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Josefin Lindgren, Freideriki Tselekidou
& Natalia Gagarina (Eds.)

***Multilingual Assessment Instrument for Narratives*:**
Recent developments and new language adaptations

Contents

Contributors

Kannan Abinayaa
Sri Ramachandra Institute of Higher Education and Research, India
Email: abinayaa.k.slp@gmail.com

Raquel Borg Cutajar
University of Malta, Malta
Email: raquel-ann.borg.13@um.edu.mt

Ineta Dabašinskienė
Vytautas Magnus University, Lithuania
Email: ineta.dabasinskiene@vdu.lt

Maria Dorbert
Humboldt University of Berlin, Germany
Email: maria.dorbert@gmail.com

Natalia Gagarina
Leibniz-Zentrum Allgemeine Sprachwissenschaft (ZAS), Germany
Email: gagarina@leibniz-zas.de

Daniela Gatt
University of Malta, Malta
Email: daniela.gatt@um.edu.mt

Kamila Homolková
Charles University, Czech Republic
Email: Kamila.Homolkova@ff.cuni.cz

Laura Kamandulytė-Merfeldienė
Vytautas Magnus University, Lithuania
Email: laura.kamandulyte-merfeldiene@vdu.lt

Katrin Bente Karl
University of Bern, Switzerland
Email: katrin.karl@unibe.ch

Daleen Klop
Stellenbosch University, South Africa
Email: dk@sun.ac.za

Josefin Lindgren
Uppsala University, Sweden
Email: josefin.lindgren@nordiska.uu.se

Marína Mikulajová
Pan-European University, Czech Republic
Email: marina.mikulajova@paneurouni.com

Blessing Ntokozo Ndlovu
Stellenbosh University, South Africa
Email: 21752966@sun.ac.za

P. Arul Nehru
Azim Premji University, India
Email: arul.nehru@apu.edu.in

Alena Nikitina
Chuvash State University, Russia
Email: alyona.nikitina@gmail.com

Miroslava Nováková Schöffelová
Charles University, Czech Republic
Email: mnere@centrum.cz

Celestino Oriikiriza
Makerere University, Uganda
Email: oriikiriza@gmail.com

Madhavi Gayathri Raman
The English and Foreign Languages University, India
Email: gayathri@efluniversity.ac.in

Lucie Saicová Římalová
Charles University, Czech Republic
Email: Lucie.SaicovaRimalova@ff.cuni.cz

Freideriki Tselekidou
Leibniz-Zentrum Allgemeine Sprachwissenschaft (ZAS), Germany
Email: erricatsel@gmail.com

Sigal Uziel
Achva Academic College, Israel
Email: sigaluk@gmail.com

Lakshmi Venkatesh
Sri Ramachandra Institute of Higher Education and Research, India
Email: lakshmiv@sriramachandra.edu.in

Sha Wang
The Hong Kong Polytechnic University, HKSAR, China
Email: wangsha.emma@gmail.com

Wenchun Yang
Leibniz-Centre General Linguistics (ZAS), Germany
Email: w.yang@leibniz-zas.de

Preface: *Multilingual Assessment Instrument for Narratives: Recent developments and new language adaptations*

Josefin Lindgren

Uppsala University, Sweden

Freideriki Tselekidou

Leibniz-Zentrum Allgemeine Sprachwissenschaft (ZAS), Germany

Natalia Gagarina

Leibniz-Zentrum Allgemeine Sprachwissenschaft (ZAS), Germany

Since its initial launch in 2012, the Multilingual Assessment Instrument for Narratives (LITMUS MAIN, hereafter MAIN) has been revised in 2019, when five revised language versions (English, German, Swedish, Russian, and Turkish for the bilingual Turkish-speaking population in Sweden) were published as part of *ZAS Papers in Linguistics*, vol. 63 (Gagarina et al., 2019). Subsequently, in 2020, *ZAS Papers in Linguistics*, vol. 64 was published (Gagarina & Lindgren, 2020). The first part of this volume included "Introduction to MAIN–Revised, how to use the instrument and adapt it to further languages" (Bohnacker & Gagarina, 2020) as well as 33 papers describing the adaptation of MAIN to 39 different languages and providing summaries of previously published studies or pilot studies using these language versions. In the second part of the volume, revised and new language versions were published. Today, a bit more than 10 years after its initial publication, MAIN has developed into a sustainable infrastructure, with its own website (https://main.leibniz-zas.de/), and with regular scientific exchange in the form of the online Text & Tea with MAIN (T&T) meetings. MAIN encompasses a vivid community of interdisciplinary researchers and practitioners in over 60 countries. MAIN-versions exist for over 90 languages and more than 3,200 researchers are registered users of MAIN. Studies using MAIN provide naturalistic data on the narrative abilities of monolingual and bilingual children from diverse cultural and educational backgrounds, analysed within the same theoretical framework, the multidimensional model of narrative organization (see Gagarina et al., 2012). A large number of studies using MAIN to

investigate different aspects of narrative skills in various mono- and bilingual groups have already been published (for an overview, see Lindgren et al., this volume), and there are numerous ongoing research projects, which will continue to bear fruit in the coming years. The number of MAIN language versions is constantly growing and includes both well-studied majority languages, and less explored, minority ones. Each adaptation sheds light on the typological and cultural properties of the language. This of course holds promise both for the growing international MAIN network and for future research into children's narrative abilities more generally, but also poses a challenge in terms of maintaining the validity of MAIN so that it can continue to reflect the unique characteristics of the languages, while simultaneously retaining its common base. Descriptions of the adaptation processes for different language versions are one way to address this challenge. This formed the starting point for the current *ZAS Papers in Linguistics*, vol. 65.

This volume comprises ten papers. Out of these, eight describe a MAIN language version. Together, they cover language families spoken in various parts of the world, from Europe to Africa and Asia. Four papers cover languages spoken in Europe. The paper by *Dorbert and Nikitina* is on Chuvash, which is one of the largest minority languages in the European part of Russia and the only extant member of the Oghur (Bulgar) branch of the Turkic language family, whereas *Nováková Schöffelová et al.* describes the Czech MAIN and *Dabašinskienė and Kamandulytė-Merfeldienė* the Lithuanian one, both Indo-European languages which are majority languages in their respective countries, the Czech Republic and Lithuania. The paper by *Gatt and Borg Cutajar* elaborates on Maltese, a Semitic language, which together with English is the majority language of Malta. Two papers give information on Bantu languages spoken in Africa, the paper by *Ndlovu and Klop* on isiZulu, which is spoken in South Africa, and the paper by *Oriikiriza and Uziel* on Luganda, spoken in Uganda. The final papers describe two languages spoken in Asia. The paper by *Abinayaa et al.* describe the adaptation of MAIN to Tamil, a South Dravidian language spoken in the Indian state of Tamil Nadu, but also in other parts of Asia (e.g., Malaysia, Singapore and Sri Lanka), and the paper by *Wang and Yang* is on Tibetan, an endangered language belonging to the Sino-Tibetan language family, which is spoken in different parts of China.

These eight papers describe the typological characteristics of the languages, provide information on the cultural context in which the languages are used, and the processes of translating and adapting MAIN, but also possible challenges that the authors encountered during the adaptation process. For example, adaptations to the MAIN pictorial stimuli are proposed in order for the stimuli to be culturally appropriate, e.g. by Wang and Yang, who state that the fish in the Cat story is not a common food in the culture of Tibetan speakers and should better be replaced with milk. Moreover, Ndlovu and Klop pose some concerns and challenges regarding the differences between aspects of traditional African storytelling and the MAIN assessment of story structure (e.g., the exclusion of settings and internal state terms in isiZulu storytelling). Last but not least, a number of the papers present pilot studies or summaries of already published studies conducted with monolingual and bilingual children, and in some cases with children with language developmental disorder (i.e., the papers by Nováková Schöffelová et al. and Dabašinskienė and Kamandulytė-Merfeldienė) as well as present methodological

issues. All available MAIN versions, including these languages, can be found on the MAIN website.

In addition to the eight papers describing MAIN versions, this volume also contains two additional papers, which report on research conducted using MAIN. The paper by *Karl* outlines how the MAIN procedure can be adapted for use with adults and in the context of remote instead of in-person elicitation. In this paper, important methodological considerations when using MAIN with adults, and when using different remote elicitation methods are described, and results from a pilot study are reported. Finally, the paper by *Lindgren, Tselekidou and Gagarina* gives a comprehensive overview of the research using MAIN that has been published to date, showing the wide range of studies that has been carried out. It summarizes the core results regarding age effects and development, comparisons of monolinguals and bilinguals, bilinguals' two languages and typically-developing (TD) children with children with developmental language disorder (DLD), as well as those investigating factors influencing bilinguals' narrative skills, task effects and the effects of elicitation mode (telling, retelling and model story).

The 65th volume of ZAS Papers in Linguistics is now ready and we are very happy to share it with you. We hope that the current volume will help researchers, educators and clinicians to assess children's narrative abilities adequately, thus assessing their linguistic skills in a contextualized and culturally appropriate manner. We also hope that the content of this volume will encourage other researchers to adapt MAIN to their languages, so that as many languages as possible, from every corner of the world, will eventually be represented in the MAIN family. We thank the authors for their valuable contribution to this journey.[1]

Josefin Lindgren, Freideriki Tselekidou and Natalia Gagarina
Uppsala and Berlin

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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).

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Lindgren, J., Tselekidou, F., & Gagarin, N. (this volume). Acquisition of narrative macrostructure: A comprehensive overview of results from the Multilingual Assessment Instrument for Narratives. *ZAS Papers in Linguistics*, *63*, 111–132.

The Multilingual Assessment Instrument for Narratives (MAIN): Adding Chuvash to MAIN

Maria Dorbert[*]

Humboldt University of Berlin, Germany

Alena Nikitina

Chuvash State University, Russia

This paper describes the process of translating and adapting the Multilingual Assessment Instrument for Narratives (MAIN) to Chuvash. Chuvash is one of the largest minority languages in the European part of Russia. The Chuvash MAIN not only extends the empirical coverage of MAIN by including the only extant member of the Oghur (Bulgar) branch of the Turkic language family, but also offers an important tool to assess the narrative abilities of Russian-Chuvash bilingual children in their first language.

1 Introduction

Narrative abilities are one of the most ecologically valid measures of communicative competence in various speakers' populations (Botting, 2002). In the last decades, the study of narratives has become a widely used method for the assessment of bilinguals' language abilities (Boudreau, 2008; Karlsen et al., 2021; Veneziano & Nicolopoulou, 2019; among others). One of the instruments that allows such assessment is the Multilingual Assessment Instrument for Narratives (LITMUS-MAIN, hereafter MAIN; Gagarina, Klop et al., 2012, 2015, 2019). MAIN is a tool originally designed for bilingual preschoolers and primary-school children. Later, it has also been used to assess older children, adolescents, and adults (e.g. Gagarina, Bohnacker et al., 2019) as well as second language (L2) learners (e.g. Krasnoshchekova & Kashleva, 2019). MAIN can be used to evaluate the comprehension and production of narratives in three elicitation modes (telling, retelling, model story) and to assess macro- and microstructure (Gagarina, Klop et al., 2019).

This paper briefly introduces the process of adapting MAIN to Chuvash. Chuvash is the second official regional language in Russia for which a MAIN version has been created (after

[*] Corresponding author: maria.dorbert@gmail.com

Yakut; Androsova & Trifonova, 2020). Adding Chuvash to MAIN is significant for at least two reasons. First, the Chuvash language is the only extant member of Oghur (Bulgar) branch of the Turkic language family and it is typologically different from most of the existing MAIN language versions. Thus, adding Chuvash enriches the typological diversity and empirical coverage of MAIN. Second, Russia is among the countries with the highest linguistic diversity in the world (with 97 indigenous languages; Simons & Fennig, 2017), but its languages often lack instruments for assessing children with and without developmental language disorder (DLD). The Chuvash MAIN offers an important tool to assess not only narrative abilities of children who are growing up as Russian-Chuvash bilinguals, but also language itself, since it allows for the analysis of the lexicon and grammar of a child producing or comprehending an oral text/narrative.

2 A brief overview of the Chuvash language

Together with Russian, Chuvash is an official language of the Chuvash Republic. Chuvash is primarily spoken in the Chuvash Republic (or Chuvashia) and adjacent areas. However, it is also widely spread beyond the administrative boundaries of the Chuvash Republic: The Chuvash people form one of the most dispersed ethnic groups in Russia. Fomin (2016) notices that the Chuvash diaspora make up 43.3% of the Chuvash-speaking population. They live primarily in the Volga region (23.0%), e.g. in the republics of Tatarstan and Bashkortostan, in the Urals (10.0%), and in Western Siberia (3.7%).[1] According to the Russian Census (2010), the number of Chuvash native speakers in Russia is 1,042,989. In the Atlas of the World's Languages in Danger (Moseley, 2010), Chuvash is classified as a vulnerable language, which means that it is not spoken by children outside the home, because of the dominant position of the Russian language.

The Turkic language family consists of two branches: a) Common Turkic (which includes Oghuz, Kipchak, Karluk, Siberian Turkic, Khalaj, Turkmen, and Turkish), and b) Oghur (Bulghar), where the only extant member is the Chuvash language (Johanson, 2021). The Oghur branch, i.e., Chuvash, does not have mutual intelligibility with the Common Turkic languages.

Chuvash is written in a variant of the Cyrillic alphabet that was devised by Ivan Yakovlev in the 1870s and reformed in 1938 (Johanson, 2021). The alphabet contains 37 letters: the 33 letters of the Russian alphabet and four special letters (*ă, ĕ, ӳ, ç*). Eleven letters are used only in Russian loanwords. Chuvash has variations in spelling, since loanwords from Russian should be read in accordance with the Russian spelling (Alòs i Font, 2015). One of the distinctive phonetic characteristics of the Chuvash language is vowel harmony. Chuvash has two classes of vowels: front or soft vowels (*е*, *ĕ*, *ӳ*, *и*) and back or hard vowels (*а*, *ă*, *у*, *ы*). The principle of vowel harmony states that words may contain either exclusively front or exclusively back vowels. Therefore, most grammatical suffixes, except for some invariant suffixes such as the plural suffix *-сем*, have front and back forms, e.g. *кушакпа* (kushakpa)

[1] Chuvash national societies are also functioning in Belarus, Estonia, Kazakhstan, and Moldova (Fomin, 2016).

'with cat', but *милĕне* (milĕpe) 'with fox.' Vowel harmony does not apply to loanwords and for some native Chuvash words (such as *анне* (anne) 'mother'). Chuvash has two slightly different dialects: the lower one (*anatri*) in the southern regions of the Chuvash Republic and the upper one (*turi*) in the northern, i.e., upstream of the river Volga. These dialects have some differences both from phonetic and lexical points of view. The written language is based on both of the dialects.

Most of the vocabulary of daily communication in Chuvash are of Proto-Turkic origin. However, many of the Turkic words in Chuvash have gone through sound changes and hide their origin. However, the main differences between Chuvash and Common Turkic basic vocabularies are in semantic shifts that accumulated over two thousand years of parallel evolution. Moreover, different contact languages (Russian, Tatar, Mari) have deeply influenced the lexicon of Chuvash (Savelyev, 2020).

In terms of morphology, Chuvash, as the other Turkic languages, is an agglutinative language. Each morpheme expresses only one grammatical function and is clearly identifiable. Suffixes are added to nominal stems; they indicate possession, number, and case (Savelyev, 2020). In contrast to other Turkic languages, the plural suffixes in Chuvash follow possessive ones. Chuvash has no grammatical gender. It has eight cases marked by suffixes which are different for singular and plural nouns: a) nominative; b) genitive; c) dative-accusative (which is a merger of dative and accusative cases that marks both direct and indirect objects); d) locative; e) ablative; f) instrumental-comitative; g) abessive (or caritive), and h) causative (e.g., Andrejev, 1963). There are six personal pronouns which are declined in all cases. The genitive forms also serve as possessive pronouns. Verbs express nine tenses: a) present tense; b) future tense; c) definite past tense; d) indefinite past tense; e) indefinite imperfect tense I; f) indefinite imperfect tense II; g) pluperfect tense I; h) pluperfect tense II; i) pluperfect tense III (Lebedev, 2016).

Syntactically, like all Turkic languages, Chuvash has a basic SOV word order. Attributes precede their nouns with no agreement with them in case, number or person. Both direct and indirect objects are marked by accusative-dative case. For negation, the suffix *-ma* after the verb stem and the word '*mar*' at the end of a clause are used. Main clauses follow subordinate ones. The subordinate clauses are formed with participles or converbs (Savelyev, 2020).

3 Adaptation of MAIN to the Chuvash language

The Chuvash MAIN version was adapted from the revised English version of MAIN (Gagarina, Klop et al., 2019) following the guidelines (Bohnacker & Gagarina, 2019). We translated the MAIN protocol into Chuvash with the help of two native speakers with university education, who also proofread it. The story scripts have been controlled for their complexity and parallelism in macro- and microstructure. Moreover, we took into consideration the recommendations about ensuring the functional, cultural, and metric equivalence given by Peña (2007) for the translation of different assessment instruments and their instructions in cross-cultural child development research. The critical points in the adaptation of MAIN to Chuvash are described below.

First, Chuvash has no grammatical gender. In this regard, there were some difficulties connected with the translation of the 3rd person pronouns, that are expressed in Chuvash with the form *вăл* (văl) 'he/she/it'. In the *Baby Goats* and *Baby Birds* stories, the authors observed two sentences where the pronoun *ăна* (ăna) 'him/her/it' might refer either to (a) the fox or the baby goat or (b) the cat or the baby bird. Since this might be challenging, especially for the children with DLD, who are vulnerable to difficulties in following the reference to characters (e.g. Fichman et. al., 2022, among others), the personal pronoun in these sentences was substituted with the nouns *тилĕ* (tilĕ) 'fox' and *кушак* (kushak) 'cat', respectively: (a) *Тилĕ качака путеккине вĕҫертрĕ те, кайăк тилле хăваласа ячĕ* 'The fox let go of the baby goat and the bird chased *the fox* away'; (b) *Кушак кайăк чĕппине вĕҫертсе ярчĕ те, йытă кушака хăваласа ячĕ* 'The cat let go of the baby bird and the dog chased *the cat* away'

Second, Chuvash is a pro-drop language allowing for the omission of pragmatically/grammatically inferable classes of pronouns. For example, pronouns were omitted in the sentences *Кайăк амăшĕ хăйĕн ачисем валли пысăк хурт йăтса таврăнчĕ, анчах Ø кушака асăрхамарĕ* 'The mother bird came back with a big worm for her children, but *she* did not see the cat' and *Качака-амăшĕ путеккине шывран тĕксе кăларчĕ, анчах Ø та тилĕне асăрхамарĕ* 'The mother goat pushed her baby goat out of the water, but *she* did not see the fox.'

Third, for the expression of the meaning 'X wants to do Y' in Chuvash, different constructions can be used. One of them is formed by combining the future participle suffix and the causative case suffix, e.g. *Ача кăмăлсăрланчĕ, вăл мечĕкне шывран кăларасшăн пулчĕ* 'He was sad and *wanted to get* his ball back.' Another one is the construction of the future tense participle + the verb *кил* 'to come', e.g., *Манăн кăлпасси ҫиес килет* 'I *want to grab* a sausage.' When translating the stories, we equally used both constructions.

Finally, in contrast to English, Chuvash has no articles and is an agglutinating language with a high number of suffixes. Thus, the total number of words in each of the four stories is much lower than in the English version (e.g., 127 Chuvash words vs. 178 English words in *Baby Birds*; 124 Chuvash words vs. 178 English words in *Cat*).

4 Conclusion

The Chuvash MAIN has an extensive potential to be used in various areas of research and language didactics. On the one hand, it can serve as an assessment tool for the narrative abilities of bi-/ multilingual children growing up in the Russian-Chuvash bilingual environment, which is very important for the screening of DLD. On the other hand, the Chuvash MAIN has a practical implementation in the Chuvash language teaching. It can be used either as an oral part of a Chuvash language proficiency assessment tool or a placement test at local schools and universities. Also, it can serve as an example of a task for the development of oral speech in the lessons of the Chuvash language. Moreover, there is currently a growing scientific interest for studying minority languages in the world and, in particular, in Russia (e.g. the project "Minority Languages of Russia" led by the Laboratory for Study and Preservation of Minority Languages, Russian Academy of Science). However, there is a lack of instruments that allow researchers

to assess and compare different aspects of languages with each other. When MAIN will be adapted to additional minority languages of Russia, there will be a great opportunity to compare the situation with minority languages in different regions of the country. The Chuvash MAIN will be piloted in three different elicitation modes (telling, retelling and model story) by the end of 2022.

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The Czech version of MAIN: adaptation, revision, pilot data from typically-developing and hearing-impaired children, and future steps

Miroslava Nováková Schöffelová[*]

Charles University, Czech Republic

Lucie Saicová Římalová

Charles University, Czech Republic

Marína Mikulajová

Pan-European University, Czech Republic

Kamila Homolková

Charles University, Czech Republic

The article introduces the latest Czech version of the Multilingual Assessment Instrument for Narratives (MAIN). The first Czech version of MAIN was published in 2020 and was piloted in 2020–2021. Subsequently, a revised Czech version of MAIN was created. This article introduces this latest version of MAIN, describes minor changes to the manual caused by typological features of Czech and a specific cultural context, and presents sample analyses of the pilot data collected from typically-developing and hearing-impaired children. The results from the pilot study indicate that MAIN functions properly in the Czech context, in particular for preschool children. The results show that MAIN can be fruitfully applied to assess speech and language skills in hearing-impaired children in the Czech context.

1 Narratives and their assessment in Czech

Narrative assessment provides a wealth of information about a child's linguistic, pragmatic, and cognitive abilities. As a research tool, it can be used to gain large amount of information regarding a person's language development from a relatively small language sample. In recent years, narrative assessment has been explored as a diagnostic tool for its considerable potential

[*] Corresponding author: mnere@centrum.cz

for clinical assessment (Botting, 2002). Narrative skills have been used for many years as a predictor for language and literacy abilities (Stothard et al., 1998) and can also be used to diagnose persistent language impairment (Bishop & Edmundson, 1987 in Norbury & Bishop, 2003).

In the Czech Republic, numerous Czech researchers have studied language skills across different fields (e.g., Chejnová, 2016; Klenková et al., 2014; Saicová Římalová, 2013, 2016; Seidlová Málková & Smolík, 2014; and others). However, research on narratives is relatively under-represented. In the Czech context, there are still no standardised tests aimed at the assessment of narrative development. In clinical practice, speech therapists sometimes create their own materials to monitor the development of narratives (e.g., a narration to a picture book chosen by the speech therapist) and then evaluate the development of this ability intuitively rather than in a standardised form. Although evaluating narratives by recording spontaneous speech production is a common method for obtaining information about language development in other countries, the practice is still little used in the Czech Republic (Seidlová Málková & Smolík, 2014).

The Multilingual Assessment Instrument for Narratives (henceforth MAIN; Gagarina et al., 2019) is a tool that has been developed for the assessment of both comprehension and production of narratives in children acquiring one or more languages. MAIN is based on six-picture sequences with carefully designed stories and allows for several methods of data elicitation, such as telling and retelling. MAIN is suitable for both research and clinical application and has the potential to provide a useful framework for eliciting semi-spontaneous speech, which could help both to maintain the advantages of spontaneous speech and to provide guidelines for its interpretation. MAIN has already been successfully used in many other languages, including languages close to Czech, such as Slovak (Kapalková & Nemcová, 2020) or Polish (Mieszkowska et al., 2020), but also typologically different ones, such as Turkish (Mavis et al., 2020) or Vietnamese (Trinh et al., 2020). The Czech version of MAIN thus has potential for both research and application and for broadening our knowledge of language and narrative development in Czech-speaking children, including research on bi-/multilingual children and children with communication disorders. In 2020, MAIN was therefore adapted to Czech.

In this article, we summarise the characteristic features of the Czech language (section 2) and describe the process of adapting MAIN to Czech, including changes in the manual compared to the first version of Czech MAIN (section 3). Subsequently, we present pilot data from Czech typically-developing children and discuss the research potential and clinical usefulness of the MAIN procedure for hearing-impaired children (section 4).

2 The Czech language

Czech is a west Slavic language, closely related to Slovak, Polish, and Upper and Lower Sorbian. It is the official language of the Czech Republic, which has a population of 10.7 million, and has approximately 12–13 million speakers (Sussex & Cubberley, 2006, p. 7; see also Lewis, 2009, p. 549).

Czech is a highly inflectional language with a rich nominal and verbal morphology. Grammatical information is typically expressed by inflectional suffixes that often combine several grammatical meanings and are frequently homonymous.[1] Word order is flexible. There is a strong tendency to organise utterances in such a way that information that is already known from the context tends to be expressed at the beginning, while new information comes towards the end. Word order allows for various subjectively motivated variations as well, for example, the speaker can place new information at the beginning of the utterance if s/he wants to stress it. Czech is a pro-drop language and typically omits pronominal subjects, except when emphasis or clarity demand otherwise. There are no definite or indefinite articles in Czech, but in informal contexts, demonstrative pronouns such as *ten* 'this/that' are sometimes used in a similar way to the way a definite article may be used in other languages. Czech often prefers a sentence with a finite verb form where some other languages (e.g., English) use more condensed constructions (e.g., constructions with a gerund or an infinitive).[2] Words are typically formed by derivation based on prefixes and suffixes (e.g., *ptáče* 'baby bird', *ptáčátko* the diminutive form of 'baby bird', and the adjective *ptačí* 'bird's' are all related to the noun *pták* 'bird' and derived by various suffixes); composition (e.g., *maloměsto* 'small town' formed from the adjective *malý* 'small' and the noun *město* 'town') is much less frequent. Czech has a well-developed system of diminutives, which are common in both child-directed speech and children's speech. In informal contexts, particularly in spoken Czech, non-standard varieties of Czech (e.g., the wide-spread non-standard variety called Common Czech or local dialects) are often preferred to standard Czech. The most salient differences between the standard and most non-standard varieties of Czech appear in morphology (especially in inflected forms of adjectives, nouns, some pronouns, some numerals, and verbs) and in pronunciation.[3] For many children, this non-standard variety becomes their L1; standard Czech is typically taught, and learned, at school.

3 The adaptation of MAIN into Czech

In this section, we describe the process of adapting MAIN into Czech in general (section 3.1) and discuss several issues that seem to be specific of the Czech context (section 3.2).

3.1 The process of adaptation

The first version of MAIN in Czech was created in 2020 based on the revised English MAIN (Gagarina et al., 2019). This first Czech MAIN was a translation of the English version and was kept as close as possible not only to the macrostructure, but also to the microstructure of the

[1] Inflectional suffixes can express, for example, a) case and number in nouns; b) case, number, and gender in adjectives, some pronouns, and some numerals; c) person, number, imperative mood in active voice, and indicative mood in active voice in verbs. Some verbal grammatical meanings, such as the past tense or the passive voice, are expressed by a combination of inflectional suffixes and specific forms of auxiliary verbs that are also inflected.

[2] For example, the common Czech translation of the English utterance 'He warned the cat not to do it' would be a compound sentence with two finite verb forms, such as *Varoval kočku, aby to nedělala*.

[3] For example, the standard Czech instrumental plural form of *svoje velké tlapy* 'one's big paws' is *svými velkými tlapami*, the common Czech form is *svejma velkejma tlapama*.

revised English MAIN (e.g., in the repertoire of specific construction and in the number of examples in the scoring protocols). It was not piloted before it was published but was reviewed by two native Czech speakers: a linguist and English teacher, and a professional English-Czech translator. The published version was subsequently piloted in 2020–2021 with 94 typically-developing children (TD) and 39 children with various communication disorders (CD). The collected data were transcribed and scored and we listed typically recurring or frequent children's statements in production (telling), reproduction (retelling), and in their answers to comprehension questions. Below (see section 4), we report results from 83 TD children aged 3;0–5;11 (which is the pre-school age in the Czech Republic) and 3 children with hearing impairment. The remaining data awaits further analysis.

Our analysis of the collected data and the experience of those who administered the tests led us to the decision to thoroughly revise the first Czech version of MAIN. The original Czech translation was once more compared to the English original and revised by a linguist, who is specialised in both Czech and English. The examples of correct and incorrect answers in the scoring protocols were checked against the pilot data. Any discrepancies between the examples offered in the scoring protocols and the answers typically given by Czech-speaking children were resolved. In some cases (e.g., various expressions of purpose), solutions used by the authors of the Slovak version (Kapalková et al., 2020) were consulted, as Czech and Slovak are typologically and culturally similar languages.

Many of the children's answers were difficult to score, both for us and for the test administrators (and speech therapists). In some cases, ambiguities arose as to whether certain answers should be scored as correct, because they were quite different from the English examples. In some cases, using our knowledge of Czech child language (see section 3.2 as well), we evaluated these answers as correct.

Our interviews with the speech therapists and students who collected the pilot data focused on parts of the manual, which appeared unclear, on typical responses from the children, and on answers that were difficult to score. These issues were discussed with the authors of the Slovak version of MAIN, Monika Nemcová and Svetlana Kapalková. Using information gained from the data collection and the interviews, we propose some changes to the manual and we have introduced some changes to the examples given in the scoring protocols (see section 3.2). The revised version corresponds in meaning to the revised version in English, but is also authentic to Czech language and culture. The revised Czech version was finally back-translated into English and checked against the original.

3.2 Issues specific to the Czech context

While creating the revised Czech version, we encountered, and therefore needed to consider, several issues that are specific to the Czech language and culture, as well as to diagnostics and intervention practices. Because of certain typological features of Czech, as a Slavic language with rich morphology, the four story scripts are naturally different from the English original, e.g., texts are shorter. The same is true for the scripts in the typologically related Slovak version (Kapalková et al., 2020). Because of the existence of standard and non-standard Czech (see section 2), we also added a footnote to the scoring protocols which states that both standard and

non-standard forms are acceptable, provided that they convey the same meaning. Where it seemed more natural from the perspective of Czech culture, we selected diminutive forms for certain characters from the stories (e.g., *ptáčátka* 'baby birds' in diminutive form; *maminka koza* 'mother goat', with the word *maminka* 'mother' in diminutive form; see section 2) and used the female gender for the cat (*kočka* 'female cat') in the *Cat* story (cf. the Slovak adaptation, Kapalková et al., 2020).

We also suggest that the beginning of each story script should contain some simple information about the location (e.g, *in the park*), because it is an important component for model stories or for retelling; it is also a scored item in the assessment procedure. As it is not present in the English version and all adaptations of MAIN should be comparable, we have not added this component into the Czech version. We nevertheless believe that adding location to the story scripts might be a useful improvement for the next new English version of MAIN and its subsequent adaptations to individual languages, should there be any.

Using both the original and the back-translated version, we carefully checked that the number and types of answers in the scoring protocols correspond to the English version. In cases where several synonymous and relatively equally frequent answers are possible in Czech, we added more examples to the scoring protocols (e.g., frequent synonyms of 'being angry', such as *být naštvaný*, *být rozzlobený*, *být rozhněvaný*). We also added synonyms to the list of words relating to mental states – the number and types of the mental states listed remains equal to the English version, but in some cases, more synonyms are present. This is also due to the fact that verbs, including 'linguistic verbs', tend to be strongly language-specific and Slavic languages have a rich verbal prefixation. For example, in the case of the *Baby Birds* and *Baby Goats* stories, we added the verbs *zamňoukat* 'to miaow' and *zavrčet* 'to growl' to the list of 'linguistic verbs'. Because they appear in the story scripts, we believe that the administrators should also be able to find them in the scoring protocols. As there are several Czech equivalents of the English construction *in order to* + verb (such as modal verb + non-finite verb, or a compound sentence with the conjunction *aby* 'in order to', 'so that' or *že* 'that'), we added these clausal subtypes to the corresponding scoring protocols. The consequence of the above-mentioned cases is that there are more examples in the relevant sections of the scoring protocols in the new Czech version than in the revised English version (e.g., for A3, A13). We believe that such increased choice will help the test administrators during data collection but will not influence the assessment procedure.

During the data collection, we noticed in our Czech-speaking participants certain narrative features that deserve further zooming in. These features may be specific to the Czech culture (we are not aware of any existing research in Czech concerning these features) or to cultures similar to the Czech one. We noticed, for example, that Czech speakers tend to answer questions concerning the purpose of a given activity by giving not the purpose as such, but the reason. That is, most speakers, including adults, seem to prefer to answer a question such as 'Why is the boy holding the fishing rod in the water?' (*Cat*, D4) with 'Because his ball is in the water' rather than with 'Because he wants to get his ball back'. Following the MAIN core team

that has decided to evaluate this type of answers as incorrect,[4] we accept this solution and we judge them as incorrect in the Czech version as well. However, as this type of answer seems to be typical of some groups of speakers and might be related to culturally determined models of narration (this question requires further investigation) or it might be a typical interpretation among some age groups (similar type of answers has been observed in some other languages, such as Swedish, [5] as well), we believe that it would deserve a more detailed research and that the (in)correctness of the given type might be then re-evaluated. It would also be useful to clearly state whether such answers are (in)correct in the scoring protocols if MAIN is revised again.

Finally, we also observed that the Czech examiners who collected data from children repeatedly encountered difficulties with some items. We therefore decided to add explanatory footnotes to item D10 (specifying that for this question, the administrator should always ask the question 'Why?') and to the components labelled 'IST as initiation event' (specifying that the item concerns the mental state of a character, i.e., an adequate mental state, character feature, or perceptual experience that functions as the initiating impulse of the event). It also seems probable that the Czech cultural model of narratives tends to specify time (e.g., 'once upon a time') rather than place, but we have not reflected this fact in the manual (the tendency to specify time rather than place might appear in other cultures as well, and the topic would deserve further research across different languages).

4 Piloting the Czech MAIN

In this section, we give an overview of the main results from the pilot study that we carried out using the 2020 Czech version of MAIN in typically-developing children (section 4.1) and in hearing-impaired children (section 4.2).

The main aim of this paper is to present the Czech MAIN, specifics of Czech language, and to present the very first pilot data. Any results described below that may point to 'differences' between ages or telling/retelling should be seen as preliminary. At this moment, we have not verified differences statistically as we plan to do it with more data as a future step.

4.1 Typically-developing children

In total, data from 83 Czech-speaking typically developing monolingual children aged 3;0 to 5;11 with typical language development (TD; mean age: 4;7) were analysed.[6] Two stories were administered to each child. First, the story *Baby Goats* or *Baby Birds* were given to elicit a narrative in the telling condition followed by the comprehension questions. Secondly, the *Dog* or *Cat* story was administered to elicit a retelling of the story after which the comprehension questions were asked. The whole procedure of administration followed the instruction in the

[4] Communication from the editors of the volume.

[5] Personal communication with Josefin Lindgren.

[6] Data from another 11 children aged 6;0 to 9;9 were collected, but this group is not yet sufficiently representative and will be the subject of further data collection and research.

manual (Gagarina, 2020). For purpose of the scoring, the narratives were transcribed and the story structure was calculated. The analysis and scoring of the story structure comprises the following components that can be present three times in the story: Internal state terms as initiating event, goal, attempt, outcome, and internal state terms as reaction (one point for each component). At the beginning, the indication of place and time is also scored by one or two points (the maximum score for story structure was 17). Ten comprehension questions were administered immediately after telling/retelling the story. Three questions focus on the goals, six questions on internal state terms including stating the reason. The last question monitors the understanding of the story as a whole (for a more detailed explanation see Gagarina, 2012).

