Exploring Reflexive Pronoun Development and Usage in Mandarin-Learning Toddlers: A Comparative Study of ASD and TD Groups

Mandarin Chinese has two reflexive forms: the bare reflexives (e.g., *ziji* 'self') and compound reflexives (e.g., *ta-ziji* 'himself/herself'), and the bare forms can function not only as syntactically bound anaphors, but also as logophors, generic pronouns (akin to English you/one), and intensifiers (e.g. Wang & Pan 2021, examples in Fig.1). We refer to these as 'discourse-semantic uses', because they are sensitive to a variety of semantic, pragmatic and discourse factors (e.g. Wang & Pan, 2021, see examples in Figure 1).

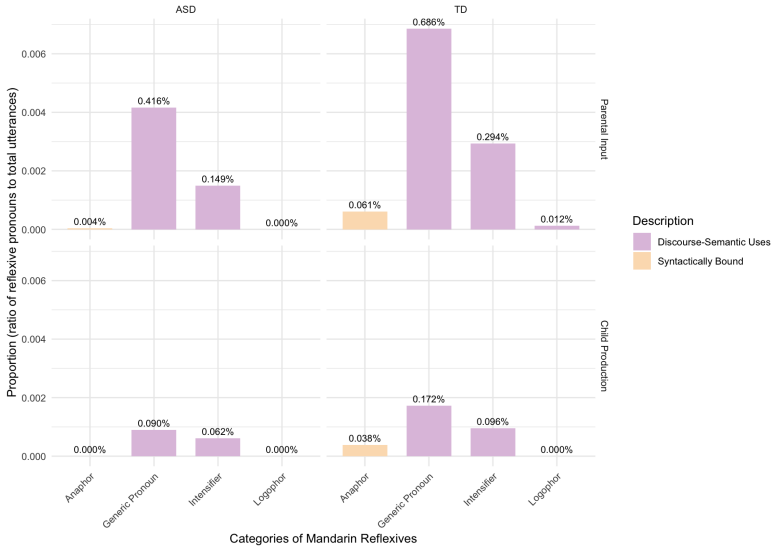
Previous research indicates that Mandarin-learning typically developing (TD) toddlers grasp bare reflexives earlier than compound reflexives, and by the age of two, they exhibit an earlier understanding of the syntactically-governed uses compared to other discourse-semantic uses which are typically comprehended around 4;0 (Li, 2024). In contrast, children with Autism Spectrum Disorder (ASD) face challenges in acquiring reflexives and their binding conditions and have later syntactical acquisition of anaphors around the age of 6;0 (Wuyun et al., 2023). However, previous research has not examined how Mandarin-learning toddlers with ASD acquire discourse-semantic contrastive uses. Language impairment is one of the most prominent early indicators of ASD, often first noticed by parents. Additionally, Mandarin reflexives represent a multifaceted system that incorporates various levels of linguistic features. Therefore, studying the reflexive pronoun development of children with and without ASD not only facilitates early diagnosis and interventions for ASD but also provides a window to explore the complex relationship between different levels of linguistic constraints and broader cognitive functions. This study offers valuable insights that improve our understanding of typical and atypical populations and their impact on pronoun acquisition and language acquisition in general.

In this study, we analyzed the parental input and child production of Mandarin reflexives by monolingual TD toddlers (N = 21) and those with ASD (N = 7) through naturalistic parent-child play sessions, longitudinally sampled over two years of time domain ($Range_{age}$ 4;0 - 6;0). The TD data were sourced from the Chang Play Corpus from TalkBank (Chang, 2019), and the ASD data were sourced from the Mandarin Shanghai Corpus from ASDBank (Zhou, 2006). Despite the limited dataset, preliminary findings reveal there are no significant differences in the parental input to TD vs ASD children, except for the TD parents providing more generic pronouns and intensifiers compared to the ASD parents (see details in Figure 2). In terms of child production, the TD children begin producing both bare and compound reflexives around the age of 4;0, indicating an earlier emergence compared to their ASD peers who show a delay with their first production of compound reflexives at 4;4, and bare reflexives at 4;5. Interestingly, neither group exhibited logophoric use of *ziji*, potentially due to its rare occurrences in parental input (N = 3, Input Proportion = 0.01% - 0.04%). Further distinctions were found in the use of anaphoric reflexives. ASD children did not produce anaphoric reflexives at all, whereas their TD peers began producing it around the age of 5;4, which aligns with previous research and suggests there might be a syntactical delay among the children with ASD. The discourse-semantic uses were the most common usages observed in both groups, with an earlier emergence of around 4;0, which is earlier than previously reported, indicating an accelerated developmental onset of the uses. Our results also suggest children with ASD may more successfully use reflexive types sensitive to semantics and discourse/pragmatics compared to syntactical bound uses, suggesting they may not be significantly impaired in terms of semantics, pragmatics, or discourse. Overall, our findings underscore distinct developmental trajectories in how both typical and atypical children acquire different types of Mandarin reflexive pronouns, which provide valuable insights into the linguistics binding theories and the cognitive mechanisms underlying language acquisition.

Figure 1: Examples Illustrating Different Functions of The Reflexive

Local Anaphoric	erzi$_i$	hai	meng-jian	le	ziji$_i$	zai	gen	pengyou-men	wan
	son	also	dream-see	ASP	self	PROG	with	friend-PL	play
	'The son also dreamed about him(self) playing with friends.' (Parental input)								
Generic	ziji	chuan	yifu						
	self	wear	clothes						
	'Wear (your) clothes by yourself.' (Parental input))								
Intensifier	ni	chi	ziji	de	fan				
	you	eat	self	POS	rice				
	'You eat your food.' (Parental input))								
Logophor	ni	kan-dao	ziji	shi	duo-me	piaoliang	a		
	you	see	self	is	really	pretty	SFP		
	'You see yourself is really pretty.' (Parental input)								

Figure 2: Parental Input and Child Production Across All Types of Mandarin Reflexives



Key References:

Chang, C. (2005). Parent-child interaction and child language/literacy development [Technical report]. Taipei, Taiwan: National Science Council, Taiwan. (NSC-91-2413-H-152-017, NSC-92-2413-H-003-074, NSC-93-2413-H-152-010)

Li, R. (2024). The Acquisition of Anaphora in Child Mandarin: Reflexive Binding and Argument Dropping. Taylor & Francis.

Wang, Y., & Pan, H. (2021). Chinese reflexives. *Oxford Research Encyclopedia of Linguistics*.

Wuyun, G., Zhang, L., Wang, K., & Wu, Y. (2023). Discourse prominence effects on interpretation of reflexive pronoun "ziji" in children with ASD. Reading and Writing, 36(6), 1393-1417.

Zhou, 2006, ASDBank Mandarin Shanghai Corpus. [Online]. Available: https://doi.org/10.21415/T5HW46