ISSN 1799-2591
Theory and Practice in Language Studies, Vol. 15, No. 5, pp. 1635-1646, May 2025
DOI: https://doi.org/10.17507/tpls.1505.28

Tools and Methods for Assessing Narrative Competence in Preschool Children: A Systematic Review

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***Abstract*—This review intends to synthesize the assessment approaches in preschool children for narrative competence while focusing on some major characteristics like elicitation procedures, stimuli, types of tasks, and levels of analysis. With reference to 37 studies published between 2019 and 2024 in the WOS database, this review points to a diverse array of tools and methods of assessing narrative competence. Standardized and non-standardized tools have their own advantages and disadvantages, with the former providing cross-cultural consistency and the latter better capturing natural language samples; however, in the digital age, both also face common limitations. Different types of narrative tasks have different cognitive demands and apply to different assessment goals. In addition to conventional picture books, narrative stimulus materials include wordless books. However, there is a growing interest in digital stimulus materials, which offer interactivity and dynamic engagement and may fit better into modern educational environments. Future research can address these limitations by expanding the scope of included studies and considering the reliability and validity of assessment tools, while integrating digital technology and artificial intelligence to promote the dynamic, comprehensive, and real-time development of narrative competence assessment methods.**

***Index Terms*—narrative competence, preschool children, assessment tools, content analysis, web of science database**

I. Introduction

In recent years, many studies have focused on the development of narrative competence in preschool children and its assessment techniques (Ralli et al., 2021). However, despite the inherent importance of narrative competence, systematic reviews of its assessment methods are scarce—especially among preschool children, largely because their writing skills are not yet fully developed and they predominantly rely on oral narration (Pinto et al., 2019). Moreover, the diversity of research topics, methodologies, and disciplinary perspectives, combined with concerns over the replicability of narrative competence assessments, further underscores the urgent need for a comprehensive analysis to address existing gaps and promote progress in this field.

II. Literature Review

Narrative competence is one of the core early literacy skills (Pinto et al., 2019) in child psychology, linguistics and education. It has thus been defined as the ability to tell a story in a consistent manner (Bowles et al., 2020), critical in early childhood language development. It forms the basis of improved vocabulary growth, acquisition of sentence structures, and advanced skills such as reading and writing (Grolig et al., 2020). Most importantly, it is a potent predictor of how well one succeeds academically and is a powerful promoter of social development (Pinto et al., 2019; Ralli et al., 2021).

Given the importance of narrative competence for child development, related studies have increased significantly in recent years. This is because assessments of narrative competence not only evaluate children's storytelling abilities but also provide a basis for educational interventions, thereby attracting considerable attention. For example, Van Kraayenoord and Paris (1996) employed wordless picture books as stimulus materials to elicit narrative expressions in

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children and evaluate their developmental levels. Subsequently, assessment tools such as Multilingual Assessment Instrument for Narratives and Edmonton Narrative Norms Instrument have been gradually developed and applied in practice. Moreover, some scholars have adopted more ecologically valid sampling methods to obtain language samples for measuring children's narrative competence.

Considering the wide variety of tools available for assessing children's narrative competence—and the substantial differences in children's language abilities, ages, and cultural backgrounds—there is an urgent need for a systematic review that summarizes the characteristics, applicable contexts, and the strengths and limitations of these assessment tools, thereby providing a more comprehensive theoretical basis for future research and educational practice. Although Sánchez-Gómez et al. (2024) have conducted a systematic review on the assessment of children's narrative competence, her focus was on children with atypical development. In contrast, systematic reviews on typically developing children, especially among preschoolers, are relatively scarce. Therefore, the necessity of this study lies in its exclusive focus on typically developing children, with an in-depth analysis of the characteristics, scope of application, and limitations of various assessment tools, aiming to fill this research gap and provide targeted guidance for further theoretical exploration and educational practice.

This study intends to conduct a systematic analysis of the literature on narrative competence in preschool children using scientific databases. Specifically, it addresses the following research questions:

(i). What are the key features of studies on narrative competence in preschool children?

(ii). What are the widely used instruments and approaches for evaluating narrative competence in preschool children, and what are their main characteristics.

III. Methodology

A. Systematic Procedure

Using the WOS database, a systematic review was carried out, and synonyms were added to broaden the scope of the search. Expanded terms were not applied in the search. The search targeted terms associated with preschool children, narrative ability, and evaluation methods. A detailed account of the search results and the composition of the initial dataset can be found in Table 1.

Table 1
Retrieval Results and Removal of Duplicate Records

Terms	Rec.	Tot.	Dup. Removed	Sel.for Scr.
preschool children AND narrative skills AND (assessment OR evaluation OR measurement)	54	443	179	264
preschool children AND narrative competence AND (assessment OR evaluation OR measurement)	12			
early childhood AND narrative skills AND (assessment OR evaluation OR measurement)	34			
early childhood AND narrative competence AND (assessment OR evaluation OR measurement)	7			
preschool children AND narrative development AND (assessment OR evaluation OR measurement)	77			
early childhood AND narrative development AND (assessment OR evaluation OR measurement)	113			
children AND storytelling abilities AND (assessment OR evaluation OR measurement)	18			
early childhood AND storytelling abilities AND (assessment OR evaluation OR measurement)	4			
preschool children AND narrative skills AND analysis	60			
preschool children AND narrative competence AND analysis	8			
early childhood AND narrative competence AND analysis	19			
narrative language AND measurement AND preschool children	7			
kindergarten children AND narrative skills AND (assessment OR evaluation OR measurement)	26			
kindergarten children AND narrative competence AND (assessment OR evaluation OR measurement)	4			

B. Study Selection and Inclusion

The study initially collected 443 studies, and then entered the screening phase. Only those studies that met all the criteria were included in the final sample. The screening process was divided into three stages, progressively refining the sample, and the detailed steps can be found in Figure 1.

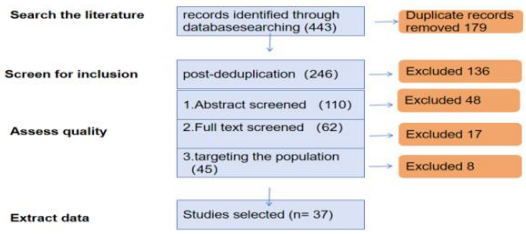

Figure 1. Flowchart

The screening process was divided into three stages. The first stage screened studies based on abstracts, requiring that studies (i) assessed preschoolers' narrative competence, (ii) did not include case reports, (iii) were published from 2019 to 2024, and (iv) were written in English. The language requirement applied only to the manuscripts and did not include the language background of the participants.