In tables 1 and 2, the mean scores of narrative macrostucture (story structure) and story comprehension are reported for telling and retelling, respectively.[7]

Table 1: Descriptive statistics of narrative macrostructure and story comprehension, TD pre-school children, telling mode (*Baby Birds* and *Baby Goats*)

Age group	Average Age	N	Telling Mean (max = 17)	SD	Min-max	Comprehension Mean (max = 10)	SD	Min-max
3-year-olds	3;6	22	2.14	2.49	0-7	3.68	2.73	0-9
4-year-olds	4;6	30	3.43	2.70	0-9	4.57	3.03	0-10
5-year-olds	5;7	31	5.06	2.29	0-10	6.94	2.58	0-10
Total	4;7	83	3.70	2.73	0-10	5.22	3.08	0-10

Table 2: Descriptive statistics of narrative macrostructure (story structure) and story comprehension, TD pre-school children, retelling mode (*Cat* and *Dog*)

Age group	Average Age	N	Retelling Mean (max = 17)	SD	Min-max	Comprehension Mean (max = 10)	SD	Min-max
3-year-olds	3;6	22	4.18	3.32	0-9	5.18	2.84	0-9
4-year-olds	4;6	30	5.10	3.33	0-14	6.40	3.10	0-10
5-year-olds	5;7	31	7.29	3.01	0-13	8.16	2.42	0-10
Total	4;7	83	5.67	3.43	0-14	6.73	3.01	0-10

The results from the pilot data indicate that MAIN may differentiate well between good and poor narrative abilities in Czech pre-school children as the results show neither a floor nor a ceiling effect. The results given in the tables show differences among the age groups which suggest that the ability to tell and retell the story and comprehension of the story increases with age. In the same way, we can see from the descriptive statistics (table 1 and 2) that, in all age groups, the overall performance of the group is higher in retelling than in telling.

In addition to the overall macrostructure (story structure) and comprehension scores, we were interested in the structural complexity of each episode in the children's narratives. The approach taken here is grounded on Westby's binary decision tree (Westby, 2005 in Gagarina et al., 2012, p.11–12). The episodes within the stories are classified into one of three levels of structural complexity: (1) A sequence where no statement about the goal was generated but an attempt and outcome was included (attempt-outcome (AO) sequences); (2) incomplete episodes

[7] 3-year-olds = ages 3;0–3;11, 4-year-olds = ages 4;0 – 4;11, 5-year-olds = ages 5;0 – 5;11.

that included a goal (G) statement, but lacked a complete GAO structure because of the omission of either the attempt (A) or the outcome (O) (goal-attempt (GA) sequence/goal-outcome (GO) sequence); and (3) complete episodes that included all three components (goal-attempt-outcome = GAO). Additionally, the number of isolated goals (G) are considered (as recommended by Gagarina et al., 2012, p. 12), in order to provide a more fine-tuned differentiation between the various populations involved. In children's production, sequences that do not contain any of components (neither AO nor G) can also appear. Table 3 shows the average number of each type of sequence (where at least one of the components appeared) for all three episodes combined. The maximum for each category is 3.

Table 3: Description of structural complexity in the telling and retelling of TD children in preschool age.[8]

Age group	**N**	**AO sequence**		**Single G**		**GA / GO sequence**		**GAO sequence (complete episode)**	
		Tell	Retell	Tell	Retell	Tell	Retell	Tell	Retell
3-year-olds	22	0.32	0.27	0.09	0.05	0.14	0.41	0.00	0.23
4-year-olds	30	0.50	0.40	0.03	0.33	0.07	0.36	0.27	0.13
5-year-olds	31	0.94	0.71	0.06	0.16	0.32	0.61	0.23	0.42
Total	83	0.61	0.48	0.06	0.19	0.18	0.57	0.18	0.27

As we can see in table 3, in *telling* the story, AO sequence is overall the most frequent one, and its frequency increases with age. However, this does not apply for *retelling*, where the most frequent sequence in total is GA/GO and the AO sequence is in the second place, but as with telling the frequency of this sequence increases with age. The production of goals (G) without any other component was the least common type in both elicitation methods.

We find the results for the production of complete episodes, where all three macrostructural components are produced within the same episode (GAO sequences), especially interesting. This type of sequences was only produced by children aged 4 or above. So any of 3 years olds did not produce this type of sequence in telling the story. On the other hand, we see that the GAO sequences are produced by 3-year-olds in retelling. We can assume that the youngest children are able to produce complete episodes based on imitation during retelling, but not yet independently in telling. Therefore, to be able to claim this, we need more data. In the future research, we would like to cover all types of sequences from a developmental perspective in detail with more data from children (including children at school age). We are interested in whether we will be able to see some regularities in the production of individual types of sequences. We are particularly interested in whether the proportion of complete GAO sequences will increase with age and the proportion of incomplete sequences will decrease.

In sum, the narratives produced by the children in the pilot study suggest some interesting trends. As a future step, this will be studied in detail with more data including confirmation by statistical tests. We plan to focus on examining the development of these

[8] AO = attempt-outcome sequence, single G = isolated goal without an attempt and/or an outcome, GA/GO sequence = goal-attempt or goal-outcome sequence without an attempt, GAO sequence = complex sequence goal-attempt-outcome.

aspects and to clarify which components and/or combinations of components typically occur at which age.

4.2 Research potential and clinical usefulness of the MAIN procedure for hearing-impaired children

In this section, we want to illustrate that the MAIN procedure has also a big potential for research of language and literacy acquisition of hearing-impaired children and can be clinically very useful in assessment and planning intervention goals.

Literacy acquisition and skills in any language are based mainly on decoding and reading comprehension (National Reading Panel & National Institute of Child Health and Human Development, 2000). Phonological and language skills are described as fundamental components of decoding and comprehension in 'The Simple View of Reading' (Gough & Tunmer, 1986). Just as phonological skills are essential for learning to read words, it has become clear that narrative comprehension and storytelling are fundamental for reading comprehension. This model can also be applied to hearing-impaired children. MAIN provides a useful framework and context for eliciting semi-spontaneous oral language samples that can be analysed to gain measurements of phonological acquisition, lexical knowledge and morpho-syntactic development, together with narrative comprehension, production and retelling. Here we illustrate our approach with the results from a pilot study of three children of pre-school age who use cochlear implants: a boy aged 3;6, a girl aged 4;7, and a boy aged 7;0. All three participants are prelingually severely hearing-impaired children of parents without a hearing loss. The sessions were videotaped, and the children's narratives and answers to the comprehension questions were transcribed using the CHAT transcription format (MacWhinney, 2000).

MAIN was administered in line with standard instructions. The children's narrative production skills (telling) were measured using the *Baby Birds* story, and narrative retelling was measured by the *Cat* story. Both telling and retelling were followed by the comprehension questions. Language samples gained from telling and retelling were further used for analyses of phonological acquisition as well as lexical knowledge and morpho-syntactic development.

The Phonological Mean Length of Utterance (PMLU) created by Ingram (2002) enables an estimate of whole-word phonological productions in children with typical language development and in children with communication disorders including hearing impairment. The measure is comparable to MLU in language studies (Brown, 1973). PMLU indicates whole-word complexity for both child-speech and target words, e.g., the word 'zucchini' pronounced as [kini], [skini], or [dzukini]. There is a criterion of no less than 25 words in a sample for the calculation of PMLU. First, we calculated PMLU for target words used in the story scripts of *Cat* and *Baby Birds* (PMLU Script in Table 4).

Then we calculated PMLU in children's narratives to compare the children's word complexity with the complexity of words used in the scripts. This measure was calculated only for children's re/tellings, not for answers to comprehension questions. Another clinically useful indicator, derived from the PMLU and proposed by Ingram (2002), is the Proportion of Whole-Word Proximity (PWP). PWP captures how well the child approximates target words and

measures the intelligibility of his/her speech. It is calculated by dividing the child's PMLU by the PMLU of the words attempted by the child. Ingram's method was adapted to Slovak for research purposes, while accounting for differences between English and Slovak phonology (Bónová et al., 2005).[9] For example, Slovak vowels are perceptually more salient than English, so both correct consonants and correct vowels are credited in the adapted measure. As Czech and Slovak are closely related languages and neither PMLU nor PWP have been adapted into Czech, our study used the Slovak PMLU and PWP rules.

Next, lexical diversity in the children's narratives was estimated with the help of the Type/Token Ratio (TTR).[10] TTR has been broadly applied as a vocabulary acquisition index in studies examining oral narrative skills in children (e.g., Humphries et al., 2004). Here we report TTR in percentage.

Finally, for morpho-syntactic development, we analysed three different measures. The *Mean Length of Utterance* (MLU) is an index of morpho-syntactic acquisition (Brown, 1973) and is calculated as the average number of words, morphemes or syllables per utterance. Here we counted MLU in words to avoid problems with the intelligibility of children's speech. The *Grammaticality Index* (GI) is calculated as the number of grammatically correct utterances divided by the total number of utterances (see, e.g., Bedore et al., 2010). We did not include utterances in which some words could not be distinguished. The *Subordination Index* (SI) measures clausal density and indicates the average number of subordinate clauses produced per C-unit (communication unit).[11] The SI index was used, for example, in Tsimpli et al. (2016). One point can be assigned for a subordinate clause even if a whole communication unit is not grammatically correct.

The results of the three hearing-impaired children for the quantitative indicators described above are displayed in Table 4. The results are presented for each child separately. The results shown in Table 4 indicate that the three children have different developmental profiles in the domains of phonology, vocabulary, morphosyntax, narrative macrostructure, and narrative comprehension. Child 1 is the youngest (aged 3;6) but has the most intelligible speech (PWP: 0.92–0.95). He attempts words that are not much shorter than the words in the story scripts. By contrast, his vocabulary is rather limited (TTR: 15–36 %). He conveys his thoughts in relatively long utterances (MLU in words: 4.28–5.6) but his SI is close to zero (0.00–0.07), which indicates that he does not use subordinate clauses. Grammatically correct clauses prevail in narrative production. Compared with the data from the typically-developing 3-year-olds in tables 1 and 2, his comprehension of the stories is good. Narrative macrostructure in telling is age appropriate, but in retelling, it was below age level; retelling of the *Cat* story was administered first, and this could be why higher score was obtained for telling with the *Baby Birds* story due to the familiarity of the task.

[9] In Slovak (unlike English), a child is credited one point for each produced sound plus one point for the correct production of both consonants and vowels; some additional rules were also applied.

[10] We are aware of existing criticism of the TTR (e.g., Richards, 1987) and use it here only for an approximate estimation of lexical skills.

[11] The C-unit is usually described as a main clause and its subordinate clauses.

Table 4: Quantitative measures of speech and language development in telling (*Baby Birds*) and retelling (*Cat*).

Elicitation mode	Phonological measures				Lexical diversity	Morpho-syntactic measures			Narrative measures	
	PMLU Script	PMLU Child	PMLU target	PWP	TTR	MLU	GI	SI	SS	Comp
Child 1 (boy, aged 3;6)										
Telling	9.95	8.18	8.62	0.95	36%	5.60	0.73	0.07	2	3
Retelling	8.63	7.44	8.70	0.92	15%	4.28	0.47	0.00	1	4
Child 2 (girl, aged 4;7)										
Telling	9.95	7.30	7.68	0.91	30%	3.72	0.42	0.06	0	0
Retelling	8.63	Not calculated			31%	3.78	0.56	0.00	0	0
Child 3 (boy, aged 7;0)										
Telling	9.95	7.90	8.77	0.81	57%	4.89	0.56	0.11	5	8
Retelling	8.63	7.37	8.89	0.83	77%	4.38	0.63	0.13	6	9

Note: PMLU child = Phonological MLU of words produced by the child; PMLU target = Phonological MLU of words attempted by the child; PWP = Proportion of Whole-Word Proximity; TTR = Type/Token Ratio; MLU = MLU in words; GI = Grammaticality Index ; SI = Subordination Index; SS = story structure score/narrative macrostructure (maximum score: 17); Comp = narrative comprehension (maximum score: 10).

Child 2 (aged 4;7) has intelligible speech (PWP: 0.91) but produces shorter word forms than those used in the story scripts (PMLU script: 9.95, PMLU child: 7.30). Her vocabulary is also rather limited, like that of Child 1. Her utterances are on average 3–4 words long (MLU: 3.72–3.78). About half of the utterances are grammatically incorrect (GI: 0.42–0.56), but a higher score was obtained for retelling. At the beginning of the assessment, she was not sufficiently interested in following the Cat story and her retelling was very limited (less than the 25 words needed for calculation of the PMLU). Later, with the Baby Birds story, her attention improved, but the production of macrostructure and narrative comprehension were both scored at zero points.

Child 3 (aged 7;0) has less intelligible speech (PWP: 0.81–0.83) but his vocabulary is much richer (TTR: 57–77 %) than that of the other two children. His utterances are 4–5 words long (MLU: 4.38–4.85), only slightly more than half are grammatically correct (GI: 0.56–0.63) and although the boy already has subordinate clauses in his repertoire (SI: 0.11–0.13), his morphosyntactic development can be classified as delayed according to his age. In the story telling and retelling, he demonstrates quite a good understanding of narrative macrostructure (story structure score: 5–6 points) and gives correct answers to nearly all comprehension questions (8–9 points).

Our first experience with using the Czech MAIN for the elicitation of language samples in hearing-impaired children demonstrates that MAIN can be fruitfully used in speech and language assessment of these children. MAIN thus provides material not only for the analysis of narrative skills, but also for phonological acquisition, vocabulary, and grammar. When we combine the quantitative indicators described above, it enables us to see a more complex

"language picture" of individual children. MAIN therefore is a valuable tool both for research purposes and for clinical use in evidence-based interventions.

5 Conclusion and future steps

MAIN is a crucial tool for the assessment of narratives that has already been adapted into many languages (at this moment, more than 80 language adaptations are found on the webside https://main.leibniz-zas.de/). In 2022, its revised adaptation to Czech, a highly inflectional West Slavic language, was created.

In this paper, we have described the process of adaptation of MAIN into Czech in detail and we have reported preliminary results from 83 typically-developing Czech-speaking children aged 3;0–5;11 (the pre-school age in the Czech Republic) and three children with hearing impairment. These preliminary analyses have successfully tested the MAIN assessment tool in the Czech context as well as its clinical potential for hearing-impaired children.

In addition to collecting data from TD and hearing impaired children, we piloted the Czech MAIN with 36 children with various types of communication disorders (developmental language disorder and speech sound disorder). These data were collected by speech therapists. They were useful for acquiring a basic idea of how these children react to the assessment, and it was possible to consider their answers when reviewing the Czech MAIN. However, this group is so heterogeneous that it has not yet been possible to perform a more detailed analysis of the data, but we would like to carry out a more systematic examination in the future. We would like to find the best way to communicate and cooperate with speech therapists in order to make the best use of MAIN, not only for research, but also for diagnostic purposes for this group of children.

As a next step in the future, we plan to collect more data and to provide a more detailed analysis of the data collected so far. Our first goal is to obtain a larger set of high-quality data from typically developing preschool and school children that could be published in the international CHILDES database (https://childes.talkbank.org/). More data obtained from various clinical groups of children is needed to verify the functioning of MAIN in diagnostic contexts as well. We are especially interested in children with developmental language disorders, hearing disorders, and Down syndrome. We have also identified several questions for further research, such as whether Czech and/or other cultures tend to prefer specification of time over specification of location in narratives or what is the typical answer to questions starting with "why" (e.g., "why did somebody do something?") in a specific culture. We also suggest that it might be fruitful to consider certain changes to the future new versions of the MAIN manual (should there be any), such as adding the specification of location (place) to the story scripts.

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Adapting MAIN to isiZulu – some reflections on ecological validity

Blessing Ntokozo Ndlovu[*]

Stellenbosch University, South Africa

Daleen Klop

Stellenbosch University, South Africa

The Multilingual Assessment Instrument for Narratives (MAIN) was developed as an instrument to assess the narrative skills of children in multilingual and multicultural contexts. The aim was to compile an instrument that is ecologically valid and culturally neutral so it can be used to assess children's narrative skills regardless of their linguistic, socio-economic and cultural backgrounds. While storytelling occurs in all communities and cultures, storytelling customs may differ from culture to culture. For example, African storytelling is based on oral traditions passed on from one generation to the next. In the Zulu culture, which has a very rich anthology of folktales and oral traditions, stories are often used to teach moral lessons. This paper reflects on the possible challenges that clinicians may encounter when using MAIN to assess young children who may have only been exposed to traditional Zulu folklore stories that differ in structure from the MAIN stories. We also consider the Southern African Story Grammar model that was proposed by Tappe (2018) as a better reflection of African storytelling than the classical Stein and Glenn (1979) story grammar model. We discuss how some aspects of the MAIN stories and assessment procedures may not resemble the typical stories or storytelling customs in traditional isiZulu-speaking populations and therefore compromise the ecological validity of MAIN. In this paper, our focus is on isiZulu, but our questions about the ecological validity of MAIN may also be relevant for other language groups and cultures in the growing international community of MAIN users.

[*] Corresponding author: 21752966@sun.ac.za

1 Introduction

Narrative assessments are considered to be less biased and more ecologically valid to assess children's communication skills than formal, standardised tests and protocols (Botting, 2002). Ecological validity refers to the generalisability and representativeness of an assessment, in other words how the assessment results relate to performance outside the test environment and the extent to which the assessment itself resembles the everyday context in which the behaviours will be needed (Dawson & Marcotte, 2017). The Multilingual Assessment Instrument for Narratives (MAIN; Gagarina et al., 2019) was developed as an instrument to assess the narrative skills of children in multilingual and multicultural contexts. The developers aimed to compile an instrument that is ecologically valid and culturally neutral so it can be used to assess children's narrative production and comprehension skills regardless of their linguistic, socio-economic and cultural backgrounds. The instrument can be used to differentiate between typical and atypical narrative skill and investigate the transference of cognitive skills in bilingual speakers.

1.1 Theoretical framework of the MAIN

MAIN consists of four parallel stories that are based on a multidimensional model of narrative organisation, which allows the assessment of cognitive abilities such as inferring of protagonists' goals, internal states and the causality of events. The MAIN stories are based on the story grammar model by Stein and Glenn (1979) which comprises of a story setting and an episodic structure that consists of the following macrostructure components shown in Table 1.

Table 1: MAIN Story grammar components: Descriptions and examples (Gagarina et al., 2012)

Story grammar component	Description and examples
Setting statement	Statement(s) that orients the listener to the spatial and temporal aspects of the narrative. Example: One day there was a boy walking by the beach.
Internal state as an initiating event	An internal state of the protagonist or an event that sets the story in motion. Example: The boy was sad that his ball fell into the water.
Goal	A statement that indicates the intention of the protagonist in response to the initiating event and/or state. Example: The boy wanted to get his ball back.
Attempt	A statement indicating the action undertaken by the protagonist to achieve the goal. Example: The boy pulled his ball with a fishing rod.
Outcome	A statement indicating the consequence of the attempt made by the protagonist to achieve the goal. Example: The boy got his ball back.
Internal state as a reaction to the event	A statement defining the internal state of the protagonist in response to the outcome of the attempt. Example: The boy was happy to have his ball back.

But how culture-fluid and therefore ecologically valid is MAIN when used to assess children in linguistically and culturally diverse societies such as South Africa? For instance, it is

generally accepted that retelling is easier for young children as it provides a model for the child and also facilitates the production of longer and complex narratives (e.g. Kadaravek & Sulzby, 2000; Merrit & Liles, 1989). However, young children may find it difficult or confusing when expected to retell a story with a different story structure and format than the traditional folktales they have been exposed to and are familiar with. The question is, to what extent can a young isiZulu-speaking child (a language spoken in South Africa) who has mostly been exposed to traditional folktales Zulu stories, relate to the pictorial and story content of the MAIN?

1.2 Adaptations of the MAIN

The original English version of MAIN has been translated and adapted to more than 70 languages world-wide and implemented in a variety of linguistic and social contexts for the assessment of child language. It can be argued that processes such as back-translation to improve linguistic equivalence between two language versions may still not guarantee functional and/or cultural equivalence (Pena, 2007). Cultural equivalence refers to aspects of content validity and cultural appropriateness of an instrument to ensure cross-cultural understanding of the pictorial and linguistic content. For example, recent additions to the available MAIN picture stimuli, such as adjusting the boy's skin colour (*Cat* and *Dog* stories) and replacing the sausages in the boy's bag with chicken legs (*Dog* story) may have improved the cultural appropriateness of MAIN in the South African context (Klop & Visser, 2020). Functional equivalence would, for instance, require measures to ensure that the isiZulu MAIN elicits constructs such as internal state terms in the same way as the English version.

In this paper, we share our reflections on some of the potential functional complexities of using the MAIN when assessing children who have mostly been exposed to traditional Zulu folktales. We will comment on the following aspects of traditional storytelling and the MAIN, namely interaction during storytelling, opening and closing formulae in narratives, setting statements and internal state terms, against the background of story traditions in the Zulu culture and the proposed Southern African Grammar by Tappe (2018) which is an alternative to the classical Stein and Glenn model (1979).

2 Brief overview of isiZulu

IsiZulu is the most commonly spoken language in South Africa and is the first language of approximately 25% of the population. Zulu speakers are largely concentrated to the province of KwaZulu-Natal, but large populations of Zulu speakers are also found in the Gauteng and Mpumalanga provinces. IsiZulu belongs to a large family of languages known as Bantu languages, which are prominent in Southern Africa. IsiZulu, together with three other South African languages, namely isiXhosa, isiNdebele and SiSwati, are subcategorised as Nguni languages.

Typical of other Bantu languages, isiZulu uses a system of noun classes, in which all nouns in belong to a particular noun class. Categorisation of nouns into the different classes is also based on the collective meaning that the nouns in that specific category share (Keet & Khumalo, 2016). For example, nouns referring to humans are predominantly found in noun

class 1 and nouns referring to animals are predominantly found in noun class 9. Noun classes play an essential role in the concordial agreement of the words in sentences (Keet & Khumalo, 2016). IsiZulu sentences follow an SVO order (Keet & Khumalo, 2016).

3 Storytelling in the Zulu culture

The tradition of storytelling is a prominent feature of the Zulu culture. Storytelling has been used for many centuries for a variety of purposes such as entertainment, teaching lessons and transmitting time-honoured wisdom across generations. Storytelling is seen as a communal and interactive activity involving different participants, the narrator (usually an elder in the family) and listeners (often children). Stories are usually told around a fire at night (Jiyane, 2017). An umbrella term used to describe these stories in isiZulu is *izinganekwane* 'folktales.' *Izinganekwane* usually communicate how certain phenomena came to be (aetiological tales), explain superstitions, and explain the history of certain nations or are told purely for entertainment purposes (Ntuli & Makhambeni, 1995). They typically include moral lessons at the end of the story to educate children. Examples of *izinganekwane* in the Zulu culture are *Unwabu nentulo* 'The chameleon and the lizard,' *Impunzi noChakide* 'The buck and the mongoose' and *Izimu nesalukazi* 'The cannibal and the old woman.' Characters in these stories may typically include *izilwane* 'animals' (these may be personified or may have special abilities), *abantu* 'humans' and *uMdali* 'the Creator' and *uNkulunkulu* 'God' (Canonici, 1993; Ntuli & Makhambeni, 1995).

A distinct feature of *izinganekwane* is the performative aspect that is employed by the narrator and the interaction between the audience and the narrator. The narrator tends to perform the emotions and states of beings of the characters and the audience takes active part by responding with chants and interjections. Storytelling is a communal activity, and the focus is on actions rather than linguistic devices to establish and maintain co-referential ties across the reference (Tappe, 2018).

Based on the analyses of traditional folklore tales and narratives from Chichewa/English children in Malawi and isiZulu/English children in South Africa, Tappe (2018) proposed an alternative story grammar model called the Southern African Story Grammar consisting of the components as depicted in Table 3.

Similarities between the Stein and Glenn (1979) model and the Southern African story grammar model are evident as both models include plans, attempts and outcomes. The main differences are that the Southern African story grammar model includes opening and closing formulae typical of African stories, and that the resolution or outcomes are presented in the form of a moral lesson that is meant to be shared with the audience. Major differences found between the models is the absence of setting statements and internal state terms as initiating events or reactions to outcomes in the Southern African story grammar model (Tappe, 2018).

Table 3: Story grammar components of the proposed Southern Africa Story Grammar (Tappe, 2018)

Story grammar component	Description
Traditional opening	Traditional opening formula initiated by the narrator and the audience which helps the audience to get ready for the story.
Initiating event	An event that creates the need for the protagonist to take action.
Plan	Intentions formulated by the protagonist based on the initiating event; indication of the intentions of the protagonist.
Attempt	Actions undertaken by the protagonist to achieve the intended plan. The attempts are marked by dialogue and repetitions, which bring in the performative aspect of storytelling.
Consequences or outcomes	The results of the attempts made by the protagonist. This indicates if the goal was achieved or not.
Resolution or outcome	Moral lesson that can be learnt from the story. The moral lessons usually have general or communal significance.
Traditional ending	A traditional closing formula is used to indicate the end of the story and also indicates a return to the real world and binds any mystical creatures to the story's realm.

3.1 Interaction during storytelling

Storytelling in the Zulu culture is an interactive activity between the narrator and the audience. In contrast, MAIN includes specific procedures to control for the assumptions of shared knowledge and joint attention between the assessor and the child, for instance procedures such as the folding out of the picture stimuli and letting the child select closed envelopes containing the stories. The rationale behind these measures is that children may provide less complex narratives if they assume that the listener is familiar with the story. The MAIN instructions also limit the allowable prompts and the interaction between the examiner and the child. During the adaptation process of MAIN to isiZulu, we reflected on the potential influence these presentation measures may have on children who are used to stories where the listener is an active participant in the narrative. We wondered if young Zulu children may actually provide more detailed narratives if the examiner responds in a more interactive way.

3.2 Opening and closing formulae on Zulu stories

In the Zulu culture, opening and closing statements are essential components of storytelling and contribute to the reciprocal interaction between the narrator and the audience. In the Zulu culture, a typical opening formula to a narrative is *Kwasukasukela* – similar to the conventional 'once upon a time' in English stories and it literally means 'in the beginning'. With this statement, the narrator invites the audience to a fantasy or fictional world and also alerts the audience to prepare themselves to suspend belief (Tappe & Hara, 2013). This opening formula also indicates that the narrative is in the remote past (Tappe & Hara, 2013). The listener(s) usually respond by saying *cosi* 'little' to indicate that they are attentive and ready for the narrator to start telling the story. The story is typically concluded with a closing formula, which in isiZulu is typically *cosu cosu yaphela* 'little by little, it ends', to indicate that the story has ended and also indicates a return to the real world (Tappe & Hara, 2013). We reflected on the possibility to include these opening and closing formulae when assessing young Zulu children

with MAIN in the retelling and model story options. We speculated that these children may be more likely to assume the role of storyteller if the MAIN stories are more aligned with their traditional way of storytelling.

3.3 Setting statements

Setting statements that convey the temporal and spatial context where the story events occur are usually absent in Southern African storytelling. In African storytelling the narrator and the audience usually share knowledge about the story context. Thus, it is likely that setting statements may not be included in narratives due to this assumption of shared knowledge (Tappe, 2018). We speculated that that omission of the spatial context in African children's narratives may reflect the assumed shared knowledge between storyteller and audience which is typical of African storytelling. However, the inclusion of the traditional opening formula *Kwasukasukela* 'in the beginning' in the Southern African story grammar model is similar to 'once upon a time' that is included in the Stein and Glenn (1979) model as well and is credited in the Zulu MAIN scoring protocol as a setting statement that provides information about the temporal context of the story.

3.4 Internal state terms

In the MAIN stories, various categories of internal state terms that denote the inner or mental states of story characters are included as initiating events and reactions in the story structure scoring protocol. In contrast, the emotions and feelings of characters may often not explicitly verbalised in traditional storytelling in Southern Africa. This is because of the performative aspect of traditional storytelling which may involve the narrator conveying the internal states (mainly emotions and feelings) through non-verbal means such and gestures and enaction (Tappe & Hara, 2013). Example (1) demonstrates expression of an internal state without using internal state terms.

(1) *"Hawu, ngingawadla lamasoseji", kusho inja ibheke amasoseji womfana.*
'"Wow, I can eat these sausages", said the dog looking at the boy's sausages.'

The expression *hawu* 'wow' may be interpreted as an expression of being pleasantly surprised. This expression would be used with a high tone to indicate a positive emotion. In (1) above, *hawu* indicates that the dog was pleasantly surprised when it saw the boy's sausages. In other words, the emotions of the characters in the stories may be conveyed not through explicit internal state terms but with expressions typically included as part of the performative aspect of traditional storytelling. We therefore speculated that the internal state terms included in the MAIN protocol may not be sensitive to the various ways that emotions of the characters can be conveyed by young children who may only have been exposed to traditional Zulu stories.

According to Tappe (2018) protagonists in traditional African stories are not seen as distinct individuals with their own thoughts and emotions, but rather as a prototype or schematic representation of a person typically found in society. Therefore, it is likely that children who have only been exposed to traditional African stories may not include internal state terms as initiating and reactions to events. For instance, the boy in the *Dog* story may be seen as a

protagonist who represents all young boys in the community and no particular internal states may be assigned to this character so that the audience could identify with the character. We speculated that the findings of Tappe (2018) and Tappe and Hara (2013) regarding the lack of internal state terms may be a consequence of the traditional stories that they used in their studies. The MAIN pictures and content were designed to clearly portray characters' emotions and the assumption that African children would not assign internal states to them needs to be investigated through research.

4 Conclusion

To conclude, we have reflected on the possible challenges that clinicians may encounter when using the MAIN to assess young children who may have only been exposed to traditional Zulu stories using some of the perspectives of Tappe's (2018) proposed Southern African story grammar. We have shown that some aspects of the MAIN stories and assessment procedures may possibly not resemble the typical stories or storytelling traditions of young Zulu children who have only been exposed to traditional stories such as the use of opening and closing formulae between the narrator and the audience and the possible exclusion of setting statements (more likely the spatial context) and internal state terms as initiating and reactions to events in traditional Zulu stories. This may possibly compromise the ecological validity of the MAIN in this population and provide an inaccurate reflection of the children's storytelling abilities. These considerations warrant for exploration, through research, of the ecological validity of the MAIN as an instrument to assess narrative abilities in multilingual and culturally diverse societies, such as South Africa. Therefore, our next steps are to conduct studies in monolingual and bilingual Zulu populations, to test the assumptions of the proposed Southern African story grammar model and the speculations in this article, and to examine the ecological validity and functional equivalence of MAIN in these populations.

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An overview of the adaptation of MAIN to Lithuanian and research using the Lithuanian MAIN

Ineta Dabašinskienė[*]

Vytautas Magnus University, Lithuania

Laura Kamandulytė-Merfeldienė

Vytautas Magnus University, Lithuania

This paper describes the Lithuanian version of the Multilingual Assessment tool for Narratives (MAIN) and presents research that used MAIN for narrative analysis of Lithuanian-speaking monolingual and bilingual typically-developing children and children with a language disorder. Our target group is preschool and primary school children, as we believe that narrative and general language skills at preschool and early school age should be investigated to establish the tendencies or even standards of this age group and to identify children who need language therapy or help in the learning process. This study is a contribution to the international network of MAIN by reinforcing a better understanding of narrative studies and the use of MAIN in Lithuanian research.

1 Introduction

Children are constantly exposed to different kinds of narratives. They listen, read and produce stories in interactions at home, school and other social environments. To comprehend and produce narratives, diverse language and cognitive skills are required; therefore, narratives have been investigated extensively in order to demonstrate developmental differences in children's story knowledge and their ability to produce coherent and linguistically cohesive stories (e.g., Berman, 2009; Bliss et al., 1998; Hickmann & Schneider, 2000; Pesco & Kay-Raining Bird, 2016; Sah, 2013). Many studies in the field highlight the correlation between early narrative abilities and later literacy development (Babayigit et al., 2021; Dickinson & McCabe, 1991; McCabe & Rollins, 1994; Suggate et al., 2018). Since language comprehension and expression of knowledge through language are required for much of academic performance (Hughes et al., 1997), therefore, in recent years, the interest in children's narrative development cross-linguistically has increased.

[*] Corresponding author: ineta.dabasinskiene@vdu.lt

Although the importance of narrative comprehension and production tasks is highlighted by a large number of international scholars (e.g., Bohnacker & Gagarina, 2020), narrative studies in Lithuania can still be characterised as very scarce. The successful cooperation of researchers within the COST program (Action IS0804 Language Impairment in a Multilingual Society: Linguistic Patterns and the Road to Assessment 2009-2013) has provided a solid basis for many languages, including Lithuanian, to start individual research and to participate in cross-linguistic studies that could offer evidence for universal and language-specific features of the results (Armon-Lotem et al., 2015). The first stage of adapting the Multilingual Assessment Instrument for Narratives (MAIN, Gagarina et al., 2019) to Lithuanian took place in 2012–2013, and pilot studies by Ingrida Balčiūnienė were conducted successfully. A few studies using the Lithuanian MAIN have been conducted with young monolingual, bilingual and language-impaired children, and the results are already partly available for readers (Balčiūnienė, 2013; Balčiūnienė & Dabašinskienė, 2019; Balčiūnienė & Kornev, 2016; Blažienė, 2015, 2016a, 2016b; Dabašinskienė & Krivickaitė-Leišienė, 2019).

MAIN has been used with different populations of children (mono- and multilingual, typically developing, and impaired) and adults in a range of different cultures and countries (e.g., Bohnacker, 2016; Gagarina, 2016; Kapalkova et al., 2016; Kunnari et al., 2016; Tsimpli et al., 2016). MAIN contains four different picture tasks that can be used for elicitations of telling and retelling. The studies conducted in Lithuanian mainly used the *Baby Birds* story to elicit narratives from children and have so far only employed the telling mode.

This paper gives a brief description of the Lithuanian language, then shortly describes the main principles of the adaptation of MAIN to Lithuanian and presents the Lithuanian studies that used MAIN for narrative analysis of monolingual and bilingual children and children with language disorders in preschool and early school age.

2 A brief description of the Lithuanian language

Lithuanian is the state language of the Republic of Lithuania. Lithuania has 2.6 million inhabitants, and the majority speak Lithuanian; the two biggest minority groups are Russian- and Polish-speaking communities. Since 2004, when Lithuania joined the EU, many Lithuanians have emigrated and formed diasporas in various European countries.

Lithuanian together with Latvian form the Baltic branch of the Indo-European language family. Lithuanian is considered one of the most conservative living Indo-European languages, morphologically rich and highly inflected; thus, the analysis of Lithuanian grammar structures is an important area of interest for linguists. Below we briefly sketch the Lithuanian morphological system.

