

Introduction to MAIN–Revised, how to use the instrument and adapt it to further languages

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1 Introduction

Since the launch of the *Multilingual Assessment Instrument for Narratives* (MAIN) in December 2012,¹ researchers around the world have been using MAIN to collect narrative data for a variety of languages and language combinations, analysed these data and thereby advanced our knowledge of children’s acquisition of narrative skills. This has led to a growing number of publications, including the *Applied Psycholinguistics* Special Issue on “Narrative abilities in bilingual children” (2016), the book volume *Developing narrative comprehension* (2020) in the *Studies in Bilingualism* Series, eds. U. Bohnacker & N. Gagarina, and the forthcoming *First Language* Special Issue on “Children’s acquisition of referentiality in narratives” (2021), eds. N. Gagarina & U. Bohnacker.

Over the years, our empirical database has greatly expanded, thanks to the never-ending creativity of how children tell and retell stories and how they answer the MAIN comprehension questions. Their creativity goes far beyond the anticipated responses that were included in the MAIN scoring in December 2012 (based on pilot studies prior to the launch of MAIN).

We therefore felt that the MAIN evaluation (i.e., the guidelines for assessment and scoring sheets) needed to be updated and expanded (see below). To do this we used our Uppsala and Berlin empirical databases of more than 2,500 transcribed MAIN narratives as well as ca

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¹ MAIN: Multilingual Assessment Instrument for Narratives is part of LITMUS (Language Impairment Testing in Multilingual Settings). LITMUS is a battery of tests that have been developed in connection with the COST Action IS0804 *Language Impairment in a Multilingual Society: Linguistic Patterns and the Road to Assessment* (2009–2013). Financial support by COST is hereby gratefully acknowledged.

24,000 responses to MAIN comprehension questions (collected between 2013–2019). The databases consist of cross-sectional and longitudinal data of 308 children in Germany, 50 children in Russia, and 286 children in Sweden. The children were growing up monolingually with Russian or Swedish, or bilingually with Russian/German, Turkish/German, English/Swedish, German/Swedish or Turkish/Swedish. First, we systematised the children’s responses across languages from English, German, Russian, Swedish and Turkish and extracted frequently-occurring correct and incorrect response types that were missing from the original MAIN scoring. We then revised the English scoring sheets, by updating and considerably expanding the list of correct and incorrect responses for production and comprehension of macrostructure, and corrected some (minor) inconsistencies in the scoring of the four MAIN stories (Cat, Dog, Baby Birds, Baby Goats). The guidelines for assessment were also amended slightly, while the protocols and story scripts remain the same. This is how the Revised version of MAIN in English (2019) (<https://zaspil.leibniz-zas.de/issue/view/53>) has come about.

At the same time, we also parallelised the German, Russian, Swedish and Turkish versions of MAIN with the Revised version in English (2019), and in doing so, incorporated authentic (correct and incorrect) responses from these languages. For example, frequently occurring response types found in Swedish or Russian were (in translated form) also included in the other language versions.

This work has resulted in the Revised versions of MAIN that we launched in November 2019 in ZASPiL 63. We hope that the Revised versions will help linguists, other researchers and practitioners to assess children’s narrative abilities more adequately. Note also that the Revised version in English serves as a base for any further language adaptations of MAIN. The present volume of ZASPiL 64 (2020) includes more than 70 such language adaptations. Additionally, 33 chapters describing the process of how MAIN has been adapted to individual languages are published in Part I of the present volume.

In order to access the language materials of the Revised version of MAIN in English, German, Russian, Swedish or Turkish for the bilingual Turkish-speaking population in Sweden (which are part of ZASPiL 63), you should click on “Materials to be used for assessment” at <https://zaspil.leibniz-zas.de/issue/view/53>. You will then be redirected to a registration site for MAIN. Once you have agreed to the copyright, citation and licensing rules and submitted your registration, you will be able to access the materials. The same holds for accessing the MAIN pictures.