The second screening phase at the full-text level retained studies that provided measurement data and evaluated oral narratives.

The third screening criterion was that the study was of preschool children, even if other age groups were included, as long as the study focused on normally developing children. Studies were excluded if they involved children with developmental disabilities or special needs, such as speech and language disorders, Down syndrome, or individualized education plans.

Ultimately, a total of 37 studies were chosen for data extraction.

C. Data Extraction and Coding

This study employs content analysis, coded across two main dimensions: study characteristics and assessment characteristics.

The coding framework for research characteristics includes not only the country, language, children's age, and gender ratio, but also the research designs. Research designs were classified according to Creswell (2012) research typology, which includes quantitative, qualitative, and mixed methods research. Quantitative research is further divided into Survey Design (cross-sectional, longitudinal) and Experimental Methods (true experiments, quasi-experiments). Qualitative research is subdivided into Phenomenology, Narrative Research, Case Study, Ethnography, and Grounded Theory (Creswell, 2012).

While the categorization of assessment characteristics was adapted from the methodological framework employed by Sánchez-Gómez et al. (2024), Table 2 provides a detailed breakdown of these assessment characteristics.

Two raters were responsible for the coding process. Each rater independently assigned codes to the selected studies. One rater coded all the selected studies, while the second rater coded 24.3% of the total (N=9). Cohen's Kappa was used to estimate the inter-rater reliability of the coding process, showing the degree of agreement between the two raters for each category (Yang et al., 2022). Perfect consensus (Cohen's Kappa = 1) was achieved for the following categories: age range, sample size, percentage of girls, country, participants' language, and standardization. Acceptable consensus (Cohen's Kappa = 0.85–0.91) was achieved for the following categories: nature of analysis, task type, research design, stimuli, and elicitation procedure. Any discrepancies were discussed and resolved by the raters.

TABLE 2
ANALYSIS CATEGORIES BASED ON ASSESSMENT CHARACTERISTICS

Criteria	Categories and Examples
Standardized test	Yes (i.e., language samples that use a certain type of stimulus and scoring scheme. It has norms of interpretation); No (i.e., language samples that use diverse types of stimuli with different scoring schemes. It has no norms of interpretation).
Stimuli	wordless picture book (e.g., frog goes to dinner); illustrated story book with words (e.g., Peter and the Cat); wordless plates or pictures (e.g., images, pictures, draws); cartoon scene; verbal prompts (oral) (e.g., instruction, prompts，questions).
Level of analysis	Macrostructure; Microstructure.
Task type	story generation; story retelling.
Nature	fictional; personal

Source: Adapted from Sánchez-Gómez et al. (2024)

IV. RESULTS

This section is organized into two parts. Firstly, the characteristics of the selected studies are described to answer research question i. Secondly, the assessment tools identified in these studies are analyzed, focusing on their features and the most commonly used instruments to answer research question ii.

A. Overview of the Chosen Studies

TABLE 3
CHARACTERISTICS OF THE STUDIES

Study	Design Type	Age range (Y; M–Y; M)	N	Girl%	country	Language
Bailey et al. (2020)	Quasi-Experimental	3-5	59	54%	United States	English
Baldwin et al. (2022)	Cross-sectional study	3;0-5;1（M=4;2)	78	53%	United States	African American English
Bohnacker et al. (2022)	Quasi-Experimental	4;0-8;1 (M=6;1)	100	53%	Sweden	Turkish-Swedish bilingual
Byrnes-Cloet and Hill (2022)	Phenomenology	Preschool group M=4;3 School group M=5;5	39	49%	United States	Spanish -English bilingual
Clark-Whitney and Melzi (2023)	Cross-sectional study	4-5 (M =4;11)	102	46%	United States	Spanish–English bilingual
Dealy et al. (2019)	Longitudinal Study	4-6	210	51%	United States	English
Fiani et al. (2022)	Longitudinal Study	4;4-9;11	69	51%	Lebanon	Lebanese Arabic-French bilingual
Gámez and González (2019)	Longitudinal Study	M= 5;7	63	46%	United States	Spanish–English bilingual
Grolig et al. (2020)	Experimental Research	M=5;5	210	43%	Germany	German
Guedes et al. (2023)	Cross-sectional study	3-6(M= 4;11)	231	50%	Portugal	Portuguese
Işıkoğlu and Güzen (2024)	Mixed Methods Research	4;8-5;8(M=5;1)	18	61%	Türkiye	Turkish
Jiménez et al. (2024)	Cross-sectional study	4;8-6;7(M=5;10)	343	53%	Spain	Spanish
Khan, Hong et al. (2021)	Cross-sectional study	M=5;2	108	53%	United States	English
Khan, Logan et al. (2021)	Cross-sectional study	3 -5;6 (M = 4;3)	307	56%	United States	English
Kiernan et al. (2024)	Cross-sectional study	5;11-6;5(M=5;7)	27	44%	Australian	English
Lai (2020)	Cross-sectional study	5;0-6;1	56	48%	China	Chinese
Lake and Evangelou (2019)	Experimental Research	3;1-4;8	94	62%	UK	English
Lindgren (2019)	Longitudinal Study	4;4-7;4	17	59%	Sweden	Swedish
Lindgren and Bohnacker (2022)	Experimental Research	4;0-6;11 (M=5;7)	46	67%	Sweden	German-Swedish bilingual
Lindgren (2022)	Longitudinal Study	T1: 4;0–4;8 (M = 4;4) T2: 5;5–6;2 (M= 5;10)	17	59%	Sweden	Swedish
MacLeod and Pesco (2023)	Longitudinal Study	5;2-6;2 (M=5;8)	60	48%	Canada	French
Mahfoudhi et al. (2023)	Cross-sectional study	4;0-7;11(M=6;10)	96	58%	Kuwaiti	Kuwaiti Arabic
Melzi et al. (2023)	Quasi-Experimental	M=3;10	56	64%	United States	Spanish or Spanish–English bilingual
Mendoza et al. (2021)	Cross-sectional study	2;1-5;11 (M=5;6)	227	53%	Spain	Spanish
Orizaba et al. (2020)	Longitudinal Study	M=4;5	40	unmentioned	United States	Spanish
Pinto et al. (2019)	Experimental Research	M=5;1	428	51%	Italy	Italian
Pronina et al. (2023)	Experimental Research	3;3-4;2(M=3;9)	37	50%	Spain	Catalan-Spanish bilingual
Rojas et al. (2019)	Longitudinal Study	5-8	1243	49%	United States	Spanish–English bilingual
Spencer et al. (2023)	Experimental Research	3;2-5;4(M=4:10)	22	46%	United States	Spanish–English bilingual
Sun et al. (2024)	Longitudinal Study	4-5	186	54%	Singapore	English-Mandarin bilingual
Tompkins et al. (2020)	Longitudinal Study	3-5(M=4;5)	52	50%	United States	English
Veneziano et al. (2020)	Experimental Research	5;6-8;8	114	50%	France	French
Wofford et al. (2022)	Longitudinal Study	5;2-7;10 (M=6;4)	133	unmentioned	United States	Spanish–English bilingual
Yang et al. (2022)	Longitudinal Study	3;10- 6;4 (M=4;11)	20	75%	Australia	Mandarin-English bilingual
Yang et al. (2023)	Longitudinal Study	5;0-9;2(M=6;8)	55	53%	China	Kam-Mandarin ethnic minority bilingual
Zanchi and Zampini (2021)	Cross-sectional study	3-8 (M = 4; 6)	240	50%	Italy	Italian
Zhang et al. (2019)	Cross-sectional study	2;11-6;11	80	50%	China	Chinese