Lithuanian nouns are inflected for gender (feminine and masculine), number (singular and plural), and case (nominative, genitive, dative, accusative, instrumental, locative, vocative). There are 12 different declension types of the noun. Adjectives agree with the noun in gender, number and case (*graž-us* ‘nice-MS-SG-NOM’, *or-as* ‘weather’-MS-SG-NOM’). Some adjectives are inflected for comparative and superlative degrees (*ger-as* ‘good’, *ger-esn-is* ‘better’, *ger-iaus-ias* ‘the best’) and can have a definite form (*geras-is* ‘the good one’). A few

of them function as nouns (*greit-a* 'fast' – *greit-oji* 'ambulance'). Pronouns have the grammatical categories of gender, number and case. Lithuanian is a pro-drop language; personal pronouns are frequently omitted in the spoken language. Adjectival pronouns agree with nouns in gender, case and number (*šit-a* 'this-FM-SG-NOM', *mergait-ė* 'girl-FM-SG-NOM') and can have a definite form. Numerals are grouped into cardinal and ordinal. Ordinal numerals function like adjectives and are inflected for number, gender and case (*penkt-as* 'the fifth-MSs-SG-NOM', *autobus-as* 'bus-MS-SG-NOM'). Lithuanian verbs are inflected for person (1st, 2nd, 3rd), number (singular, plural), tense (present, past simple, past frequentative, future) and mood (indicative, subjunctive, imperative). In addition, Lithuanian verbs have non-finite forms (infinitive, active and passive participle, half-participle and gerund). The category of aspect in Lithuanian is still debated (Holvoet, 2014). However, traditional grammatical descriptions consider it a lexical rather than morphological category. Lithuanian has many different types of adverbs that are usually formed from adjectives or verbs; some of them are inflected for degrees of comparison. Prepositions are used with genitive, accusative and instrumental cases of nouns.

As for the derivational morphology of Lithuanian, complex words are mainly formed by employing derivation and composition, the former being much more productive than the latter (Kamandulytė-Merfeldienė et al., 2021). Among the means of derivation, suffixal derivatives are the most typical. In contrast, prefixal and circumfixal (prefixal-suffixal) derivatives, as well as conversions (inflectional changes), are much rarer in the word-formation system of Lithuanian (Stundžia, 2016). In the nominal word-formation system, suffixal derivatives are much more frequent than prefixal ones. In verbal derivation, however, prefixal derivation prevails. In inflectable derived words, suffixes and prefixes, being the main derivation formants, are accompanied by inflections that are usually different from the inflectional paradigm of the base words and, thus, serve as a secondary means of derivation, e.g., *rank-a* 'arm' → *rank-ov-ė* 'sleeve' (Stundžia, 2016, see also Kamandulytė-Merfeldienė et al., 2021).

The word order in Lithuanian is fairly flexible. It signifies "the functional (theme-rheme) sentence perspective and, to a much lesser degree, the syntactic relations between sentence constituents" (Ambrazas et al., 1997, p. 690). The position of the lexical item in the sentence can change because its syntactic function is shown by its grammatical form (Ramonienė et al., 2019). Thus, word order can be variable and structurally fixed. Variable word order shows different syntactic patterns depending on the information structure and the communicative function of the sentence; expressive and stylistic factors also play an important role (Ambrazas et al., 1997, p. 690). The neutral pattern of word order in Lithuanian is SVO; for example, it is common to place the subject initially followed by the predicate with the object (Ramonienė et al., 2019, p. 239). Structurally fixed word order applies mostly to the placement of prepositions, the interrogative particle, negation and attributive clauses (Ambrazas et al., 1997, p. 691).

Studies on narrative production, in most cases, investigate the story structure (referred to as 'story grammar' or 'macrostructure') and language (or 'microstructure') of the narrative. In Lithuania, the research using MAIN chiefly concentrates on microstructural features of the narrative due to the language characteristics mentioned above. The next section will briefly present the process of adapting MAIN to Lithuanian.

3 Adapting MAIN to Lithuanian

The Multilingual Assessment Instrument for Narratives (MAIN) was translated and adapted to Lithuanian by Ineta Dabašinskienė and Ingrida Balčiūnienė. This process consisted of two phases[1] (1st version in 2012, 2nd version in 2020). The scholars followed the guidelines prepared by Gagarina et al. (2012, 2015, 2019). The first phase of MAIN adaptation included the adaptation of the MAIN instrument during the COST Action IS0804 Language Impairment in a Multilingual Society: Linguistic Patterns and the Road to Assessment (2009-2013) mentioned above. A revised version of MAIN was released in 2019 (Gagarina et al., 2019) and included some changes and clarifications in the instruction part. Thus, minor revision and adaptation were also needed for other languages. The revised version served as a base for the final version of the Lithuanian MAIN, which was prepared in 2020 by Ineta Dabašinskienė.

Like all MAIN language versions, the Lithuanian MAIN consists of four parallel stories (*Cat*, *Dog*, *Baby Birds*, *Baby Goats*). Each story is a carefully designed six-picture sequence based on the theoretical model of multidimensional story organisation (Gagarina et al., 2012, 2019). When the MAIN pictures were developed, the depicted objects and characters were carefully chosen and designed for a variety of cross-cultural environments and piloted in different countries (Bohnacker & Gagarina, 2020), including Lithuania. Thus, the MAIN picture sequences did not require any major re-evaluation or cultural adaptation for Lithuanian. The characters and contexts in the four MAIN picture sets/stories were familiar to children and did not show any difficulties in comprehension. The most significant contribution of the first attempts to adapt and pilot MAIN is related to Balčiūnienė's postdoctoral research (2013).

Following the instructions of the colleagues responsible for the MAIN adaptation to different languages, we have tried to stay as close as possible to the English version; however, due to linguistic peculiarities, especially its morphological and syntactic structures, the Lithuanian version of MAIN is not a direct translation of the English instrument. If the straightforward translation of the stories was not possible, some phrases were substituted with expressions more suitable, natural, and logical for the Lithuanian language. For example, changes have been made when there was a need to consider word order or other syntactic or morpho-syntactic relations. Terms like 'little birds' and 'baby goats' were changed into diminutives (*paukščiuk-ai* 'birds-DIM', *ož-iukai* 'goat-DIM'), some verbs with prefixes (*iš-skrid-o / nu-skrid-o* 'flew away-PREF-PAST-3', *pa-mat-ė* 'saw-PREF-PAST-3) and/or other derivational affixes were used (*nu-si-vij-o* 'chased away-PREF-REF-PAST-3'), and more conjugations of verbs were employed.

The next section gives an overview of results from the studies conducted with the Lithuanian MAIN.

[1] The first Lithuanian version of MAIN was developed in 2012. The methodology was translated and adapted into Lithuanian by Ingrida Balčiūnienė and Ineta Dabašinskienė. The second version was revised by Ineta Dabašinskienė in 2020, following the revised MAIN (Gagarina et al., 2019).

4 Studies on Lithuanian narratives using MAIN

The adaptation of MAIN and the general awareness of the narrative as an ecological tool (Botting, 2002) for evaluating the language have led to a growing number of publications in the field of the acquisition of Lithuanian. Thus, the three subsections will shortly provide the information on the studies conducted with different populations, first, starting with Lithuanian-speaking monolingual children and adults (Section 4.1), followed by bilingual children (Section 4.2), and finishing with the group of children with developmental language disorder (Section 4.3).

4.1 Lithuanian as L1

The first study on MAIN narrative analysis in Lithuanian as L1 was conducted by Balčiūnienė (2013). Her research focused on the main linguistic features, i.e., microstructure of oral narratives by Lithuanian-speaking children and adults. The analysis was based on the data of 240 typically-developing monolingual Lithuanian participants divided into 12 age groups in order to obtain as detailed as possible age-related results: 1) 4–5 years; 2) 5–6 years; 3) 7–9 years; 4) 10–12 years; 5) 13–15 years; 6) 16–19 years; 7) 20–29 years; 8) 30–39 years; 9) 40–49 years; 10) 50–59 years; 11) 60–69 years; and 12) > 69 years. All participants were asked to tell the *Baby Birds* story. The study investigated a number of linguistic features such as general productivity, lexical diversity, and syntactic complexity. The results, regarding the age effect, are not unexpected, and demonstrated that the mean length of utterance (MLU), the total number of words, the type/token ratio (TTR) and syntactic complexity increased with the age. The main findings showed that although children at age four can already create simple narratives, this ability is only fully mastered at the school age or even later, at the age of twenty (Balčiūnienė, 2013), and it is undoubtedly related to the impact of formal education, life experiences and the development of specific cognitive functions (logic, planning, concentration). The findings on the syntactic complexity, lexical diversity, and general productivity of the narratives have illustrated the main features of the Lithuanian narrative microstructure, characteristic of the typically developing language. Although statistical methods were not applied and we do not know if results are statistically significant, this study has served as a basis for further research, including narrative abilities in bilingual and language-impaired children.

4.2 Lithuanian as L1 and L2 in bilingual children

The first study that analysed both macro- and microstructural characteristics of Lithuanian as a heritage language was conducted by Balčiūnienė and Dabašinskienė (2019). Typically-developing (TD) sequential bilingual (Lithuanian L1/English L2; n=12) and monolingual Lithuanian children (n=12) (mean age 74 months) were asked to tell the *Baby Birds* story. The bilingual children were born in the UK and were exposed to Lithuanian mostly at home as both parents were speakers of Lithuanian. The examined macrostructural characteristics were story structure, structural complexity, and internal state terms. The parameters were scored following Gagarina et al.'s (2012, 2015) guidelines. Macrostructural measures did not show any

significant statistical differences between the groups: monolingual and bilingual children demonstrated similar results in using *story structure* (SS) elements, and *structural complexity* (SC) did not reveal any significant difference between the groups either. Thus, our hypothesis that bilinguals with schooling experience would outperform monolinguals in macrostructural measures was not confirmed. This prediction was based on Berman's (1988) findings that preschoolers show poorer development than early-school-age children. However, although our subjects had different schooling experiences (the bilingual children have already attended primary school for 2–3 years, while the monolinguals have only been to kindergarten), they are of the same age. Slightly better (but statistically not significant) results for bilingual children suggest that future research with a larger sample of subjects is needed. The microstructure displayed statistically significant differences between the groups regarding general productivity and lexical diversity. The bilinguals performed better for general productivity, but lexical diversity was higher in the group of monolingual children; thus, the results are not straightforward. The parameters of the cohesion, *number of horizontal links* (TNHL) and the *number of temporal/ causal links* (TNTCL), need a more detailed explanation, as a significantly higher number of horizontal links was found in the narratives produced by the bilinguals. However, this finding alone does not indicate better cohesion. The monolinguals were able to combine different cohesive devices (labelling, describing events, horizontal links, and temporal/causal links), while the bilingual group preferred horizontal links only. A dominance of horizontal links in the production of the bilingual group might indicate that other cohesive devices are less-elaborated.

The second study of bilingual Lithuanian-speaking children (Dabašinskienė & Krivickaitė-Leišienė, 2019) primarily aimed to examine the general linguistic performance (microstructure) in Lithuanian using the narrative elicitation (telling) procedure (of the *Baby Birds* story) in a group of Russian-Lithuanian sequential bilingual 6-year-old children (n=25). These children lived in Kaunas and Vilnius and attended a state kindergarten for minority children with Russian as the main language of instruction; additionally, they had 3–4 hours weekly of Lithuanian classes. A control group of monolingual Lithuanian preschool children was tested as well. The results displayed statistically significant differences between the bilingual and monolingual groups for two measures, general productivity and syntactic complexity. The analysis of the story length in words showed that the bilinguals produced much shorter stories than the monolinguals. The bilinguals performed significantly poorer in general productivity and syntactic complexity, but the lexical diversity was on the same level as in the group of monolingual children. Erroneous utterances were found in both groups; however, as it was expected, the bilingual group made significantly more errors than the monolingual one. The paper emphasised the influence of the linguistic environment, as the bilingual children were from two cities: Vilnius (the capital of the country with more linguistic diversity) and Kaunas (the second largest Lithuanian city, more linguistically homogeneous). The error analysis showed that children from Vilnius made more errors, but statistically this result was not significant. No cases were registered for code-switching in bilingual children from Kaunas, whereas children from Vilnius used code-switching. The results of the study suggest that

Russian-speaking children have more possibilities to advance their Lithuanian skills, thus demonstrating better results in an environment that stimulates talking Lithuanian.

Both these studies looked at the narrative production in Lithuanian from different perspectives, i.e., Lithuanian as a heritage language and as L2; thus, the results are hardly comparable. However, both studies emphasise the importance of the linguistic environment and the role of the schooling experience.

4.3 Lithuanian children with a developmental language disorder

The first, still unpublished, study conducted by Kamandulytė-Merfeldienė and Balčiūnienė examined the lexical diversity and grammatical errors in the narratives of 5–6-year-old TD monolingual Lithuanian children (n=80) and 5–6-year-old monolingual Lithuanian children with Developmental Language Disorder (DLD) (n=80). The DLD children's performance was characterised not only by a higher number of semantic errors but also by the lack of compensatory strategies: while the TD children usually replaced an unknown word with a semantically-related word, the DLD children were not able to find a proper word and used pronouns, adverbs, or fillers instead. This insufficient compensatory strategy led to numerous communicative failures. The study also revealed a large number of grammatical errors in the narratives of the DLD children. They struggled not only with complex grammatical structures, but also with quite simple ones, for example, substituting the nominative inflection *-as* with *-is*, e.g., *kat-is* instead of *katin-as* 'cat-MS-SG-NOM', or confusing the inflectional paradigms of frequent verbs, e.g., *grįž-e* instead of *griž-o* 'come back-PAST-3'. The preliminary results suggest that the DLD children, due to limited meta-linguistic and linguistic competence, produce much more erroneous utterances and demonstrate a more restricted vocabulary.

5 Future directions

The discussed studies on Lithuanian narrative production using the MAIN instrument have collected and analysed narratives from around 350 participants. The collected data can be used for more detailed and broader studies encompassing additional parameters and using diverse approaches for the interpretation of the results. The already obtained results have revealed interesting tendencies and it would be important to analyse them further from a language specific (typological), but also from a global story structure perspective. We hope that future studies will collect more data on diverse groups of Lithuanian-speaking children and that they will apply statistical methods for more reliable results. Moreover, we will continue to explore different MAIN picture sets, the telling and retelling modes and additional languages, especially in multilingual settings and populations.

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The Adaptation of MAIN to Luganda

Celestino Oriikiriza[*]

Makerere University, Uganda

Sigal Uziel

Achva Academic College, Israel

The present paper reports on how the MAIN instrument was adapted to Luganda, a Bantu language spoken in Uganda, for assessing the narrative skills of Luganda-speaking children. The adaptation involved recommendations for cultural adaptations of the picture sets and translation of the manual into Luganda. The paper also describes the first (pilot) study using the Luganda MAIN, and how the bureaucratic, linguistic, and technical challenges along the way were dealt with. In addition, preliminary results are reported and discussed, followed by some conclusions and suggestions for future research.

1 Introduction

The present paper reports on the process of cultural and linguistic adaptation of the Multilingual Assessment Instrument for Narratives (LITMUS MAIN,[1] hereafter MAIN) to Luganda, a Bantu language widely spoken in Uganda. We describe the adaptation of the materials to the African setting (picture sets, instruction sheet, manual), and the administration of MAIN to Luganda-speaking children in Kampala, Uganda, pointing out the challenges involved in carrying out this endeavor. Finally, some preliminary results are reported and discussed.

The Multilingual Assessment for Narratives (MAIN) is a picture-based instrument developed by a group of international researchers to assess the production and comprehension of narratives by children of diverse linguistic and cultural backgrounds, i.e., multilingual, bilingual, and monolingual children (Gagarina et al., 2015). It has standardized procedures for narrative elicitation and scoring. MAIN has mainly been used to elicit oral narratives, but it

[*] Corresponding author: oriikiriza@gmail.com

[1] LITMUS stands for Language Impairment Testing in Multilingual Settings. It is a battery of tests developed as a result of *COST Action IS0804 Language Impairment in a Multilingual Society: Linguistic Patterns and the Road to Assessment* (see https://main.leibniz-zas.de/).

could also be used to test written production and comprehension of narratives (e.g., Pesco & Bird, 2016; Lindgren, 2019; Amora et al., 2020; Mieszkowska et al., 2020; Kapalková et al., 2020; Klop & Visser, 2020; Kan et al., 2020; Otwinowska et al., 2022). The materials consist of four picture-based stories (Baby Goats, Baby Birds, Cat, and Dog), each in the form of a sequence of six pictures intended to elicit narratives and to assess both their production and comprehension. The four stories were controlled for parallelism in their macrostructure and microstructure (story level and sentence level, respectively). At the macrostructural level, the stories were controlled for story components (A), episodic structure (B), number of tokens of internal state terms (C), and comprehension of goals and internal states of protagonists (D). At the microstructural level, the stories were controlled for aspects like the number of coordinating and subordinating constructions, overall internal state terms, and the number of direct speech sentences. The stories can be used with children aged 3 years and up. Each MAIN picture set can be used in one of three modes: Model story, Telling and Retelling. In all three modes, the story selection process is identical, i.e., the researcher asks the child to select one of three presented envelopes containing a set of six pictures. In addition, in all three modes the telling of the story is followed by asking the child comprehension questions about the story. However, in the Model story, the child gets to see the whole sequence of the picture set, and then the researcher tells him/her the story unfolding two pictures at a time. In the Retelling mode, the researcher tells the story to the child, and then the child tells the story to the researcher, and in the Telling mode, the child is asked to look at two pictures at a time and tell the story himself/herself.

A major advantage of the instrument is that it is theoretically based and designed to be culturally and socio-linguistically neutral and appropriate for speakers of different languages, social, and cultural backgrounds. It is designed to be sensitive to different speaker populations, and to enable testing multilingual speakers on each of their languages in a comparable way. To date, the MAIN manual has been adapted to more than 90 different languages, e.g., Afrikaans, Arabic, Greek, Hindi, Mandarin, Russian, Turkish, and Urdu (Gagarina & Lindgren (eds.), 2020), and the scoring procedure was revised to include more examples (Gagarina, Klop et al., 2019). In addition, MAIN has been used with numerous typologically different languages (e.g., Arabic, Danish, Bulgarian, Estonian, Greek, Catalan, Gondi, and Hindi; see references in Gagarina & Lindgren (eds.), 2020). This increases its cross-linguistic reliability and makes its scoring results available for comparison. Given the few assessment tools adapted to Ugandan languages to date, the endeavor of adapting MAIN to Luganda fulfills a true need for language and culture appropriate tools for clinical assessment as well as for research on narrative production by different groups of child and adult Luganda speakers.

2 Typological characteristics of Luganda

Luganda (or Ganda, as recorded in some documentation of the language), is a member of the Niger-Congo group of languages belonging to the narrow Bantu language cluster.[2] Luganda is

[2] Based on alphanumerical classification of Bantu languages, whereby letter-word combinations are used to represent the geographical zone in which each language is spoken, Luganda has been classified as E15 (Guthrie,

widely spoken in the central part of Uganda by many people, most of whom are native speakers of a language called Baganda. In the last housing and population census of Uganda, the population of Baganda was 5.56 million people (UBOS, 2016). Luganda is the major language in Kampala city, the Capital of Uganda, and in neighboring areas. Most urban dwellers in Kampala acquire Luganda as it is used in trade and business. The dialects of Luganda include Lusese, Lukooki, Lunabuddu, Luvuma, and the standard variety spoken in central Buganda. It is the standard variety that is used in formal communication, trade, business, and school. According to Lewis (2009) and Nakayiza (2013) some of the dialects of Luganda like Lukooki and Lusese are almost dying out. Luganda is closely related to several other Ugandan languages, including Runyoro and Runyankore (Kamoga & Stevick, 1968, p. iii) in its linguistic structure. For example, these languages have a similar noun class system whereby nouns fall in different classes and each class has an agreement marker inflected on the verb, adjective, and pronoun in a sentence. Luganda has a writing system, which like other languages in Uganda, is based on the Roman alphabet (Nsimbi & Chesswas, 1958). However, in some respects, its spelling system differs from that of other languages related to it, such as Runyankore-Rukiga and Runyoro-Rutooro. This is due to differences in speech sounds that occur in one language and not the other. For example, in Luganda we find both /l/ and /r/. These two sounds occur between specific vowels, so that /l/ occurs between the vowels [o…o] and [a…a] as in *ensolo* 'animals', *omuwala* 'girl', while /r/ manifests itself between [e…e] in words like *ekikere* 'frog', *emmere* 'food'. Likewise, as shown in Ndoleriire (2020), Runyoro-Rutooro /l/ and /r/ occur in specific environments: /l/ occurs between [u…i], [i…i], and [o…u], e.g., in the words *ihuli* 'egg', *omusiri* 'garden', *olubabi* 'leaf', whereas /r/ is conditioned by the environment [e...a], e.g., *okusera* 'to night-dance'. In contrast, in Runyankore-Rukiga we find only /r/ in all the environments, except in loan words such as *lita* 'litre' and among some speakers of Rukiga.

Luganda is well-documented. It has grammar books, dictionaries, and other reference texts, (e.g., Crabtree, 1923; Matovu, 1990). Most of its basic vocabulary has been recorded down in dictionaries (Kiingi, 2007; Murphy, 1972). It is taught in school from lower primary level to university level and used in the media. In the past, the Baganda had a tradition of storytelling. Nowadays, some of these stories are included in the school curriculum, for instance, in teaching religious studies. For example, many Ugandans who were in primary school in Uganda in the early 80s would still remember the story of *Nkyalira Walumbe e Ttanda* 'I Visit the Spirit of Death in Ttanda' (this is a myth about death). The story was included in the school teaching materials alongside other common traditional stories in Uganda and was used in lessons of religious studies to teach about the origin of death.

Luganda is a Subject-Verb-Object (SVO) language, as illustrated in examples (1) and (2) below.[3] Its lexical categories include nouns, verbs, adjectives, and adverbs which form the

1969, 1971), J15 (Bastin et al., 1999), and J10 (Ethnologue, 1996). Luganda is also classified as ISO 639-3 lug under the ISO code classification (Eberhard et al., 2022). For more detailed information, see references cited here.

[3] The following abbreviations are used in the examples: APPL - Applicative; AUG - Augment; HAB - Habitual aspect; IND - Indicative; INF - Infinitive (default, non-inflected, unmarked base form); NCL - Noun class (the number following NCL is the noun class number); Person - 1, 2, 3; PASS - Passive voice; PL - Plural; PST - Past tense; PFV - Perfective aspect; OBJ - Object pronoun; SG - Singular; SBJ - Subject pronoun.

content words, as well as pronouns, prepositions, conjunctions, among others, which form the function words. Pronouns may be free or bound. Examples of the latter case can be seen in (3) and (4) below. Chesswas (2002) describes the words that mark place, locative, and prepositions in Luganda. Some of the prepositions are: *e* 'in, from', for example in *e Mmengo* 'Mmengo' (name of a place); *Nva e Kampala* 'I come from Kampala'. Others are: *ku* 'in, at, to, on, about' and *mu* 'in, inside'. For conjunctions, Sternefeld (2015) lists the following conjunctions in Luganda: *ne* 'and', *ate* 'and, in addition', *era* 'and, in addition, also, too', *naye* 'but', *kyokka* 'just', *kubanga* 'because', and *n'olwekyo* 'therefore'. Others are: *nga* 'when, meanwhile, as though, like', *buli lwe* 'whenever', and *wabula* 'while, but'.

(1) *Omwana* *alidde* *omuyembe.*
o-mu-ana a-li-il-e o-mu-yembe
AUG-NCL1-child SBJ.3SG- eat-PFV-IND AUG-NCL3-mango
'The child has eaten a mango'

(2) *Abakyala* *bafumba* *emmere.*
a-ba-kyala ba-Ø-fumb-a e-m-mere
AUG-NCL2-woman SBJ.3PL-HAB-cook-IND AUG-NCL9-food
'The women cook food'

(3) *Omulimi* *yaleeta* *amazzi.*
o-mu-limi y-a-leet-a a-ma-zzi
AUG-NCL1-farmer SBJ.3SG-PST-bring-IND AUG-NCL5-water
'The farmer brought water'

Morphologically, Luganda is an agglutinative language with a noun class system of 23 classes denoting semantic notions like Human/non-human, Object, Plant, Property, etc. The noun class is denoted by a class marker which is a prefix attached to the root.[4] In example (3), *omulimi* 'farmer' is the subject of the sentence. The subject is marked on the verb by the 3rd person singular subject pronoun as a prefix. The subject and the subject pronoun prefix on the verb agree in number and noun class. Both must be in the same noun class, in this case class 1, whereby the noun class marker (*-mu-*) for the noun and the subject pronoun (*a-*) correspond grammatically. Due to assimilation, the sound /a/ changes to /y/ in speech form.

In Luganda, the marking of inflectional categories on the verb includes tense, aspect, number, voice, modality, and agreement (in number and person). Modality is marked by modal verbs. This is illustrated in (4), where there are two verbs: an auxiliary *ayinza* 'may' which is a modal verb and the main verb *okuleeta* 'to bring'. Aspect marking (imperfective, perfective) is illustrated in examples (5)–(6), respectively, and voice marking (active, passive) is illustrated in examples (7)–(8), respectively:

[4] A noun in Bantu languages is made up of three components: an [augment] + [class prefix] + [root], e.g., the noun *o-mu-ntu* (person) consists of *o-* [augment], *mu-* [class prefix,3SG], and *-ntu* ['person', root]. Katamba (2003) notes that nouns in Bantu languages are categorized into 'classes' based on the prefixes they take.

(4) *Omulimi* *ayinza* *okuleeta*
o-mu-limi a-yinz-a o-ku-leet-a
AUG-NCL1-farmer SBJ.3SG-may-IND AUG-INF-bring-IND
amazzi.
a-ma-zzi
AUG-NCL5-water
'The farmer may bring water'

(5) *Omulimi* *atuleetera* *amazzi.*
o-mu-limi a-tu-leet-er-a a-ma-zzi
AUG-NCL1-farmer SBJ.3SG-OBJ.1PL-bring-APPL-IND AUG-NCL5-water
'The farmer is bringing us water'

(6) *Omulimi* *yali*
o-mu-limi y-a-li
AUG-NCL1-farmer SBJ.3SG-PST-be
atuleetedde *amazzi.*
a-tu-leet-er-i-e a-ma-zzi
SBJ.3SG-OBJ.1PL-bring-APPL-PFV-IND AUG-NCL5-water
'The farmer had brought us water'

The verb in sentence (5) denotes the imperfective progressive aspect, which in Luganda is not overtly marked by affixation. In contrast, the verb in (6) has a modified ending to denote the perfective aspect. Voice is illustrated in examples (7)–(8). In (7) the applicative suffix is used, and (8) both the applicative and the passive suffixes co-occur.

(7) *Omulimi* *yatuleetera*
o-mu-limi y-a-tu-leet-er-a
AUG-NCL1-farmer SBJ.3SG-PST-OBJ.1PL-bring-APPL-IND
ensujju.
e-n-sujju
AUG-NCL9-pumpkin
'The farmer brought for us a pumpkin'

(8) *Ensujju* *etuleeteddwa*
e-n-sujju e-tu-leet-er-w-a
AUG-NCL9-pumpkin SBJ.3SG-OBJ.1PL-bring-APPL-PASS-IND
omulimi.
o-mu-limi
AUG-NCL1-farmer
'The pumpkin has been brought for us by the farmer'

Luganda sentence types include: simple sentences (made up of one verb), e.g., *Abayizi balina ebitabo* 'The students have books', compound sentences (clauses joined by a coordinating conjunction), e.g., *Abayizi nabalaba era balina ebitabo* 'I saw the students and they had books', *Abayizi nabalaba naye tebalina ebitabo* 'I saw the students but they did not have books', and

complex sentences (consisting of one simple sentence and one or more subordinate clauses), e.g., *Omusomesa amanyi nti abayizi balina ebitabo* 'The teacher knows that the students have books'. Subordinate clauses are introduced by complementizers. The common form is the word *nti* 'that' as in *Awo Wango n'avaayo n'agamba nti yali taliiko kabi* 'Then, Mr. Leopard came out and said that he had no blame.'

3 The process of adapting MAIN to Luganda

Adaptation of any research instrument to diverse language populations is not an easy task. This is especially true when the languages involved are understudied. However, this process is essential before the instrument can be used to elicit data in new temporal, cultural or linguistic settings. A careful adaptation process can ensure that the results based on that instrument accurately reflect what they are supposed to measure, and at the same time reflect the unique characteristics of the language community studied. In this section, we describe the process and the steps required for the adaptation of MAIN to Luganda.

3.1 Adapting the MAIN picture sets to African culture and setting

The adaptation of MAIN to Luganda required both cultural and linguistic modifications. We first describe the cultural modifications proposed for the picture sequences, and then proceed to the linguistic adaptations of the manual and instruction sheet.

The modifications that were proposed for the picture sequence relate to animal and human figures as well as to objects and food and are intended to reflect more closely the African setting and to appeal to an African audience. Some of these were implemented by designing picture sets that were more appropriate to the African context. These include replacing the fox with a wolf (in the Baby Goats story) and using a dark-skinned boy with black curly hair (in the Cat story). In several African traditional narratives, a wolf is portrayed as a dangerous animal. Foxes are rarer than wolves in African tradition, so replacing the fox with a wolf in the picture set would make it more familiar to the children. In the telling task, some of the children actually used the words 'wolf' or 'leopard' to name the fox. Goats are reared in most African communities. Like any other domestic animal, they drink water in flooded areas or ponds when they are taken out for grazing. It is also common for the animals' kids or calves to drown in such water whereupon they are rescued by their mothers. They can be attacked by other animals, especially wolves. Thus, using goat figures in the pictures was suitable for the African audience.

Proposed changes which have not been implemented yet include the following: portraying the animals in the picture sets more like African domestic animals, e.g., most African dogs have straight-shaped jaws, V-shaped ears, and long tails, and often have a little bell around the neck. The domestic cat could be replaced by a wild cat which normally has black patches and likes hiding behind bushes to hoodwink unsuspecting people. In fact, children are fond of chasing it on sight, so they would recognize it easily in a picture. In the Cat story pictures, the boy goes fishing using a rod with a roller. However, a common fishing method in Africa is for people to sit by the riverbank or by the lake and lower the hook in the water, pulling it out as they feel that it is heavy due to the weight of a fish. Thus, adaptation of the fishing rod to the

African setting would require drawing a rod with a hook without a roller, instead of the boy's current fishing rod which has a roller for pulling the string. Also, the bucket may be replaced by a basket as the container where the fish is kept. In addition, children could be drawn holding a locally made ball. The balloons seen in the Dog story pictures can be found in some African modern homes as well as in nursery schools, but nursery school children, unlike children who do not attend school, do not always know their native language. They use mostly English or a mixture of English and a native language. A local object which could replace the balloon is a catapult that children use to shoot at birds in the trees. The houses in the background (of the pictures) could also be replaced by African shacks or traditional African houses. Regarding food, in the Dog story pictures, it is better to use meat (beef) instead of sausages. In some modern African homes, people eat sausages, but there is no local word for it.

Given that not all required changes to the picture sets were implemented by the time MAIN was administered in Uganda, and due to technical problems (e.g., electricity breakdown, lack of internet connection) which prevented downloading and printing new sets of pictures, the researchers had to use the standard pictures (see the picture set in Figure 1 below), which they already had available. That said, the standard pictures are generally understandable, and they do appeal to the children since they are in cartoon form. Thus, using them did not seem to affect the production of the narratives in any significant way, since all the participating children were school children, who were exposed to outside cultural environments through their school curriculum. The outcome of keeping the standard pictures would have been different with children that are not in school, because they would probably not quite recognize some objects (e.g., sausage) in the pictures.

Next, we describe the process of adapting the MAIN manual to Luganda. The main reason for translating the manual into Luganda is to ensure that the researchers using it comprehend the procedure and follow the administration and scoring instructions accurately and successfully. In line with that, the MAIN manual, including the story scripts, were translated from English into Luganda by two researchers over a period of several weeks. The translators produced three drafts before coming up with an acceptable version. Several features in the manual were familiar, which made it easy for the translators, e.g., terms used in formal education like *instructions, assessment, guide, materials, picture, story,* among others, and elements in the home environment of the children. Moreover, the narratives had the same structure as the ones that the children hear in their home as they are growing up, so that formulaic narrative markers like 'long ago, there was … or long ago, there lived …' were easy to understand and express in Luganda. However, despite the ease of adapting some aspects of the MAIN manual to Luganda, there were challenges to overcome.

3.2 Challenges in the adaptation process

Several challenges were encountered in the translation of the MAIN manual and its instruction sheet from English to Luganda, due to typological differences between the two languages and the lack of one-to-one lexical correspondence between them. For instance, some key concepts like *model story* and *retelling* as well as linguistic terms used in relation to internal states, e.g., *mental verbs*, do not have lexical equivalents in Luganda. The translators overcame the

challenge either by identifying a close equivalent or by using a whole sentence to convey the meaning. Thus, the terms above were translated as follows: model story to *okunyumya* 'conversation', retelling to *okuddamu ebyogeddwa* 'repeating what is said', internal state terms to *ebigambo by'embeera y'omunda* 'words expressing feelings', linguistic verbs to *ebikolwa by'ekinnannimi* 'saying verbs', *ebikolwa by'okugamba* 'action verbs', and *ebikolwa by'okutegeeza* 'verbs of thinking', and mental verbs to *ebikorwa by'okulowooza* 'verbs of thought'. A similar case was reported by Amora et al. (2020), who acknowledged the lack of one-to-one lexical equivalence between English and Tagalog. They also used the closest translations and descriptive forms. For example, they wrote about the translation of the word *boy* that "… in Tagalog, there is no direct one-word translation for the word 'boy'. ... [but the] closest translation is the gender-neutral *bata* 'child'. Adding the gender and connecting the words together with a linker (e.g., *batang lalaki* for 'boy') gives the same meaning as its English counterpart" (Amora et al., 2020, p. 225).

Understanding some of the instructions related to the preparation of the picture sets and translating them into Luganda was also challenging, since some of the instructions were ambiguous or opaque. For instance, the pictures in Figure 1 were supposed to be cut widthwise through the wider gap in-between. But the instruction was "Cut out the two rows of pictures" which was difficult to translate into Luganda. Also, the instruction "Paste the pictures together into a 6-picture strip as illustrated below and fold them twice (pic 1, pic 2, fold, pic 3, pic 4, fold, pic 5, pic 6)." was difficult to follow, since two separate instructions were put together (pasting and folding the picture strips), the folding direction was not clarified in the instructions, and figuring it out from the drawing was not straightforward. Yet, the pictures should have been folded in such a way that when the child opens them, s/he sees only two pictures at a time out of the six pictures on the strip. To resolve this, the Luganda instructions require separating the upper from the lower set of pictures by cutting along the wide gap between them. Then, placing the lower strip on the shaded part on the top-right of the upper strip and pasting them together at that point; finally, folding the picture set after the second and fourth picture margins to allow opening two pictures at a time for the child to see.

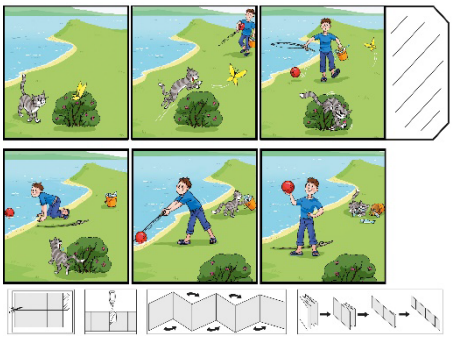

Figure 1: Preparation of the picture set (Gagarina, Klop et al., 2019, p. 3).