In order to access the new and revised language versions of the present volume ZASPiL 64 (such as Afrikaans, Arabic, Bulgarian, Cantonese Chinese, Catalan, Croatian, Cypriot Greek, Danish, Dutch, Estonian, Farsi, Finnish, Frisian (West), Scottish Gaelic, Gondi, Halbi, Hebrew, Hindi, Greek, Icelandic, Irish (Gaeilge), Italian, Kam, Kurmanji (Kurdish), Luxembourgish, Mandarin Chinese, Polish, Brazilian Portuguese, Serbian, Slovak, Spanish, Tagalog, Torwali, Turkish in Turkey, Urdu, Vietnamese, Yakutian), you should go to Part II of this ZASPiL volume, 64 and click on the respective words “The available *MAIN–Revised* language versions can be downloaded after registration. **Here** is the link to registration and language versions.” You will then be redirected to a registration site for MAIN. Once you have

agreed to the copyright, citation and licensing rules and submitted your registration, you will be able to access the materials.

2 The MAIN pictures

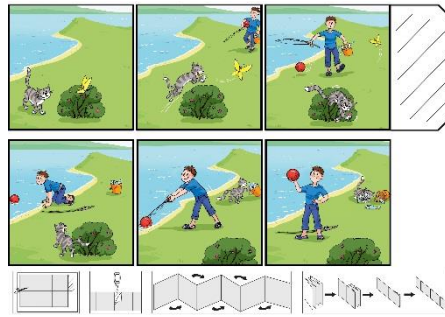
There are pictorial stimuli for all four MAIN stories (Cat, Dog, Baby Birds, Baby Goats), each consisting of six pictures in colour. When developing the story plots and the content and form of the pictures during 2009–2012, more than 200 revisions were made. (For more information on this developmental process, see ZASPiL 56, Part I, pp. 19–53.)

When the MAIN pictures were developed, the objects and characters depicted were carefully chosen and designed for a variety of cross-cultural environments and also piloted in different countries (2009–2013). Later on, with the ever-increasing popularity of MAIN, the pictorial stimuli have been used successfully also in other environments and regions of the world (2013–2019). In a few cases, some minor, cosmetic, picture adaptations have been done (e.g. adjusting the skin colour of the boy, or adjusting the colour of a particular animal so that it can be recognised by children in a particular geographical region or a cultural environment where the original animal is unknown, or replacing the sausages in the boy’s bag by chicken legs for cultural environments where sausages are less widespread). These pictorial stimuli have been successfully used with languages spoken in regions of Africa, e.g. Afrikaans, Akan, Luganda and South African English, as well as languages spoken in regions of the Middle East and Asia, such as different varieties of Arabic, Cantonese, Gondi, Halbi, Hindi, Indonesian, Kam, Kannada, Kazakh, Kurdish (Kurmanji), Malayalam, Mandarin, Persian, Tagalog, Urdu, Uyghur and Uzbek.

Some researchers have also requested that more substantial changes be made in the pictures to fit their particular cultural environment. However, such changes in the pictorial content may jeopardise the validity of the instrument and also jeopardise the comparability of results across studies. Note also that the content of the four picture stories has been thoroughly discussed with representatives of different cultures and languages, and numerous revisions and refinements were made when developing them, so that the MAIN pictures in their current form appear to be suitable for assessing macrostructural narrative abilities in diverse cultures and regions of the world. We have therefore been restrictive in responding to requests for more substantial changes in the pictures.

Note that you may not alter the pictures yourself, for copyright reasons.

In order to use the pictures, you may want to read the Guidelines for Assessment in the MAIN Revised version in English (and other languages). You should print the pictures in colour on a good-quality printer on white A4 paper, each picture in original size (9 x 9 cm), cut and paste them together into a 6-picture strip, and fold them twice (pic 1, pic 2, fold, pic 3, pic 4, fold, pic 5, pic 6), as illustrated below.



The default serial order of our picture sequences is from left to right. For languages with a right-to-left reading direction, the pictures may be pasted together and presented from right to left instead (6-5-4-3-2-1). You can also download the pictures in right-to-left direction.

