

Narrative Proficiency of Spontaneous Stories Produced by Typically Developing Children Ages 4-9

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Abstract

Research has shown that development of narrative language has a strong link to children's success in the classroom¹. The purpose of this study was to measure narrative proficiency of 374 typically developing children ages four to nine. The study included 26 four year-olds, 49 five year-olds, 79 six year-olds, 66 seven year-olds, 104 eight year-olds, and 104 nine year-olds. The participants were asked to develop a story based on a picture. These stories were transcribed using the Systematic Analysis of Language Transcripts⁷. The Monitoring Indicators of Scholarly Language³ was used to score the stories produced by children. MISL is a progress-monitoring tool that measures the macrostructure and microstructure of stories. Macrostructure focuses on the hierarchy of the story (character, setting, initiating event, internal response, plan, attempts, consequences), while microstructure focuses on the narrative's specific words and grammar (coordinating and subordinating conjunctions, adverbs, elaborated noun phrases, metalinguistic and metacognitive verbs). The participants are scored on a scale of 0 to 3 according to their level of mastery in each category. The MISL has been used in other studies as a criterion-referenced measure of narrative proficiency for children with language impairment⁶, children with Autism Spectrum Disorders⁴, and children at-risk for academic failure⁵. From the results, we hope to develop a database of scores for normative comparisons for children ages four to nine. A normative database for comparison would be a very useful tool for Speech-Language Pathologists working with young children in the schools.

Keywords: Child Language, Narratives, The Monitoring Indicators of Scholarly Language

1. Introduction

Research has shown that development of narrative language has a strong link to children's success in the classroom¹. Children who exhibited difficulty producing narratives have also been shown to perform poorly in other academic areas such as reading, writing, and comprehension¹⁰. Children with a language impairment also produce stories that are lower in length, complexity, and subjective narrative quality than their typically developing peers².

A story recall schema has been developed in the past, which has highlighted common theoretical story elements⁹. Based on this schema, it is expected that similar story elements (e.g., character, setting, initiating event, action, consequence, etc.) will be found in most narrative tasks. As these story grammar elements are expected to exist within narratives produced by children, these should be explicitly taught to children with language impairments. A progress monitoring tool designed to measure narrative proficiency is therefore needed to assist SLPs determine which story elements are not existent within a child's narrative and what narrative related goals would be appropriate to set for each individual student.

There are relatively few measures of narrative proficiency that may be used to monitor progress of children over time. One tool, the Monitoring Indicators of Scholarly Language (MISL), has been used to track the progress children make toward language goals and toward the standards Common Core has appointed for school-age children with relation to narrative proficiency⁴. The MISL is composed of two main categories: macrostructure and microstructure. There are seven macrostructure elements (i.e., character, setting, initiating event, internal response, plan, action, and consequence), which look at the story grammar elements and cohesiveness of the story. There are also six microstructure elements (i.e., coordinating and subordinating conjunctions, mental and linguistic verbs, adverbs, and elaborated noun phrases), which look at the types of words used to connect phrases and sentences and to express meaning. In past research, it has been shown that inter-rater reliability of the MISL is 90% or higher, and that it meets the requirements for construct validity⁴.

The purpose of this study was to determine if the MISL scores of children ages four to nine were correlated with an overall measure of narrative proficiency (gold standard) and therefore demonstrates developmental sensitivity. A secondary purpose was to determine the ages at which children acquire the skills necessary to apply the MISL elements.

2. Methodology

The study included 26 four year-olds, 49 five year-olds, 79 six year-olds, 66 seven year-olds, 104 eight year-olds, and 104 nine year-olds.

The participants were asked to create their own story from a single scene picture prompt depicting an alien story after listening to a single scene prompt model depicting a dragon story. The story was a subtest of the Test of Narrative Language – 2³, which is an assessment that can be used to identify a child's specific strengths and weaknesses related to comprehending and expressing narratives. Recordings of each participant's story were made. These recordings were used to transcribe exactly what the examiner and participant had said, using a software program called Systematic Analysis of Language Transcripts (SALT)⁸. These transcripts were then separated into Communication-Units (C-Units), which are composed of an independent clause and any other words connected to the independent clause. Next, the verbs within the C-Units were segmented into morphemes. Any sentence reformulations, abandoned utterances, and duplicated ideas were mazed out, or discluded from the analysis.