4 Administration of MAIN to Luganda-speaking children – a pilot study

Between 2018 and 2020, the authors of this article administered MAIN to 24 Luganda-speaking children aged 7 to 12. This piloting of MAIN focused only on narrative production. Therefore, we used only the Telling mode. In this section, we describe the research team (4.1), the participants (4.2), the procedure of data collection (4.3), the challenges encountered (4.4), data processing, i.e., transcription, translation, and scoring (4.5), and some preliminary results (4.6).

4.1 The research team

The research team included a PI and a co-PI. The PI who is the first author of this paper, is a lecturer at Makerere University in Kampala and a speaker of Luganda as an L2. The PI was responsible for coordinating the various aspects of the project, training two Luganda-speaking research assistants to collect narratives in three of the four schools and to transcribe them, and recruiting three contact persons in local schools, coordinating the transcription of the narratives, and translating the manual from English to Luganda. The PI also took care of the administrative requirements including getting the necessary documents to carry out the study, composing the parental consent form, coordinating the testing dates, and obtaining the participants lists from the schools. The co-PI, the second author, is a lecturer at a college in Israel, and does not speak the local languages, but has hands-on experience with the Ugandan education system and with coordinating MAIN administration in some other languages (e.g., Telugu, Palestinian Arabic). The co-PI was responsible for contact with the MAIN team at ZAS and for supervising the administration of MAIN in the largest school. Apart from the PI and co-PI, the research team included the two L1 Luganda-speaking research assistants mentioned above, two translators who were L1 speakers of Luganda, one of whom translated the MAIN manual from English into Luganda, and the other translated the narratives from Luganda into English, an L1 Luganda-speaking language editor who edited the transcriptions, and a second scorer, a faculty member at Makerere Linguistics department, who was an L2 speaker of Luganda.

4.2 Participants

The participants were recruited from four public schools located in different administrative areas (Divisions) of Kampala, the capital city of Uganda: Two schools in the Kawempe Division (Schools A and B), one in the Kampala Central Division (School C) and one school in the Nansana Division (School D).[5] The first two schools were in different parishes of the Kawempe Division, namely Ttula and Mulago, respectively. The school contact persons identified children suitable for the study. The children were Luganda-English bilinguals, as it is almost impossible to find monolingual Luganda speakers who attend school. Initially, 34 children of the appropriate age were identified and tested (School A, N=24; School B, N=2; School C, N=2; School D, N=6). However, only 24 were eventually included in the study. Most children came from one school (A, N=19) and a few others came from the three other schools

[5] The term *Division* is used by Ugandan authorities to refer to a small administrative unit in urban areas. In Uganda, several Divisions constitute a town or a city.

(B, N=1; C, N=1; D, N=3). The 24 participants were 13 males and 11 females, aged 7;4–12;10 (*M*=9;6). The children aged 7–9 years were in the 2nd–4th grades, respectively, except for one 9-year-old child who was in the 5th grade. The children aged 10–12 years were in the 5th–7th grade, except for one 10-year-old child who was in the 4th grade. These exceptions may be due to late start or to repeating a class, which is not uncommon in Ugandan schools. Several children (N=10) were excluded from the study for various reasons: Objection of the school administration, low proficiency in Luganda, absence from school during the testing day, COVID-19 limitations, incompatibility with the research requirements (e.g., wrong narration language – English, Runyankore, Acholi; failure of parents to complete and sign the consent form), or technical reasons like problems with the recording equipment, quality of the recording, wrong testing procedure, or missing personal details (see section 4.4). Information about the number of participants by age and gender is given in Table 1.

Table 1: Participants' information

Age group	Age range	N	Male	Female
7–9 years (M_{age}=8;9)	7;4	1	1	0
	8;0–8;9	7	5	2
	9;0–9;8	10	4	6
Total 7–9 years		18	10	8
10–12 years (M_{age}=10;5)	10;1–10;10	3	1	2
	11;7	1	0	1
	12;0–12;10	2	2	0
Total 10–12 years		6	3	3
Total (M_{age}=9;6)		**24**	**13**	**11**

4.3 Data collection

Data collection was carried out at the schools, in a relatively quiet place set for this purpose, either in the classroom or outside, in the compound of the school. Children were sent by their teacher in turn according to a pre-compiled list and were administered the test individually. Most children were assessed by the PI and co-PI, and a few by research assistants. The children were first asked their name and age (to be verified against the information filled in by their parents on the consent form). Then they were explained in English, what they were requested to do. The explanation was given in English since it is the language commonly used in Ugandan schools, and to ensure uniformity in the administration conditions, since not all the members of the research team who administered the test were native speakers of Luganda. Following the

instructions, the children were shown the first set of pictures and were asked to tell the story in Luganda. If they started telling the story in English, they were asked to start over in Luganda. There were few isolated instances of children who asked for clarifications in English, perhaps since they were tested in a school environment where everyone was intuitively using English. This may imply that in the future, similar interviews should be conducted in a natural setting of the target language.

Each child told two stories based on two different picture sequences. The four sets of pictures (Baby Birds, Baby Goats, Cat, and Dog) were used to elicit the narratives. Children were initially asked to pick one picture set at random. After telling the story based on the first set of pictures, each child was asked to pick a second set of pictures and tell the story based on it. The pairs of picture sets were not equally counterbalanced, so that 12 children told the Baby Birds/Dog stories, 10 children told the Cat/Baby Goats stories, 2 children told the Cat/Dog stories, and no child told the Baby Birds/Cat stories, the Baby Birds/Baby Goats stories, or Dog/Baby Goats. Most of the narratives were audio recorded on a Samsung smartphone using the phone recording app. The rest of the narratives were recorded using a Spark mobile phone. Once the task was completed, the child received a balloon as a small token of appreciation.

The distribution of narratives by story and age is displayed in Table 2. The Baby Birds story was narrated by 12 children, the Baby Goats story was narrated by 10, the Cat story was narrated by 12, and Dog was narrated by 14 children. In sum, 48 narratives were collected. Most of the narratives were produced by 8;0 and 9;0-year-old children (N=14 and N=20, respectively). As noted in section 4.2, a different number of narratives was collected in each school. The bulk of the narratives were gathered in one school in the Kawempe Division (A, N=19), and another small number of narratives was gathered in the three other schools – one in the Kawempe Division, one in Kampala Central and one in Nansana (B, N=1; C, N=1; D, N=3). In addition, the final number of narratives collected for each picture set was uneven. This was partly due to the number of children who participated in the study in each school, and partly to the number of children who showed interest in telling a particular story.

Table 2: Distribution of narratives by age group and story

Story	**7–9 years**	**10–12 years**	**Total by story**
Baby Birds	8	4	12
Baby Goats	9	1	10
Cat	10	2	12
Dog	9	5	14
Total by age group	**36**	**12**	**48**

4.4 Challenges during the data collection process

The administration of the MAIN instrument to Luganda-speaking children required dealing with numerous challenges like objections of school principals and parents, children's absence,

difficulties with contact persons in the schools, and an array of technical problems. These are described in more detail here: First, several principals objected to the administration of the test in their schools for fear of negative evaluation of the school based on the test results. In these cases, the research team had to look for other schools to perform the study. Other Principals expressed objection to administering the test in their school without a letter of permission from the Ministry of Education. The need to obtain such letters required dealing with bureaucracy and would have delayed the administration of the test in the schools. Secondly, some parents refused to sign the informed consent form, were late in returning it or failed to return it altogether. Consequently, this led the researchers to look for more children, which was also a time-consuming task. Thirdly, some of the children who were supposed to participate in the study were absent from school on the day the administration of the tests took place, due to sickness or holiday. In some other cases, the research assistants interviewed children who did not belong to the required age range. Fourthly, the researchers had difficulties to find a contact person in one of the schools, or in other cases, the contact person did not follow the time schedule, which resulted in delays in data collection. In a few other cases the researchers failed to find research assistants. Finally, there were some technical problems, such as limitations in storage and transfer of the audio recordings, unclear or incomplete recordings, or use of inappropriate testing procedures. Therefore, some of the data collected had to be discarded.

4.5 Data processing: Transcription, translation, and scoring

The narratives were transcribed by a trained research assistant who was a native speaker of Luganda. Next, the transcriptions were verified by another research assistant against the recordings and were then translated from Luganda into English.

As the Luganda-speaking children were tested only in the Telling mode of MAIN, only the story structure (SS) and structural complexity (SC) parts of the MAIN scoring sheet were used to score the narrative macrostructure in production. The SS measure reflects the quantitative aspect of narrative structure, comprising the participants' combined score on the four sections of the production test (Max 17 points): the setting (Range: 0_{Min}–2_{Max} points) and three episodes (Range: 0_{Min}–5_{Max} points each). The SC measure reflects the qualitative aspect of the narrative, comprising the participants' score on different elements within each episode, i.e., Goal (G) - the objective of the protagonist's action, Attempt (A) - the protagonist's action itself, Outcome (O) - the (non)accomplishment of the action, and various sequences thereof. The comprehension questions which form part of the Telling mode were not asked during the piloting phase of the study due to time limitations (a future study thus needs to investigate Luganda-speaking children's narrative comprehension). Two members of the research team scored the narratives, the PI and another lecturer from the Linguistics department at Makerere University, both L2 speakers of Luganda. The scorers read each narrative together. Then, each scorer scored the story independently, and the two sets of scores were compared. In case of disagreement, the scores were discussed until agreement was reached.

The scorers faced some challenges during the scoring procedure as, initially, they found it difficult to score some of the categories. For example, in the setting, the part that concerns the place where the story takes place (e.g., *by a lake/ at the riverbank/ in a meadow)* is not

commonly used in the setting of African narratives). African stories seldom begin with sentences like 'long ago, near a mountain'. Normally, you find a pattern like 'Long ago, there was Mr. Hare and Mr. Leopard. They lived together harmoniously …'. In contrast, the part of the setting that concerns the time of the story (*once upon a time/ one day/ long ago…*) was quite familiar to them, based on their background of African stories. They had heard such expressions both around the campfire and in the primary school. That said, the scoring of the setting worked well because the pictures portrayed the presence of the characters in a place, e.g., the goats were grazing near a lake. The rest of the categories became easy to score as the scorers got more experience following the scoring procedure in the MAIN guidelines.

4.6 Preliminary results

In this section, we report preliminary results based on the analysis of the narrative data elicited using the Luganda MAIN. We first focus on findings pertaining to story structure (SS). Our data comprises 48 narratives produced by 24 Luganda-speaking children between ages 7;4-12;10 (*M* = 9;6). The group's overall mean score on SS was *M*=8.04 (*SD*=2.64; Range: 1_{Min}–13_{Max}), which was lower than the middle score (8.5) of the total score (Max=17), suggesting that most children scored below 50% of the maximum number of points on SS as a whole.

Table 3 displays the mean, standard deviation, and score range by age group. The findings reveal that the mean scores of the 7–9-year-olds (*M*=7.56, *SD*=2.68) was lower than that of the 10–12-year-olds (*M*=9.50, *SD*=1.98), suggesting that the children's scores increased with age. An independent t-test showed a significant difference between the age groups on narrative scores, $t(46)=-2.31$, $p=.026$.

Table 3: Mean scores on SS (Max = 17) by age group for N = 48 participants.

Age group	N	Mean	SD	Median	Min	Max
7–9 years	36	7.56	2.68	8	1	12
10–12 years	12	9.50	1.98	9	7	13

Table 4 displays the children's mean, standard deviation, and score range by story. The findings suggest that the children scored highest on the Baby Goats story (*M*=8.9) and lowest on the Cat story (*M*<8), with the Baby Birds and the Dog stories in the middle, with a mean of around 8.1. Further analysis of a larger number of narratives elicited with each story is required to determine whether these differences are statistically significant, and whether the picture sequence used is indeed a factor that affects production scores. It should be noted, though, that similar findings have been reported in Gagarina, Bohnacker & Lindgren's (2019) study on adults and in Lindgren's longitudinal study from age 4 to 7 (2019), whereby participants showed higher scores on the Baby Goats story as compared with the Baby Birds story.

Table 4: Mean scores on SS (Max = 17) by story type for N = 48 participants

Story	N	Mean	SD	Min	Max
Baby Birds	12	8.00	2.45	2	12
Baby Goats	10	8.90	3.45	1	13
Cat	12	7.17	2.62	3	10
Dog	14	8.21	2.19	5	12

Moving on to a more refined examination of the SS scores, Tables 5 and 6 display the mean and standard deviation for each of the three different episodes by age group (Table 5) and story type (Table 6). The maximum score on the setting is 2, and the maximum score on each one of the episodes is 5. Table 5 shows that the group of 7–9-year-olds scored consistently below 50% of the maximum number of points, i.e., 2.5, on each episode but above 50% on the setting, whereas the group of 10–12-year-olds scored around 50% or slightly above on each episode and on the setting. Thus, the participants' overall score on each episode was relatively low, but appeared to improve slightly with age.

Table 5: Mean and standard deviation of SS by age group and episode

	Setting (Max = 2)		Episode 1 (Max = 5)		Episode 2 (Max = 5)		Episode 3 (Max = 5)	
Age group	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
7–9 years	1.28	0.944	2.19	1.091	2.00	1.219	2.08	1.052
10–12 years	1.75	0.622	2.58	1.311	2.42	1.084	2.75	1.055

Table 6: Mean and standard deviation of SS by story type and episode

	Setting (Max = 2)		Episode 1 (Max = 5)		Episode 2 (Max = 5)		Episode 3 (Max = 5)	
Story	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Baby Birds	1.83	0.577	1.67	1.30	1.83	0.835	2.67	1.07
Baby Goats	1.60	0.843	2.60	0.966	2.40	1.43	2.30	1.25
Cat	1.00	0.953	2.50	1.31	2.25	1.22	1.42	0.996
Dog	1.21	0.975	2.43	0.852	2.50	0.855	2.07	1.21

The findings of Table 6 indicate that the children scored around 2.5 or below on each episode, but above 1 in the setting, regardless of story type (Setting: *M*=1, Range: 1_{Min}–2_{Max}; Episodes 1–3: *M*=2.5, Range 0_{Min}–5_{Max}).

Figure 2 displays findings relating to the structural complexity of the narratives by age group and sequence type, i.e., story complexity (SC). The categories included in the scoring of each episode were the Attempt (A), the Goal (G) and the Outcome (O) of each episode (see section 4.5), and combinations of these categories, presented here by level of complexity: no sequence (no-S), AO, GA/GO and GAO. We followed the procedure in Gagarina, Bohnacker et al. (2019) in calculating the proportion of each episode type out of the total number of episodes in the sample. Akin to Gagarina, Bohnacker et al.'s (2019) methodology, we combined "sequences with A/O only" "with "sequences with G only" into one category, the no sequence (no-S), as both do not represent sequences but rather single components. The total number of episodes for the 7–9-year-olds was 108 (36x3), and the total number of episodes of the 10–12-year-olds was 36 (12x3).

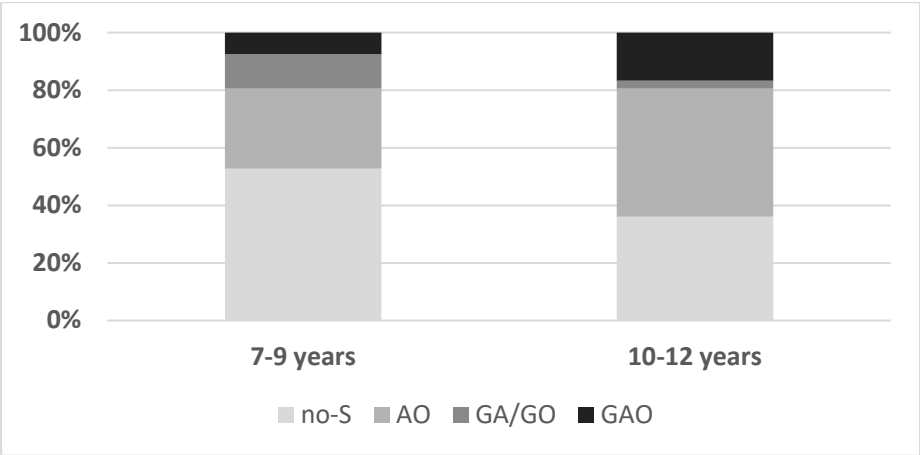

Figure 2: Structural complexity by age group and sequence type

The following findings emerge from the structural complexity analysis: The two groups of children used the no-S and the AO sequences considerably more than the GA/GO and GAO sequences. This finding, in and of itself points to a relatively basic and simplistic narrative structure. However, while the 7–9-year-olds used the no-S sequence most frequently (53.00%, 57/108) followed by the AO sequence (27.78%, 30/108), the 10–12-year-olds used the AO sequence most frequently (44.44%, 16/36) followed by the no-S sequence (36.11%, 13/36). Since AO is a sequence, whereas, by definition, no-S is not, the increased use of the former by the older children suggests that complexity may be increasing with age. This claim is further supported by the production of GA/GO versus GAO sequences by the two groups: While the younger group produced GA/GO sequences (12%, 13/108) around four times as often than the older group (2.78%, 1/36), the older group produced the most complex sequence, GAO, twice the percentage of the younger group ((16.67%, 6/36, vs. 7.41%, 8/108).[6] In sum, findings

[6] The makeup of the "no-S" category included the following components: G, A, O, and no component at all. The component most prominent in this category in both age groups was O (N=23, 40.3%, 7–9-year-olds; N=5, 38.4%,

suggest that although the narratives produced by children in both groups contain mainly simple episodes, the older group shows a somewhat higher complexity of narrative structure.

Finally, the quantitative findings described in Tables 5–6 and in Figure 2 are illustrated with an example. Consider the following *Cat* narrative produced by an 8-year-old child:

CHI17 [8;0, Cat]

Lwali lumu nga ppusi *eri awo, ngeraba akamuli ku muti.*
One day, when the cat was there it noticed a flower on a certain tree.

Ngeraba ekiwojjolo ku muti nebuuka ekikwate,
The cat saw a butterfly on a tree and jumped to catch it.

negwa mu maggwa negagifumita.
Unfortunately, it landed on thorns which pricked it.

Omu omulenzi ngabadde agenze okuggyayo ebyennyanja, na omupiira gwe negugwa,
One boy who had gone to get fish from water had his ball slide/fall

negugenda mu mazzi.
into this water.

Kaakati nalekawo ebyennyanja ppusi nebiraba.
He then abandoned his fish and the cat saw them.

Negenda wali eri nebirya nga omupiira ali muguggyayo,
It moved closer to the fish and ate them while the boy was rescuing/removing his ball from the water.

omulenzi, omupiira namala oguggyayo, nga ppusi eridde ebyennyanja bye.
Luckily, he got the ball, but the cat had already eaten his fish.

The total score of the child in the production task was below 50% of the maximum score, yet several components of the narrative macrostructure (setting, goal, attempt, outcome) can be identified in the text. The child scored high on items describing actions, e.g., expression that the cat jumped to catch the butterfly, the cat moved closer to the fish, the cat ate the fish, etc. In contrast, items relating to feelings or emotional reactions were mostly missing from the narrative, e.g., there was no mention of the boy's feeling when getting the ball or the satisfaction of the cat after eating the fish (with the exception of the internal state of seeing (e.g., *the cat saw them*). Instead, sentential adverbs were used to express the narrator's outlook on the situation, e.g., *unfortunately*, *luckily*. Similarly, with the exception of Episode 1, goals were missing, e.g., the child did not express what the boy wanted to do to get his ball back, or what the cat planned or wanted to do to get the fish. Rather, the description of the events focused on the actions taken by each of the characters and the outcomes of these actions. It should be noted,

10–12-year-olds); A was high in the production of the younger children but least frequently used by the older ones (N=18, 31.5% vs. N=2, 13.3%, respectively); both groups had the same number of G only (N=3), which constituted a considerably higher percentage of the episodes in the production of the 10–12-year-olds (5% vs. 23%); finally, the two groups differed in the absolute number of episodes which contained neither A, O or G (N 13, 7–9-year-olds; N=3, 10–12-year-olds). However, considering the percentages of these episodes out of the total number of episodes per group reveals that their proportion was quite similar (22.8%, 7–9-year-olds; 23%, 10–12-year-olds).

however, that these observations are based only on one narrative, and should be compared to the rest of the narratives to detect general linguistic patterns and cultural characteristics.

5 Conclusion

The present paper focused on how the MAIN instrument was adapted to Luganda for assessing the narrative skills of Luganda-speaking children. In the paper, MAIN was introduced along with the relevant typological and linguistic characteristics of Luganda. In addition, recommendations were made for the adaptation of the picture sets to the African culture and setting (i.e., animal and human figures, objects and food) to make them more appealing to an African audience. The latter sections of the paper described the adaptation process, administration of MAIN to elicit Luganda narratives, processing of the recorded narratives and a preliminary analysis of the narrative macrostructure, i.e., analyses of SS by age, story type and episode, and SC by episode and age. As noted, the adaptation process did not go without challenges. These included bureaucratic, linguistic, and technical challenges (e.g., lack of cooperation from some of the schools, difficulties in getting parents to sign ICFs, lack of translational equivalents of some words in the manual, difficulties encountered by researchers in understanding manual instructions, missing information in the consent forms, difficulty in obtaining the adapted picture sequences, etc.).

The preliminary analysis of the results provides a glimpse into the macrostructural characteristics of the narratives produced by Luganda-speaking children. The findings should be further analyzed in the light of narrative macrostructure and microstructure to provide more insights regarding these aspects. For example, at the macrostructural level, the use of internal state terms should be examined, and at the microstructural level, relevant aspects may include clause structure, noun phrase types, as well as the use of lexical elements, like connectors, verbs, and adverbs. The findings should also be compared to the African storytelling traditions to detect language and culture specific patterns compared to universal trends.

To conclude, the Luganda version of MAIN will prove useful in research on narrative production by children and adults from different age, gender, and socioeconomic status (SES) groups, as well as for clinical assessment. MAIN results can serve several purposes: (1) as a scientific basis for recommendations on how to develop children's narrative skills and narrative-based teaching programs in the local languages; (2) as a reference for teaching language aspects at language programs in academic institutions in Uganda; (3) cases of repetitions, hesitations and vocabulary errors evident in the narratives can shed light on how language is processed among children; (4) the results can form the basis for evidence-based intervention programs for remedying language communication challenges. In sum, Luganda MAIN is one of the very few existing assessment tools adapted to a native Ugandan language and piloted. Its complete implementation holds promise both for academic research and for clinical practices.

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The adaptation of MAIN to Maltese

Daniela Gatt[*]

University of Malta, Malta

Raquel Borg Cutajar

University of Malta, Malta

This paper describes the process of adapting the Multilingual Assessment Instrument for Narratives (MAIN) to Maltese. The language-learning context in Malta is introduced, followed by an overview of the main typological characteristics of Maltese. A detailed account of the adaptation process is then given. Theoretical and clinical applications of the Maltese adaptation of the MAIN are discussed and current research projects in which the Maltese adaptation is being employed are briefly described.

1 Introduction

Children's narratives are known to generate rich, quasi-naturalistic information on their oral language abilities (Paradis et al., 2020), making narrative tasks a valuable resource in clinical assessment. The Multilingual Assessment Instrument for Narratives (MAIN; Gagarina et al., 2012, 2019), developed within COST Action IS0804 as part of the Language Impairment Testing in Multilingual Settings (LITMUS) test battery (Armon-Lotem, de Jong, & Meir, 2015), is designed to evaluate narrative comprehension and production in children learning one or more languages. The four picture-based narrative tasks of the MAIN (*Cat*, *Dog*, *Baby Birds*, *Baby Goats*) have been purposely designed in parallel to ensure comparability. Each task addresses story production through telling and retelling, as well as narrative comprehension. Assessment of narrative production taps into microstructural, or linguistic, aspects and the macrostructural features of story structure and organisation (Gagarina et al., 2016). A set of questions pertaining to each story addresses comprehension of narrative macrostructure.

The MAIN stories and protocols have been adapted to a growing number of languages, enabling cross-linguistic insight into children's narrative abilities. Moreover, the availability of several language versions allows MAIN to determine the bilingual/multilingual narrative skills of children exposed to more than one language. The latter feature is especially relevant to the identification of language difficulties in children receiving bilingual/multilingual exposure,

[*] Corresponding author: daniela.gatt@um.edu.mt

which is often hampered by the limited availability of tests in each of the child's input languages (e.g., Bedore & Peña, 2008). These theoretical and clinical applications of the MAIN indicated that a Maltese adaptation would be a useful addition to the numerous language versions already available. This paper introduces the language-learning context in Malta and outlines the main typological characteristics of the Maltese language. It then describes the development, application and use of the Maltese adaptation of the MAIN.

2 Malta's language-learning context

Maltese is the national language of Malta, spoken by the vast majority of its inhabitants (Vella, 2013), with English holding official language status alongside Maltese and Maltese Sign Language. Bilingualism in Maltese and English is nationwide, albeit to varying degrees. The relative prominence of English stems from Malta's past as a British colony between 1800 and 1964 (Paggio & Gatt, 2018). Maltese tends to be the dominant spoken language, but English is often preferred in the written medium (Pace & Borg, 2017). English is sometimes employed as a home language with Maltese children, although most young children are predominantly exposed to Maltese at home. In these instances, children's acquisition of the second language (L2), Maltese or English respectively, is expected to take place largely through schooling (Camilleri, 1995; Gatt, Grech, & Dodd, 2016; Gatt & Dodd, 2019). Early exposure to relatively balanced exposure to Maltese and English in the home is also a possibility, encouraging children to develop as simultaneous bilinguals.

Since Maltese and English exist in close proximity, language contact phenomena are widely employed. It is virtually impossible, therefore, for Maltese children exposed to one language in the home to develop monolingually (Vella, 2013). Several loan words having Romance and English origins have been integrated into Maltese out of necessity (Hoberman, 2007), as in the case of the words *pizza*, *stiker* 'sticker' and *trakk* 'truck', which compensate for Maltese lexical gaps. Many English words are also preferred over available Maltese equivalents (Brincat, 2011), functioning as core borrowings. In spoken Maltese, for example, *bicycle*, *meeting* and *toys* are widely preferred over *rota*, *laqgħa* and *ġugarelli*, the respective Maltese equivalents. This language choice pattern is accompanied by code-switching, which contrasts with borrowing in being more sporadic and idiosyncratic in nature. Moreover, adults addressing their children in Maltese tend to employ additional core borrowings from English which are unlikely in adult-to-adult language use. Since it is specific to adult-child dyads, this language contact mechanism has been referred to as 'functional borrowing' (see Gatt, Grech, & Dodd, 2016).

Although bilingualism is the norm in Malta, recent years have seen a substantial increase in linguistic diversity through a continuous influx of asylum seekers and economic migrants (Cefai et al., 2019). Suffice to say, in the scholastic year 2018/19, foreign children enrolled in pre-primary, primary and secondary education amounted to 12% of the total student population, representing a 1% increase over the previous year's figures (National Statistics Office, Malta, 2021). The languages most commonly spoken by these children, based on their reported nationality, were Italian and Arabic, followed by Bulgarian and Serbian. For foreign children,

societal bilingualism in Maltese and English would be expected to add a multilingual dimension to skills developing, or already available, in a minority home language, although related empirical evidence is still scarce (see Baschiera & Caruana, 2020; Pirchio et al., 2020).

3 A brief typology of the Maltese language

Maltese is a Semitic language. It is typologically closest to North African vernacular Arabic, from which it has inherited the greater part of its verbal morphology (Hoberman, 2007). A millennium of close contact with Sicilian and Italian explains its substantial Romance influences (Comrie, 2009), while English borrowings have been in use over the last sixty years or so (Hoberman, 2007). Mifsud (1995) described the Maltese language as consisting of a basic Semitic layer on which Romance elements and, subsequently, English borrowings, were superimposed. The Semitic framework is itself influenced by these Romance and English borrowings, making Maltese "unique and different from Arabic and other Semitic languages" (Hoberman, 2007: 258).

In their comprehensive description of the Maltese language, Borg and Azzopardi-Alexander (1997) highlight its rich inflectional and derivational morphology, its optional subject forms by virtue of the person, number and gender inflections coded on the verb and its free word order. Also noteworthy are the free and suffixed pronouns that are marked for first, second and third person, with singular and plural distinctions also coded for each person. Pronominal suffixes attach to nouns, marking possession, to verbs, where they mark direct and indirect objects, and to prepositions as their objects (Borg, & Azzopardi-Alexander, 1997; Hoberman, 2007). Table 1 lists the subject pronouns, all of which are free, and exemplifies enclitic pronouns that are suffixed to nouns, verbs and prepositions. An enclitic pronoun on the main verb enables topicalisation of the grammatical object (Fabri & Borg, 2002). Thus, by virtue of the free word order of Maltese, emphasis may be placed on an object by preposing it to the beginning of the sentence, as in *Ħalli**hom** lill-psiepes,* literally translated as 'Leave **them**, the baby birds' ('Leave the baby birds alone').

These features of Maltese make it typologically very different from English, the language in which the MAIN was originally constructed. It was imperative, therefore, that the Maltese adaptation embraced the structural properties of the language to ensure authenticity in the context of Maltese narrative assessment. In the next section, the adaptation process is described.

Table 1: Free and enclitic pronouns in Maltese

	Free subject pronouns		**Enclitic pronouns (with examples)**	
	Singular	Plural	Singular	Plural
1st person	*jien(-a)* 'I'	*aħna* 'we'	*-i* *oħt-i* 'my sister' *-ja* *idej-ja* 'my hands' *-ni* *agħti-ni* 'give me'	*-na* *oħt-na* 'our sister' *idej-na* 'our hands' *agħti-na* 'give us'
2nd person	*int(-i)* 'you'	*intom* 'you'	*-ek* *xagħr-ek* 'your hair' *-ok* *oħt-ok* 'your sister' *-k* *jagħti-k* '(he) gives you'	*-kom* *xagħr-kom* 'your hair' *oħt-kom* 'your sister' *jagħti-kom* '(he) gives you'
3rd person masc.	*hu(-wa)* 'he'	*huma* 'they'	*-u* *oħt-u* 'his sister' *-h* *bi-h* 'with him' *-hu* *agħti-hu-lu** 'give it to him'	*-hom* *oħt-hom* 'their sister' *bi-hom* 'with them' *agħti-hom-lu** 'give them to him'
3rd person fem.	*hi(-ja)* 'she'	*huma* 'they'	*-ha* *oħt-ha* 'her sister' *bi-ha* 'with her' *-hie* *agħti-hie-lha*** 'give it to her'	*-hom* *oħt-hom* 'their sister' *bi-hom* 'with them' *agħti-hom-lha*** 'give them to her'

Note. * *-lu* is the enclitic indirect object pronoun 'to him', **-*lha* is the enclitic indirect object pronoun 'to her'.

4 Adapting MAIN to Maltese

The adaptation of the MAIN story scripts to Maltese closely followed Bohnacker and Gagarina's (2019) guidelines for adapting the Revised version of the MAIN in English to other languages. The process started with a preliminary translation of the English version that was carried out by the first author and checked by a professional proofreader of Maltese. This translation retained the sequence and number of Goals, Attempts, Outcomes, as well as Initiating Events and Reactions represented by the Internal States of the story characters. Native Maltese vocabulary was given priority over core borrowings from English, so that the story script adaptations were formulated in unified Maltese. For example, although use of the lexical items *baby birds* and *baby goats* would have been somewhat acceptable in an oral rendition of the story scripts with children, the respective Maltese equivalents *psiepes* and *gidien* were preferred.

Next, six bilingual speech-language pathologists who had pursued post-qualification research and/or had more than 10 years of professional experience were invited to view the four picture sequences and read the respective story scripts. They were asked to provide feedback

on the suitability of the scripts for children aged 3-10 years, specifically in terms of naturalness of structures employed to convey the narrative content represented in the pictures. The original English version was not provided, so that the clinicians would not be inclined to focus on how closely the Maltese translation approximated the original. Most comments concerned the lexical-semantic level, exploring options for representing the words *bush*, *mummy bird, baby birds, mummy goat* and *baby goats* without relying on the English versions as core English borrowings. The selected Maltese lexical forms were those having the least ambiguous semantic conceptualisations. The resulting adaptation of each story script was used as a basis for translating the respective scoring sheets. The four story scripts and scoring sheets were then piloted with four Maltese-English bilingual children aged 6;0 – 6;11 years. Each child was also administered the narrative comprehension questions for the four stories. For each child, the *Cat* and *Dog* stories were employed to elicit story retelling while spontaneous telling was addressed through the *Baby Birds* and *Baby Goats* stories. In the latter story, *lupu*, the Maltese equivalent of *wolf*, was preferred over *volpi* 'fox' by three children. Since wolves and foxes are not found in Malta, the children's performance suggested that exposure through books and visual media may have been more inclined towards wolves than foxes. However, this trend has also been observed in MAIN narratives collected in contexts where both animals are found. This prompted the design of a 'wolf version' of the *Baby Goats* picture sequence, story script and scoring sheet that has been made available in the MAIN resource base. In view of the Maltese children's performance during piloting, this alternative picture sequence was preferred and the relevant lexical substitutions were made to the story script and scoring sheet.

The updated story scripts were then reviewed by a Maltese linguist, who was also given access to the original English version, the accompanying picture stimuli and Bohnacker and Gagarina's (2019) guidelines. At this stage, the primary focus was on ensuring that the microstructural requirements were met. To enhance the idiomatic use of Maltese, cumbersome syntactic constructions were minimised, as in the case of the subordinator *li* 'that, who' being employed twice in a single sentence with only one or two elements separating both occurrences. One of the two subordinating clauses was therefore converted to a main clause, in each of the four stories. Table 2 lists the four instances where a main clause was considered more idiomatic than a subordinating clause in the Maltese story scripts. Topicalisation of the grammatical object, including attachment of a co-referential pronominal clitic to the main verb (see Fabri & Borg, 2002), was also introduced to enhance syntactic authenticity. The Maltese main, subordinating and coordinating clauses, as well as the instances of direct speech, were then mapped onto their English counterparts to ensure a close correspondence between the numerical values of the two language versions. Word counts for both language versions were also compared and decisions on how to quantify the Maltese story tokens were taken following consultation with the Maltese linguist. A distinction was made between word components having lexical-semantic meaning, such as enclitic pronouns, and those having solely grammatical meaning, as in the case of person, number and gender markers on verbs, as well as gender and number markers on adjectives. For the purpose of comparison to English token counts, only words and word components having semantic meaning were tallied. The Maltese versions of the *Baby Birds*, *Baby Goats* and *Dog* stories have slightly lower token counts than

their English counterparts (*Baby Birds*: 170 in Maltese, 178 in English; *Baby Goats*: 175 in Maltese, 185 in English; *Dog*: 172 in Maltese, 174 in English). Here, the optional subject forms characteristic of Maltese contributed to the numerical discrepancies. The *Cat* story adaptation to Maltese counts 181 tokens (178 in English).