In order to access the pictures, visit <https://main.leibniz-zas.de/en/main-materials/main-materials/>, where you will be directed to a registration site for MAIN. Once you have agreed to the copyright, citation and licensing rules and submitted your registration, you will be able to access the materials.

3 Do's and don'ts for working with MAIN

MAIN has been adapted to and is being used in a large number of languages. The MAIN community is growing, since it is a good instrument for measuring macrostructural narrative abilities across different languages. MAIN has been in the public domain and is accessible via the website at the Leibniz-ZAS in Berlin. We would like to ensure that research with MAIN is done in a comparable manner and that the results can eventually be published together, as this will advance our knowledge of children's developing narrative abilities across the world. Please be part of our endeavor and help us safeguard that the instrument is being used in a comparable and reliable way across languages, countries, research groups and labs.

Here are some recommendations for use.

How to access and share the MAIN materials

- Make sure that you use the latest version of MAIN. We recommend that you only use versions which you download yourself from the (Leibniz-ZAS) MAIN-website (<https://main.leibniz-zas.de/>).
- Do not circulate MAIN materials to others in ways that bypass the web registration; instead direct interested colleagues, students, friends etc. to the website to take note of the copyright, citation and licensing rules for MAIN

How to use the MAIN pictures

- When administering MAIN, use the pictures in agreement with the Guidelines for Assessment (which can be found in every language version)

- Do not alter the size, colour or content of the MAIN pictures
- The pictures are part and parcel of the MAIN assessment, so don't use them unless you are administering MAIN for evaluation, intervention and/or research purposes

How to use the MAIN stories

- When testing bilinguals in their two languages, avoid using the Cat and/or Dog story for one language and the Baby Birds and/or Baby Goats story for another language
- Avoid using the Cat and/or Dog stories at one testing point and comparing them with Baby Birds and/or Baby Goats at another testing point
- Why? The MAIN stories cannot straightforwardly be compared in every way. As recent results have shown, there are some nuances for which the four stories differ, especially with regard to the comprehension questions. Baby Birds and Baby Goats are roughly parallel; Cat and Dog are also parallel but differ from Baby Birds and Baby Goats in some respects, e.g. plotline, number of characters and some of the comprehension questions. (For more information, see the book volume *Developing narrative comprehension* (2020), eds. U. Bohnacker & N. Gagarina, in the *Studies in Bilingualism* Series, Amsterdam/Philadelphia: John Benjamins.)

How to administer MAIN

- Please follow the Guidelines for Assessment and the Instructions in the protocols found in every language version

How to cite

If you present or publish results based on the Revised version of MAIN in English, cite:

- Gagarina, Natalia, Klop, Daleen, Kunnari, Sari, Tantele, Koula, Välimaa, Taina, Bohnacker, Ute & Walters, Joel (2019). MAIN: Multilingual Assessment Instrument for Narratives – Revised. *ZAS Papers in Linguistics* 63.

If you use a language version other than English, cite this language version according to the title page of the version you are using. Here, there are two possibilities:

If your language version is not accompanied by a chapter on adaptation (Part I, ZASPiL 64), cite this language version as illustrated here for the Sangho version:

- 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. Sangho version. Translated and adapted by Diki-Kidiri, M.

If your language version is accompanied by a chapter on its adaptation (in Part I, ZASPiL 64), cite this language version as illustrated here for the Estonian version:

- Argus, R. & Kütt, A. (2020). The adaptation of MAIN to Estonian. *ZAS Papers in Linguistics*, 64, 57–62.
- Gagarina, N., Klop, D., Kunnari, S., Tantele, K., Välimaa, T., Bohnacker, U. & Walters, J. (2019). MAIN: Multilingual Assessment Instrument for Narratives – Revised version. Materials for use. *ZAS Papers in Linguistics*, 63. Estonian version. Translated and adapted by Argus, R. and Kütt, A.