The transcripts were then scored for narrative quality using the *Monitoring Indicators of Scholarly Language (MISL)* rubric³ for narrative macrostructure and microstructure. The MISL is a progress-monitoring tool that measures the macrostructure and microstructure of stories. Macrostructure focuses on the hierarchy of the story (character, setting, initiating event, internal response, plan, attempts, consequences), while microstructure focuses on the narrative's specific words and grammar (coordinating and subordinating conjunctions, adverbs, elaborated noun phrases, metalinguistic and metacognitive verbs). The stories were scored on a scale from 0 to 3 according to their level of mastery in each category. A score of 0 means that the child did not include that element; a score of 1 indicates that the child included a non-specific or non-causally connected response; a 2 is warranted if the child included a specific or causally connected response; and finally a 3 would suggest that the child included more than one specific or causally connected responses. The MISL has been used in other studies as a criterion-referenced measure of narrative proficiency for children with language impairment⁷ children with Autism Spectrum Disorders⁵, and children at-risk for academic failure⁶.

The research project posed the following questions.

1. Do scores on the MISL differ across the age ranges studied?
2. Do scores on the MISL correlate with a standard measures of narrative proficiency?

3. Results

Table 1 shows the descriptive characteristics for the participants in the study, as well as the means and standard deviations for the total MISL score and the total raw score for the oral narration (ON) subtest of the TNL-2 by age.

Table 1. Overall narrative production means and total MISL score means.

Age	Total MISL Score (M, SD)	Narrative Production Score (M, SD)	Sex	
			Male (n=208)	Female (n=219)
4 (n = 25)	8.44 (3.355)	15.6 (9.16)	13	12
5 (n=49)	9.29 (5.172)	23.39 (10.30)	19	30
6 (n=79)	13.29 (5.800)	32.72 (11.56)	40	39
7 (n=66)	14.26 (5.576)	37.20 (10.55)	33	33
8 (n=104)	17.98 (5.989)	42.11 (9.98)	47	57
9 (n=104)	18.84 (5.766)	45.60 (9.07)	56	48
Total (n=427)	15.19 (6.625)		208	219

A one-way Analysis of Variance (ANOVA) was conducted to determine the effect of age on the overall performance on MISL. The total MISL score was the dependent variable and age group was the independent variable. The ANOVA on the MISL total score was significant, $F(1, 427) = 1982.76, p = .001, \eta^2 = .825$, as was the ANOVA for age $F(5, 427) = 3403, p = .001, \eta^2 = .288$.

Post hoc analyses, using Tukey's to correct for Type I error, revealed that four and five year-olds scored significantly lower than all other age groups (with the four and five year-olds scoring similarly). Six and seven-year-olds scored significantly lower than the eight and nine year-olds. There were no other significant differences in MISL scores between the age groups. Therefore, the four and five year-olds were combined into one group; the six and seven year-olds were combined into a single group; and the eight and nine year-olds were combined into a single group. The means and standard deviations for these revised groups are shown in Table 2. ANOVA on the MISL scores using the new age groupings revealed significant differences in scores across the three age groups at .001.

Table 2. Total MISL scores by age group.

Age	Total MISL Score (M, SD)	Sex	
		Male (n=208)	Female (n=219)
4 & 5 year-olds (n=74)	9.00 (4.632)	32	42
6 & 7 year-olds (n= 145)	13.73 (5.700)	73	72
8 & 9 year-olds (n=208)	18.41 (5.880)	103	105
Total (n=427)	15.19 (6.625)	208	219

Macrostructure scores are shown in Table 3 with means and standard deviations for each age group. Differences in macrostructure across the three age groups were significant with the younger children scoring fewer points than the older children. Children ages four to seven most frequently scored 1 for character and setting; scores of 2 and 3 did not consistently appear until eight or nine years old. Scores for initiating event and action were highly variable for the four and five year-olds (0, 1, 2), and became more stable at six and seven years of age (1, 2); stabilizing at nine years old (2). Children were not observed to use language related to feelings (IR) and plans until ages eight to nine. Children ages four to seven years old most frequently scored 0 for consequence. The children in the eight to nine-year-old group received more scores of 1 for consequences, but some scores of 2 were observed.

Table 3. Macrostructure scores by age group.