Table 2: Sample of clauses in the Maltese adaptation of the MAIN, as mapped onto the English story scripts, including all Maltese main clauses (MC) replacing subordinating clauses (SC) in the English version

English clauses		**Maltese**		
		Clauses*		**Variations from English version**
	Baby Birds		Il-Psiepes	
MC	One day there was a mother bird…	MC	Darba waħda kien hemm għasfura…	--
SC	…who saw that…	MC	…u rat li… '…and (she) saw that…'	'u rat li…'(MC) preferred over 'li rat li...' (SC)
	Baby Goats		Il-Gidien	
MC	One day there was a mother goat…	MC	Darba waħda kien hemm mogħża...	--
SC	…who saw that…	MC	...u rat li.... '…and (she) saw that...'	'u rat li…'(MC) preferred over 'li rat li...' (SC)
	Cat		Il-Qattus	
MC	Meanwhile, a cheerful boy was coming back from fishing…	MC	Sadanittant, tifel ferrieħi kien ġej lura mis-sajd…	--
SC	…with a bucket and a ball in his hands.	MC	…u f'idejh kellu barmil u ballun. '… and in his hands he had a bucket and a ball.'	'u f'idejh kellu barmil u ballun' (MC) preferred over 'b'barmil u ballun f'idejh' (SC)
	Dog		Il-Kelb	
MC	Meanwhile, a cheerful boy was coming back from shopping…	MC	Sadanittant, tifel ferrieħi kien ġej lura mix-xirja	--
SC	…with a bag and a balloon in his hands.	SC	…u f'idejh kellu basket u bużżieqa. '… and in his hands he had a bag and a balloon.'	'u f'idejh kellu basket u bużżieqa' (MC) preferred over 'b'basket u bużżieqa f'idejh' (SC)

Note. *English translations are given in square brackets where Maltese clauses differ from the English version.

The revised story scripts were then back-translated by a Maltese bilingual holding a postgraduate degree in the English language. The back-translation was purposely non-literal, in order to accomodate the grammatical and lexical adaptations made to the Maltese version. There was general agreement between the original and back-translated English versions, with differences in wording being minor and retaining the macrostructural properties of the original. For example, in the English back-translation of the *Baby Birds* story, the Attempt-Goal sequence in Episode 1 was worded as *She flew from her nest to find food for them* whereas, in the original script, the same sequence is presented more explicitly as *She flew away because*

she wanted to find food for them. The direct Maltese translation of the latter, *Taret 'il bogħod għax riedet issibilhom l-ikel,* was preferred as it approximated the original word counts of the individual macrostructural elements more closely. Fine-tuning of the vocabulary items employed for some Internal State Terms (ISTs) was also required for a consensus to be reached. A case in point is the IST as Initiating Event *playful* in Episode 1 of the *Cat* and *Dog* stories, which was translated as *iħobb jilgħab* (literally '(he) likes to play'), since a suitable Maltese lexical equivalent was not identified. This was back-translated as *who was playing*, drawing attention to the fact that the Maltese translation did not employ the same word class as the original English story scripts. *Iħobb jilgħab* was therefore substituted by the IST *vivaċi* 'lively.' Not all lexical differences could be accommodated. In particular, semantic nuances conveyed by specific lexical items in the English story scripts could not be conveyed faithfully in Maltese, either because the latter's lexical range did not allow this or because limited usage of specific Maltese words led to them being relatively obscure. For instance, the action words *growled*, *meowed* and *cried* were all represented by the more generic lexical item *qal* '(he) said.' Moreover, Maltese idiomatic expressions were reconsidered in terms of their accessibility to younger children and eliminated in instances where they might have been too abstract or complex. For example, *ħaseb* '(he) thought' was preferred over *qal bejnu u bejn ruħu*, literally translated as '(he) said within himself and his soul' in being more semantically concrete. Final checking of the Maltese story scripts and score sheets was carried out by a Maltese bilingual holding a doctorate in Maltese translation, who also translated the remaining parts of the MAIN manual to Maltese.

5 Theoretical and clinical applications of the Maltese adaptation of the MAIN

The availability of a Maltese adaptation extends the MAIN's potential for cross-linguistic research. It also allows insight into the narrative skills of Maltese children acquiring Maltese as their L1 or L2. Besides, it enables the assessment of Maltese narrative abilities in language minority children having home languages other than Maltese and/or English. Maltese, like other understudied languages, merits more research attention than it has garnered to date, particularly in view of it being a non-Indo-European language (Kidd & Garcia, 2022). Given that Maltese monolingualism is highly unlikely (Vella, 2013), language assessment for Maltese children needs to consider that language knowledge is likely to be distributed across Maltese and English, necessitating evaluation of proficiency in both. Documenting Maltese narrative skills as a component of bilingual acquisition is highly relevant to establishing the extent of variation from the norm that counts as clinically significant. It also opens inroads into the study of language acquisition in normative bilingual contexts, a field which is notoriously under-researched, despite the theoretical potential it holds (Montanari & Nicoladis, 2018). The Maltese adaptation of the MAIN also enables the measurement of narrative skills in migrant children and adults living in Malta and learning Maltese as a foreign language, often as a third language (L3), since English is more likely to take on L2 status by virtue of it being a global language of communication. Documenting the learning of Maltese as a foreign language has potential to shed light on the dynamics of multilingual acquisition within a societal context of

stable bilingualism. It complements the testing of children's home language/s through the numerous MAIN language versions available, along with the assessment of English, thus serving both clinical and research purposes. Finally, the Maltese adaptation of the MAIN also represents a valuable addition to the limited clinical assessment base available for native and foreign speakers of Maltese. A bilingual Maltese-English story retelling task is already in use as part of the standardised Language Assessment for Maltese Children (LAMC, Grech, Franklin & Dodd, 2011). The Maltese adaptation of the MAIN enhances the viability of language assessment for children exposed to two or more languages in Malta, across a broader range of narrative skills.

An important strength of narrative tasks is that they enable the naturalistic elicitation of language contact phenomena, such as code-switching, typically produced in bilingual contexts (see Iluz-Cohen & Walters, 2012) for an investigation of codeswitching in children's English and Hebrew narratives). Since contact between Maltese and English in the Maltese context is widespread, it is unsurprising that the usage of English incorporates extensive code-switching and typological influence from Maltese, leading to use of the term 'Maltese English' (Krug & Sönning, 2018). Likewise, the Maltese language is characterised by substantial influences from English, particularly at the lexical and morphosyntactic levels (see Vella, 2013 for a discussion). Given these language contact dynamics, the Maltese adaptation is a resource which allows insight on the current mixing patterns between Maltese and English, adding to the limited evidence currently available on language contact phenomena elicited through bilingual narrative tasks (e.g. Iluz-Cohen & Walters, 2012). Then, the comparability of MAIN narratives across language versions opens up exciting possibilities for comparison of language mixing phenomena in different input language pairs, or even combinations of more than two input languages, which share a common language or otherwise.

6 Current research involving the Maltese MAIN

Data collection that uses the Maltese MAIN adaptation to document narrative skills in individuals having Maltese as L1, L2 and L3 has only commenced recently. It has so far involved children living in Malta in two lines of research, one involving participants having Maltese nationality and the other focusing on foreign children.

With Maltese-English bilingual children, MAIN data are currently being collected from typically-developing 3-6-year-olds having varying levels of proficiency in Maltese and English. Thus, use of the revised English version and its Maltese adaptation in parallel has enabled the assessment of narrative production and comprehension in both languages. The aim of this research is to document the narrative skills of children growing up in the bilingual context of Malta. Findings have clinical relevance, as they contribute towards establishing a standardised version of the Maltese adaptation, useful for the assessment of children with language impairments. These data also have theoretical importance. They shed light on narrative abilities in two languages that co-exist as official languages on a nationwide level, elucidating on the nature of bilingual narrative skill acquisition without the bias imposed by factors such as low socioeconomic status (SES), the latter typically associated with bilingualism in language

minority groups. This dataset also has the potential of extending cross-linguistic comparisons using MAIN data. Because of public health restrictions related to the COVID-19 pandemic, data collection has so far taken place in a virtual mode. The PowerPoint templates of the Hong Kong online pilot version (Hamdani et al., 2021) have been used with permission from the authors, with the scripts accompanying the slide shows modified to reflect the story scripts and comprehension questions of the Maltese adaptation of the MAIN. Data collection is still ongoing, with available data currently being transcribed and analysed.

Another project involves the Maltese adaptation employed as part of a test battery that evaluates the Maltese and English language skills of foreign children residing in Malta. For these children, aged between 3 and 6 years, both parents are foreign nationals and speak a home language which is neither English nor Maltese. These data may contribute towards a better understanding of multilingual development in societies that are intrinsically bilingual, providing a theoretically interesting viewpoint that differs from the predominantly monolingual contexts often documented in the literature. The Maltese adaptation of the *Dog* and *Cat* stories is being used alongside the original English version to elicit the participants' story retelling and narrative comprehension in both languages. Testing is scheduled at three time points over a twelve-month period, in order to document the developmental acquisition of both languages. Due to restrictions imposed by the COVID-19 pandemic, some of the children have participated in the study virtually, while others were able to participate in person. To maintain homogeneity in the data collected, Hamdani et al.'s (2021) PowerPoint version of the MAIN was used in both virtual and in-person testing. Data collection is almost complete and the available data are currently being coded and inputted.

7 Concluding remarks

Narrative tasks are highly relevant to the assessment of children developing monolingually, bilingually or even multilingually. By virtue of their contextualised nature, they can be elicited relatively easily across different languages. MAIN (Gagarina et al., 2012, 2019) is a versatile tool for evaluating the skills of children learning one or more languages. In bringing together several language versions of the same narrative assessment, it has increased opportunities for cross-linguistic investigations, bilingualism and multilingualism research as well as clinical assessment. The Maltese adaptation of MAIN is a valuable addition to this assessment toolkit. The data it generates can contribute towards answering theoretical questions related to linguistic universals in the acquisition of narrative comprehension and production skills in two or more languages. The Maltese version of MAIN can serve to elucidate the nature of bilingual and multilingual acquisition in a context where bilingualism is the norm. Last but not least, it facilitates clinical evaluation with children who are native or foreign learners of the Maltese language. Comprehensive assessment that spans all languages available to the child is now more of a reality than just an ambition.

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Adapting the Multilingual Assessment Instrument for Narratives to Tamil

Kannan Abinayaa

Sri Ramachandra Institute of Higher Education and Research, India

Lakshmi Venkatesh[*]

Sri Ramachandra Institute of Higher Education and Research, India

P Arul Nehru

Azim Premji University, India

Madhavi Gayathri Raman

The English and Foreign Languages University, India

This paper reports on the adaptation of the Multilingual Assessment Instrument for Narratives (MAIN) to Tamil. We first briefly provide an overview of the Tamil language and the Tamil population in the southern state of Tamil Nadu in India and then we describe in detail the multiple phases of the adaptation process including input from some pilot data from Tamil-speaking children.

1 Background

The Multilingual Assessment Instrument for Narratives (MAIN; Gagarina et al., 2012; 2015; 2019) is a tool designed and developed to assess narrative abilities in children from multilingual and multicultural backgrounds. It has been used to elicit and analyze children's comprehension and production of narratives in a large number of languages and various elicitation modes: telling, retelling and model story (e.g., Bohnacker, 2016; Kunnari et al., 2016; Lindgren, 2019; Madappa et al., 2020; Öztekin, 2019; Wehmeier, 2019). The tool's design allows for studying and comparing production of macrostructure and microstructure as well as comprehension of narratives in a bilingual's person languages. The story structure of the narratives, their structural

[*] Corresponding author: lakshmiv@sriramachandra.edu.in

complexity, use of internal state terms and microstructure aspects, can be studied by eliciting narratives in the different modes. Literal and inferential comprehension of narratives can be assessed using the comprehension questions provided in the tool. The four stories and their picture stimuli are carefully constructed to be culturally appropriate for the usage of the tool among a diverse population.

This paper describes the adaptation of MAIN to the Tamil language as spoken in India, a country that is home to 121 different languages, including 22 scheduled and 99 non-scheduled languages (Census of India, 2011). The scheduled languages are those included in the eighth schedule of the constitution of India which lists the official languages of the country. The People's Linguistic Survey of India (2011-2012), a nationwide survey of the living languages in the country, reported the existence of 780 spoken languages and 66 different scripts in India (Devy, 2018). In a population of 1.38 billion, there are approximately 250 million bilinguals and more than 85 million multilingual speakers speaking three or more languages. The multilingual context underscores the need for language specific tools for understanding typical development of language among children as well as clinical assessment of children suspected of language delays. Indeed, there have been a few focused efforts in the field of speech language pathology to develop tools for speech-language assessment in multiple languages (Chengappa, 2001). However, these have been restricted to development of word lists for assessment of speech production skills or the assessment of semantics and syntax among children in select languages. Tools to assess narrative skills in multiple languages are lacking. Narratives provide contextualized language samples from children. Hence tools to assess narratives are ecologically valid and less biased for the assessment of language among multilingual children than the standardized tests created for monolinguals. The adaptation of a tool such as MAIN is crucial for language assessment and can be useful for exploring narrative skills among children in a multilingual and linguistically diverse environment as seen in India.

1.1 MAIN in Indian Languages

MAIN has so far been adapted to 11 Indian languages: Bengali, Bagri, Gondi (Chimirala, 2020), Hindi (Madappa et al., 2020), Halbi (Chimirala, 2020), Kannada (Madappa et al., 2020), Konkani, Malayalam (Madappa et al., 2020), Odia, Telugu and Urdu (Hamdani et al., 2020). Marathi and Punjabi adaptations are currently in progress. The adapted Hindi (see Gurung, 2018; Madappa et al., 2020) and Kannada (see Madappa, 2018; Madappa et al., 2020) versions have been piloted with bilingual populations (Hindi-English and Kannada-English) and differences in narrative measures between the two languages Hindi and English, as well as between Kannada and English have been profiled (Gurung, 2018; Madappa, 2018; Madappa et al., 2020). Narratives elicited through the adapted versions have also identified children 'at risk' for Specific Language Impairment in both languages (Gurung, 2018; Madappa, 2018). The adaptations of MAIN into the Halbi and Gondi (Dantewada) languages for the Halbi and Gondi communities of India have been used to elicit and study narratives in the first and second languages of 54 children speaking Gondi-Hindi and Halbi-Hindi (Chimirala, 2020). The Hindi and Telugu versions of MAIN were used in a recent longitudinal project focusing on multilingualism and multiliteracy in primary education in India with 1,200 children (Tsimpli et

al., 2019). In addition to several adaptations and studies from around the world, these studies of Indian languages have further exemplified the robust nature of MAIN to investigate children's narrative comprehension and production across languages and cultures. Studies on narrative production among Tamil speaking children have used various tasks, employing different modes of eliciting narratives and were scored using variable scales (Bhuvaneswari, 2017; Priyadharshini et al., 2017; Venkatraman & Thiruvalluvan, 2021). A standard set of stories with testing and scoring procedures will have implications for use in both clinical and research contexts. This served as the motivation to adapt MAIN to Tamil.

2 A short description of the Tamil language in India

Tamil is a language belonging to the South Dravidian branch of the Dravidian family and is spoken in various parts of the world. The southern state of India, Tamil Nadu, with a population of over 96 million, has the highest concentration of Tamil speakers (Census India, 2011). Tamil is also spoken in other parts of India and in other countries like Malaysia, Singapore and Sri Lanka with an extensive diaspora in several other regions of the world (Muthusamy et al., 2020). Several dialects of Tamil have emerged over the two thousand years of evolution of the Tamil language (Steever, 2009). Tamil is the official language of the state of Tamil Nadu with its 38 districts. The Tamil language spoken across the state can now be categorized into six regional dialects: Northern dialect, Western dialect, Central dialect, Eastern dialect, Southern dialect, and Sri Lankan dialect (Muthusamy et al., 2020; Steever, 2009). The most populous city in Tamil Nadu is the state's urban capital, Chennai, which is one of the largest cultural, educational and economic centres of India. The city hosts an amalgamation of diverse groups of people speaking a range of dialects of Tamil and other Indian languages. In addition to geographical variations, there exist social dialects of Tamil and finally the diglossic variations further discussed in the following section (Muthusamy et al., 2020; Steever, 2009).

2.1 Diglossia in Tamil: Literary Tamil and standard spoken Tamil

Steever (2009) describes diglossia as "a situation in which two varieties of the same language live side by side, each performing a different function. It involves the use of two different variants of a single language." Diglossic variations prevalent in Tamil are phonological, lexical and grammatical variations between the formal variety (/sen̪n̪ʈamiɻ/)[1] of Tamil and informal variety (/koṯun̪n̪ʈamiɻ/) (Krishnamurti, 2003; Steever, 2009). The formal variety is also referred to as literary Tamil. The two varieties of Tamil differ and complement each other in their functions: the formal variety is used mainly in writing, while giving platform speeches, and in television broadcasts, and the informal variety is used in face-to-face conversations (Muthusamy et al., 2020). An example of a lexical difference between the varieties is shown in (1).

[1] To increase readability throughout the text, we represent words in Tamil using the alphabet of the International Phonetic Association (IPA), 2005.

(1) a)	pinnʌr (formal)	b) ʌppʌrʌm (informal)
	after	after
	'after'	'after'

An example of a morphological difference in diglossia is the possessive noun shown in (2).

(2) a)	/ʌʊʌnuɖʌjʌ/ (formal)	b) /ʌʊʌnoɖʌ/ (informal)
	ʌʊɑn-uɖʌjʌ	ʌʊʌn-oɖʌ
	he-POSS	he-POSS

Such diglossic variations present in the daily lives of people, such as reading the formal variety of Tamil in print materials, using the informal variety in day-to-day conversations and listening to a mixture of both in televised commercials and platform speeches, requires the speaker, listener or reader's ability to navigate between a number of differences to understand and communicate effectively (Steever, 2009). Extensive research on the diglossic varieties of spoken Tamil in Tamil Nadu and Singapore led Schiffman (1998) to use the term Standard Spoken Tamil (SST) to refer to a variety of spoken Tamil that has likely emerged from every discourse of educated people through informal consensus. Schiffman (1998) described that the standard variety avoids regionalisms and serves for communication among persons speaking different dialects.

2.2 Tamil: An inflectionally rich language

Tamil is a morphologically rich language characterized as entirely agglutinating and exclusively suffixal (Krishnamurti, 2003; Lehman, 1989). The main parts of speech are nouns and verbs which can appear in simple as well as in compound forms. The morphological features of the language are best described by its noun and verb morphology. Nouns are inflected for person, case, gender and number (Krishnamurti, 2003). In Tamil, there are two gender classifications, namely *uyartinai* (/ujʌrt̪inai) 'rational' and *ahrinai* (/ʌhrinɑi/) 'irrational'. Generally, deities, men and women are classified as rational, while children and animals are classified as belonging to the irrational gender forms in some written contexts such as stories (fables) and also spoken forms (Steever, 2009).

The use of certain cases corresponds to e.g., constructions with prepositions in languages such as English. For example, for the phrase 'in the water', the noun is inflected with locative case marking, as shown in (3).

(3) /t̪ʌnni:r-il/
water-LOC
'in the water'

Verbs are inflected for tense, person, number and gender. Example of a verb 'jump' marked for tense with a PNG concord is given in (4).

(4) /guɖi-t̪-t̪ɑ:n/
jump-PST.3-M.SG
'jumped' (a single male)

As the subject features are inflections on the verb, subject pro-drop (pronoun-drop) is quite common (Kothandaraman, 1990). In other words, the pronouns may be dropped resulting in the possibility to omit the subject of a finite construction. Tamil follows the SOV (subject-object-verb) clause structure and permits wide scrambling (Sankaravelayuthan & Gejeswari, 2019). Tamil has a word order such that the subject, object, adverb, etc., can be positioned anywhere before the finite verb. The prominence of an element is attained by placing it in the word-initial position (Sankaravelayuthan & Gejeswari, 2019). In Tamil, clauses are combined either by use of coordinating elements or with non-infinite and infinite verb forms in subordination. Complex sentences are predominantly formed by subordination or complementation. In this case, a subordinate clause is formed by several types of inflections on the verb (Lehman, 1989). For example, in the sentence *If she eats, he will also eat*, instead of using the conjunction *if*, as in English, the verb /sɑːppiɖɨ/ 'eat' is inflected with a conditional suffix /-ɑːɭ/ and the pronoun /ʌvɑn/ 'he' is inflected with coordinating clitic /-um/ 'also', as seen in (5).

(5) /ʌvʌɭ sɑːppi-ʈɑːɭ, ʌvʌn-um sɑːppiɖɨ-vɑːn/
she eat-if-COND-PRS.3-F.SG he-also-ADV eat-FUT.3-M.SG
'If she eats, he will also eat'

3 The Development of the Tamil MAIN

Here we describe the adaptation of MAIN into the Tamil language using multiple iterative steps and pilot data collection from children in the age range of 3-8 years old. The guidelines provided by Bohnacker and Gagarina (2020) for the revised English MAIN were followed for the adaptation process. Specific challenges that arose due to the typological differences between English and Tamil and the modifications made in the process of adaptation has been explained in the following sections as three separate adaptation cycles.

3.1 Adaptation cycle I

The first drafts of the MAIN story scripts, comprehension questions, scoring protocol and task instructions were developed by a Tamil-English bilingual speaker with a linguistic training. The number of goals (G), attempts (A) and outcomes (O), the GAO-sequences, the number of internal state terms (ISTs) as initiating events and as reactions, and the logical sequence of clauses were matched adequately to the English scripts. Direct speech sentences were kept similar to the English scripts. However, challenges were encountered at the microstructural level due to morphological differences between the languages. For example, there are no articles (e.g., *the*, *a*, etc.) in Tamil. The numerical /oriɨ/ 'one' or demonstrative pronouns may serve articles' function in Tamil (Annamalai & Steever, 2015). For example, in the Baby Birds story, ***a*** *big worm* was adapted to /**oriɨ** perijʌ puɻuː/ '**one** big worm'. There were around 10 to 12 (in)definite articles in each story in the English script that could not be replaced by numerical or demonstrative pronouns in the Tamil script and had to be dropped. For example, the article *the* in sentences like ***the*** *butterfly flew away quickly and* ***the*** *cat fell into the bush* were dropped in the Tamil adaptation.

Similarly, coordination and subordination in Tamil differ significantly from English. The use of *and* as a coordinating structure is marked with /um/, which is a clitic in Tamil. However, only infinitive and verbal participle clauses can be coordinated using this clitic. All other forms of sentence coordination involving *and* and *that* in the English version are produced by embedding and adjoining the clauses into another sentence which is referred to as complementation (Lehman, 1989). As a result, the sentences are coordinated by morphological modifications and additions made to root words without using a conjunction in the sentence. Hence, matching the exact number of coordinating structures was challenging. One such example of addition of adverbial participle instead of a conjunction in the *Baby Birds* story can be seen in the adaptation of the sentence *The cat let go of the baby bird* ***and*** *the dog chased him away*, as in (6).

(6) /puːnɑi pʌrʌʊɑi kunɟɟ-ɑi ʊiʈʈʌ-uɖʌn nɑːi ʌɖʌ
cat bird baby-POSS leave-as soon as-ADV dog it
ʈurʌʈʈi-ʊiʈʈʌɖɨ/
chaseaway-PST.3N.SG
'**As soon as** the cat let go of the baby bird, the dog chased it away.'

Unlike English, Tamil does not have flexibility in the arrangement of clauses (Sankaravelayuthan & Gejeswari, 2019). Specifically, if all subordinate clauses were placed before the main clause in Tamil, the sentence might lack clarity and become unnatural. Therefore, a few long sentences in English were broken down into simple sentences in Tamil. Consequently, the order of events within the sentence also changed. For example, in the Baby Goats story, the sentence 'One day there was a mother goat who saw that her baby goat had fallen into the water and that it was scared' was broken down into two sentences, as in (7).

(7) a) /orɨ nɑːl orɨ ʌmmɑː ɑːdɨ ʌɖʌnuɖʌjʌ kuʈʈi/
one day one mother goat its-POSS.3-F.SG baby

/ʈʌnniːriɭ ʊiɻuɳɖʌɖai pɑːrʈʌɖɨ/
water-LOC fall saw-PST.3-F.SG
'One day a mother goat saw that her baby fell into the water.'

b) /ɑːʈɨ kuʈʈi rombʌ bʌjʌɳɖɨ poj iriɳɖʌɖɨ/
baby-goat very scare go was-PST.3-N.SG
'The baby goat was very scared.'

At the end of cycle I, a preliminary adaptation of the story scripts, comprehension questions, scoring protocol and instructions for the tasks were complete and ready for further review.

3.2 Adaptation cycle II

The first version of the Tamil story scripts and the comprehension questions were reviewed by eight Speech-Language Pathologists (SLPs) with experience in working with children and eliciting language samples from children. Further, it was also validated by three linguists with prior knowledge of this tool and its Indian language adaptations. In addition, the scripts were reviewed by three Tamil speakers who are primary caregivers of young children between 5-8

years old to ascertain the scripts' naturalness and closeness to the native language. Finally, the entire manual including the task instructions and scoring protocols were reviewed by two SLPs and two rehabilitation specialists who are native Tamil speakers and are experienced in working with children. All reviews were done individually and independently. Issues addressed at this level were predominantly about the selection of words based on their linguistic and cultural appropriateness across a range of children. The loan words 'balloon' and 'bucket' were retained in the same form (but written in Tamil script) instead of their Tamil equivalents as the reviewers agreed that the borrowed words are easily recognizable, frequently used in everyday conversations and hence might facilitate a better understanding of the stories. The choice of vocabulary for certain words was made carefully to make the story scripts more suitable for assessment of children speaking a range of dialects. Some of the words chosen for the script included /ʌmmɑ:/ for 'mother' in place of its synonym /t̪a:i/, /sɑ:ppɑ:di̪/ for 'food' in place of its synonym /unʌʊi̪/ , /gu̪di̪tːɑ̪d̪i̪/ 'to jump' in place of /pɑ:in̪d̪ʌ̪d̪i̪/ 'to jump forward' and /sɑ:mɑ:n/ 'things' in place of its synonym /porul/. The selection was made by the authors through consensus after reviewing the suggestions from the reviewers. Overall, there were four such word changes made in the Baby Birds story and seven each in the other three stories.

In consonance with the gender classification mentioned earlier in the description of Tamil language in terms of rational and irrational, the animals were referred to as /ʌd̪i̪/ ʌd̪i̪ŋgʌ/ 'it/they' instead of /ʌ*v*ʌ*n*/ʌvŋgʌ/ 'he/they' in the stories. Specific to comprehension questions, the word order of the questions was reorganized to make the questions sound idiomatic. Therefore, 'wh-words' placed before the noun (the grammatical subject) at the beginning of the sentence were removed and were instead added before the verb (action by the protagonist). This can be seen in the case of the question *Who does the mother bird like best, the cat or the dog? Why?* (*Baby Birds*, D10), in which the word /jɑ:rɑi/ 'who' was placed before the verb /puɖikum/ 'like' as seen below in (8). This change in the question holds the same meaning and is the form of question that is used more frequently in Tamil, thus making it easier for children to understand the specific aspect of the story under question.

(8) a) /jɑ:rɑi ʌmmɑ: pʌrʌʊɑikki̪ rombʌ puɖikum/
who mother bird-PREP more like
'Who does the mother bird like more?'

b) /ʌmmɑ: pʌrʌʊɑikki̪ jɑ:rɑi rombʌ puɖikum/
mother bird-PREP who very like
'Who does the mother bird like more?'

Following the review, the Tamil story scripts were compared critically to the story scripts developed for Malayalam, another Dravidian language spoken in India (Madappa et al., 2020). The change in the order of events within sentences observed in Tamil was found to be similar to the Malayalam story scripts. The same type of breakdown of complex and compound sentences to simpler sentences was found in both language versions; however, Tamil had fewer such occurrences than Malayalam. Both language versions also opted to use English loan words like *balloon* and *bucket* for ease of understanding.

3.3 Adaptation cycle III

The adapted story scripts, task instructions, comprehension questions and scoring protocols were used to collect the first round of pilot data from children. A group of eight children between the ages of five and eight years living in the Chennai region produced the stories in the telling mode and retelling mode and answered the comprehension questions. The narrations were carried out as per the protocol for the two modes in the manual (Bohnacker & Gagarina, 2020). Children found the stories to be interesting and new. During the retelling task, it was observed that children were not familiar with a few words used and hence, these words were replaced with more commonly used words (synonyms) for improved familiarity and comprehension. For example, the words /poɖʌr/ 'bush' and /pʌɖʌri/ 'startled' were replaced with /muɭ ʧedi/ 'thorny plant' and /bʌjʌɳɖɨ/ 'scared', respectively.

Among these six children, two different Tamil dialects were represented. When the model for the retelling task was provided in a dialect different than the child's, there was some difficulty noted in the usage of morphosyntactic structures as the child tried to imitate the examiner's model. For example, the word /jo:siʈʈʌɖɨ/ 'thought' can take different forms based on the dialect, as shown in (9).

(9) a) /jo:si-ʈʈ-ʌɖɨ/ b) jo:si -ʧɨ - ɖɑ:m c) jo:si -ʧʧɨ - ʈɑ:n
think- PST.3-N.SG think- PST.3-N.SG think- PST.3-N.SG
'thought' 'thought' 'thought'

Such dialectal variations, specifically in the morphological markers, within such a small group of children were noted by the authors and a decision was made to provide the story scripts in the formal standard variety of Tamil with considerations for dialects to be made while the examiner presents the story to the child. The differences in the written and spoken form coupled with the existence of multiple dialectal forms in Tamil support the use of live presentation of the story and comprehension questions over recorded input for eliciting optimal responses from young children. These considerations are needed to make the story scripts culturally appropriate and idiomatic.

Based on the narratives elicited in the pilot study, three additions were made to the acceptable responses in the story structure section of the protocol. First, in the first episode of the *Baby Birds* story, /unʌʊɨ keʈʈʌ-ɖɨ/, 'they [the baby birds] asked for food', shown in (10), was added as an acceptable response in addition to existing responses (*Baby Birds were hungry*, *wanted food*, *cried for food*).

(10) /unʌʊɨ keʈʈʌ-ɖɨ/
food ask- PST.3-N.SG
'asked for food'

Second, a change was made to comprehension questions D2, D5, and D8 for all stories, which enquire about how the protagonist is feeling. The use of the Tamil word /unʌrɳɖ-ʌɖɨ/ 'to feel' did not elicit responses as the children did not understand the word. Therefore, providing an alternate word namely /ninɑiʈʈ-ʌɖɨ/ 'to think' was tried. However, most of the children then answered with the action of the protagonists and not with the expected emotional state terms,

while the rest did not change their answers. Finally, the English loan word *feel* was used, and the question was reframed as in (11).

(11) /epʌɖi fi:l pʌnn̪i -d̪i/
how feel do- PRS.3-N.SG
'How did it feel?'

This elicited the expected response from two of the older children. Hence, the English word *feel* was added as an alternate choice for this question. It was also noted that children responded with emotional state terms in English, like *happy* and *sad*. As the primary focus was to understand if the children were able to recognize these emotional state terms, appropriate usage of these loan words was allowed to be scored as accurate responses. Further, a specific type and pattern of response observed for comprehension questions in the pilot study led to a slight change in scoring responses to questions D2, D5 and D8 for all stories. One other type of answer provided instead of internal state terms like *happy*, *sad*, *scared* was accepted as a correct answer and awarded one point. An example of this type of response is the use of the English word *feel* in place of an IST provided with an accurate reason or explanation. When asked *How does the cat feel?* (*Cat*, D2), the response obtained was 'The cat is **feeling** because it fell down', as shown in (12).

(12) a) /pu:nɑi epʌɖi fi:l pʌn̪i-d̪i /
cat how feel do-PST.3-N.SG
'How does the cat feel?'

b) /pu:nɑi ki:ɻʌ viɻin̪d̪id̪i-ʧi-n̪i fi:l pʌn̪i-d̪i
cat down fall- PST.3-N.SG feel do- PST.3-N.SG
'The cat is feeling because it fell down'

The use of the English word 'feel' in place of an IST to convey the emotion of sadness is commonly observed among Tamil-English bilingual population. Hence, a response from children such as '/fi:l pʌn̪i-d̪i/' was considered synonymous with 'feeling sad' and was accepted in place of an IST.

Another type of response in place of ISTs was the use of exclamatory expressions conveying negative emotions along with an accurate reason or explanation. The question *Imagine that the boy sees the cat. How does the boy feel?* (*Cat*, D8), elicited the response, as shown in (13).

(13) /ʌjjo: pu:nɑi mi:n elɑ:t̪t̪ɑjum sɑ:pɽi-ʧʧe/
exclamation cat fish all ate- PST.3- N.SG
'Exclamation! Cat ate all of the fish.'

Exclamations like /ʌjjo:/, /ʌʧʧo:/, and /ʌi/ are commonly used in colloquial language for expressing negative emotions and hence when produced along with an accurate reason, may be accepted in place of ISTs. Such responses and scoring allowances should therefore be taken into consideration while using the tool to assess the Tamil-English bilingual population.

At the end of the three cycles, the macrostructural aspects of the final Tamil story scripts were made parallel to the English scripts. Three goals, three attempts and three outcomes were

present in each story. Two IST as initiating events and two IST as reactions were maintained in all the stories. The microstructural aspects were comparable for the number of direct speech sentences and the number of clauses in each story. Differences from the English story scripts were found in the word count and number of coordinating and subordinating constructions. The word count was lower in the Tamil version across all four stories when compared to English. However, it remained comparable between the *Cat* and *Dog* and the *Baby Birds* and *Baby Goats* stories in Tamil. The reduction in the overall number of words is explained by the agglutinative nature and morphological density of the language as discussed above. As explained earlier, the number of coordinating and subordinating structures did not match between English and the Tamil story scripts. For example, there were eight marked conjunctions in Tamil, as compared to approximately 14 in English (for the *Baby Birds* story). The phrases and sentences in Tamil are bound by other morphological structures like participles and clitics called *idai sorkal* in Tamil. Although they serve the purpose of conjoining phrases and sentences, they are not categorized under conjunction. Hence, making a strict comparison for conjunctions between the English and Tamil story scripts is not appropriate.

4 Concluding remarks

After the three cycles involving multiple iterative steps and a pilot data collection from Tamil-speaking children, decisions were made regarding vocabulary choices, sentence order changes and simplification, use of borrowed words and addition of acceptable responses in production and comprehension yielding a culturally and linguistically appropriate tool.

The final version of Tamil MAIN is an addition to the existing MAIN English version and the adaptations of MAIN to other Indian languages available for use within the multilingual environment in India. The addition of the Tamil MAIN adaptation will contribute to cross linguistic research. Considering the lack of appropriate assessment tools for multilingual children, the Tamil MAIN will be of use to researchers and clinicians in the field of study of Tamil language development and disorders in children.

A first publication related to the use of the Tamil MAIN version with Tamil-speaking children between 5 and 8 years of age is in preparation. Studies intending to utilize the Tamil MAIN should cite the assessment protocol and this introductory 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. Materials for use. *ZAS Papers in Linguistics*, *63*. Tamil version. Translated and adapted by Abinayaa, K., Nehru P. A., Venkatesh, L., & Raman, M. G.
- Abinayaa, K., Venkatesh, L., Nehru P. A., Raman, M. G. (2023). Adapting the Multilingual Assessment Instrument for Narratives to Tamil. *ZAS Papers in Linguistics*, *65*, 73 – 84.

