



# Narrative Ability of Mandarin-Speaking Patients with Cerebral Palsy

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**Abstract.** Patients with cerebral palsy (CP) were found to have narrative difficulty. To examine the exact difficult dimensions, a group of 6 CP patients were investigated on their narrative performance. The 6 adult CP patients attended our collection of narratives and then their narratives were examined concerning the micro- and macro-structure. Altogether five dimensions of Narrative Assessment Profile (NAP) were examined and analyzed, i.e. topic maintenance, event sequencing, explicitness, reference, and conjunctive cohesion. Compared to TD children from 5 to 6, the CP patients manifested differences and similarities. It is shown that CP patients need a corresponding and well-designed intervention plan to improve their ability in keeping consistent in topic, in adding more details, in narrating in chronological order and in using more conjunctions.

**Keywords:** Patient with cerebral palsy · narrative ability · Speech therapy

## 1 Introduction

There are more than 6 million cerebral palsy patients in China and the number keeps growing as the rate of cerebral palsy (CP) in newborns is 2.48‰ [1]. The majority of CP patients live in economically disadvantaged area, hence, they have not received timely and professional diagnosis and therapy, including language therapy [2]. As it's acknowledged that childhood is the critical period for children to learn to speak, the same is true to CP children, even though they may not be able to develop normal speaking ability. Speech therapy poses opportunities for children with CP to be accepted and included by others and society. Speech and language therapy should begin shortly after a child is diagnosed with CP. Studies show that speech and language therapy offers the greatest chance of success the earlier it is introduced into a CP child [3, 4].

### 1.1 Cerebral Palsy

Cerebral palsy is a loss or deficiency of motor control with involuntary spasms caused by permanent brain damage present at birth. It often affects the language centers of the brain that control speech. In mild case of CP, a patient seems to be able to carry on daily communication, but he has difficulty using correct words; in more severe case,

a patient's ability to verbally express himself or herself might be seriously impeded. Even the patients with the mildest CP were found to have considerable difficulties in such narrative tasks as story-telling or picture-description. Hence, patients with CP will face many challenges because they averagely cannot interact normally with others. For this reason, speech therapy is an essential step in their development into becoming a well-adjusted adult, or even depending on themselves.

## 1.2 Narrative Ability

Narratives are integral to our work and life, thus it is key for CP patients to live an independent life and to be included in any working field. Speech therapy for CP patients, esp. for CP children, is supposed to take it into account and to give intervention on developing necessary narrative ability for CP patients. Research on children's narrative skills are productive for both typically developing (TD) children and some language impaired children. After years of research and study, researchers and teachers have already developed some effective approaches to promote TD children's narrative performance and figured out many factors influencing children's narrative performance in the breeding culture. However, research on narratives of CP patients is not as productive as that for TD children. Therefore, method about how to improve CP patient's narrative ability has not been included into the intervention plan for them. We have to improve the narrative ability of CP patient considering its integral role in work and independent life.

## 1.3 Structure of Narrative

There must a structure in any piece of narrative. The structure not only demonstrates the ability for speaker to arrange sentences into discourse but also reflects the speaker's performance in memory, the norm in the speaker's culture, as well as the cognitive development of the speaker. Children do not display full competence in producing narratives with episodic structures before school years [5]. CP patients are not expected to display better performance. The narratives of language impaired (LI) children proved to contain less information, fewer inferences and more referentially ambiguous material, and, finally, sometimes included implausible content [6]. Narrative assessment profile (NAP), Story grammar (SG), and High point analysis (HP) are widely used approaches to assess the structure of children's narratives.

## 2 Purpose and Predictions

This study aims to investigate the linguistic characteristics of narratives of CP patients in order to develop a more appropriate and detailed plan for their speech therapy. Thereby, we can draw a conclusion about similarities and differences between TD children and CP patients. Then in future, a further study on intervention plan to improve the narrative ability of CP patients can be developed.

Mandarin-speaking children with language impairment (LI) would demonstrate lower performance in lexical diversity and syntactic complexity, as shown in previous narrative studies in Mandarin-speaking children [7]. We expected to see parallel

average ability between the group of CP patients and another group of 30 TD children. But we wonder to which age group CP patients are parallel concerning their narrative ability.