4 Helpful information about scoring

Scoring in MAIN is done according to scoring sheets that include correct and incorrect responses. Scoring MAIN macrostructure includes both production (storytelling and/or retelling) and comprehension and is divided into four sections, A, B, C and D. These sections cover quantitative and qualitative aspects of evaluating narrative performance.

Quantitative scoring in Section A (“Story structure”) calculates the number of story components produced by the child, with a maximum score of 17. This maximum score consists of 1 point each for reference to time and place at the beginning of the story (so-called setting), and 1 point each for mentioning the 5 components of an episode (internal state as initiating event, goal, attempt, outcome, internal state as reaction). As there are 3 episodes in each story, this means 15 points (plus 2 points for setting), yielding a maximum of 17 points. Since every MAIN story includes 3 episodes, there are several opportunities for the child to produce story structure components. In our experience, very few children produce them all, and most adults do not reach 17 points either. A score below 17 does not necessarily indicate poor narrative ability (cf. Gagarina, Bohnacker & Lindgren 2019 in ZASPiL 62, pp. 190–208).

The quality of a narrative also depends on the combination of story components in an episode. This is assessed in Section B (“Structural complexity”), which is derived from Section A. In Section B, combinations of story components are classified in terms of complexity (episodic structure: sequences, incomplete vs complete episodes), as shown in the scoring sheets. There are different ways of scoring structural complexity. In our experience, a promising way of evaluating structural complexity is by analysing whether a child is able to produce sequences at all, and whether the child is able to produce at least one goal-attempt-outcome sequence, i.e. a full episode.

Section C counts the total number (i.e. tokens) of internal state terms in the child’s narrative. Internal state terms are words and expressions that denote the inner (or mental) states of story characters. It should be acknowledged that internal state term tokens are not strictly part of macrostructure, but more of a lexical measure. Internal state terms are also language-specific and their production depends on lexical proficiency. No maximum score can be specified for internal state term tokens.

In Section D (Comprehension), 10 questions are asked and a maximum score of 10 points can be obtained (each correctly answered question scores 1 point). The questions target

understanding of those aspects of macrostructure that must be inferred from the pictures, namely goals and internal states of protagonists. The questions were designed to have different levels of difficulty in terms of abstraction and inferencing, so a child is not expected to answer them all equally well. In our experience, many typically developing children above the age of 4, even those with relatively low language exposure and proficiency, can reach relatively high comprehension scores in Section D.

There are other aspects of narrative ability that are not directly assessed with the MAIN scoring, but which can also be investigated in stories elicited with MAIN. For the so-called microstructure, Gagarina et al. (2012, *ZASPiL* 56, Part I, pp. 15–17, 55–58) suggest investigating the following aspects of microstructure: narrative length and lexis, syntactic complexity and discourse cohesion, and/or code-switching. Since narratives as semi-spontaneous data are a rich source of linguistic material, other aspects, such as referent introduction and maintenance, temporality, causality etc., also lend themselves to analysis.

5 For researchers: Helpful information for reporting MAIN results

MAIN provides a uniform methodology of collecting narrative data and thereby makes it possible to investigate children’s narrative abilities across languages and populations in a truly comparable way. However, MAIN also provides different options to elicit these data. When we collect semi-spontaneous narratives across countries and teams, real life ‘intervenes’ and perfect uniformity cannot always be achieved; some variation in method naturally occurs. It is therefore important that you explain the methodology of your study in detail when reporting results.

You should always specify the following concerning mode, materials and administration:

- which story or stories were used (Cat, Dog, Baby Birds or Baby Goats),
- in which elicitation mode the data were collected from the children (tell, retell or model story),
- how the experimenter(s) administered MAIN to the children (non-shared visual attention, fold-out presentation mode), and in the case of retell, how the stories were read to the children (live by experimenter or pre-recorded via earphones), and who the children retold the stories to,
- who administered MAIN (e.g. trained experimenter, native speaker, monolingual or bilingual experimenter, number of experimenters in the study and per language),
- setting (e.g. quiet room at school or preschool, home, lab),
- time lapse between testings,
- counterbalancing procedures,
- recording method (audio or video).