Following the presentation of the table, the study characteristics are summarized as follows. The research types included quantitative studies (N=35), qualitative studies (N=1), and mixed-methods studies (N=1). Among the quantitative studies, survey research and experimental methods were prominent. Survey research (N=25), comprising 12 cross-sectional and 13 longitudinal studies, provided snapshots or insights into long-term trends and effects, respectively. Experimental methods (N=10) included seven experimental studies with controlled variable manipulation and three quasi-experimental studies exploring causal relationships without full randomization. Sample sizes ranged from 17 to 1,243 participants.

In terms of linguistics and geography, participants represented 11 languages across 15 countries or regions. It is particularly noteworthy that the languages of English, Arabic, and Chinese also encompassed their dialects, such as African American English, Lebanese Arabic, Kuwaiti Arabic, and Kam language. English was the most common (N=18), primarily from the United States, Australia, the UK, and Singapore. Spanish (N=11) and Chinese (N=5) followed. Bilingual narratives (N=14), particularly Spanish-English bilinguals (N=7), were also analyzed.

When it comes to participant gender, most studies include mixed-gender samples, except for three studies that do not specify the participants' gender. In terms of age, while the screening criteria require the inclusion of preschool-aged children, participants in some studies span a broader age range, covering children from 2 years and 1 month to 9 years and 2 months.

Overall, these study characteristics demonstrate the diversity and cross-cultural context of research in the field. The differences in language, culture, gender, and age involved add to our understanding of preschoolers' narrative competence, but also expose differences between studies. The above analysis provides a comprehensive overview of research on narrative competence in preschool children. Building on this foundation, the focus will shift to the core tools and methods used in the research, which will be analyzed in the following section.

B. Evaluation Instruments Identified and Features

(a). Characteristics

The assessment tools were identified, coded, and analyzed based on their characteristics, as shown in Table 4.

TABLE 4
CHARACTERISTICS OF THE ASSESSMENTS

Study	Stand	Elicitation Procedure	Stimuli	Task Type	Nature	Level of Analysis
Bailey et al. (2020)	No	Topic: recent scary things	Verbal prompts	Generation	Personal	Macrostructure
Baldwin et al. (2022)	Yes	NSS[1] (Frog, Where Are You)	Wordless picture books	Retelling	Fictional	Macrostructure Microstructure
Bohnacker et al. (2022)	Yes	MAIN[2]	Wordless pictures	Generation	Fictional	Macrostructure Microstructure
Byrnes-Cloet and Hill (2022)	No	1. *Frog, where are you?* 2. *Frog goes to dinner* 3. a recorded story	Wordless picture books	Retelling	Fictional	Macrostructure Microstructure
Clark-Whitney and Melzi (2023)	No	Topic: 1. falling 2. taking medicine that tastes bad.	Conversational Map	Generation	Personal	Macrostructure Microstructure
Dealy et al. (2019)	No	Story stems	Verbal prompts	Generation	Fictional	Macrostructural
Fiani et al. (2022)	Yes	MAIN	Wordless pictures	Generation	Fictional	Macrostructure1
Gámez and González (2019)	No	Cartoons: 1.a small mouse and his friends 2.a duck and an elephant	non-verbal animated cartoons	Retelling	Fictional	Macrostructure Microstructure
Grolig et al. (2020)	Yes	NCT ** [3](Frog, Where Are You?)	Wordless picture books	Generation	Fictional	Macrostructure Microstructure
Guedes et al. (2023)	No	Children and adults having fun in a swimming pool	Pictures	Generation	Fictional	Macrostructure Microstructure
Işıkoğlu and Güzen (2024)	No	Story authoring apps	Brainstorming, storyboarding, and Creating multimedia content	Generation	Fictional	Macrostructure
Jiménez et al. (2024)	No	unmentioned	Pictures	Generation	Personal	Macrostructure Microstructure
Khan, Hong et al. (2021)	Yes	TNL[4] (the Shipwreck Story)	Verbal prompt and pictures	Retelling	Fictional	Macrostructure
Khan, Logan et al. (2021)	Yes	NAP[5]-2	Wordless picture books	Retelling	Fictional	Macrostructure

[1] Narrative Scoring Scheme
[2] Multilingual Assessment Instrument for Narratives
[3] Narrative Comprehension Task
[4] Test of Narrative Language
[5] Narrative Assessment Protocol