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

Sha Wang*

The Hong Kong Polytechnic University, HKSAR, China

Wenchun Yang*

Leibniz-Centre General Linguistics (ZAS), Germany

This paper introduces the Tibetan version of the Multilingual Assessment Instrument for Narratives (MAIN). We describe the main typological properties of the Tibetan language, including word order, case markers, and evidentiality. Finally, the motivation for adaptation, the process of adaptation, and the challenges encountered are discussed.

1 Introduction

The Multilingual Assessment Instrument for Narratives (MAIN; Gagarina et al., 2012, 2015, 2019) was developed as a part of the LITMUS (Language Impairment Testing in Multilingual Settings) test battery by an international research team within the COST Action IS0804 *Language Impairment in a Multilingual Society: Linguistic Patterns and the Road to Assessment* (Armon-Lotem et al., 2015). MAIN is a reliable tool to assess narrative production and comprehension abilities in monolingual and bilingual speakers. By 2023, MAIN has been adapted to more than 90 languages and it has been widely used in testing children's narrative abilities (e.g., Gagarina et al., 2019; Gagarina & Bohnacker, 2022a). Despite a rich body of research on children's narrative development, thus far, the investigations are heavily biased towards English and other Indo-European languages and the so-called WEIRD (Western, Educated, Industrialized, Rich, and Democratic) societies (Henrich et al., 2010). Given the diversity of cultures and languages, addressing other populations and languages is crucial. Also, to make validation of child language acquisition theories, diverse empirical evidence is necessary (Kidd & Garcia, 2022).

Thus far, Sino-Tibetan languages, including the Tibetan language, are still underexplored in child language development research. In addition, the social-communicative

* Corresponding authors: wangsha.emma@gmail.com; w.yang@leibniz-zas.de

environment of Tibetan children is different compared to their WEIRD peers. Most Tibetan children live in relatively underdeveloped regions and rural areas and come from low social-economic status families with a lack of learning resources and facilities. Moreover, Tibetan is spoken across a broad geographical area. The Tibetan MAIN will not only enrich the MAIN database but also provide a proper language assessment tool for children living in the Tibetan Plateau. Moreover, the Tibetan MAIN can be used in other Himalayan regions with Tibetan as a lingua franca and similar cultures, including some areas in north India, Nepal, and Bhutan. The linguistic data collected using the MAIN can help practitioners, educators, and policymakers to take further steps, such as diagnosing language disorders and crafting curriculums and programs to facilitate children's language development.

This paper focuses on Central Tibetan (the Ü-Tsang language). Central Tibetan, one of the core varieties of Modern Tibetan, is spoken by the Tibetan ethnic minority people living in Lhasa, Shigatse, and other areas of the Tibetan Autonomous Region (DeLancey, 2017). The present article is organized as follows. In section 2, we introduce the properties of central Tibetan (henceforth, Tibetan). In section 3, we describe the process of translating and adapting MAIN to Tibetan. In Section 4, we provide some concluding remarks.

2 Properties of Central Tibetan

Tibetan is mainly spoken by ethnically Tibetan people residing in the Tibetan Autonomous Region and other Tibetan-speaking areas in China, such as Qinghai, Gansu, Sichuan, and Yunnan (DeLancey, 2017). There are more than 6 million Tibetan speakers in China (Office of Leading Group of the State Council for the Seventh National Population Census, 2021). Tibetan belongs to the Sino-Tibetan language family, typologically different from Indo-European languages such as English in phonology and morphosyntax (Thurgood & LaPolla, 2017). For example, unlike English, the unmarked word order of Tibetan is Subject-Object-Verb (SOV), as shown in (1) and (2).[1]

(1) English

The girl	bought	an apple.
S	V	O

(2) Tibetan

mø-*s*	kuɕu	tɕi'	ɲø-pa-ɪe
girl-*agentive*	apple	a/an	bought
S	O		V

'The girl bought an apple.'

The majority of nouns tend to be disyllabic, such as *ɕi-mi* 'cat', *o-ma* 'milk', and *za-k^{h}aŋ* 'restaurant.' Tibetan uses enclitics to encode cases,[2] as illustrated in (3) and (4).

[1] All Tibetan examples are rendered using the International Phonetic Alphabet (IPA).

[2] There are debates on the classifications of case categories in the Tibetan language. DeLancey (2017) argued that there are five case categories-genitive, ergative/instrumental, dative/locative, and ablative and one unmarked

(3) pʰu-*i* ama naŋ-*la* du'
boy-*genitive* mother home-*locative* is
'The boy's mother is at home.'

(4) ɕimi-*s* tɕʰi-u tɕi' tsʰin-pa-ɹe
cat-*agentive* baby bird a caught
'The cat caught a baby bird.'

Verbs occur with stems and inflectional suffixes, which indicate tense: past, present, and future, as shown in (5)– (7).

(5) ŋa-*s* za kʰaŋ-*la* ʈʂʰo-ɕin-pa-yin
Isg-*agentive* restaurant-*locative* go-ing present/conjunct
'I am going to a restaurant.'

(6) ŋa-*s* za kʰaŋ-*la* tɕʰin-pa-yin
Isg-*agentive* restaurant-*locative* went-past/conjunct
'I went to a restaurant.'

(7) ŋa-*s* za kʰaŋ-*la* ʈʂʰo-ji-yin
Isg-*agentive* restaurant-*locative* go-future/conjunct
'I will go to a restaurant.'

Another feature relevant to the adaptation process is how evidentiality is expressed in Tibetan. Evidentiality deals with information sources. There are three primary evidential modalities in Tibetan (Denwood, 1999; Garrett, 2001): 1) indirect, which is used when the assertion has indirect support, including inference and hearsay; 2) direct, which is used when the assertion is based on directly witnessed/perceptual knowledge; and 3) "ego", which is unique to the Tibeto-Burman language family and is based on intimate and immediate knowledge of a situation associated with the first person. The evidentiality in Tibetan is realized as suffixes on verbal predicates, shown in (8)–(10).

(8) Indirect
ɕimi-*s* oma tʰoŋ-gi-yø-ɹe
cat-*agentive* milk drink-indirect
'(It is said/reported that) the cats drink milk.'

(9) Direct
ɕimi de oma tʰoŋ-gi-du'
cat that milk drinking-direct
'(The speaker/hearer is looking) That cat is drinking milk.'

(10) Ego
ŋa-*i* ɕimi naŋ-*la*-yø
I-*genitive* cat home-*locative*-ego
'My cat is at home.'

nominative, whereas Tournadre (2010) argued that there are ten cases: absolutive, agentive, genitive, dative, purposive, locative, ablative, elative, associative, and comparative.

In the adaptation, we considered the evidentiality in the stories. MAIN stories are fictional and the examples of answers are based on the assumption, which means that the stories or responses are not fully based on children's directed experience or real-time visual sensory perception in real life. Hence, the scripts were translated in the indirect evidentiality form.

3 The adaptation process

The Tibetan MAIN is based on the revised English MAIN (Gagarina et al., 2019) and strictly follows the guidelines for adaptation (Bohnacker & Gagarina, 2020b). The adaptation process was carried out in three phases. In the first phase, a pilot study on the appropriateness of the MAIN pictures was conducted by using an acceptability judgment task. Nine children were recruited to rate the acceptability of the animals and the action events in the MAIN pictures. Results showed that all children fully accepted the animals (i.e., cat, dog, bird, goat, and mouse) and the action events of the four stories, showing that the story characters and story plotlines were familiar to and accepted by Tibetan children.

However, some minor changes were still needed for certain aspects of the *Dog* and *Cat* story. Some items in the original pictures of the *Dog* and *Cat* story did not well suit the Tibetan context because of the unique food habit, religions, and culture in the Tibetan region. For example, the sausages in the *Dog* story would better be replaced with dried meat, which is more familiar to the children living in the Tibetan Plateau. In the *Cat* story, fish is not a common food or even taboo in Tibetan culture. Therefore, the fish should be substituted with milk, and the fishing rod should be replaced with a branch of a tree. Consequently, the basket for the fish should also be changed to a transparent container, a glass bottle, so that the milk could be easily visible. Hence, a new set of pictures with these changes is needed.

Several rounds of discussions and crosschecking took place to ensure the adapted version's quality, including consistency and accuracy. In the second phase, the first author (Wang), a native speaker of Central Tibetan and currently a Ph.D. candidate in Linguistics, translated the MAIN protocol. The second author (Yang), a linguist who has been involved in adapting MAIN to Kam and Mandarin, provided detailed instructions during the translation. The second author (Yang) double-checked the translation of linguistic terminologies. During the third phase, the entire draft was sent to four native speakers and two experts in Tibetan language and culture research for proofreading.

There were a few challenges in adapting and translating the story scripts. The biggest one was that there was no comparable use of some terminologies and vocabulary in Tibetan. It is difficult to translate these items directly from English to Tibetan. For example, the term *narrative* is not commonly used; thus, it may not be accessible to children in the Tibetan context. It was replaced with *ʤʐoŋ ɛɛ* 'storytelling' which is more familiar to Tibetan children. There is also no overarching term for *Internal State Terms (IS)* in Tibetan, and this terminology is quite opaque to speakers. Our way to deal with this issue was to use another umbrella term, *tsʰor wa* 'feeling', in Tibetan. This term covers Central Tibetan nominations for the different mental and physical states, linguistic verbs, etc. Another challenge is the translation of internal states. For instance, some physiological state terms in Tibetan, like 'worry' and 'fear' cannot

be directly expressed as a single word as in English. In Tibetan, 'worry' and 'fear' are compound words, *sem-ʈʰɛl tɕʰe* 'anxiety make' (11) and *ʃe-naŋ-ce* 'fear arise' (12). These features inevitably lead the Tibetan text to be longer than English in terms of the number of syllables.

(11) ɹa mø-*s* ɹa ʈʂʰu'-*la* sem ʈʰɛl tɕʰe-pa-ɹe
goat female-*agentive* goat baby-*dative* worry made-past/conjunct
'Mother goat worried about the baby goat.'

(12) ɹa mo ɹa ʈʂʰu' tɕʰ naŋ-*la* tʰoŋ nɛ ʃe naŋ ce-pa-ɹe
goat female goat baby water inside-*locative* see after fear arose-past/conjunct
'Mother goat feared when she saw the baby goat was in the water.'

4 Final remarks

This short paper has briefly introduced the significance of adapting MAIN to Tibetan, the properties of Tibetan, and the challenges during the adaptation process. The Tibetan MAIN can provide rich linguistic samples of Tibetan speakers. Such data would contribute to research on child language acquisition in a Tibetan context which is little so far (except de Villiers et al., 2009). Future studies which make use of the assessment protocol are required to cite the following references:

- Gagarina, N., Klop, D., Kunnari, S., Tantele, K., Välimaa, T., Bohnacker, U. & Walters, J. (2019). MAIN: Multilingual Assessment Instrument for Narratives. Revised version. *ZAS Papers in Linguistics*, *63*. Translated and adapted to Tibetan by S. Wang & W. Yang.
- Wang, S., & Yang, W. (2023). Adapting the Multilingual Assessment Instrument for Narratives (MAIN) to Tibetan. *ZAS paper in Linguistics*, *65*, 85–90.

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Adapting MAIN to eliciting stories from adults and in a remote context: What do we have to consider, and what do we know?

Katrin Bente Karl[*1]

University of Bern, Switzerland

The present study suggests guidelines for the successful elicitation of adults' narratives using an online remote design. In doing so, I have adapted the Multilingual Assessment Instrument for Narratives (LITMUS MAIN) to an adult population and specify possible applications in a remote context. Hereby, I elaborate on various features that impact the elicited data and the testing context. I also report results from a pilot study with 10 adults telling MAIN stories using three different testing methods (two moderated methods using PowerPoint or an external link and one unmoderated) to argue that different methods of remote narrative elicitation do not influence the macrostructure of the narratives. However, by extending the analysis to the context of the testing and including the experimenters' and participants' assessments of the testing situation, we can see differences that lead me to recommend the so-called Link method (a moderated remote testing method with a certain degree of autonomy) for remote testing with adults.

1 Introduction

Recent developments in data elicitation methods have moved toward the use of digital online (remote)[2] elicitation. Consequently, the use of several questionnaires and experimental data elicitation platforms is increasing (e.g., Psychopy, Pavlovia, jsPsych, Labvanced, and Gorilla, to name a few). Apart from this development, oral elicitation in-person became impossible during the years of the Covid-19 pandemic. This situation has led to proliferated methodological studies on data elicitation and fundamental empirical research based on online elicited data (e.g., the research topic Remote Online Language Assessment: Eliciting Discourse from Children and Adults in *Frontiers in Psychology*, cf. frontiersin.org). Among several digital tools for elicitation of lexicon and grammar, the existing instrument on narrative elicitation, Multilingual Assessment Instrument for Narratives (LITMUS MAIN; hereafter

[*] Corresponding author: katrin.karl@unibe.ch

[1] Fruitful discussions with Natalia Gagarina accompanied the design and completion of the study.

[2] I will use the terms online and remote synonymously throughout the paper.

MAIN, Gagarina et al., 2012; Gagarina, Klop et al., 2019), also went online (see the different versions for online MAIN testing with children, which are available for download via the MAIN-homepage: the Hong Kong Polytechnic University – ZAS Version, Slovak version and ZAS version, https://main.leibniz-zas.de). Most studies using MAIN have elicited data from children (to name a few recent studies: Fiani et al., 2022; Roch & Hržica; 2020; Rodina, 2020; Sheng et al., 2020, and the contributions in Gagarina & Bohnacker, 2022a, b). However, there is growing interest in transferring the established data collection method to adults (cf. Gagarina et al., 2019b; Krasnoshchekova & Kashleva, 2019) and in a digital context (cf. Jažić et al., 2023; Mattiuada et al., 2022).

In this paper, I elaborate on the cornerstone criteria for successful online narrative elicitation from adults. I suggest an updated method for working with adults using MAIN. I start with outlining a number of fundamental criteria to consider during the test situation (Section 1) and move on to the adaptation to an adult context (Section 2). Next, I outline the adapted instructions for eliciting MAIN with adults (Section 3) and illustrate different testing methods (Section 4). Finally, I present the design, implementation, analysis, and results of a pilot study (Section 5), and conclude with a final discussion (Section 6).

2 General remarks: Test situation

The multidimensional theoretical model of narrative text organization laid the foundation for the MAIN tool. It is based on the consideration that a narrative contains microstructural (language-specific linguistic structures at all linguistic levels) and macrostructural elements (hierarchical organization of the story, episodic structure, story grammar) that need to be analyzed separately, but can be collected and examined within a framework (cf. Gagarina et al., 2012, p. 8f.). Concerning the macrostructure, MAIN allows for the measurement of three elements: story structure (following the story grammar model, cf. Stein & Glenn, 1979), which claims that a narrative consists of components, including the setting of the story and episodes), structural complexity (following Westby, 2005 and taking into account that an episode itself consists of components, such as Goal, Attempt, and Outcome and can be measured by its level of structural complexity and divided into sequences, incomplete and complete episodes) and Internal state terms (showing to which degree the narrator emphasizes with others' emotions and state of minds, as it is elaborated in the theory of mind (ToM)) (cf. Gagarina et al., 2012, p. 10ff.). The MAIN protocol (Gagarina et al., 2012) allows for the analysis of the verbalized items of a narrative collected with the help of MAIN. Each item scores one point. For the entire narrative, by verbalizing all components of all episodes, all internal states, and the setting of the story, a maximum of 17 points can be achieved in total.

The foundation of this model, the causal-temporal episodic components, is universal for narrative organization. Its pictorial representation was originally developed for children between the ages of 3 and 10 (cf. Gagarina, Klop et al., 2019, p. 1) but later was successfully used with teenagers and adults (Antonijević et al., 2022; Gagarina et al., 2019b; Jažić et al., 2023; Krasnoshchekova & Kashleva, 2019; Mattiuada et al., 2022; Vogels & Lindgren, 2022). However, it also requires a background view, which I want to provide here.

First, it is necessary to take a closer look at the test situation, which includes the participant, experimenter, the picture-based story, and their respective interactions. From the moment of narration, we also deal with the roles of narrator and addressee. In the test situation described in the MAIN protocol (for testing children, cf. Gagarina, Klop et al., 2019, p. 3), the experimenter is the same as the addressee of the story and the participant the narrator, which leads to a child narrator telling an adult a story (Figure 1).

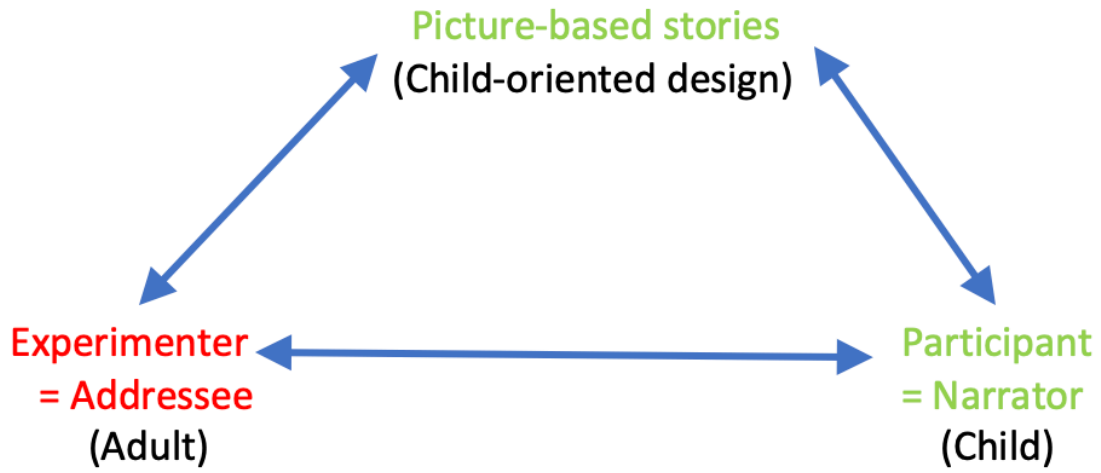

Figure 1: Graphical representation of the situation of testing with children.

In this constellation, the conception and design of the story and the participant have the same (child) context. In contrast, the story's addressee (experimenter) is an adult. Depending on the child's experience of telling picture-based stories to an addressee, be it adults or other children, the test situation can be more or less familiar to the child.

While transferring the elicitation method to an adult context, the participant changes from a child to an adult, as shown in Figure 2.

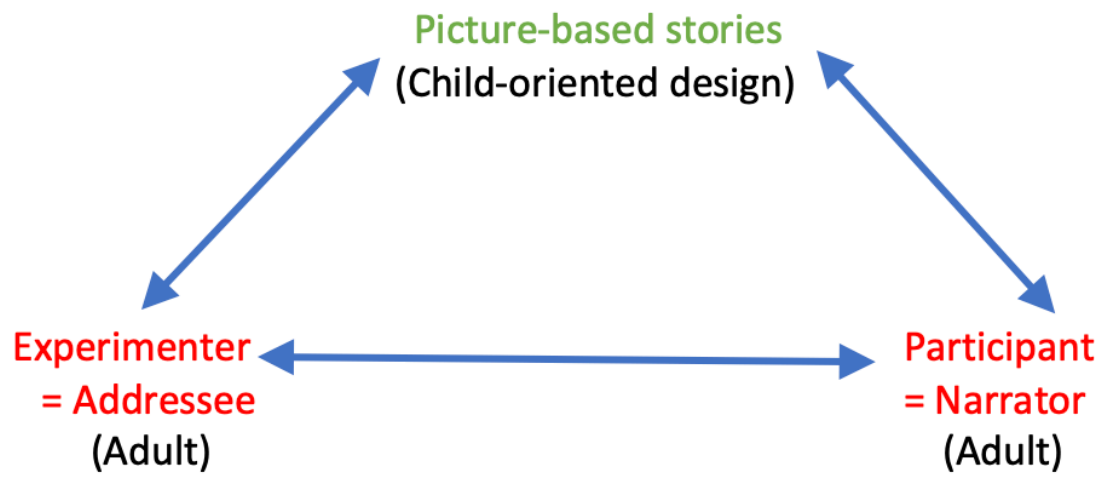

Figure 2: Graphical representation of adult testing.

Here, the experimenter and the participant are both adults, whereas the material used remains in the child's context. Similarly to testing children, there is thus a contextual difference (adult

vs. child) in one component, while the other two match. What consequences this has requires a more thorough discussion.

3 Adult participant (consequences for testing)

The term *adult* is used with different meanings. In everyday language, it can refer to a person who has reached a) a biological state (i.e., physical maturity, being grown up), b) a legally defined age with which the attainment of maturity goes hand in hand, or c) a cognitive maturity (Oxford English Dictionary, www.oed.com). It does not refer to a division into stages, nor does it have an endpoint. It is an elastic and thus also imprecise term; a person is considered an adult at 20 and 90. Ultimately, the term adult can distinguish a person from a child or a teenager. In this general sense, I refer to adults as mature persons who are no longer in the process of growth and – probably the most relevant point for our interests – have completed their first language acquisition. This vague definition requires further explication. In current research, there is a broad discussion on the classification of adulthood (e.g., adolescence, early, middle, and late adulthood), as well as on changes during adulthood (e.g., concerning personality, see Srivastava et al., 2003, or language across the lifespan, see Beaman & Buchstaller, 2021; de Bot & Schrauf, 2009; Gerstenberg & Voeste, 2015). The changes people undergo are not precisely predictable; they depend on individual factors, such as lifestyle, socioeconomic status, and biological components (e.g., cognitive or general health peculiarities), which we must consider. The necessary extent of background information and its relevance in concrete studies depends on the research question and the study design and thus cannot be conclusively clarified in this article. Since my considerations are concerned with the general difference between children and adults (and thus with the very general distinction described above), I assume an adult who has completed his first education and first language acquisition and who shows no cognitive limitations.[3] No general age limit is to be set here. Such an average adult differs from a child in many respects. For the context of these remarks, such appear relevant as, e.g., the life experience and perhaps higher experience in test situations; in our time, likewise a basic familiarity with technical devices, software, and media;[4] acquired habits and routines in storytelling and dealing with different communicative situations and reacting to materials (as the stimuli for narrating a story) and so on. In the following, I will elaborate on some of these points.

3.1 Children vs. adults in testing situations and interaction with the experimenter

In a testing situation we can see a difference between testing children and adults on two levels – how a childish vs. an adult participant deals with and reacts in the testing situation in general and how they interact with the experimenter. Concerning the first issue, the research from Bauer et al. (2017) shows that performance in a testing situation differs consistently between children

[3] These conditions can thus not be transferred to the testing of older people and people with different cognitive impairments. For testing those people, separate considerations are inevitable. For testing with adults with down syndrome cf. Mattiauda et al. (2022).

[4] That also may apply to children and, to a limited extent, to older people.

and adults,[5] stating that "adult-like performance was observed around mid-adolescence, by ages 13-16 years" (ibid., p. 1), and that adults outperformed children in their experiments. Punch (2002) explains in more detail the question of to what extent research with children differs from adults and gives advice to experimenters testing children. Although her considerations take the opposite view (deducing from testing with adults to testing with children), they provide insights into the main differences as she states that a crucial point is the perception of children vs. adults. And there, we can see the link to the second issue, the interaction between the participant and the experimenter.

If we look at the above interaction scheme (Figure 2), we see a relevant difference regarding the interaction between the participant and the experimenter. In our case, two adults interact with each other and not an adult with a child. Consequently, we have a difference in address, which becomes apparent both linguistically (according to the respective linguistic conventions, e.g., adaptation of the distance and/or polite address, which, of course, is highly dependent on the concrete languages in question) and pragmatically. An adult may be interested in the context of the test situation and may have previous experience with testing. The experimenter should address these issues and explain the background of the test and research interest to a different extent than is the case with especially younger children.

3.2 Participant: Skills, habits, and digital literacy

As addressed above, children and adults may differ in skills, habits, and, potentially, digital literacy. For this article, we have to take a closer look at the narrative skills, habits in telling a story, and the assumed level of proficiency, to handle different testing software.

Narrative skills can be understood as the ability to derive a meaningful context from a sequence of events and to verbalize this context. To be able to narrate, we have to have some preconditions. Pfeffer (2015) points to cognitive skills, such as working memory and processing capacity, emotional or pragmatic skills (c.f. the already mentioned theory of mind and the possibility of emphasizing with the listener) and, finally, linguistic skills to be able to verbalize the story. These skills show up in narratives of different kinds, amongst them picture-based stories. It is considered a skill that is acquired late in language acquisition. Research using the MAIN stories show that macrostructure develops with children's age (see Gagarina et al., 2019b, p. 195 and the cited literature), but less is known yet about developmental changes in adults (is there an endpoint of acquisition, is the skill – once acquired – stable or which factors could possibly affect their development?). These questions cannot be explored in depth or answered in this article but must be discussed in follow-up studies (as planned in Karl, in prep.). The relevant point is that narrative skills in adults are no longer in the acquisition process, as is the case with children.

Regarding individual habits in telling a story (e.g., when/in which situation, to whom, and how regularly the person tells stories), there are differences between children and adults, but they can appear as well as within adults considering their stage of life, routines, and

[5] I want to point out that these studies mainly refer to generalized adults and do not refer to possible age differences. The extent to which test-taking behavior changes throughout adult life is the subject of other studies (cf. Whitbourne, 1976, or Andreoletti et al., 2006 for measuring anxiety).

interests. It is plausible that these factors influence a person's narrative. As they are highly individual and depend on life experience and personal habits, they cannot be generalized. Still, information on them should be gathered when it comes to concrete testing.

Finally, I want to come to digital literacy, which can be considered an "umbrella term" (Nascimbeni & Vosloo, 2019, p. 10) and shall be restricted for the purpose of this article to "the ability to use digital devices or software" (ibid.). Especially for younger adults, the use of computers, the Internet, various software, and, at the latest, since the pandemic, platforms such as Zoom are part of everyday life and hardly pose a challenge. Therefore, we can assume that they have a relatively high digital literacy, which allows for testing them in different remote settings (see Section 5.1 below). However, the older the participants become, the more carefully one should look at the extent to which they are familiar with technical devices (especially at an older age) and adjust the test design in case of doubt.

3.3 Story and addressee

The final important component to consider is the story to be told (the material). In our context, this is a fixed factor, since in order to compare narratives from children and adults, the same picture-based stimuli need to be used. However, it still gives rise to the consideration of two points: the child-oriented material and the addressee of the story.

Concerning the material, I advise contextualizing the materials used in advance in an adult-specific way by adding a short description of why these materials are used: Such a description could be phrased in the following way: "We use test materials established for collecting stories from children. Therefore, they are adapted to children according to the type and structure of the stories. Now we are interested in how the same stories are told by adults of different age groups." Such an explanation can serve as a justification for the participant.[6]

The question of the addressee concerns a core point of the test design and leads to a more detailed discussion in the following section.

4 Instructions for testing MAIN with adults

Against the background of the previous remarks and considering the extensive research on eliciting data with the help of MAIN with children (for an overview, see Lindgren et al., this volume), two points are particularly relevant for developing instructions for testing the MAIN stories with adults: the aim of gaining as much comparability as possible with the established procedure and the need to adapt some points to an adult context at the same time. These two demands are not contradictory, which is why a transfer from a child to an adult context is generally unproblematic. However, there is a need to discuss the points already mentioned above: interaction with the participant (including addressing and considering the adult's abilities), choice of testing method, and finally, the question of the addressee of the story. These three points influence the test situation and, thus, the data quality differently. In a presentation by Karl (2021), there was a discussion regarding the participant. There is a need to consider the respective linguistic politeness norms of the tested language and the individual relationship

[6] Regarding testing with older children or adolescents, one could also consider adding this explanation.

between the experimenter and the participant (if I know the person, it would be unnatural to address him or her differently than in a common communication situation, for example in the distance form during the test, just because it is fixed in the manual). Likewise, a more detailed presentation of the test background, including a reference to the origin of the visual materials, could be included in the instructions without significant trouble. The question of the testing method seems much more relevant as it could potentially influence data quality.

The MAIN protocol was initially devoted for in-person testing with children but has already been adapted for a remote context. Different materials for online-testing are available via the homepage (see https://main.leibniz-zas.de/en/main-materials/main-materials/ and Section 1 above). Studies comparing elicited narratives with children in both contexts show comparable results regarding macrostructure in production and comprehension (cf. Pratt et al., 2022 and the special issue of *Frontiers in Psychology* on digital discourse elicitation).

As mentioned above, MAIN has been used with adults employing an in-person testing procedure in a study by Gagarina, Bohnacker et al. (2019b). In this study, 69 monolingual German-, Russian-, and Swedish-speaking adults told one of the MAIN stories (either Baby Birds or Baby Goats). Among others, Antonia Hannes accomplished a transfer into a remote context of testing with adults. In her Bachelor thesis (2021), she tested 20 German-speaking adults using a Zoom mode of testing. The MAIN stories were presented via a PowerPoint presentation operated by the experimenter (using screen sharing) with the help of the corresponding material for online child testing. The data collected in this way showed no significant deviations in macrostructure from the data collected in the in-person testing with adults from Gagarina, Bohnacker et al. (2019). Thus, there is essential comparability. In addition, there are studies collecting data from adults and using them as a control group (e.g., Hržica & Kuvač Kraljević, 2022; Vogels & Lindgren, 2022) and two important studies focusing on adult's narratives elicited with the help of MAIN in a remote context (Antonijević et al., 2022; Jažić et al., 2023). Antonijević et al. (2022) aimed to establish measures of macrostructure in narratives of Irish-English bilingual adults to create a baseline for comparison with narratives of respectively bilingual children. Therefore, they tested 30 Irish-English speaking adults (aged 22–59 years) via Zoom with the help of an unpublished "custom-made PowerPoint presentation embedding the 6 pictures for each story [..] [to] share the pictures with participants." (ibid. p. 5). Regarding the MAIN protocol (Gagarina, Klop et al., 2019), in the beginning, they presented three envelopes to "create an illusion that the researcher did not know the story that the participant was about to tell." (Antonijević et al., 2022, p. 5). Concerning the online administration of MAIN, they hint at some advantages, such as the experimenter's evaluation of straightforwardness, an improvement in time management and flexibility but also mention a possible malfunction of the internet connection and, as a limitation, the small or differing size of the pictures (ibid. p. 9f.).[7]

Jažić et al. (2023) also uses MAIN stories in a remote context for gathering narratives from adults, in their case, from 20 monolingual and 20 heritage speakers of Bosnian, aged between 18 and 30 years. They aimed to research differences in these two populations regarding

[7] Pratt et al. (2022) hinted at that too.

case marking. Hence, they focus on microstructural features and use the MAIN stories to elicit data with the help of a PowerPoint Presentation and using Zoom. They follow the here to be yet elaborated procedure (see below) and use the material developed for online testing with adults (ibid., p. 14). So, this study is of great interest as it shows that the developed material can be used successfully. Furthermore, they hint at the same crucial points, which were also discussed during an online meeting on 26.03.2021 and will be described in more detail in the following.

The first point concerns the need for discussion on the specific design of the PowerPoint slides, especially concerning how to deal with the fact that the participant is supposed to tell the story without the experimenter knowing which story it will be (non-shared knowledge), as specified in the MAIN standardized procedure. The choice between the three different envelopes and the (supposedly) random selection in the in-person testing for children grant this. This experimental setup is also possible in an in-person testing with adults. However, by presenting the story via screen sharing with the help of PowerPoint, one can hardly assume that an averagely skilled adult participant believes that the experimenter cannot see the pictures just shown and accordingly tells the story in non-shared mode (see the notes on that in Jažić et al. 2023, p. 8).

The next question arises from the adequate addressee of the story. The visual material (developed for children) makes it seem logical to give adults the task of telling this story to an (imaginary) child. In this way, the discrepancy between testing an adult with the child-oriented material already raised could be solved well. However, if one decides to do this, a vital difference emerges compared to the instruction for children who tell this story to adults. Consequently, the comparability of the data becomes questionable. In addition, before changing the addressee we must know more about the effects on the macro- and microstructure of the stories told. Systematic studies on this topic have yet to be conducted, so it is wiser not to carry out such a change at this point. Instead, it seems sensible to first conduct contrastive studies with varying addressees (Karl, in prep.).

To sum up, remote instruction should initially include addressing the story to an adult, and the question of non-shared knowledge needs to be solved differently than in the case of child testing.

Considering these arguments and in exchange with other researchers from the MAIN-community (a.o., Natalia Gagarina & Anna Smirnova, exchange during an online-meeting on 26.3.2021), the slides developed for online testing children (the so-called ZAS version) were adapted by including the considerations mentioned above. To enable non-shared knowledge, the adults' ability of imaginativeness is used: they shall imagine that the experimenter does not see the pictures during the narration. Hence, we ensure parallelism and consider adults' competencies (their ability to imagine things). These reflections were incorporated into the PowerPoint slides and implemented as simply as possible (for an application example see Jažić et al., 2023). The materials are thus oriented as closely as possible to the in-person test materials and only differ from them to the extent necessary. The developed PowerPoint slides and instructions (for online and in-person testing) for testing with adults will soon be available on zenodo (the author can be contacted for more information).

Thus, these adapted materials are a first outcome. At the same time, a number of questions remain open: the question of enabling non-shared knowledge in remote testing and the effects of addressing the story to an adult or a child. In the following section, I will discuss the first question in more detail. For answering the second question, I refer to a comprehensive ongoing study which systematically investigates this variation and its effects (Karl, in prep.).

5 Elicitation methods

5.1 General remarks

We have to distinguish between two general testing settings to elicit data: The in-person testing and different forms of digital remote testing. Both can be further differentiated and are referred to with varying terms (e.g., remote/online testing, computer-based testing (CBT) vs. in-person testing, paper-based or paper-and-pencil tests). There are a growing number of studies comparing these two testing settings and discussing the differences in general and regarding the outcomes (to name a few more recent studies from different disciplines: Funda, 2021; Karay et al., 2015; Mcclelland & Cuevas, 2020; Smolinsky, 2020; or for a broader overview Leeson, 2006). For the purpose of this article, I want to give a very broad overview of some of the relevant differences. The following variables may differ between the methods of testing:

- Space (experimenter and participant are/are not present in the same room)
- Time (experimenter and participant are/are not present at the same time)
- Moderation (a real person does/does not moderate the test)

In a classic in-person test situation, the experimenter and the participant are in the same room simultaneously, and a real person (experimenter) moderates the test. In contrast, by definition we have a non-shared real space in all remote testing procedures. However, in a typical situation, the persons meet in a digital space where both are present at the same time. The test is still carried out in the presence and moderated by an experimenter. I will call these tests moderated remote testing (abbreviated as remote testing A).

Testing software makes it possible to conduct a test digitally at every possible moment without a real moderator. Such tests are called unmoderated or sometimes self-moderated (for a comparison between moderated and unmoderated tests c.f. a.o. Hertzum et al., 2015, for unmoderated testing He, 2021; Relawati & Primanda, 2022) (abbreviated here as remote testing B). Such a testing method differs from in-person testing for all variables. Table 1 summarizes the differences between the three methods, in-person testing, remote testing A and remote testing B.

Table 1: Methods of testing and its variables.