### 3 Method

#### 3.1 Subjects

Six CP patients were invited to participate the investigation with consent of their care-givers. Their narratives were collected based on recall and account of their personal experiences, mainly weekend and holiday fun. These patients all live in a care-center on working days and go home to spend holiday with their family members on weekends and holidays. The six (5 men and 1 woman) were selected because they are the mildest patients, have comparatively mild temper, and can utter intelligible speech. They are respectively 13, 17, 19, 24, 25, 28. Their IQs were not assessed due to no professional medical diagnosis.

Thirty TD children were invited to participate in another longitudinal study from 4 to 6 to assess the development of their narrative performance. Their recall narratives of personal experiences were collected. In this study, the data of their narratives at 5, 5.6 (year. Month) and 6 were compared to the narratives of CP patients. Although the two groups are not matched in their chronological ages, their narrative performances are to be compared.

#### 3.2 Materials

NAP, widely applied for clinician to diagnose symptoms of SLI and design intervention [8, 9], was applied into this study with some revision to make it adapt to our subjects. In the original protocol, 6 dimensions of narration are assessed simultaneously, namely: topic maintenance, event sequencing, explicitness, referencing, conjunctive cohesion and fluency [10]. In this study, only topic maintenance, referencing, event sequencing and conjunctive cohesion were assessed. Most CP patients have difficulty in controlling their speaking organs and muscles, which will definitely impact their speaking fluency. In this study, the dimension fluency was just deleted to have a more objective assessment of the narrative ability of CP patients.

### 4 Results and Discussion

We analyzed the narratives of CP patients with NAP. The five dimensions of NAP were examined and the result is shown in Table 1.

From the Table1, we can see that the CP patients cannot keep consistent in their narrating, i.e. they often narrate something unrelated to their recalling of weekend experience. Only two of them showed consistency in their narrating. Hence the average number of unrelated narration is 2 sentences. Event sequencing is the dimension on which CP patients performed the worst. Five of them narrated without chronological

**Table 1.** Analysis of CP patients' narratives

Dimension	TM <sup>a</sup>	ES	Ex	Reference	CC
Assessment	Inappropriate (unrelated narration: M = 2)	Inappropriate (disorderly narration: M = 4)	Impaired (evaluation: M = 0.3; action: M = 2.8)	Appropriate	Appropriate

<sup>a</sup> TM is short for topic maintenance, Ex for explicitness, ES for event sequencing, and Cc for conjunctive cohesion.

order and even the mildest CP patient made one mistake in arranging his weekend experiences in right sequence. Their narratives are lack of details, since they could only offer basic outline about the weekend experiences and could not initiate evaluation without being asked how they felt. What's more, none of their narratives is in full structure of a discourse from HP perspective since they narrated no abstract, no coda, or even no resolution and orientation. Their performances concerning reference and conjunctive cohesion are appropriate. Even the poorest performer did not misuse reference and could use appropriate "although...but, because...so, and then...".

In order to know the development of the CP patients, we compared their narratives with those of TD children from 5 to 6. The narratives of TD children were collected in another study followed similar elicitation rules. The two groups were compared and contrasted in the following narrative assessment dimensions: topic maintenance, event sequencing, explicitness, reference, and conjunctive cohesion. The data at hand were analyzed and shown in Table 2.

Topic maintenance proved to be tough for CP patients for most of them made inconsistent narration unrelated to the topic of weekend experiences. TD children of 6 can maintain consistent narration concerning one topic. Actually children of 5 can do it, too. Only TD children under 5 made unrelated narration in their narratives.

Event sequencing proved to be especially tough for CP patients since they offered no clear time sequence in their narratives. TD children of 6 could narrate in clear logical or chronological order. However, TD children of 5 also made unclear narration, too.

Explicitness is inclusive, which is quite tough for CP patient whose cognition is limited. In our study, insufficient actions and limited evaluations are characteristic of the narratives of CP patients, compared with those of TD children of 6. TD children of 5.6 could narrate longer and more detailed stories about their experiences, while TD children of 5 have parallel performance concerning explicitness.

**Table 2.** Comparison of the two groups

	TM	ES	Ex	Reference	CC
CP	appropriate	appropriate	appropriate	appropriate	appropriate
TD	Inappropriate	Inappropriate	Impaired	appropriate	appropriate

Adequate use of reference contributes to the coherence of the narrative and comprehension between speakers. TD children under 5 manifested problems in using proper pronouns. They may use pronouns without previous introduction, or they did not use a pronoun when pronouns would have been expected. However, TD children of 5.6 and above and CP patients in this study did not show misuse of reference.