						Microstructure
Kiernan et al. (2024)	No	1.William's Baby Brother 2.The Football Story or Ana Gets Lost	Pictures	Retelling	Fictional	Microstructure
Lai (2020)	No	Interview (the experience of visiting a doctor)	Verbal prompt	Retelling	Personal	Macrostructure Microstructure
Lake and Evangelou (2019)	Yes	BST[6] and TNR[7]	Illustrated storybook, visual prompts and pictures	Generation	Fictional	Macrostructure Microstructure
Lindgren (2019)	Yes	MAIN	Wordless pictures	Generation	Fictional	Macrostructure
Lindgren and Bohnacker (2022)	Yes	MAIN	Wordless pictures	Generation	Fictional	Macrostructure Microstructure
Lindgren (2022)	Yes	MAIN	Wordless pictures	Generation	Fictional	Macrostructure Microstructure
MacLeod and Pesco (2023)	Yes	ENNI[8]	Wordless pictures	Generation	Fictional	Macrostructure
Mahfoudhi et al. (2023)	Yes	ENNI	Wordless pictures	Generation	Fictional	Microstructure
Melzi et al. (2023)	No	1.*Frog, Where Are You?* 2.share personal narratives 3.a play narrative	Wordless picture book, the conversational map the MacArthur Story Stem Battery	Generation	Personal and Fictional	Macrostructure: Microstructure
Mendoza et al. (2021)	No	An Afternoon in the Park	Verbal prompts	Retelling	Fictional	Macrostructural Microstructural
Orizaba et al. (2020)	Yes	NAP-S NSS (Frog, Where Are You?)	Wordless picture book	Generation	Fictional	Macrostructure Microstructure
Pinto et al. (2019)	No	Activities, recycling material, games, story-telling, discussion	Pictures and activities	Generation	Fictional	Macrostructure Microstructural
Pronina et al. (2023)	Yes	BST	Pictures	Retelling	Fictional	Macrostructure
Rojas et al. (2019)	No	*Frog, Where Are You?* or *Frog Goes to Dinner* or *Frog on His Own* or *One Frog Too Many*	Wordless picture book	Generation	Fictional	Microstructure
Spencer et al. (2023)	Yes	NLM[9] Listening	Illustrations	Retelling	Fictional	Macrostructure Microstructure
Sun et al. (2024)	Yes	MAIN	Wordless pictures	Generation	Fictional	Macrostructure Microstructure
Tompkins et al. (2020)	No	1.The Great Monster Hunt 2.Mr. Duck Means Business	Wordless picture books	Generation	Fictional	Macrostructure
Veneziano et al. (2020)	No	1.the Stone story 2.the Bicycle story.	Wordless pictures and a game (control group)	Generation	Fictional	Microstructure
Wofford et al. (2022)	No	Generation: *One Frog Too Many* Retelling: *Frog, Where Are You?*	Wordless picture books	Generation and Retelling	Fictional	Microstructure
Yang et al. (2022)	No	Ana gets lost and pictures	Wordless pictures	Retelling	Fictional	Macrostructure Microstructure
Yang et al. (2023)	Yes	MAIN	Wordless pictures	Retelling and Generation	Fictional	Macrostructure
Zanchi and Zampini (2021)	Yes	NCT *[10] and BST	Illustrated storybook	Generation	Fictional	Macrostructure Macrostructure
Zhang et al. (2019)	No	Topic	Verbal prompt	Generation	Personal	Macrostructure Microstructure:

The first feature analyzed pertains to the use of standardized assessment tools. Some language samples were obtained using diverse stimuli and non-uniform scoring criteria, while others were gathered through standardized tests employing fixed stimuli and explicit interpretive guidelines. Among the reported studies, 19 employed non-standardized assessment tools, whereas 17 utilized standardized tools. Notably, studies conducted by Lake and Evangelou (2019), Orizaba et al. (2020), Zanchi and Zampini (2021), incorporated two types of standardized tools. Casenhiser et al. (2013) argued that non-standardized methods, such as oral narrative and language sample analysis, are more appropriate for evaluating Indigenous children's language skills, as they allow for the collection of more representative samples in

[6] Bus Story Test
[7] Test of Narrative Retell
[8] Edmonton Narrative Norms Instrument
[9] Narrative Language Measures
[10] The Narrative competence Task

natural communication contexts, avoiding the limitations of decontextualized standardized tests.

The second feature examined concerns the types of stimuli used to elicit children's narratives. In most studies, researchers employed audiovisual stimuli, such as pictures, picture books, cartoons, and audio recordings. Specifically, 29 studies used pictures or picture books, with 18 explicitly indicating the use of picture books. Additionally, six studies employed verbal prompts; for instance, one study required participants to recount a personal experience related to a specific topic. Depending on the research objectives, multiple types of stimuli (N=6) were sometimes employed, including activities, games, and discussions, alongside traditional audiovisual and verbal stimuli.

The third feature analyzed concerns the type of narrative task utilized in the assessments: story generation or story retelling（Sánchez-Gómez et al., 2024). These two types of tasks differ in their approaches. In retelling tasks, children are first asked to listen to a story and then either use visual aids (e.g., picture books or images) or rely on memory to retell the story in their own words. In contrast, generation tasks provide children with only a prompt or stimulus (e.g., an illustration or cartoon) and require them to create a story based on their interpretation of the stimulus. For instance, in the Multilingual MAIN, examiners guide children to examine a series of pictures and then invite them to narrate a story in their own words. Across the studies analyzed, story generation tasks were more prevalent (N=26) than story retelling tasks (N=13), with two studies incorporating both types of tasks.

This study analyzed two main types of tasks to assess narrative skills: story generation and story retelling. Story retelling requires children to listen to a story and then retell the content using pictures or from memory. Conversely, the generation of a story is a type of materials stimulation that encourages children to create some story from their fanciful understanding. For instance, in MAIN, the child looks at a number of pictures and independently comes up with the story in each picture. In fact, generation tasks (N=26) were more numerous than retelling tasks (N=13) in the analyzed studies, two of which combined components of both tasks into a single approach.

Researchers believe that feedback given to children while storytelling (e.g., That's good. Very nice, etc.) as well as directive language (e.g., I'm going to show you a picture, please take 30 seconds to look at it and tell a story) (Jiménez et al., 2024) cannot be considered as components of stimulation.

The form of story used in the assessment is the fourth key aspect of the analysis of children's narratives. Sánchez-Gómez et al. (2024) classified two types of stories: personal and fictional. However, children's fictional stories often involve, to varying degrees, personal characters or events, which justifies the particular attention evolving only on those stories based clearly on their lived experiences. Children could be requested, for example, to share their experience of going to the doctor (Jiménez et al., 2024) or to narrate a personal event linked to a specific theme (Zhang et al., 2019). Out of the studies reviewed, only six complied with that requirement. That underscores what Clark-Whitney and Melzi (2023) believed reasoned assessments of children's narratives often emphasize fictive stories more so than personal stories. But personal stories give vital information on children's language usage, which gives knowledge on their grammatical structures and vocabulary richness (Ralli et al., 2021).

There are two main levels of analysis for competence in terms of narrative: macrostructure and microstructure (Zanchi & Zampini, 2021). Macrostructure means the structure of the story, how it is held together, overall coherence, and itself includes evaluative comments one makes (Zanchi & Zampini, 2021). On the other hand, microstructure comprises details in aspects of language, that is, sentence complexity and vocabulary richness (Lindgren, 2022). Twenty-one studies examined both macrostructure and microstructure. Eleven only examined macrostructure, while five only examined microstructure.

