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

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

1   Introduction

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

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

2   DA: Mediated Learning Experience (MLE) and modifiability

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

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

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

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

3 Adapting MAIN as Dynamic Assessment (MAIN-DA)

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

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

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

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

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

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

3.1 Testing phase using the Baby Goats story

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

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

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

3.2 Teaching phase using the Baby Goats story

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

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

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

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

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

3.2.1 *Measuring child modifiability during the teaching phase*

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

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

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

3.3 *Retesting phase using the Baby Birds story*

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

3.4   Scoring

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

4   Conclusion

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

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

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

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