Age	Macrostructure Score (M, SD)	Sex	
		Male (n=208)	Female (n=219)
4 & 5 year-olds (n=74)	5.32 (2.929)	32	42
6 & 7 year-olds (n= 145)	6.46 (3.158)	73	72
8 & 9 year-olds (n=208)	9.61 (3.389)	103	105
Total (n=427)	7.80 (3.701)	208	219

Microstructure scores are shown in Table 4 with means and standard deviations for each age group. Differences in microstructure were also found between the three age groups. Younger children earned significantly lower scores than the older children. The most frequent microstructure element between ages four to five were coordinating conjunctions and elaborated noun phrases. By ages six to seven subordinating conjunctions, mental verbs, linguistic verbs, and adverb scores of 1 were observed. By eight to nine years-old students' scores included some 2 and 3's. The most frequent score of 3's were observed four and five year-olds for elaborated noun phrases, six and seven year-olds for coordinating conjunctions and elaborated noun phrases, and for eight and nine year-olds for coordinating conjunctions, adverbs, and elaborated noun phrases.

Table 4. Microstructure scores by age group.

Age	Microstructure Score (M, SD)	Sex	
		Male (n=208)	Female (n=219)
4 & 5 year-olds (n=74)	3.68 (2.203)	32	42
6 & 7 year-olds (n= 145)	7.27 (3.187)	73	72
8 & 9 year-olds (n=208)	8.80 (3.200)	103	105
Total (n=427)	7.39 (3.551)	208	219

An ANOVA was conducted to test the relationship between gender and total MISL score and was significant. Females scores consistently higher (M = 16.12, SD = 6.68) than males (M = 14.21, SD = 6.44).

Pearson Product Moment Correlation coefficients were computed between the MISL total score and the oral narration raw score on the TNL-2 with age collapsed. The MISL and the ON scores were moderately to highly correlated at $r = .775$, $p < .001$.

4. Discussion

The purpose of the research project was to determine whether the MISL rubric was a valid tool for measuring aspects of narrative proficiency for children ages four to nine. The specific narrative context that was studied involved asking students to create their own story using a single scene picture prompt. We asked whether the MISL scores differed across the age ranges studied. The results suggested that the MISL scores increased significantly across three age ranges. Four and five year-olds scored significantly lower than children ages six to nine. Similarly, six and seven year-olds scored significantly higher than their younger peers, and significantly lower than the eight and nine year-olds. Finally, eight and nine year-olds scored significantly higher than their younger peers. The same pattern of findings held for macrostructure (character, setting, initiating event, internal response, plan, action, consequence) and for microstructure (coordinating conjunctions, subordinating conjunctions, mental and linguistic verbs, adverbs and elaborated noun phrases). Further, the MISL scores correlated moderately-highly with a gold standard of narrative proficiency, indicating that it is a valid measure of narrative ability.

Using specific names for characters and setting can be reasonably expected at eight and nine years of age. Scores for initiating event and action were observed to stabilize at a score of 2 by the time children were eight and nine years old. Before that time, children's stories did not always contain clear goal motivated actions. One important finding related to children's use of internal response; meaning words in their stories. Children did not begin to consistently include these story grammar elements until eight to nine years of age. Surprisingly children were not observed to consistently include consequence in their stories until they were eight to nine years-old. This could be related to the way MISL is scored. In order to receive a score of 2 for consequence, a student must clearly tie the ending to the initiating event. Unless students used a word like "because" or "so" the statement would be scored as a 1 at best. Mastery of microstructure was not observed across all the linguistic elements measured until eight to nine years of age, indicating that at ages six and seven children are in the process of adding to their linguistic repertoire, while four and five year-olds rely mainly on simple syntactic structures (and, then) and noun phrase elaboration to create stories.

5. Clinical Implications

This study provided data from a sample of typically developing children. Data on the performance of typically developing children are needed in order to recognize abnormal performance. Clinicians need to know when to expect children to use different aspects of narratives. This study revealed when items within narratives are typically used by children. By the age of eight and nine years old, a clinician could expect a child to: use specific names for characters and settings, include at least one initiating event directly related to at least one action, begin using internal response words, and begin tying at least one consequence to an action. The study also affirmed that the MISL scores do correlate with an overall measure of narrative proficiency, and that the scores increased in each age group.

Future research could include repeating this process for children of older ages. This would provide further insight as to how narrative abilities develop with age. Researchers could also look more closely at each component of microstructure and macrostructure, and how they compare to each other across the ages.

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