Table 4 further details the particular criteria for each analytical stage. Overall, the studies effectively utilized standardized tools and tailored narrative analysis to their research objectives. Macrostructure analysis was relatively consistent, focusing on dimensions such as story grammar, plot complexity, and coherence（e.g., Gámez & González, 2019; Lake & Evangelou, 2019; Melzi et al., 2023). In contrast, microstructure analysis showed greater variability. Common measures included language productivity (e.g., number of words or C-units, total word count), syntactic complexity and vocabulary diversity（e.g., Bohnacker et al., 2022; Dealy et al., 2019; Grolig et al., 2020). Some studies also examined lexical structures（e.g., Khan et al., 2021), use of modifiers, nouns, verbs, and sophisticated words（e.g., Orizaba et al., 2020), as well as errors in word choice and syntax（e.g., Jiménez et al., 2024).

It is particularly noteworthy that the *Frog, Where Are You?* series of wordless picture books was used in 6 studies, making it one of the most popular picture books. This trend of use is unrelated to the use of standardized assessment tools. In these studies, the nature of the stories was primarily fictional, with five studies employing fictional stories. Except for one study conducted in Germany, the remaining studies were all carried out in the United States, with the languages involved mainly being bilingual English and Spanish (N=3), pure English (N=2), and pure Spanish (N=2). In terms of narrative analysis, three studies examined both macrostructure and microstructure, two studies focused solely on microstructure, and one study focused only on macrostructure.

(b). Most Common Tools

Seventeen studies in this research utilized standardized assessment tools, encompassing 10 different instruments. The figure below provides details on their specific usage. Notably, NAP has undergone iterative updates, resulting in versions such as NAP-2 and the Spanish adaptation, NAP-S. While these versions include some modifications, they retain the original NAP’s core framework and methodology. Therefore, this study consolidates NAP-2 and NAP-S into a

single category of standardized tools. A similar approach is taken for the BST, with various versions treated as adaptations of the same standardized tool.

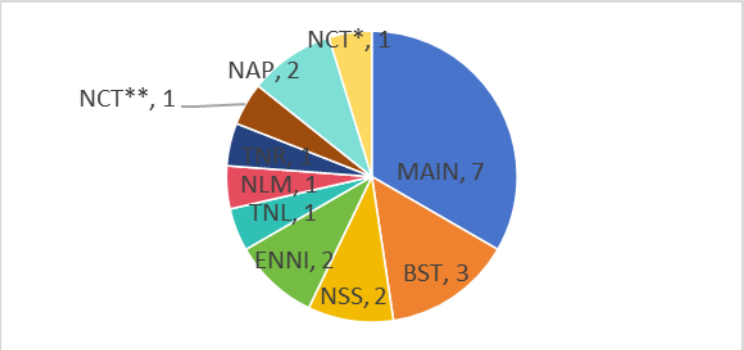

Figure 2. Breakdown of Standardized Assessment Tools Across 17 Studies

In this report, a total of seven studies employed the MAIN as a standardized research tool, five of which focused on assessing the narrative competence of bilingual children, exploring narrative performance across different linguistic backgrounds as well as the differences between narratives in the first and second languages. These applications align with the original purpose of MAIN's development and design. In all seven studies, children completed the story generation task using the wordless picture sequences provided by MAIN (with one study additionally including a story retelling task). Regarding narrative analysis, four studies examined both macrostructure and microstructure, while three studies focused solely on macrostructure. No studies were found that exclusively focused on microstructure.

The second most commonly used tool is the BST(N=3). Since the BST comes with accompanying picture stimuli, all studies utilizing this tool employed these images. However, the nature of story generation and the levels of analysis varied across the studies. Zanchi and Zampini (2021) analyzed both the macrostructure and microstructure of stories created by Italian-speaking children based on the pictures. Pronina et al. (2023) asked Catalan-Spanish bilingual children to retell the story and analyzed their macrostructure scores. Lake and Evangelou (2019) involved English-speaking children in creating stories, examining both the macrostructure and microstructure of their narratives. Additionally, two of the studies used other standardized assessment tools alongside the BST.

The third tool, the NSS, is specifically designed to assess children's narrative organizational skills by evaluating seven dimensions of narrative macrostructure: introduction, character development, mental and emotional states, referencing and listener awareness, conflict resolution, events and reactions, and overall coherence and conclusion (Baldwin et al., 2022). In this report, two studies utilized the NSS in alignment with its intended purpose, focusing exclusively on narrative macrostructure analysis.

The fourth commonly used tool is the ENNI. The ENNI also includes wordless picture stimuli, and the two studies in this report employing the ENNI used it for story generation tasks. However, their narrative analyses differed: one study focused on macrostructure, while the other emphasized microstructure

V. Discussion

Further, the diversity of research approaches and cultural settings denotes the significance of an evaluation of instruments and methods of carrying out assessments-whose key features, characteristics, and practical relevance need to be especially attended to. With the findings thus arrived at, the next part studies the characteristics of narrative assessments, thereby presenting elicitation techniques, stimuli, and levels of analysis. The next section will dwell on these aspects in greater depth.

A. Standardized vs Non-Standardized Tools

As outlined earlier, the narrative abilities of preschool children were evaluated based on language sample recordings, utilizing both standardized and non-standardized assessment tools. Each tool has advantages and certain limitations.

Non-standardized tools are used slightly more often, as they are capable of collecting natural speech samples, highlighting children's language development (Casenhiser et al., 2013). However, there are objective drawbacks to non-standardized instruments. These include the susceptibility of raters to subjective factors, the lack of stability in the scoring criteria, and the low general applicability of the studies, which makes them difficult to replicate.

Conversely, standardized tools offer substantial comparative validity to research due to their scoring and cross-cultural consistency. For instance, the MAIN and BST, two frequently cited standardized narrative assessment tools, employ pictured stories to facilitate narrative assessments. The MAIN's primary feature lies in its employment of wordless pictures to mitigate cultural and linguistic biases, thereby enabling comprehensive macrostructure and microstructure analysis for both generation and retelling tasks. The MAIN has been shown to effectively assess a range of linguistic and cognitive abilities, including vocabulary, grammar, reading skills, and false belief understanding. Concurrently, the BST enhances children's storytelling abilities by facilitating comprehensive investigations of narrative

structure and intricacy. The BST demonstrates significant reliability across cultures and serves as a valuable complement to other narrative assessment tools. The selection of a standardized or non-standardized tool is determined by the specific objectives of the research study, contingent upon the nature of the subjects being assessed.

