Freideriki Tselekidou & Natalia Gagarina.