Methods of testing	**Space**	**Time**	**Moderation**
In-person testing	+	+	+
Remote testing A	-	+	+
Remote testing B	-	-	-

5.2 Digital testing procedure in MAIN

In order to adapt MAIN to remote testing procedures, we have to take into account the *degree of non-shared knowledge*, and the *degree of autonomy* of the participant. By the degree of autonomy, I understand the extent to which the participant goes through the test in a self-determined way and can, for example, influence the speed of presentation of the individual pictures. These two variables depend on the specific test instructions (i.e., not on the choice of method per se).

In canonical in-person testing (as described in the MAIN protocol), the choice of envelope allows for autonomy. However, the experimenter does the unfolding (and refolding) of the story or pictures. That reduces the degree of autonomy but guarantees the non-shared-knowledge effect maintenance: the experimenter can control that he/she does not see the pictures him/herself and can pretend to not know the story. In this testing procedure, the participant tells the story to the experimenter, a real adult addressee. The whole procedure is carefully considered, piloted, adapted, and finally recorded and adopted in this form for most tests with children and the case of adult testing already mentioned.

All remote testing procedures developed so far for testing with children use moderated testing in digital space (via conferencing platforms, such as Zoom) (remote testing A) with the help of a PowerPoint presentation. The experimenter starts the screen sharing and shows the MAIN story as part of a PowerPoint presentation. The experimenter navigates through the presentation; the participant has no access rights. In this variant, it is logical that the participant and the experimenter have the same view of the pictures, which raises the question of how the non-shared knowledge effect can be guaranteed. Therefore, different approaches exist for testing children. One version (Slovak) suggests to the child that the computer screens show different images – the experimenter's screen remains black during the presentation of the pictures, which are only visible on the subject's screen. Another version (Hong Kong Polytechnic University – ZAS Version, for both versions, see https://main.leibniz-zas.de/en/main-materials/main-materials/) introduces an additional imaginary protagonist and addressee (a child) in the presentation. Hence, there is a virtual (and additionally childish) addressee.

If we transfer this to the adult context, I again hint at the mentioned differences between children and adults. If we imagine an adult with a correspondingly high level of digital literacy, it would be difficult to trick him/her into thinking that the experimenter cannot see the screen during a test via Zoom and screen sharing (cf. also the comments of Jažić et al., 2023, p. 8). The second variant, introducing an imaginary childish addressee, also poses difficulties, and the deviation from an adult addressee to a child needs to be revised in terms of its effects. This gives rise to the following questions:

1) Is a parallel test design using a PowerPoint presentation (henceforth PPP) and screen sharing suitable for adults, and what modifications are necessary?
2) What other test designs are available in remote testing?
3) What impact do different test designs have on the collected narrative data?
4) Which test design is the most suitable in which context?

I explored these questions by conducting a pilot study in which I elicited narrations from adults using three MAIN stories in the telling mode (see Gagarina, Klop et al., 2019 for descriptions of the telling, retelling, and model story modes).

6 Pilot study

I conducted a pilot study with 10 German-speaking adults telling three MAIN stories (Baby Birds, Baby Goats, and Cat) in the telling mode using three different testing methods (two moderated methods – one using PowerPoint and the other an external link – and one unmoderated) to research their possible effects on different levels. These are the level of the narratives' macrostructure (Section 5.3.1, defined and analyzed following to the MAIN protocol, Gagarina, Klop et al., 2019) and the levels of assessment from the view of the participant (Section 5.3.2) and the experimenters (Section 5.3.3). The conclusion (Section 5.3.4) weighs the results and comes to the outcome to recommend the moderated method with the help of an external link for remote testing with adults.

6.1 Testing methods

Taking into account the premises for the transfer to the adult context (comparability, avoidance of unnecessary deviations, and retention of an adult addressee, see above), the following three methods for remote testing were developed:

1) Moderated remote testing via Power point presentation (*PPP*): For this procedure, the Power point slides revised for adults (see explanations above) were used via screen sharing in virtual meetings. The non-shared knowledge is guaranteed using the adult's ability to imagine (see above). We asked the participant, "Now, please tell the story. Look at the pictures, and try to tell the best story you can. While doing this, imagine that I cannot see the pictures. Please start your story." This procedure assumes that the participant can use the conference software, but no further digital literacies are necessary. The conference software records the narrations, and the experimenter moderates the test.

2) Moderated remote testing via software (hereafter *Link*): This method works via a survey software in which we embedded the images of the MAIN stories. A digital survey was created that is accessible via a uniform resource locator (URL), i.e., a link to a website. This link is shared with the participant via chat during a virtual meeting. The person gets access to the survey page and can navigate autonomously through the pictures of the story. Here, the introduction, with the three envelopes' selection and the pictures' presentation, is identical to the PPP version. The difference is that only the participant sees the story. This solves the problem of non-shared knowledge. At the same time, he/she can go through the pictures autonomously at his/her speed. With the appropriate screen setting (or two screens), the experimenter's view remains large enough to ensure good interaction. This implementation assumes that the participant can handle with different software and is familiar with using parallel windows on the screen. The conference software records the narrations, and the experimenter moderates the test.

3) Unmoderated testing: No meeting with an experimenter is necessary for this method. The testing is done autonomously via software, which is also accessible via a link. The participant receives the link, calls up the page, and goes through the survey with the help of videos, audio files, and written instructions. The participant navigates autonomously through the story and has the task of telling it to a virtual person. In this case, autonomy is comparable to the second variant. The question of non-shared knowledge does not arise because no addressee is present (nevertheless, the instruction was kept identical in wording in all cases). The significant difference is that no moderated testing takes place. Accordingly, there is no interaction with the experimenter and no opportunity to ask questions. The interview software records the narrations. The recording must be started by the participant himself/herself. To implement this test version, the highest digital literacy is necessary. The participant has to start the software on its own and has no possibility to ask for help.

For the design of the Link version and the unmoderated testing and thus for the transfer into digital space with the help of survey software, I obtained permission from MAIN authors (Daleen Klop, Sari Kunnari, Koula Tantele, Taina Välimaa, Ute Bohnacker, and Joel Walters). I chose the survey platform *soscisurvey.de*, as it complies with data security standards on the one hand and blocks the download of embedded images on the other hand – in this case, the MAIN stories – and thus offers copy protection.

A summarizing comparison of the mentioned testing methods is shown in Table 2.

Table 2: Testing methods and other characteristics.

Testing method	Space	Time	Moderation	Autonomy[8]	Non-shared knowledge	Addressee
In-person testing	+	+	+	-	+	real
PPP	-	+	+	-	- (imagined)	real
Link	-	+	+	+	+	real
Unmoderated testing	-	-	-	+	not necessary	imagined

6.2 Participants and procedure

For the pilot study, I collected data from 10 adults aged 22 – 25 (mean age: 21.9) from the same socioeconomic background: They were all students (of different disciplines at a German university), with German as their first language. The testing begun with a written questionnaire with questions on biographical data and several items on linguistic habits, such as storytelling routines and contact with children. Afterward, the virtual meeting with the eliciting of the MAIN narratives took place. Each person told their three stories with the help of the three mentioned remote testing methods, i.e., each participant had to tell three different MAIN stories, all in the telling mode, each using another testing method. The stories used were Baby Birds, Baby Goats, and Cat in random order for the different testing methods, where either Baby Birds or Baby Goats was always the first story. The order of the testing methods was also randomized,

[8] Whether the participant can influence the tempo/timing of the 'unfolding' of the pictures

but, for organizational reasons, unmoderated testing was either the first or the last. The moderated tests were conducted and recorded via Zoom. In this way, each session consisted of a meeting with an experimenter via Zoom, where the person told two stories with the help of two testing methods, and of the autonomous testing (beforehand or afterward) via soscisurvey.de. In the Zoom meeting, we ensured that the participant did not tell both stories directly – one after the other – and that other tests distracted the persons between the two narrations (these tests included several tasks on working memory, inhibition, word recognition etc.). One Zoom session lasted about 45 minutes; the narration of the stories was the first and the last task.

After completing all three narrations with all three methods, we asked the participant to fill out a final questionnaire with questions about how they felt during the testing and which of the testing methods they liked better.

6.3 Results

I evaluated the use of the different methods from three perspectives: I analyzed the narratives on the macrostructural level (according to the MAIN protocol) (Section 6.3.1) with regard to their similarity of the performance between the three testing methods, the evaluation of the different testing methods by the participants (based on data from the final questionnaire, Section 6.3.2), and by the experimenter (Section 6.3.3). For this last perspective, I interviewed all three experimenters to determine which of the two moderated testing methods worked best in their perceptions. The analysis includes a total of 30 narrative.

6.3.1 Results: Macrostructure

Regarding the perspective of the data, I evaluated the scores for *story structure* (following the MAIN protocol, Max=17 points, for more details, see Gagarina, Klop et al., 2019). Additionally, to assess the *story complexity*, I counted the percentage of verbalized Attempt/Outcome sequences (AO), Goals only (G), or Goal/Attempt/Outcome sequences (GAO).

Table 3 shows the results for story structure, percentage AO-sequences, percentage single Gs and percentage GAOs for all narratives and by method of testing, (PPP, Link, and unmoderated), and by story (Baby Bird = BB, Baby Goat = BG, and Cat). Regarding the three testing methods, the differences between them are marginal. The slightly lower scores for the PPP are an artifact of another outcome, which relates to the narratives of the Baby Goats story. Some participants reinterpreted the story's beginning and said that the baby goat was swimming or playing in the water, not drowning and that the mother goat wanted the baby to come out of the water. This verbalizing of the episode results in a lower score for the respective narratives.[9] As we had slightly more Baby Goat stories told using the PPP method, this explains the difference between the methods and the comparatively lower score and lower percentage of

[9] Similar references to a reinterpretation of the Baby Goat story are found in Antonijević et al. (2022, 10), who attributes this to the size of the pictures. They assume that the participant did not see the pictures clearly or large enough, which led to the reinterpretation. That, of course, may be, but it would not explain why this affects the Baby Goat narratives exclusively.

verbalized GAO-sequences in the case of the Baby Goat stories.When all three stories told by one individual were analyzed, no variation due to the different testing methods was found. On the contrary, most people (6) told all three stories in all three methods identically down to the details of structural complexity.

In sum, I found no differences in telling the stories due to the different testing methods. Hence, there were no differences regarding the macrostructure of the elicited narratives.

Table 3: Results: Macrostructure.

	Story Structure (Max = 17)	**AO (%)**	**G (%)**	**GAO (%)**
Total (N = 30)	13.9	17.8	3.3	78.9
PPP (N = 10)	13.7	16.7	6.6	76.7
Link (N = 10)	13.9	16.7	3.3	80.0
Unmoderated (N = 10)	14.0	20.0	0.0	80.0
BB (N = 10)	14.3	16.7	0.0	83.3
BG (N = 10)	13.0	16.7	10.0	73.3
Cat (N = 10)	14.3	20.0	0.0	80.0

6.3.2 Participant: Assessment

To gain insight into the evaluation of the test procedures by the participants, they were asked to fill out a questionnaire, in which they should compare and rate the settings. In addition, I looked at how the participants coped with the testing situation at the technical level. All participants coped well and mastered the technical issues, except for two cases of unmoderated testing, where some technical problems appeared that led to empty audio files and therefore had to be repeated.

When asked which setting was most natural for telling a story, the participants indicated that both moderated methods were equally good and felt natural, but the unmoderated one was worse and more unnatural and unknown. Another question concerned the non-shared knowledge (i.e., in which setting was it best imaginable that the addressee did not see the pictures). In this case, the link variant was named as the best solution, followed by the unmoderated variant. Participants did not mention the PPP variant here. In a final question, the participants were asked to give their overall assessment: Which method was found most pleasant overall. The Link variant received the most positive assessment, followed by the PPP variant. The unmoderated variant received the worst ratings. However, the assessments were somewhat better when the unmoderated test was the final task.

6.3.3 Experimenters: Assessment

To include the experimenters' perspectives, I asked the three experimenters (all trained students with experiences in collecting data) to rate and reflect on the test situations. In general, they agreed that the PPP variant is technically easy to handle. It needs no further explanation as the

experimenter starts and controls the story. This outcome is in line with the statement of the straightforwardness of the PPP testing method in Antonijević et al. (2002, p. 9). However, they pointed out that when using PPP, they often had the feeling of interrupting the flow of the story by asking if they could go ahead with the next pair of pictures. This problem did not occur with the Link variant, but the experimenters stated that this method required a little more time and explanation at the beginning of the test. Initially, they had to explain to the participants how to open the link and move to the next page. Nevertheless, after this introduction, the storytelling flowed smoothly. Regarding unmoderated testing, the most crucial point for the experimenters is that they do not need to be present, so using this method saves time. At the same time, there is a higher level of uncertainty whether everything works as it should, and if not, one can lose the data.

6.4 Summary and conclusion: Pilot study

The pilot study results show that the choice of the testing method does not impact the macrostructure of the resulting narratives; no differences due to the test design were found. This means that the decision for a specific testing method may depend on other factors. As pointed out, such other factors can be the degree of non-shared knowledge and the participant's autonomy in unfolding the pictures. The need for autonomy must be considered from multiple perspective (in some cases, it may be desirable that the experimenter has more control over the procedure); nevertheless, it is a relevant factor in the case of adults. Both factors are not met in the PPP method. The unmoderated method ensures non-shared knowledge and autonomy. At the same time, this testing saves the experimenter's time, but enhances the danger of technical failures. It is also the most unnatural setting for telling a story. Nevertheless, persons with high digital literacy, who are already aware of the testing conditions coped well with this situation. Assuming participants are already familiar with eliciting picture-based stories in general (e.g., because they have previously told a MAIN story in a moderated method) and who have the appropriate digital literacy, this method seems to be well suited for use. The moderated method via Link also guarantees non-shared knowledge and autonomy. At the same time, testing via Link enables the most natural setting for telling a story: there is an interaction with a real person. However, the narrator directs the action himself/herself and is not interrupted or influenced by the experimenter. In cases of technical problems or questions the present experimenter can help, but otherwise he/she does not have to interfere. For these reasons, I generally consider the moderated method via Link as the best choice.

Finally, I want to hint at the limitations of the study. I obtained data from a small sample of young adults with a high level of digital literacy. The results are not generalizable and not transferable to older adults or adults with different backgrounds. Still, they show us what we, in general, must consider before testing MAIN with adults.

7 Conclusion

This paper has provided an overview of some necessary considerations for adapting the MAIN for use with an adult population by considering the similarities and differences of the overall

contexts of testing with adults compared to children, on the one hand, and in different conditions (in-person vs. remote), on the other. I outlined the process of adapting the instructions for testing MAIN with adults and considered some follow-up questions for using them in a remote context. To investigate these questions, I carried out a pilot study with 10 young German-speaking adults. The results of the pilot study showed the successful transfer from in-person testing to three different remote testing methods: two moderated and one unmoderated. The participants told three MAIN stories (Baby Goats, Baby Birds, and Cat) each in another testing method. The analyses of the resulting 30 narratives showed that the testing methods did not influence the macrostructure expressed by the participants. However, the participant and the experimenters experienced the three methods differently. I concluded that I recommend the so-called Link method for remote testing with adults, but that under certain conditions, the unmoderated method (when testing a second story and with participants with a high level of digital literacy) or the PPP method (especially for participants without corresponding digital literacies) are also applicable.

This paper has covered the general background for testing MAIN with adults in a remote context. It has answered some crucial questions and showed that the transfer to an adult and a remote context has been successful. At the same time, some questions remained open, such as the transfer to testing with older persons or those with cognitive impairments or the highly relevant question of addressing the story (addressee). Hence, there is a need for further studies.

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Acquisition of narrative macrostructure: A comprehensive overview of results from the Multilingual Assessment Instrument for Narratives

Josefin Lindgren[*]

Uppsala University, Sweden

Freideriki Tselekidou

Leibniz-Zentrum Allgemeine Sprachwissenschaft (ZAS), Germany

Natalia Gagarina

Leibniz-Zentrum Allgemeine Sprachwissenschaft (ZAS), Germany

In this paper, we give a comprehensive overview of the results from studies that have used the Multilingual Assessment Instrument for Narratives (MAIN) to investigate comprehension and production of narrative macrostructure (story structure) to date. We show the wide range of research in which MAIN has been used through summaries of core results from studies that investigated age effects, and studies that compared monolinguals with bilinguals, bilinguals' two languages, and typically-developing (TD) children with children with developmental language disorder (DLD). Results from studies including factors that influence bilinguals' narrative skills (e.g., language skills, language input) are also covered, as are those that deal with methodological aspects and more specifically, task effects, i.e., how the choice of elicitation mode (telling; retelling; model story) and story (Cat/Dog; Baby Birds/Baby Goats) influence story structure and story comprehension. As concluding remarks, we summarize the state-of-the-art of narrative research using MAIN and outline possible directions for future studies.

[*] Corresponding author: josefin.lindgren@nordiska.uu.se

1 Introduction

The Multilingual Assessment Instrument for Narratives (LITMUS MAIN, hereafter MAIN; Gagarina et al., 2012; Gagarina, Klop et al., 2019) was developed within the framework of COST Action IS0804 *Language Impairment Testing in Multilingual Settings* with the aim to assess narrative production and comprehension skills of children from 3 to 10 years old. Later, it has expanded to older children, adolescents, and adults. MAIN was originally published in 2012 (with a revised version in 2019). Currently, it is available in over 90 languages and during the past 10 years, a large number of published studies have used it to investigate different aspects of children's narratives. These studies cover a variety of languages and language combinations. Three special journal issues have been published, in *Applied Psycholinguistics* on *Narrative abilities in bilingual children* (Gagarina et al., 2016), in *First Language* focusing on *Children's acquisition of referentiality in narratives* (Gagarina & Bohnacker, 2022a) and in *Linguistic Approaches to Bilingualism* on *Storytelling in bilingual children* (Gagarina & Bohnacker, 2022b). Additionally, a recent book volume focused on narrative comprehension using MAIN (Bohnacker & Gagarina, 2020). However, so far, no comprehensive overview of the results from studies using MAIN has been published.

In this paper, we therefore summarize the findings of the research using MAIN, focusing on the scores on *story comprehension* and *story structure* (narrative macrostructure), two commonly used measures that are included as standardized measures in the instrument. An overview of all reviewed studies is given in Table 1 in the Appendix.[1] We start by giving an overview of MAIN and these two narrative measures (Section 2). Next, studies investigating age effects and development are described (Section 3), after which we focus on studies of bilingual children, including those who investigated different factors influencing bilinguals' narrative skills (Section 4), and on studies comparing typically-developing (TD) children with children with developmental language disorder (DLD) (Section 5). In the following section (Section 6), we describe results from studies investigating methodological aspects and more specifically, task effects, i.e., how results are influenced by the choice of elicitation mode and story. Finally, in our concluding remarks, we summarize what these studies tell us about children's narrative abilities and outline possible future directions for narrative research (Section 7).

2 The Multilingual Assessment Instrument for Narratives: an overview

Based on the need to create a satisfactory and theoretically-grounded instrument for the assessment of children's narrative skills across different languages, MAIN was developed by an interdisciplinary group of researchers. It consists of four parallel picture-based stories (Cat,

[1] In our review, we include only those published studies that analysed narratives elicited with MAIN and report results for the story structure score (or a close equivalent that included the same types of macrostructural components) and/or the standardized measure of story comprehension (see Section 2). We have done our best to find all such studies, but there may be additional studies of which we are not aware. Studies of MAIN narratives that only investigate other measures (e.g., reference or other aspects of microstructure) were not included.

Dog, Baby Birds, Baby Goats), each consisting of six pictures accompanied by story scripts. The four stories are equivalent in terms of their linguistic and cognitive demands, and are controlled for their cultural appropriateness. Thus, they allow testing both languages of bilinguals and make it possible to draw parallels between children from different linguistic and cultural backgrounds. Children's narrative abilities can be assessed via three elicitation procedures, telling, retelling, and model story, and the resulting narratives can be analyzed on both microstructural and macrostructural levels. The microstructure focuses on aspects that are connected to language specific characteristics, such as the number and complexity of words and sentences, and lexical diversity, while macrostructure evaluates the higher-order narrative structure, which is thought to express universal structures (cognitive schemata) and can therefore be considered language-independent.

The theoretical fundament of the macrostructure is the multidimensional theory of narrative organization. The core of this theory operationalizes narratives macrostructure in production and comprehension as several layers on the qualitative/quantitative and factual/inferred dimensions. The macrostructure in MAIN consists of single elements, such as Goals (G), internal states (IS), Attempts (A), and Outcomes (O), which are organized in episodes. With respect to the dimension of quantity/quality, the number (or sum) of these produced components is the *story structure*, the quantitative measure of the macrostructure. The MAIN story structure assessment consists of awarding points for the production of a setting (time + place, Max=2) and for IS as initiating event, goal, attempt, outcome, and IS as reaction in each of the three episodes (Max=15 points, 3x5 components). The maximum story structure score in all MAIN-stories is thus 17, if all components specified in the model are verbalized by the narrator.

Story complexity measures another dimension of a narrative. It reflects the qualitative aspect of narrative macrostructure by examining the ability to combine the core episodic components (e.g., A+O, G+A, G+O, G+A+O) in order to form episodes with different levels of complexity, with the most complex episode being a so-called complete episode, a goal-attempt-outcome sequence (GAO). Story complexity can be operationalized in different ways, e.g., by counting the number of GAO-sequences (max=3) produced by a child or by analyzing the proportions of different types of sequences found in narratives produced by a group of children. In previous studies, story complexity has indeed been operationalized in a number of ways that are not fully comparable. For this reason, in the present paper, we only report results from studies investigating story structure.

Another dimension of the multidimensional theory is factual vs inferred components. Goals and internal states are the two inferred components that are present in each of the three episodes in MAIN. Factual components, such as attempts and outcomes, are visualized directly in the pictures, and they are therefore easier to recognize, produce and understand. The dimension factual vs. inferred is reflected only in the production, since the comprehension questions target only inferred types of components (G and IS).

Story comprehension is assessed via 10 questions,[2] which are asked after the production of the story (or after the child has listened to a model story), and target inferred components of narrative macrostructure. Answering the questions correctly requires the child to use Theory of Mind to understand what the characters want and feel at specific points in the story. Three questions tap into the child's understanding of the three goals (one in each episode), six target the character's internal states and the child's ability to express the character's reason for experiencing these internal states, and one question assess the child's understanding of the whole plotline. Thus, the comprehension questions allow the researcher to draw conclusions with respect to different types of inferred information.

The quality of MAIN as a testing instrument was assessed in a study by Lautenschläger et al. (2021), who performed a psychometric evaluation analysing its objectivity, reliability, and validity. In their study, focus was on the story structure score and on the Baby Birds and Baby Goats stories. Generally, the instrument performed satisfactorily, although with some differences between different measures. Using some additional guidelines/criteria next to the MAIN scoring protocol, the interrater agreement (i.e. objectivity) was very high (98.13%). The test-retest reliability showed an almost perfect correlation (r=.978) between two testing points with around two weeks in between, when the same story was used twice. The children received significantly higher scores on the second testing point, showing a training effect. There was a lower reliability when two different stories were used: the correlation between the scores when the children told both stories was substantially lower, but still high (r=.767), and there was no significant difference between Baby Birds and Baby Goats. To investigate the validity of MAIN, the story structure scores were correlated with scores from a test of expressive vocabulary. The result showed a strong positive correlation, that was nevertheless not perfect (r=.648), between story structure and expressive vocabulary, indicating that although the story structure score is closely linked to expressive vocabulary (see also the results presented in Section 4.3 below), it does measure something in addition to the child's vocabulary skills. The authors conclude that further investigation into the validity of MAIN is needed, that it is important that scorers of MAIN receive extensive training to have satisfactorily objectivity in the scoring, and that researchers need to be aware of the fact that that when two different stories are used (e.g., in a bilingual child's two languages), there will be some difference in the scores.

3 Age effects and development

The majority of the studies using MAIN have focused on age 4 to 7, i.e., children attending preschool and/or the first grades of primary school, depending on the school system of the country (e.g., Altman et al., 2016; Boerma et al., 2016; Bohnacker et al., 2020; Bohnacker & Lindgren, 2021; Fichman et al., 2022; Haddad, 2022; Kapalková et al., 2016; Kunnari et al., 2016; Lindgren, 2018; Öztekin, 2019; Peristeri et al., 2020; Roch et al., 2016; Wehmeier, 2020), with fewer studies including children aged 8 or above (e.g., Fiani et al., 2020, 2022; Gagarina,

[2] In a few early studies, the participants were only asked 9 questions, as the final question was added a bit later in the process of developing MAIN.

2016; Košutar et al., 2022; Lindgren, 2022; Peristeri et al., 2020; Tribushinina et al., 2022; Tsimpli et al., 2016; Yang et al., 2023). Relatively many previous studies using MAIN analysed data from participants of different ages without including age as a variable in the study (e.g., Altman et al., 2016; Blom & Boerma, 2020; Boerma et al., 2016; Fichman et al., 2022; Kunnari & Välimaa, 2020). To our knowledge, only two studies have focused solely on adults. Gagarina, Bohnacker, et al. (2019) analyzed story structure and story complexity in German-, Russian-, and Swedish-speaking adults (N=69) and Antonijevic et al. (2022) investigated story structure and story comprehension in Irish-English bilinguals (N=30).

Studies investigating age effects on *story comprehension* have mostly found clear age effects for age 3/4–6/7, both in monolinguals (e.g., Bohnacker & Lindgren, 2021; Lindgren, 2019, 2022) and in bilinguals (e.g., Bohnacker, 2016; Bohnacker et al., 2020; Gagarina et al., 2020; Haddad, 2022; Lindgren & Bohnacker, 2020). The studies by Roch and Hržica (2020) and Blom and Boerma (2016) form exceptions here. Roch and Hržica (2020) did not find a significant correlation between age and story comprehension in Croatian-Italian bilingual 5–7-year-olds (N=30), and in their longitudinal study of Dutch monolingual children with TD (N=45) and with DLD (N=84), Blom and Boerma (2016) found no development from age 5–6 to age 6–7. There are some indications that story comprehension is close to ceiling already at age 5–6 (Bohnacker & Lindgren, 2021; Lindgren, 2019, 2022), which may explain these findings. However, Fiani et al. (2020), in their study of Lebanese Arabic-French bilinguals (N=48) found a significant effect of age from age 4 to 9, and likewise did Peristeri et al. (2020) from age 6 to 9 in a study of Albanian-Greek bilinguals and Greek monolinguals. In some studies, the age effect differed between groups or languages. For example, Wehmeier (2020), in her study of German-speaking monolinguals (N=199) and bilinguals (N=66) aged 4;6–5;11, found an age effect only in the monolingual group; this may have been due to the smaller bilingual sample. Rodina (2017), in her study of Russian-Norwegian bilinguals aged 4–6 (N=16), found an age effect on story comprehension in Norwegian, but not in Russian.

With respect to *story structure*, development have also generally been found between ages 3–4 and 6–7, for both monolinguals (Lindgren, 2019, 2022) and bilinguals (Bohnacker, 2016; Bohnacker et al., 2022; Fiani et al., 2022; Gagarina, 2016; Haddad, 2022; Lindgren & Bohnacker, 2022; Roch et al., 2016). The study by Blom and Boerma (2016) cited above is again an exception, with no significant development in story structure from age 5–6 to 6–7.

Studies including older children show more mixed results. For example, in a study of Croatian-speaking monolinguals (N=89), Košutar et al. (2022) found a significant difference between ages 6 and 8, whereas Gagarina (2016), in a study of Russian-German bilinguals found no significant difference between children in Grade 1 (aged 6;5–7;5) and Grade 3 (aged 7;11–10;6). Similarly, Fiani et al (2022) found no significant difference between Lebanese Arabic-French bilinguals aged 6–7 and 8–9, and Yang et al. (2023), in their study of Kam-Mandarin Chinese bilinguals aged 5 to 9 (N=55), found no effect of age. In a longitudinal study from age 4 to 7 of narratives elicited with the Baby Birds/Baby Goats stories from Swedish-speaking monolinguals (N=17), Lindgren (2019) found no difference in the story structure between age 5;10 and 7;4, whereas a subsequent study of the same children's Cat/Dog narratives from age 4 to 9 (Lindgren, 2022) found a significant development from age 7 to age 9. It is thus possible

that children's story structure reaches a plateau before it develops further. Again, some studies found differences between groups or languages. Tribushinina et al. (2022) found an age effect in the home language Indonesian of Indonesian-Dutch bilinguals aged 5–12 (N=32), but not in the societal language Dutch. More research is thus needed on children above the age of 7–8 to be able to draw firm conclusions as to how narrative skills develop further and at what age these skills reach the level of adults.

4 Bilinguals' narrative abilities

The majority of the published studies using MAIN have investigated narrative abilities of bilingual children. Some studies compared them to monolinguals (e.g., Blom & Boerma, 2020; Boerma et al., 2016; Bohnacker & Lindgren, 2021; Kunnari et al., 2016; Kunnari & Välimaa, 2020; Peristeri et al., 2020; Rodina, 2017; Tsimpli et al., 2016), others compared different bilingual groups (e.g., Blom & Boerma, 2020), or bilinguals' two languages (e.g., Altman et al., 2016; Bohnacker, 2016; Bohnacker et al., 2020, 2022; Bohnacker & Lindgren, 2021; Fiani et al., 2020, 2022; Fichman et al., 2022; Gagarina, 2016; Kapalková et al., 2016; Kunnari et al., 2016; Kunnari & Välimaa, 2020; Lindgren & Bohnacker, 2020, 2022; Öztekin, 2019; Roch et al., 2016; Roch & Hržica, 2020; Rodina, 2017; Tribushinina et al., 2022). One study combined all three types of comparisons (Lindgren, 2018). Several studies using MAIN have also investigated the effect of background factors or general language skills on bilinguals' narrative skills. Here, we summarize results from studies comparing bilinguals and monolinguals or different bilingual groups (Section 4.1), comparing bilinguals' two languages (Section 4.2) and those investigating factors influencing bilinguals' narrative skills (Section 4.3).

4.1 Bilinguals vs monolinguals and comparisons of different bilingual groups

The majority of studies comparing monolinguals and bilinguals in *story comprehension* have found that the groups do not differ significantly from each other (Blom & Boerma, 2020; Boerma et al., 2016; Bohnacker & Lindgren, 2021; Kunnari & Välimaa, 2020; Rodina, 2017). For example, Boerma et al. (2016) found that Dutch-speaking monolinguals and bilinguals (N=132) performed similarly on story comprehension after both telling and model story. One study forms an exception: in the study by Peristeri et al (2020), Albanian-Greek bilingual 6–8-year-olds were found to perform significantly better on story comprehension in the retelling mode than their monolingual Greek-speaking peers.[3] The study by Lindgren (2018), which compared Swedish monolinguals (N=72), German-Swedish bilinguals (N=46), and Turkish-Swedish bilinguals (N=48), found that the latter group performed significantly lower than the other two on comprehension of the Baby Birds/Baby Goats, but not Cat/Dog (both used in the telling mode). This indicates that the performance of different groups may be influenced by the type of stimulus material. Lindgren (2018) also found a significant difference between the two bilingual groups in their home languages, where the German-Swedish group had significantly higher comprehension scores in German than the Turkish-Swedish group in Turkish. In their

[3] The home language Albanian was not investigated.

longitudinal study with three timepoints (T1 at age 5–6) of comprehension after model story and telling, Blom and Boerma (2020) compared story comprehension for different bilingual groups, Turkish-Dutch (N=31) and Tarifit-Dutch (N=38). They only found a significant difference for story comprehension after telling at T2 (age 6–7), with higher scores in the Turkish-Dutch group.

For *story structure*, results are a bit more mixed. A number of studies found that bilinguals and monolinguals perform similarly also for this measure (Boerma et al., 2016; Haman et al., 2017; Kunnari et al., 2016). Tsimpli et al. (2016), using a modified scale of story structure where points were only awarded for the production of goals, attempts, and outcomes (Max=9 points), found that Greek-speaking bilinguals performed significantly higher than monolinguals. Rodina (2017) found that Russian-Norwegian bilinguals aged 4 to 6 (N=16) growing up in Norway performed similarly to Norwegian monolinguals, but significantly lower than Russian monolinguals. In the study described above, Lindgren (2018) found that the Turkish-Swedish bilinguals performed significantly lower on story structure than both Swedish monolinguals and German-Swedish bilinguals, with no difference between the two latter groups. When comparing story structure in the home language, the German-Swedish group performed significantly higher for narratives elicited with Cat/Dog, but for Baby Birds/Baby Goats there was no significant difference. The reason for this difference is not clear, and further studies that investigate narrative production by monolinguals and bilinguals for the different MAIN stories, while also taking factors such as general language skills into account (see Section 4.3), are still needed.

4.2 Bilinguals' two languages

A relatively large number of studies have compared bilinguals' performances in the two languages and the majority came to the same conclusion, namely that bilinguals perform similarly in the languages. This has been shown for both *story comprehension* (Bohnacker, 2016; Bohnacker et al., 2020; Fiani et al., 2020; Kapalková et al., 2016; Kunnari & Välimaa, 2020; Lindgren & Bohnacker, 2020; Rodina, 2017) and *story structure* (Altman et al., 2016; Bohnacker, 2016; Bohnacker et al., 2022; Fiani et al., 2022; Fichman et al., 2022; Kunnari et al., 2016; Lindgren & Bohnacker, 2022; Rodina, 2017). However, some studies did find differences between the languages. With one exception, these studies found higher scores in the children's first language (L1), irrespective of which language was the societal language. For example, Roch and Hržica (2020) found for story comprehension that Croatian-Italian bilingual 5–7-year-olds growing up in Croatia performed significantly higher in L1 Croatian than in L2 Italian. Similarly, Tribushinina et al. (2022) found higher story structure scores in L1 Indonesian than in L2 Dutch for Indonesian-Dutch bilinguals aged 5–12 growing up in the Netherlands, and Kapalková et al. (2016) found higher story structure scores in L1 Slovak than in L2 English in bilingual 5–6-year-olds growing up in Slovakia. Interestingly, Roch et al. (2016) only found a difference between L1 Italian and L2 English in the younger group (age 5–6), whereas the older group (aged 6–7) showed similar performance in the two languages. The pattern was the same for both story comprehension and story structure. In all cases, these results could be explained by the bilinguals' possibly having lower language proficiency in the L2

compared with the L1. The only exception to the pattern of higher scores in the L1 was found in a study by Lindgren and Bohnacker (2022) of German-Swedish 4–6-year-olds (N=46); these children had significantly higher score in the societal language Swedish than in the home language German. However, the majority of these children were simultaneous bilinguals, speaking both Swedish and German at home from birth, which may explain the higher scores in the societal language, as they may well be more proficient in the this language. These results are thus linked to the studies in the following section, which deals with factors influencing bilinguals' narrative skills.

4.3 Factors influencing bilinguals' narrative skills

A number of studies using MAIN have investigated factors influencing bilinguals' narrative skills, including measures of general language skills such as vocabulary and/or grammar (Bohnacker et al., 2020, 2022; Fiani et al., 2020, 2022; Lindgren & Bohnacker, 2020, 2022; Roch & Hržica, 2020; Tsimpli et al., 2016; Yang et al., 2023), measures connected to the amount of input received in the languages, the child's Length of Exposure (LoE) or Age of Onset (AoO) (Blom & Boerma, 2020; Bohnacker et al., 2022; Haman et al., 2017; Lindgren & Bohnacker, 2022; Roch & Hržica, 2020; Tribushinina et al., 2022) as well as language dominance or type of bilingualism (Fiani et al., 2020; Fichman et al., 2022; Gagarina, 2016).