However, standardized assessment tools have certain limitations. For example, due to the fixed nature of the testing environment, children's verbal performance may not correspond exactly to the real situation. There may also be limitations in measuring children's immediate creative narratives.

There are also limitations common to both standardized and non-standardized assessment tools.

Firstly, most current narrative proficiency assessments (except NAP) rely on post hoc analysis, where researchers need to collect children's language data before transcribing and coding, resulting in lagging feedback. This not only affects the capture of children's immediate language changes in different contexts, but also makes it difficult for educators to adjust strategies in real time during teaching or therapy.

Second, whichever method is used to measure narrative competence, children's spoken language samples have to be recorded, after which the data are transcribed, coded, and analyzed, which is time- and labor-intensive. After that, researchers usually need to use professional language analysis software, such as CLAN, to analyze the data, and the analysis methods of different language analysis software may lead to different analysis results.

Thirdly because narrative ability is strongly influenced by children's cognitive and emotional states. Children's attention, emotions, and fatigue levels can affect narrative performance and lead to data fluctuations.

Therefore, future research can combine the strengths of standardized and non-standardized tools to explore new ways of assessment, reduce their respective limitations, and provide educators and therapists with a more universal, accurate, and real-time method of assessing narrative ability.

B. Comparison of Narrative Task Types: Retelling vs Generation

Story generation tasks are more commonly used in research than retelling tasks. Nonetheless, these two types of tasks differ in their structure and demands on cognition, and development pacing of language.

While retelling gives children the structural framework with adult narration and pictures, thus encouraging a more advanced vocabulary and long stories, it is an essential skill when children between three and five are learning narrative skills (Grolig et al., 2020; Wofford et al., 2022).

On the contrary, story generation tasks allow the children to create a narrative on their own, taking it any hint. Tasks such as that involve more of working memory and put high cognitive demands on executive function (EF), which is quite difficult for younger children (e.g., Clark-Whitney & Melzi, 2023; Fiani et al., 2022; Grolig et al., 2020). It also bears more expression of the child's ability for independent presentation. They are also a major way for children to interpret the world around them. On the other hand, retelling tasks are easier, relying chiefly on long-term memory (e.g., Lai, 2020; Wofford et al., 2022).

Thus, one ought to make a sound judgment when designing task types based on the research goals and the children's characteristics. Retelling tasks serve to monitor the use of language models and memory skills, whereas generation tasks are more suited to investigate independent expression and cognitive capacity.

C. The Use of Narrative Stimuli

In most assessments, audiovisual stimuli such as pictures, picture books, cartoons, and audio recordings are used. Wordless picture books and images were the most used amongst these others (N=18). This reduces the cognitive load for the children and allows them to focus on their storytelling rather than interpreting written texts (e.g., Grolig et al., 2020). It brings children into storytelling in a more natural manner and helps them improve their storytelling skills. It also gives teachers the freedom to devise tasks to meet the special language needs of each child (e.g., Melzi et al., 2023). Wordless picture books promote better interaction with children, thus allowing them to form stories together easily through a simple dialogue (e.g., Melzi et al., 2023). In addition, they provide the natural setting for storytelling, so fantasy and imagination can run simultaneously without depending on verbal prompts (e.g., Orizaba et al., 2020). Because wordless picture books are not reliant upon specific vocabulary or language, lay the groundwork for little to no testing bias, allowing children across varied language background to show their language competencies fairly (e.g., Grolig et al., 2020). Finally, when children retold stories from wordless picture books, they revealed their language qualifications for vocabulary, structures, and discourse, thus making them overtly revealing to the assessors (e.g., Orizaba et al., 2020).

In summary, paper-based images and wordless picture books remain valuable tools for stimulating children's language production, ensuring fairness, and promoting cross-cultural applicability while fostering creative thinking. However, as children are increasingly immersed in digital environments, the demand for more diverse narrative stimuli has become more pressing. In response, researchers have begun exploring how digital tools can complement traditional stimuli to better align with contemporary learning experiences.

The integration of digital technology in narrative competence assessments helps address some of the limitations of traditional stimuli. Unlike static images or text, digital tools provide greater interactivity and engagement, allowing children to construct narratives in dynamic, multi-sensory environments (Isikoglu & Güzen, 2024; Zanchi & Zampini, 2021). Moreover, multimedia elements can enhance children's comprehension and retention of storylines and character relationships. Although only a small fraction of the 37 studies included in this review focus on digital technology,

existing research has already highlighted its potential advantages.

VI. Conclusion

A. Findings

This review synthesizes evidence from 37 studies examining the assessment of narrative competence in preschool children. The findings indicate a diversity of assessment methods: some studies employ standardized tools, providing a reliable benchmark for cross-cultural comparisons, while others use non-standardized approaches to capture more natural and enriched language samples. However, all methods have certain limitations, such as the inability to conduct real-time assessments. Additionally, narrative tasks predominantly focus on story generation rather than retelling, reflecting the cognitive differences between the two—retelling tasks may elicit richer vocabulary and syntactic structures, whereas story generation tasks place greater demands on children's independent expressive abilities.

Moreover, the widespread use of audiovisual stimuli, particularly wordless picture books, effectively reduces children's cognitive load and facilitates more authentic narrative production. The dual analysis of macrostructure and microstructure in narrative competence further underscores the complexity of assessing language development in preschool children.

B. Study Limitations

This study reviewed how narrative competence is assessed in typically developing preschool children. However, the review methodology has its limitations. The selection and analysis of studies were influenced by factors like the database they may use, search terms, language, and time constraints. This may have caused some relevant studies to be missed and affected the final results. Furthermore, in some studies involving children with atypical development, the control group may have consisted of typically developing children, which could affect the findings.

Additionally, due to space constraints, the analysis of reliability and validity was not included, which constitutes a limitation of this study. Future research could address these limitations by expanding the scope of included studies and considering the reliability and validity of the tools used in the assessment of narrative competence.

C. Recommendations for Future Research

With advances in digital technology, it is expected that AI technology will be integrated into narrative measurement tools to enable real-time measurement and rapid feedback on children’s language structure, lexical diversity, and grammatical diversity. This will make the assessment of children's narrative competence more comprehensive and in line with the global trend of cultural diversity. In addition, innovations in narrative measurement tools will lead to further expansion of narrative stimulus materials for children’s narratives, such as interactive pairs of media tools to create more realistic storytelling scenarios, or even augmented reality (AR) and virtual reality (VR) technologies to allow children to create stories in immersive virtual environments and to track changes in their narrative abilities in real time. These innovations offer powerful support for narrative ability assessment. In the future, it is expected that more dynamic, comprehensive and real-time assessment methods can be realized, thus promoting further development of the field.