All subjects used conjunctions, but in significantly different ways. CP patients used less kinds and less number of conjunctions. They used “and then” more than TD children did.

In the present study, the strengths and weaknesses of the CP patients’ narrative ability were analyzed and disentangled, thus making it possible to design adequate intervention method and propose an intervention plan.

## 5 Conclusion

All TD children are trained at home and school to narrate clear story and experience. They read and play games in school and at home, and they travel to improve their cognitions. With development of TD children’s brain, their narrative abilities improve accordingly. On the other hand, the CP patients in this study have not received professional education and intervention due to economic or other reasons. This is one factor leading to their limited narrative abilities even in their adult age.

Through this study we found that some adult CP patients’ narrative abilities were parallel to the abilities of TD children about 6. The CP adult patients in this study performed worse than those of TD children at 6 concerning event sequence, explicitness, and topic maintenance. Conjunctions used in the narratives of CP patients were rather limited in number and variety due to the length of narratives. References used in the narratives of CP patients were appropriate, which shows their cognitive abilities are developed to certain degree. Hence we believe intervention well- designed to improve their narrative abilities can benefit even the adult CP patients.

Our findings about the narrative ability of CP patients have implications for the design of a more specific intervention plan to improve CP patients’ narrative ability. This paves the way for a CP patient to play a more integral role in the family unit, the community, and eventually, school and work.

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## References

1. X. Liu, J. Liu, C. Cao. Observation on curative effect of Chinese medicine tincture combined with wax therapy on children with spastic cerebral palsy, *Chinese Journal of Physical Medicine and Rehabilitation*, vol.40, no. 5, 2018, pp.382-384. DOI: <https://doi.org/10.3760/cma.j.issn.0254-1424.2018.05.018>.

2. C. Gao, J. Zhang, S. Cao. Changes and significance of serum IGF-1 in children with cerebral palsy before and after surgical intervention, *World Latest Medicine Information*, Vol.70, 2020, pp. 35-37. DOI: <https://doi.org/10.3969/j.issn.1671-3141.2020.70.012>
3. W. Joseph, Speech therapy for cerebral palsy patients, *Physical Therapy*, Vol. 21, no. 2, 1941, pp.82-87. DOI: <https://doi.org/10.1093/ptj/21.2.82>
4. A. McCoy, S. Leaver, E. Williams, et al. Therapy methods for cerebral palsy, *Journal of Paediatrics and Child Health*, Vol. 31, no. 4, 1995, pp.366-367. DOI: <https://doi.org/10.1111/j.1440-1754.1995.tb00836.x>
5. H. Ilgaz, A. Aksu-koc. Episodic development in preschool children's play-prompted and direct-elicited narratives, *Cognitive Development*, Vol. 20, no. 4, 2005, pp. 526-544. DOI: <https://doi.org/10.1016/j.cogdev.2005.08.004>
6. P. Holck, A. D. Sandberg, U. Nettelbladt. Narrative ability in children with cerebral palsy, *Research in Developmental Disabilities*, Vol. 32, no. 1, 2011, pp. 262–270. DOI:<https://doi.org/10.1016/j.ridd.2010.10.001>
7. W. Tsai, C. Chang. “But I first... and then he kept picking”: Narrative skill in Mandarin-speaking children with language impairment, *Narrative Inquiry*, Vol. 18, no. 2, 2008, pp.349-377. DOI: <https://doi.org/10.1075/ni.18.2.09tsa>
8. J. Huttenlocher, M. Vasilyeva, E. Cymerman, S. Levine, Language input and child syntax, *Cognitive Psychology*, Vol. 45, no.3, 2002, pp.337-374. DOI: [https://doi.org/10.1016/S0010-0285\(02\)00500-5](https://doi.org/10.1016/S0010-0285(02)00500-5)
9. S.A. Marinellie. Complex sentence used by school-aged children with specific language impairment in child-adult conversation, *Journal of communication disorders*, Vol.37, no.6, 2004, pp.517-533. DOI: <https://doi.org/10.1016/j.jcomdis.2004.03.005>
10. Tsai, C. Chang. “But I first... and then he kept picking”: Narrative skill in Mandarin-speaking children with language impairment, *Narrative Inquiry*, Vol. 18, no. 2, 2008, pp.349–377. DOI: <https://doi.org/10.1075/ni.18.2.09tsa>

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