Regarding transcriptions, you should specify how transcriptions were done, i.e. by whom, how they were checked, and how transcription reliability was achieved.

Concerning MAIN scoring, you should specify your scoring procedure. We recommend that you use the scoring sheets of the Revised version (2019) for English, German, Russian, Swedish or Turkish for the bilingual Turkish-speaking population in Sweden (ZASiL 63). Alternatively, for the new language versions and revised language versions included in the present 2020 volume (ZASPiL 64), use the scoring sheets included here, as they are based on the Revised version of MAIN in English. Researchers who have worked with MAIN using older versions should specify which older versions these were. Any deviations from the MAIN scoring protocol should be reported. Specify how problematic cases were resolved and how scoring reliability was ensured.

When presenting or publishing your results, please cite MAIN as specified in Section 3 (“Do’s and don’ts for working with MAIN”).

6 Guidelines for adapting MAIN to other languages

If MAIN does not yet exist for your language, here are some recommendations for adapting it to your language.

Adaptation steps

1. Start the adaptation only after you have read the MAIN Manual and familiarised yourself with the whole instrument. The Manual was published in 2012 and describes the theoretical background and the process of developing MAIN. It can be downloaded from the ZAS Papers in Linguistics website: <https://zaspil.leibniz-zas.de/issue/view/46> (Gagarina et al. 2012. MAIN: Multilingual Assessment Instrument for Narratives [Part I] ZAS Papers in Linguistics 56).
2. Use the *Revised version in English* (2019) as a base for all language adaptations. You should contact costmain@leibniz-zas.de for further information and if you have questions about adaptation.
3. Translate the whole text into your language.
4. Ask two native-speaker linguists to carefully check the translation of the entire text and adjust. Your translation should closely correspond in meaning to the Revised version in English, but be worded in a way that is authentic and idiomatic in your language.

Special requirements for adapting the story scripts to your language

5. Translate all four story scripts into your language.
6. When adapting macrostructure note the following:
The number of GAO sequences and internal states for each protagonist must remain constant across languages. Adaptations of the scripts to different languages must therefore keep the following similar to the English version:
 - The number and sequence of G, A, O
 - The number of internal state terms as initiating events and as reactions

- The logical sequence of clauses/utterances
7. When adapting microstructure note the following:
Script adaptations to different languages should keep microstructure as similar as possible across stories.
- All scripts should be similar to the English scripts concerning:
 - The number of coordinating and subordinating constructions (+/- 2)
 - The number of internal state terms overall
 - The number of direct speech sentences
 - The number of clauses per story may differ from English (+/- 2), but should be kept identical across the two parallel story scripts (Cat and Dog, Baby Birds and Baby Goats) within a language.
 - The number of words per story may differ from English (+/- 3 words or more depending on the language) but should be kept similar across the two parallel story scripts (Cat and Dog, Baby Birds and Baby Goats) within a language.
 - Lexicon: If you have the choice of different lexemes, use basic-level terms (so for instance, rather than a choosing a noun compound use the simplex form, such as ‘worm’ and not ‘earthworm’). If possible, choose a frequently used lexeme that is acquired early by children.
 - Do not use idioms, as children may not be familiar with them.
8. Note any grammatical and lexical difficulties that occurred during the adaptation as well as any changes that were made because of language-specific requirements concerning the structure and/or lexical inventory (this information may come in useful for future publications).
9. Translate your language version back into English and closely compare your back translation with the original English version. Note the differences, if any.
10. Ask two native-speaker linguists to carefully check the translation of the story scripts. Discuss alternatives and via consensus arrive at the best possible final version.

Piloting your language version

Try out your language version on children of different ages including preschoolers before you start collecting data. This is to make sure that the wording of your prompts and comprehension questions is easily understood by children and elicits relevant responses. Adjust the wording accordingly, if necessary.

If you have any questions regarding MAIN, please write to costmain@leibniz-zas.de