Acknowledgements

This research was funded by the 2024 Social Science Development Research Project of Hebei Province, China (Grant No. 202401024), under the project Research on the Reform and Practice of Contemporary Japanese Preschool Special Education.

References

[1] Bailey, A. L., Moughamian, A. C., Kelly, K. R., McCabe, A., & Huang, B. H. (2020). Leap-frog to literacy: maternal narrative supports differentially relate to child oral language and later reading outcomes. *Early Child Development and Care*, *190*(7), 1136–1149. https://doi.org/10.1080/03004430.2018.1521807

[2] Baldwin, E., Heilmann, J., Finneran, D., Cho, C. C., & Moyle, M. (2022). Dialect density, language abilities and emergent literacy skills of prekindergarten children who speak African American English. *Journal of Research in Reading*, *45*(4), 567–586. https://doi.org/10.1111/1467-9817.12410

[3] Bohnacker, U., Lindgren, J., & Öztekin, B. (2022). Storytelling in bilingual Turkish-Swedish children. *Linguistic Approaches to Bilingualism*, *12*(4), 413–445. https://doi.org/10.1075/lab.20057.boh

[4] Bowles, R. P., Justice, L. M., Khan, K. S., Piasta, S. B., Skibbe, L. E., & Foster, T. D. (2020). Development of the Narrative Assessment Protocol-2: A tool for examining young children’s narrative skill. *Language, Speech, and Hearing Services in Schools*, *51*(2), 390–404. https://doi.org/10.1044/2019_LSHSS-19-00038

[5] Byrnes-Cloet, H., & Hill, S. (2022). Writing Play-Books with linguistically diverse young learners. *Reading Teacher*, *75*(4), 413–427. https://doi.org/10.1002/trtr.2056

[6] Casenhiser, D. M., Shanker, S. G., & Stieben, J. (2013). Learning through interaction in children with autism: Preliminary data from asocial-communication-based intervention. *Autism*, *17*(2), 220–241. https://doi.org/10.1177/1362361311422052

[7] Clark-Whitney, E., & Melzi, G. (2023). Executive function and narrative language abilities in emergent bilingual preschoolers: An exploratory study. *Language, Speech, and Hearing Services in Schools*, *54*(2), 584–599. https://doi.org/10.1044/2022_LSHSS-21-00190
[8] Creswell, J. W. (2012). Education *Research Planning Conducting and Evaluating Quantitative and Qualitative Research* (fourth). Pearson.
[9] Dealy, J., Mudrick, H., & Robinson, J. (2019). Children's narrative story stem responses: Contributions of executive functioning and language proficiency to relationship representations. *Social Development*, *28*(1), 168–185. https://doi.org/10.1111/sode.12335
[10] Fiani, R., Henry, G., & Prévost, P. (2022). Macrostructure in narratives produced by Lebanese Arabic-French bilingual children. *Linguistic Approaches to Bilingualism*, *12*(4), 446–478. https://doi.org/10.1075/lab.20035.fia
[11] Gámez, P. B., & González, D. (2019). A comparison of narrative skill in Spanish-English bilinguals and their functionally monolingual Spanish-speaking and English-only peers. *International Journal of Bilingualism*, *23*(1), 329–348. https://doi.org/10.1177/1367006917728391
[12] Grolig, L., Cohrdes, C., Tiffin-Richards, S. P., & Schroeder, S. (2020). Narrative dialogic reading with wordless picture books: A cluster-randomized intervention study. *Early Childhood Research Quarterly*, *51*, 191–203. https://doi.org/10.1016/j.ecresq.2019.11.002
[13] Guedes, C., Ferreira, T., Leal, T., & Cadima, J. (2023). Unique and joint contributions of behavioral and emotional self-regulation to school readiness. *Applied Developmental Science*, *27*(2), 136–155. https://doi.org/10.1080/10888691.2022.2045200
[14] Işıkoğlu, N., & Güzen, M. (2024). The promise of digital storytelling for kindergarteners: language and technology skills. *Early Child Development and Care*, *194*(2), 195–207. https://doi.org/10.1080/03004430.2023.2299389
[15] Jiménez, J. E., Rodríguez, C., & Balade, J. (2024). Identifying kindergarteners at-risk of writing difficulties based on foundational literacy skills. *Reading and Writing*. https://doi.org/10.1007/s11145-024-10518-7
[16] Khan, K. S., Hong, F., Justice, L. M., Sun, J., & Mills, A. K. (2021). Cross-domain associations between mathematical and narrative abilities in preschool-aged children. *Journal of Experimental Child Psychology*, 212. https://doi.org/10.1016/j.jecp.2021.105233
[17] Khan, K. S., Logan, J., Justice, L. M., Bowles, R. P., & Piasta, S. B. (2021). The contribution of vocabulary, grammar, and phonological awareness across a continuum of narrative ability levels in young children. *Journal of Speech, Language, and Hearing Research*, *64*(9), 3489–3503. https://doi.org/10.1044/2021_JSLHR-20-00403
[18] Kiernan, R., Pearce, W., & Flanagan, K. (2024). Home language variation in the narratives of urban First Nations Australian children in their first year of school. *Clinical Linguistics and Phonetics*, *38*(7), 626–641. https://doi.org/10.1080/02699206.2023.2233048
[19] Lai, W. F. (2020). Narrative structure and evaluative language of personal narratives shared by urban aboriginal children in Taiwan. *Early Child Development and Care*, *190*(14), 2214–2228. https://doi.org/10.1080/03004430.2019.1566229
[20] Lake, G., & Evangelou, M. (2019). Let's Talk! An interactive intervention to support children's language development. *European Early Childhood Education Research Journal*, *27*(2), 221–240. https://doi.org/10.1080/1350293X.2019.1579549
[21] Lindgren, J. (2019). Comprehension and production of narrative macrostructure in Swedish: A longitudinal study from age 4 to 7. *First Language*, *39*(4), 412–432. https://doi.org/10.1177/0142723719844089
[22] Lindgren, J. (2022). The development of narrative skills in monolingual Swedish-speaking children aged 4 to 9: a longitudinal study. *Journal of Child Language*, *49*(6), 1281–1294. https://doi.org/10.1017/S030500092100057X
[23] Lindgren, J., & Bohnacker, U. (2022). How do age, language, narrative task, language proficiency and exposure affect narrative macrostructure in German-Swedish bilingual children aged 4 to 6? *Linguistic Approaches to Bilingualism*, *12*(4), 479–508. https://doi.org/10.1075/lab.20020.lin
[24] MacLeod, A. A. N., & Pesco, D. (2023). Narratives by bilingual children: a tale of strengths and growth during kindergarten. *International Journal of Bilingual Education and Bilingualism*, *26*(7), 891–903. https://doi.org/10.1080/13670050.2022.2132107
[25] Mahfoudhi, A., Abdalla, F., & Al-Sulaihim, N. (2023). The effect of age and task complexity on the microstructure of child Arabic narratives. *Language, Speech, and Hearing Services in Schools*, *54*(3), 952–966. https://doi.org/10.1044/2023_LSHSS-22-00091
[26] Melzi, G., Schick, A. R., & Wuest, C. (2023). Stories beyond books: Teacher storytelling supports children's literacy skills. *Early Education and Development*, *34*(2), 485–505. https://doi.org/10.1080/10409289.2021.2024749
[27] Mendoza, M., Beltran-Navarro, B., Matute, E., & Rosselli, M. (2021). Effects of the age, sex, and maternal education of monolingual Spanish-speaking preschool children on oral narrative production. Journal of Speech, *Language, and Hearing Research*, *64*(2), 579–592. https://doi.org/10.1044/2020_JSLHR-19-00175
[28] Orizaba, L., Gorman, B. K., Fiestas, C. E., Bingham, G. E., & Terry, N. P. (2020). Examination of narrative language at microstructural and macrostructural levels in Spanish-speaking preschoolers. *Language, Speech, and Hearing Services in Schools*, *51*(2), 428–440. https://doi.org/10.1044/2019_LSHSS-19-00103
[29] Pinto, G., Tarchi, C., & Bigozzi, L. (2019). Promoting narrative competence in kindergarten: An intervention study. *Early Childhood Research Quarterly*, *47*, 20–29. https://doi.org/10.1016/j.ecresq.2018.09.003
[30] Pronina, M., Grofulovic, J., Castillo, E., Prieto, P., & Igualada, A. (2023). Narrative abilities at age 3 are associated positively with gesture accuracy but negatively with gesture rate. *Journal of Speech, Language, and Hearing Research*, *66*(3), 951–965. https://doi.org/10.1044/2022_JSLHR-21-00414
[31] Ralli, A. M., Kazali, E., Kanellou, M., Mouzaki, A., Antoniou, F., Diamanti, V., & Papaioannou, S. (2021). Oral language and story retelling during preschool and primary school years: Developmental patterns and interrelationships. *Journal of Psycholinguistic Research*, *50*(5), 949–965. https://doi.org/10.1007/s10936-021-09758-3