With respect to measures of bilinguals' *language skills*, in a number of studies, the child's expressive vocabulary (measured by a score on a vocabulary test) has been found to significantly influence bilinguals' narrative skills; children's scoring higher on expressive vocabulary have been found to have higher scores on both story comprehension (Bohnacker et al., 2020; Fiani et al., 2020) and story structure (Bohnacker et al., 2022; Fiani et al., 2022; Yang et al., 2023) in both languages.[4] However, there are indications that, at least for some bilingual groups, the effect of vocabulary may differ between the languages. Two studies of the same German-Swedish bilinguals, one of story comprehension (Lindgren & Bohnacker, 2020) and one of story structure (Lindgren & Bohnacker, 2022), found a significant effect of expressive vocabulary in the home language German but not in the societal language Swedish. The authors propose that this may be linked to the children's overall higher proficiency in the societal language, compared to the home language. Additionally, the only study investigating receptive vocabulary also found different patterns in the two languages, with a significant correlation between receptive vocabulary and story comprehension in L1 Croatian, but not in L2 Italian (Roch & Hržica, 2020). Roch & Hržica (2020) also investigated the correlation between grammatical competence and story comprehension, which was found to be significant in both languages.

Regarding the effects of *language input/exposure* (including measures such as LoE and AoO), results are somewhat mixed and seem to depend both on the bilingual groups investigated and on the measure used. A number of studies have used parental estimates of the children's daily input in the two languages or measures of input at home, finding no effect on

[4] Yang et al. (2023) only investigated the home language Kam of Kam-Mandarin Chinese bilinguals. In addition to expressive vocabulary, they also found a significant effect of grammar (morphosyntactic ability measured via a sentence repetition task) on the children's story structure score.

or relationship with story comprehension (Blom & Boerma, 2020; Bohnacker et al., 2020; Lindgren & Bohnacker, 2020; Roch & Hržica, 2020)[5] or story structure (Bohnacker et al., 2022; Lindgren & Bohnacker, 2022). Tribushinina et al. (2022) analyzed current amount and richness of input in relationship to the story structure of Indonesian-Dutch bilinguals, but found no significant effect in either language. However, Haman et al. (2017) found that both higher exposure to L1 Polish and L2 English led to higher story structure scores in the L1, and Peristeri et al. (2020) found an effect of the amount of exposure to Greek before the age of schooling (age 6) on Albanian-Greek 6–8-year-old bilinguals' story comprehension. Roch and Hržica (2020) found no correlation between AoO and story comprehension in Croatian-Italian bilinguals' both languages, and Bohnacker et al. (2022) found no effect of LoE on Turkish-Swedish bilinguals' story structure in both languages. Tribushinina et al. (2022) found no effect of LoE to the majority language Dutch on the Indonesian-Dutch bilinguals' story structure in Dutch.

Finally, two studies have analysed narrative skills in relation to *language dominance*, one on story comprehension in Lebanese Arabic-French bilinguals (Fiani et al., 2020) and one on story structure in Russian-Hebrew bilinguals (Fichman et al., 2022). None of the studies found a significant effect of language dominance in either language, possibly due to the relatively small number of children in each dominance group. Differences between simultaneous and successive bilinguals have only been investigated in one previous study, the study by Gagarina (2016) on Russian-German bilinguals. Simultaneous bilinguals were found to have an advantage on story structure over successive bilingual, but only in the majority language German; no difference was found in the home language Russian. It can thus be concluded that while there seem to be a clear link between bilinguals' language skills and their story structure and story comprehension, factors such as input, LoE, AoO and language dominance need to be investigated further in future studies.

5 Typically-developing children and children with developmental language disorder

A number of studies have used MAIN to compare children with TD and children diagnosed with DLD or children who were identified to be at risk for DLD. Some of the studies investigated monolingual children (Blom & Boerma, 2016; Kuvač Kraljević et al., 2020; Pham et al., 2019; Sheng et al., 2020), others focused only on bilinguals (Altman et al., 2016), whereas yet others included both monolinguals and bilinguals (Boerma et al., 2016; Peristeri et al., 2020; Tsimpli et al., 2016). The specific ages investigated differ between studies, but the majority falls within the range of age 5 to 8.

Only a few studies have investigated *story comprehension* in children with DLD, and results are somewhat mixed. In their longitudinal study of Dutch monolinguals, Blom and Boerma (2016) found a difference between the TD and DLD groups at age 5–6, but not at age

[5] In their longitudinal study from age 5 to 7 of Turkish-Dutch and Tarifit-Dutch children, Blom and Boerma (2020) only found a significant correlation between home language richness, a measure of the child's input "from family friends and peers, as well as during reading activities, watching television/movies, and oral storytelling" (p. 209), and story comprehension in the home language on the Tarifit-Dutch group at T1 (age 5–6).

6–7, possibly due to ceiling effects. The result for age 5–6 was replicated in a study that also included bilingual Dutch-speaking children with and without DLD (Boerma et al., 2016). Peristeri et al. (2020), in a study of children aged 6–8 (N=120), found a difference between TD and DLD for Greek-speaking monolinguals, but not for Albanian-Greek bilinguals. Further studies of story comprehension in TD-children and children with DLD are thus needed before it is possible to draw any conclusions.

With respect to *story structure*, a larger number of studies have been carried out and results are a bit more uniform. The studies by Blom and Boerma (2016) and Boerma et al. (2016) of Dutch-speaking children, as well as the studies by Kuvač Kraljević et al. (2020) of Croatian-speaking monolinguals and Pham et al. (2019) of Vietnamese-speaking monolinguals, found significantly higher scores in TD-children. The study by Sheng et al. (2020) of Mandarin-speaking children with TD (N=21) and those at risk for DLD (N=21) found a difference between the two groups on story structure in narratives elicited in the telling mode, but no difference between the groups in the retelling mode. Two studies who did not use the story structure score, but instead analyzed a score for story complexity for two narratives combined (Tsimpli et al., 2016) or counted only goals, attempts and outcomes in the narratives (Altman et al., 2016), respectively, did not find any difference between children with TD and DLD. Since these measures differ both from the story structure score and from each other, it is difficult to compare the studies and for this reason, the picture of how DLD influences children's story structure in MAIN-narrative is still not conclusive.

6 Task effects

6.1 Differences between the stories

The four MAIN-stories, *Cat*, *Dog*, *Baby Birds* and *Baby Goats* were created to be parallel in their macrostructure, and the same number and types of macrostructural components are depicted in or can be inferred from the pictures and are included in the story scripts. However, there are some differences between, on one hand, Cat/Dog and, on the other, Baby Birds/Baby Goats. In Cat/Dog, multiple events that belong to different episodes take place simultaneously, whereas events are organized in a more linear fashion in Baby Birds/Baby Goats. Cat and Dog also contain three characters, where one is human (a boy), whereas Baby Birds and Baby Goats have five characters, who are all animals. Additionally, in the Baby Birds story, the two baby birds together function as one character, whereas the two baby goats in the Baby Goats story are separate entities, who are part of different plotlines. These differences may influence the structure of the narratives that children tell to these stories. A number of studies have investigated differences between the stories in story comprehension or story structure, either between the two pairs of stories (i.e., Cat/Dog vs. Baby Birds/Baby Goats) or between two specific stories (e.g., Bohnacker et al., 2022; Fichman et al., 2022; Gagarina, Bohnacker, et al., 2019; Kawar et al., 2023; Lindgren & Bohnacker, 2020). Here, we summarize the findings from these studies. The studies reported here used the telling mode unless stated otherwise. Studies employing different stories in different elicitation modes, e.g., Cat/Dog in retelling and Baby Birds/Baby Goats in telling, are discussed in Section 6.2.

For *story comprehension*, a number of studies have found a significant difference between Cat/Dog and Baby Birds/Baby Goats, when the same children told one story from each pair (i.e., a within-subjects design), with higher scores on the former than on the latter (Bohnacker et al., 2020; Bohnacker & Lindgren, 2021; Kawar et al., 2023; Lindgren & Bohnacker, 2020).[6] The difference has been found both for monolinguals and in bilinguals' two languages. For example, in their study of 100 Turkish-Swedish bilinguals aged 4 to 7, Bohnacker et al. (2020) found significantly higher scores on story comprehension of Cat/Dog than Baby Birds/Baby Goats in both languages. In all these studies, all children told Cat/Dog first, and the significant difference could thus be caused by an order effect, i.e., that the children were experiencing fatigue while answering the questions to Baby Birds/Baby Goats at the end of the testing session.[7] A number of studies have compared performance on story comprehension between the two stories within a pair, where different children told different stories (i.e., a between-subjects design). Here, no significant differences have been found between Cat and Dog (Bohnacker et al., 2020; Bohnacker & Lindgren, 2021; Lindgren, 2018, 2022), whereas scores have been found to be significantly higher on Baby Goats than on Baby Birds, for monolinguals (Bohnacker & Lindgren, 2021; Lindgren, 2019) and for bilinguals, at least in one of the languages (Bohnacker et al., 2020, for Turkish of Turkish-Swedish-bilinguals; Bohnacker & Lindgren, 2021, for English of English-Swedish bilinguals). For story comprehension there are thus indications that, on the one hand, the pairs Cat/Dog and Baby Birds/Baby Goats may not be completely comparable, but also that Baby Goats and Baby Birds may differ.

For *story structure*, studies comparing narratives elicited with Cat/Dog and Baby Birds/Baby Goats from the same children have found no significant differences (Bohnacker et al., 2022; Lindgren, 2018; Lindgren & Bohnacker, 2022), despite the fact that Cat/Dog was always administered first. Studies comparing Cat and Dog have found no significant differences (Lindgren, 2018, 2022; Öztekin, 2019), whereas results are more mixed for Baby Birds and Baby Goats. A number of studies have found that these two stories did not differ significantly either (Fichman et al., 2022, using the retelling mode; Lindgren, 2018; Öztekin, 2019), whereas others have found significantly higher scores on Baby Goats than on Baby Birds (Gagarina, Bohnacker, et al., 2019; Lindgren, 2019). There are thus some indications that, on the one hand, the story pairs Cat/Dog and Baby Birds/Baby Goats may lead to equivalent performance on story structure, but on the other hand, there may be a difference between Baby Birds and Baby Goats. These issues need further investigation.

6.2 Differences between telling, retelling and model story

As described above, MAIN can be administered in three different modes, *telling*, *retelling* and *model story*. A number of published studies have compared the telling and the retelling mode,

[6] Note that, in Lindgren and Bohnacker (2020), the difference was significant for the 4- and 5-year-olds but not for the 6-year-olds, which was likely due to the high scores on both tasks in this group. In Kawar et al. (2023), the retelling mode was used for both Cat/Dog and Baby Birds/Baby Goats, and all children retold all four stories.

[7] In Kawar et al. (2023), it is not clear whether the order of Cat/Dog and Baby Birds/Baby Goats was randomized or not.

investigating story comprehension (Kunnari & Välimaa, 2020; Wehmeier, 2020), story structure (Kunnari et al., 2016; Kuvač Kraljević et al., 2020; Sheng et al., 2020) or a combination of the two (Maviş et al., 2016; Otwinowska et al., 2020; Roch et al., 2016; Wehmeier, 2019). Some studies compared story comprehension after model story and after telling (Blom & Boerma, 2020; Gagarina et al., 2020; Maviş et al., 2016).

The studies follow the same general procedure (as described in the MAIN manual), but there are some minor differences between studies in the retelling/model story procedure used. In the studies by Roch et al. (2016) and Kuvač Kraljević et al. (2020), the child listened to a pre-recorded story in headphones, whereas in the other studies, an experimenter read the story scripts.[8] In most studies, in both modes, only the child was able to see the pictures (as per the standardized procedure); the study by Otwinowska et al. (2020) forms an exception here. In Otwinowska et al. (2020), the pictures were visible to both experimenter and child during the retelling, whereas the telling was done with the pictures visible to the child only. All studies published so far have used the Cat/Dog stories for model story/retelling and the Baby Birds/Baby Goats stories for telling,[9] which was the intention in the original version of MAIN (Gagarina et al., 2012), but was changed in the revised MAIN (Gagarina, Klop, et al., 2019). Additionally, only the study by Roch et al. (2016) counterbalanced the order of the retelling and telling tasks; in the other studies, all children received the tasks either in the order retelling (or model story) followed by telling (Blom & Boerma, 2020; Gagarina et al., 2020; Maviş et al., 2016, study 1; Sheng et al., 2020; Wehmeier, 2019, 2020) or telling followed by retelling (Kunnari et al., 2016; Kunnari & Välimaa, 2020; Kuvač Kraljević et al., 2020; Maviş et al., 2016, study 2; Otwinowska et al., 2020).

For *story comprehension*, results with respect to the effect of elicitation mode are somewhat mixed. Three studies have found a significant difference between retelling and telling in story comprehension (Otwinowska et al., 2020; Roch et al., 2016; Wehmeier, 2020), with higher scores for the former than the latter. For example, in their study of children aged 5–7 with L1 Italian and L2 English (N=62), Roch et al. (2016) found significantly higher scores in retelling than in telling in both languages. The difference between retelling and telling was large (around 2 points, with max=9 points). However, two studies found no significant differences (Kunnari & Välimaa, 2020; Maviş et al., 2016, study 2). It is notable that the studies which found no significant difference were smaller than those who found an effect, i.e., the former studies may have suffered from a lack of power. Three studies (Blom & Boerma, 2020; Gagarina et al., 2020; Maviş et al., 2016, study 1) investigated comprehension after model story and comprehension after telling, two of them longitudinally. Blom and Boerma (2020) analysed data from Dutch-speaking monolinguals (N=45) and bilinguals (N=69) at three testing points with approximately one year between. They found a significant difference between model story and the telling comprehension at T1 (age 5–6) and T2 (age 6–7), but not at T3 (age 7–8), due to ceiling effects; at T3, scores were above 90% (9 points) in both modes. Similarly, Gagarina

[8] In two studies (Blom & Boerma, 2020; Wehmeier, 2020), it was not specified who read the story scripts or how the child heard them, but it can be assumed that the more common procedure, where the experimenter reads the story, was used.

[9] Wehmeier (2019, 2020) used the Cat story for retelling and the Baby Birds for telling.

et al. (2020), in their three-year longitudinal study of Russian-German (N=30) and Turkish-German (N=27) bilinguals, who were either aged 2;10-3;11 or 3;0-4;7 at T1, only found a significant effect of mode in the younger group, possibly due to ceiling effects. The effect of mode was also only found for the comprehension of goals, not ISTs.

With the exception of the study by Otwinowska et al. (2020), which added an extra three points for the production of GAOs to the story structure score, the studies investigating task effects on *story structure* used the same standardized story structure score. The results for story structure are even more mixed compared to those for story comprehension. Roch et al. (2016) found a significant, but relatively small difference in the story structure score, with higher scores in retelling. Similarily, the studies by Otwinowska et al. (2020), Kuvač Kraljević et al. (2020) and Wehmeier (2019) also found significantly higher scores in retelling. However, Maviş et al. (2016, study 2) found no significant difference between the elicitation modes, and Kunnari et al. (2016) found a significant difference for bilinguals in Finnish, but not in Swedish and no significant difference in Finnish monolinguals. Sheng et al. (2020) found no effect of elicitation mode in TD children, but significantly higher scores in retelling than in telling for children who were at risk for DLD.

There are thus some indications that elicitation mode influences both story structure and story comprehension, but results are somewhat mixed, and may be related to sample sized. Due to the fact that the studies have used different stories in the two modes, it is also possible that the differences found between model story/retelling and telling in some previous studies is in fact an effect of differences between the stories (see also Section 6.1). Similarly, in all studies except the study by Roch et al. (2016), the difference could potentially be caused by either a learning effect or an exhaustion effect, depending on which task was administered first. The fact that Roch et al. (2016) as well as studies using different orders (retelling-telling or telling-retelling) have found similar results, namely higher performance in retelling than in telling indicate that the effect is likely not caused by the order, but is a true effect, either of elicitation mode or differences between Cat/Dog and Baby Birds/Baby Goats. Future studies investigating effects of elicitation mode should control for the stories used in the different modes as well as the order of the tasks.

7 Concluding remarks

The aim of this paper was to conduct a comprehensive review of the results from research using MAIN to investigate children's narrative skills. We have summarized findings from studies of comprehension and production of narrative macrostructure (story structure), focusing on how these two narrative measures (the story comprehension and story structure scores) are affected by age, bilingualism and factors influencing bilinguals' narratives (e.g., language skills, input), language, and DLD. We also focused on methodological aspects, more specifically task effects, i.e., the choice of elicitation mode (telling; retelling; model story) and story (Cat/Dog; Baby Birds/Baby Goats). In these concluding remarks, we summarize the state-of-the-art of narrative research using MAIN and outline possible directions for future studies.

With respect to *age*, a clear development has been found during the preschool age (age 3 to 7), but results from those few studies that investigated older children are more mixed. A central issue for future studies is thus to focus on children above age 7 to extend our knowledge of how narrative skills develop further and at what age these skills reach the level of adults.

Most studies using MAIN have investigated *bilingual* children, comparing them to monolinguals, comparing different bilingual groups or comparing bilinguals' two languages. Some have also investigated the effects of various background factors, most notably general language skills. Results indicate that bilinguals often do not differ from monolinguals, and that bilinguals tend to perform similarly in their two languages, but that factors such as the stimuli used and the language skills of the bilinguals in each of the languages play a role. General language skills, such as vocabulary knowledge, have been found to influence bilinguals' comprehension and production of narrative macrostructure. Studies investigating the effect of language exposure/input show mixed results; here results may depend on the characteristics of the studied group as well as on the measure used. It is thus necessary to be cautious with generalizations with respect to how such factors influence bilinguals' narrative skills. Further studies investigating the effects of a wider range of background factors on larger groups of bilinguals are still needed. Additionally, further studies comparing monolinguals and bilinguals speaking various languages are essential in order to fully verify whether the MAIN measures of story structure and story comprehension are indeed independent of the language spoken and the cultural context in which children grow up, as they were designed to be.

A number of studies have compared TD-children and children with *DLD*, but results are mixed, both for comprehension and production of narrative macrostructure, and, additionally, few studies have used the standardized story structure score. For this reason, further studies that use comparable measures and investigate a larger number of languages and language combinations are needed before any firm conclusions can be drawn as to the influence of DLD on children's story structure and story comprehension.

Concerning *task effects*, the results from previous studies indicate that researchers need to be cautious when using the different stories. The Cat/Dog and Baby Birds/Baby Goats stories, despite being constructed to be parallel both in their macrostructure and in their comprehension questions, may not be completely comparable. This also has consequences for studies investigating the effects of elicitation modes; future studies comparing for example telling and retelling should control for the specific stories used in the different modes. Since results from some previous studies, including the psychometric evaluation carried out by Lautenschläger et al. (2021), indicate that there may be differences between Baby Goats and Baby Birds, we recommend future studies to use Cat/Dog in situations when total comparability is needed. Additionally, as it is still unknown how the order of the tasks may influence performance, when comparing telling and retelling, it is also necessary to counterbalance the order of the tasks across participants.

From these summaries, it is clear that previous research on MAIN has helped us gain important knowledge about children's narrative skills, especially since the instrument has been used with participants who speak a wide range of languages, come from different cultures and belong to different age groups (see Table 1 in the Appendix), but that a number of issues, which

we have pointed out above, still remain open. In addition to investigating these issues further, what directions could future research using MAIN take? There are of course multiple answers to this question, depending on the specific interest of the researcher as well as the needs of the specific social and cultural contexts in which the study takes place. However, we want to stress a few points that we find especially important.

First, we suggest that future research on MAIN could work towards establishing norms, or at least referential norms, for the acquisition of different narrative skills. Such referential norms must consider the child's chronological age, the Age of Onset of bilingualism, language use and input, factors that would need to be operationalized as scores and be part of the referential norms. The scores on story comprehension and story structure, being the most frequently used measures so far, would be the logical point to start this work. However, establishing norms would require the pooling of resources from a large number of researchers. Therefore, this must be seen as a long-term goal.

Second, another fruitful avenue to go down would be to develop the theoretical model of multidimensional narrative organization further. This endeavour would contribute to a deeper knowledge of narrative skills and their development and form the starting point for new lines of research. To develop the multidimensional model of narrative organization further, a large dataset that contains oral (and possibly also written) narratives from adult speakers of different languages is needed, in addition to the existing datasets from child speakers.

Third, we see a need for further research that includes in-depth analyses of narrative microstructure, including both lexical and grammatical measures. Results from previous studies indicate that narrative skills are not independent of general language skills, but it is still unknown how much language knowledge is necessary to produce a minimally satisfactory story structure at a certain age, or to be able to combine the elements of at least one episode into a GAO-sequence, i.e., to produce a complete episode. Apart from establishing such a threshold, studies of the relationship between macrostructure and microstructure may provide help in identifying children with DLD. In particular, analyses of mental language, such as goals and internal states, could shed light on the specific difficulties of populations with atypical language development. Such analyses would also deepen our understanding of how children develop their reasoning about the inferred parts of events and internal states of story characters.

Last but not least, we want to point out the importance of investigating the cultural dimensions of children's narrative development and supporting the continuous growth of the MAIN network, including the creation of additional language versions as well as fostering further interdisciplinary collaborations by researchers from all around the world.

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Appendix

Table 1. Overview of the reviewed MAIN-studies.

Paper	Participants	Ages	Modes/Stories	Language(s)	Prod (SS)	Comp	Analyses
Altman et al. (2016)	Bi English-Hebrew TD (N=19) + DLD (N=12)	5–6	RT BB/BG	English; Hebrew	X*		langs, TD/DLD
Antonijevic et al. (2022)	Bi Irish-English (N=30)	Adults	T Cat/Dog; T BB/BG	English; Irish	X	X	langs, stories
Blom & Boerma (2016)	Mo Dutch TD (N=45) + DLD (N=84)	Long 2yrs T1: 5–6	MS Cat/Dog; T BB/BG	Dutch	X	X	age, TD/DLD
Blom & Boerma (2020)	Mo Dutch (N=45); Bi Turkish-Dutch (N=31); Bi Tarifit-Dutch (N=38)	Long 3yrs T1: 5–6	MS Cat/Dog; T BB/BG	Dutch		X	Mo/Bi, Bi groups, modes, input
Boerma et al. (2016)	Mo Dutch TD (N=33) + DLD (N=33); Bi Dutch TD (N=33) + DLD (N=33)	5–6	MS Cat/Dog; T BB/BG	Dutch	X	X	Mo/Bi, TD/DLD
Bohnacker (2016)	Bi English-Swedish (N=52)[a]	5–7	Telling BB/BG	English; Swedish	X	X	age, langs,
Bohnacker & Lindgren (2021)	Mo Swedish (N=72);[b] Bi English-Swedish (N=52)[a]	Mono: 4–6 Bi: 5–7	T BB/BG; T Cat/Dog (Mono only)	English; Swedish	X		age, langs, Mo/Bi
Bohnacker et al. (2020)	Bi Turkish-Swedish (N=100)[c]	4–7	T Cat/Dog; T BB/BG	Swedish; Turkish		X	age, langs, expressive vocab
Bohnacker et al. (2022)	Bi Turkish-Swedish (N=100)[c]	4–7	T Cat/Dog; T BB/BG	Swedish; Turkish	X		age, langs, expressive vocab, LoE, input
Fiani et al. (2020)	Bi Lebanese Arabic-French (N=48)	4–9	T BB/BG	Lebanese Arabic; French		X	age, langs, dominance, expressive vocab
Fiani et al. (2022)	Bi Lebanese Arabic-French (N=69)	4–9	T BB/BG	Lebanese Arabic; French	X		age, langs, expressive vocab
Fichman et al. (2022)	Bi Russian-Hebrew (N=38)	5–6	RT BB/BG	Hebrew; Russian	X		langs, dominance
Gagarina (2016)	Bi Russian-German (N=57)	3–4 + 6–7 + 8–10	MS Cat/Dog; T BB/BG	German; Russian	X		age, simul/seq
Gagarina et al. (2019)	Mo German (N=30); Mo Russian (N=20); Mo Swedish (N=19)	Adults	T BB/BG	German; Russian Swedish	X		langs
Gagarina et al. (2020)	Bi Russian-German (N=30); Bi Turkish-German (N=27)	long, 3yrs T1: 2–4	MS Cat/Dog; T BB/BG	German		X	age, modes
Haddad (2022)	Bi Arabic-Swedish (N=100)	age 4–7	T Cat/Dog, T BB/BG	Arabic; Swedish	X	X	age, langs, stories

Haman et al. (2017)	Mo Polish (N=145); Bi Polish-English (N=88)	4–7	T BB/BG; RT Cat/Dog	Polish	X		Mo/Bi, input
Kapalková et al. (2016)	Bi Slovak-English (N=40)	5–6	T BB/BG; RT Cat/Dog	English; Slovak	X	X	langs
Kawar et al. (2023)	Mo Palestinian Arabic (N=30)	5–6	T BB/BG; RT Cat/Dog	Palestinian Arabic; MSA		X	langs, stories
Košutar et al. (2022)	Mo Croatian (N=89)	6 + 8	Telling BB/BG	Croatian	X		age
Kunnari & Välimaa (2020)	Mo Finnish (N=16); Bi Swedish-Finnish (N=16)[d]	5–6	T BB/BG; RT Cat/Dog	Finnish; Swedish		X	langs, Mo/Bi, modes
Kunnari et al. (2016)	Mo Finnish (N=16); Bi Swedish-Finnish (N=16)[d]	5–6	T BB/BG, RT Cat/Dog	Finnish; Swedish	X		langs, Mo/Bi, modes
Kuvač Kraljević et al. (2020)	Mo Croatian TD (N=20) + DLD (N=20)	mean 6;6	T BB/BG, RT Cat/Dog	Croatian	X		TD/DLD, modes
Lindgren (2018)	Mo Swedish (N=72);[b] Bi German-Swedish (N=46);[e] Bi Turkish-Swedish (N=48)[c]	4–6	T Cat/Dog; T BB/BG	Swedish, German, Turkish	X	X	age, langs, Mo/Bi, Bi groups, stories
Lindgren (2022)	Mo Swedish (N=17)[b]	Long 3yrs T1 mean 4;4	T BB/BG	Swedish	X	X	age, stories
Lindgren (2019)	Mo Swedish (N=17)[b]	Long 5yrs T1 mean 4;4	T Cat/Dog	Swedish	X	X	age, stories
Lindgren & Bohnacker (2020)	Bi German-Swedish (N=46)[e]	age 4–6	T Cat/Dog; T BB/BG	German; Swedish		X	age, langs, expressive vocab
Lindgren & Bohnacker (2022)	Bi German-Swedish (N=46)[e]	4–6	T Cat/Dog, T BB/BG	German; Swedish	X		age, langs, expressive vocab, input
Maviş et al. (2016)	Bi Turkish-German (N=49)	2–7	RT/MS Cat/Dog; T BB/BG	Turkish	X	X	age, modes
Otwinowska et al. (2020)	Mo Polish (N=75); Bi Polish-English (N=75)	3–7	RT Cat/Dog; T BB/BG	English; Polish	X	X	langs, Mo/Bi, modes
Öztekin (2019)	Bi Turkish-Swedish (N=102)[c]	4–7	T Cat/Dog, T BB/BG	Swedish; Turkish	X	X	age, langs, stories
Peristeri et al. (2020)	Mo Greek TD (N=30) + DLD (M=30); Bi Albanian-Greek TD (N=30) + DLD (N=30)	6–8	RT Cat/Dog	Greek		X	age, Mo/Bi, TD/DLD, home language history
Pham et al. (2019)	Mo Vietnamese TD/"no risk" (N=45) + "some risk" (N=45) + DLD (N=10)	5	RT Cat	Vietnamese	X		TD/some risk/DLD
Roch et al. (2016)	Bi Italian-English (N=62)	5–7	T BB/BG, RT Cat/Dog	English; Italian	X	X	age, langs, modes

Roch & Hržica (2020)	Bi Croatian-Italian (N=30)	5–7	T BB/BG	Croatian; Italian		X	age, langs, receptive vocab, grammar, AoO, input
Rodina (2017)	Mo Russian (N=16); Mo Norwegian (N=16); Bi Russian-Norwegian (N=16)	4–6	MS Cat/Dog, T BB/BG	Norwegian; Russian	X	X	langs, Mo/Bi
Sheng et al. (2020)	Mo Mandarin Chinese TD (N=21) + "at risk" (N=21)	mean 5;8	T BB/BG; RT Cat/Dog	Mandarin Chinese	X		TD/at risk, modes
Tribushinina et al. (2022)	Bi Indonesian-Dutch (N=32)	5–12	T Cat/Dog (Indonesian); T BB/BG (Dutch)	Dutch; Indonesian	X		age, langs, input
Tsimpli et al. (2016)	Mo Greek TD (N=21) + DLD (N=21); Bi Greek TD (N=15) + DLD (N=21)	mean ≈9	RT Cat/Dog	Greek	X[+]		Mo/Bi, TD/DLD, composite language ability
Yang et al. (2023)	Bi Kam-Mandarin Chinese (N=55)	5–9	RT Cat/Dog; T BB/BG	Kam	X		age, expressive vocab, grammar
Wehmeier (2019)	Mo German (N=198)[f]	4–5	RT Cat; T BB	German	X	X	age, modes
Wehmeier (2020)	Mo German (N=199);[f] Bi German (N=66)	4–5	RT Cat; T BB	German		X	age, modes

Note. Studies marked with the same superscript letter (e.g. [a]) report results for the same group(s) of participants.[10] Mo = monolingual, Bi = bilingual; TD = typically-developing children; DLD = children with developmental language disorder; T = telling; RT = retelling; MS = model story; BB = Baby Birds, BG = Baby Goats; Prod (SS) = story structure score in narrative production; Comp = story comprehension score; Mo/Bi = comparison of monolinguals and bilinguals; Bi groups = comparisons of bilingual groups; TD/DLD = comparisons of TD children and children with DLD; langs = comparisons of languages; modes = comparisons of elicitation modes; stories = comparisons of stories; vocab = vocabulary; simul/seq = comparison of simultaneous and sequential bilinguals.

[*] Using a score that only counts goals, attempts, and outcomes (Max = 9)

[+] Using a score with max =18 (9x2 – two narratives combined, AO=1p, GA/GO=2p, GAO=3p)

[10] This marking is based on information that is either stated explicitly in the cited papers or otherwise known to the authors of the present paper. In some cases, one study reports results for a subgroup of participants that are also included in another study (e.g., the Turkish-Swedish participants in Lindgren, 2018 are a subgroup of the participants in Bohnacker et al., 2020; 2022 and Öztekin 2019).

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Papers in Phonology and Phonetics. Contributions by Karen Baertsch, Stuart Davis, Jana Brunner, Susanne Fuchs, Pascal Perrier, Hyeon-Zoo Kim, Antony Dubach Green, T. A. Hall, Silke Hamann, Jaye Padgett and Marzena Zygis.

ZASPiL 33 Natalia Gagarina and Dagmar Bittner (eds.):

Studies on the Development of Grammar in German, Russian and Bulgarian. Contributions by Dagmar Bittner, Natalia Gagarina, Milena Kühnast, Velka Popova, Dimitar Popov and Franziska Bewer.

ZASPiL 34 Paul Law (ed.):

Proceedings of AFLA 11, ZAS, Berlin 2004. Contributions by Edith Aldridge, Loren Billings & Daniel Kaufman, Chun-Mei Chen, Wen-yu Chiang & Fang-mei Chiang, Wen-yu Chiang & I Chang-Liao, Mark Donohue, Nelleke Goudswaard, Nikolaus Himmelmann, Arthur Holmer, Arsalan Kahnemuyipour & Diane Massam, Daniel Kaufman, Tomoko Kawamura, Edward Keenan & Cecile Manorohanta, Yuko Otsuka, Ileana Paul, Matt Pearson, Eric Potsdam and Craig Thiersch.

ZASPiL 35 Ben Shaer, Werner Frey and Claudia Maienborn (eds.):

Proceedings of the Dislocated Elements Workshop, ZAS Berlin, November 2003. Contributions by Maria Alm, Olga Arnaudova, Betty Birner, Ariel Cohen, Cécile de Cat, Judit Gervain, Beáta Gyuris, Liliane Haegeman, Konstantina Haidou, Anke Holler, Ruth Kempson & Ronnie Cann & Jieun Kiaer, Anikó Lipták, Eric Mathieu, Sam Mchombo & Yukiko Morimoto, Nicola Munaro & Cecilia Poletto, Frederick J. Newmeyer, Andreas Nolda, Javier Pérez-Guerra & David Tizón-Couto, Benjamin Shaer & Werner Frey, Nicholas Sobin, Augustin Speyer and Malte Zimmermann.

ZASPiL 36 Anatoli Strigin:

Blocking Resultative Secondary Predication in Russian.

ZASPiL 37 Susanne Fuchs and Silke Hamann (eds.):

Papers in Phonetics and Phonology. Contributions by Laura J. Downing, Christian Geng, Antony D. Green, T. A. Hall, Silke Hamann, Al Mtenje, Bernd Pompino-Marschall, Christine Mooshammer, Sabine Zerbian and Marzena Zygis.

ZASPiL 38 Jason Mattausch:

On the Optimization and Grammaticalization of Anaphora.

ZASPiL 39 Jana Brunner:

Supralaryngeal mechanisms of the voicing contrast in velars.

ZASPiL 40 Susanne Fuchs, Pascal Perrier and Bernd Pompino-Marschall (eds.):

Speech Production and Perception: Experimental analyses and models. Contributions by Susanne Albert, Jérôme Aubin, Pierre Badin, Sophie Dupont, Sascha Fagel, Roland Frey, Alban Gebler, Cédric Gendrot, Julia Gotto, Abraham Hirschberg, Ian S. Howard, Mark A. Huckvale, Bernd J. Kröger, Ines Lopez, Shinji Maeda, Lucie Ménard, Christiane Neuschaefer-Rube, Xavier Perlorson, Pascal Perrier, Hartmut R. Pfitzinger, Bernd Pompino-Marschall, Nicolas Ruty, Walter Sendlmeier, Willy Serniclaes, Antoine Serrurier, Annemie Van Hirtum and Ralf Winkler.

ZASPiL 41 Susanne Fuchs:

Articulatory correlates of the voicing contrast in alveolar obstruent production in German.

ZASPiL 42 Christian Geng, Jana Brunner and Daniel Pape (eds.):

Papers in Phonetics and Phonology. Contributions by Jana Brunner, Katrin Dohlus, Susanne Fuchs, Christian Geng, Silke Hamann, Mariam Hartinger, Phil Hoole, Sabine Koppetsch, Katalin Mády, Victoria Medina, Christine Mooshammer, Pascal Perrier, Uwe D. Reichel, Anke Sennema, Willy Serniclaes, Krisztián Z. Tronka, Hristo Velkov and Marzena Zygis.

ZASPiL 43 Laura J. Downing, Lutz Marten, Sabine Zerbian (eds.):

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 and 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 Sauerland, Uli & 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 Weber, Oliver, 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.