[32] Rojas, R., Hiebert, L., Gusewski, S., & Francis, D. J. (2019). Moving Forward by Looking Back: Understanding Why Some Spanish-Speaking English Learners Fall Behind. In *New Directions for Child and Adolescent Developmen*t (*Vol. 2019*, Issue 166, pp. 43–77). Wiley-Blackwell Publishing. https://doi.org/10.1002/cad.20305
[33] Sánchez-Gómez, V., Verdugo, M. Á., Calvo, M. I., Amor, A. M., Palomero-Sierra, B., & Zampini, L. (2024). How to Assess Oral Narrative Skills of Children and Adolescents with Intellectual Disabilities: A Systematic Review. *Behavioral Sciences*, *14*(4), 308. https://doi.org/10.3390/bs14040308
[34] Spencer, T. D., Kirby, M. S., Garcia, A. R., & Sturm, B. (2023). Additive Effect, Feasibility, and Cost-Effectiveness of Family Engagement Activities that Supplement Dual Language Preschool Instruction. *Early Childhood Education Journal*. https://doi.org/10.1007/s10643-023-01571-y
[35] Sun, H., Tan, J., & Feng, L. (2024). Proficiency and compensatory strategies in bilingual children's Mandarin Chinese narrative. *Reading and Writing*, *37*(7), 1733–1752. https://doi.org/10.1007/s11145-024-10541-8
[36] Tompkins, V., Blosser, M. K., & Downing, M. (2020). False belief understanding and narrative comprehension in the preschool years. *Cognitive Development*, 56. https://doi.org/10.1016/j.cogdev.2020.100936
[37] Van Kraayenoord, C. F., & Paris, S. G. (1996). Story construction from a picture book: An assessment activity for young learners. *Early Childhood Research Quarterly*, *11*(1), 41–61. https://doi.org/10.1016/S0885-2006(96)90028-9.
[38] Veneziano, E., Le Normand, M.-T., Plumet, M.-H., & Elie-Deschamps, J. (2020). Promoting narrative skills in 5-to 8-year-old French-speaking children: The effects of a short conversational intervention. *First Language*, *40*(3), 225–250. https://doi.org/10.1177/0142723720901614
[39] Wofford, M. C., Cano, J., Goodrich, J. M., & Fitton, L. (2022). Tell or Retell? The Role of Task and Language in Spanish-English Narrative Microstructure Performance. In *Language, Speech, and Hearing Services in Schools* (*Vol. 53*, Issue 2, pp. 511–531). American Speech-Language-Hearing Association. https://doi.org/10.1044/2021_LSHSS-21-00055
[40] Yang, J., Kim, J. H., Tuomainen, O., & Xu Rattanasone, N. (2022). Bilingual Mandarin-English preschoolers' spoken narrative skills and contributing factors: A remote online story-retell study. *Frontiers in Psychology*, 13. https://doi.org/10.3389/fpsyg.2022.797602
[41] Yang, W., Chan, A., & Gagarina, N. (2023). Left-behind experience and language proficiency predict narrative abilities in the home language of Kam-speaking minority children in China. *Frontiers in Psychology*, 13. https://doi.org/10.3389/fpsyg.2022.1059895
[42] Zanchi, P., & Zampini, L. (2021). The narrative competence task? A standardized test to assess children's narrative skills. *European Journal of Psychological Assessment*, *37*(1), 15–22. https://doi.org/10.1027/1015-5759/a000569
[43] Zhang, F., McCabe, A., Ye, J., Wang, Y., & Li, X. (2019). A developmental study of the narrative components and patterns of Chinese children aged 3–6 years. *Journal of Psycholinguistic Research*, *48*(2), 477–500. https://doi.org/10.1007/s10936-018-9614-3

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