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Literature Review on Psycholinguistic Processes in Reading Comprehension Mechanisms in Individuals with Language Disorders

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Abstract: This literature review investigates the psycholinguistic processes in reading comprehension mechanisms in individuals with language impairment. Reading comprehension is an important aspect of language development, yet individuals with language impairment often experience difficulties in understanding written text. Reading comprehension involves various psycholinguistic processes, including phonological, syntactic, semantic and pragmatic processing. Language impairment conditions such as dyslexia, language development disorders and reading comprehension disorders often affect these mechanisms. Phonological processing is key in reading comprehension mechanisms, and individuals with language impairments often have difficulty in recognising and decoding words. In addition, syntactic aspects play an important role in understanding sentence structure and the relationship between sentence elements. Reading comprehension disorders are often associated with difficulties in understanding semantic relationships, recognising word meanings and applying semantic knowledge in reading contexts. In addition, pragmatic factors are also important in comprehending text, including understanding context and communicative purpose. Individuals with language impairment may have difficulty in picking up pragmatic nuances and applying them in reading comprehension. This literature review presents an in-depth understanding of the relationship between psycholinguistic processes and reading comprehension mechanisms in individuals with language impairment. The clinical implications of this study may aid the development of more effective intervention strategies to improve reading comprehension in this population. With a better understanding of the factors that influence reading comprehension, health and education practitioners can design specific and targeted intervention programmes to improve reading ability in individuals with language impairment.

Keywords: Psycholinguistics, Reading comprehension, Language disorders

Introduction

Reading comprehension is a complex cognitive ability that plays a central role in the stages of individual language development. The reading comprehension process not only includes the technical ability to recognise words and read text mechanically, but also involves a series of mental processes that are able to decipher, interpret, and assimilate information from the text read (Ampuni, 1998). Thus, reading comprehension is not simply the recognition of written symbols, but rather the ability to construct meaning and relationships between ideas in a particular context.

An individual's language development is not only influenced by the technical ability to read, but also by the extent to which the individual is able to relate the information obtained to the knowledge already possessed, including the level of intelligence, language skills, attitudes, interests, reading habits, knowledge of how to read, and social, economic, and cultural background. (Irdawati et al., 2019). In this sense, reading comprehension is not only a bridge to understanding written texts, but also the foundation for the development of critical thinking, reasoning and conceptual knowledge. In other words, reading comprehension forms an important basis for the understanding of complex concepts and abstract thinking that underpin communication and problem-solving skills.

In addition, reading comprehension also contributes to vocabulary development and an understanding of the nuances of language. Through reading, individuals can be exposed to a variety of writing styles, sentence structures, and word varieties that make up the richness of the language (Wati, 2016). Therefore, reading comprehension not only impacts on cognitive aspects, but also on the development of language skills that involve choosing the right words, understanding the context, and expressing ideas effectively. As such, it is important to realise that reading comprehension is not simply a mechanical activity of reading word for word, but rather a series of mental processes involving information processing and meaning construction. Reading comprehension, in this context, not only plays a central role in an individual's language development, but also opens the door to critical thinking skills, effective communication, and the development of deep knowledge.

The psycholinguistic processes involved in the mechanisms of reading comprehension have become a major focus in the scientific literature, particularly when applied to individuals with language impairments (Natsir, 2017). Language disorders can include a number of conditions, such as dyslexia, language development disorders, and reading comprehension disorders, all of which have a significant impact on an individual's ability to comprehend and interpret written text (Indah, 2017). It is important to understand that psycholinguistic processes that include phonological, syntactic, semantic and pragmatic processing have important contributions in shaping reading comprehension mechanisms (Ocktaviana, 2023; Suharti et al., 2021). herefore, this literature review aims to delve deeper into the role and complexity of these psycholinguistic processes in individuals with language impairment, with a specific focus on reading comprehension.

Language impairment can prevent individuals from recognising and processing words phonologically, understanding the syntactic structure of sentences, interpreting word meanings, and applying semantic knowledge in reading contexts (Ocktaviana, 2023). When individuals experience language impairment, this can be a significant barrier in several key aspects of reading comprehension(Pratama, 2022). One such aspect is the ability to recognise and process words phonologically. Language impairments often create challenges in understanding and reproducing word sounds, which can result in difficulties in identifying words and decoding them accurately.

In addition, language impairment can also affect the understanding of sentence syntactic structure. Individuals with language impairment may face difficulties in decoding and understanding the syntactical relationships between words in a sentence (Siroj & Arianti, 2023). This can hinder the overall comprehension of sentence meaning and disrupt the logical flow of reading, creating a potentially detrimental challenge in detailing and relating the information presented in the text. Language impairment can result in distortion of meaning, causing individuals to struggle in capturing the nuances and concepts intended by the author. What's more, the inability to string information together correctly can result in imprecise interpretations, affecting individuals' ability to explore cause-and-effect relationships, and undermining their ability to construct an overall picture of the material read.

Disrupting the logical flow of reading can also create barriers to understanding the narrative or argumentative structure of a text. Individuals with language impairments may struggle to recognise patterns of structuring information that support the author's line of thought. As a result, this can reduce the ability to draw accurate conclusions and critically analyse information. This limitation is not only related to the direct comprehension of the text, but can also impact on the individual's ability to transfer knowledge gained from the text to everyday life contexts. The inability to recognise and apply sentence meanings consistently can limit an individual's ability to bridge information gained from reading with existing knowledge.

Therefore, an in-depth understanding of how language impairment affects the processing of sentence meaning and logical flow in reading is important in designing appropriate and supportive interventions. This literature review is expected to delve deeper to identify effective intervention strategies and contribute to the development of methods that can improve the ability of individuals with language impairment to better comprehend and interpret text. The interpretation of word meaning is also an important aspect of reading comprehension, and

language impairment can create difficulties in understanding and attributing meaning to words (Wulandari, 2023). This can be detrimental to an individual's ability to understand the text as a whole, as poorly understood word meanings can affect understanding of the wider context.

It is also important to highlight that language impairment can hinder the ability to apply semantic knowledge in a reading context (Kase, 2019). Being able to relate concepts gleaned from the text to general knowledge can be challenging, and this can affect an individual's ability to extract deeper meaning from the text being read. While previous research has provided some insight into the impact of language impairment on these processes, there is still a need for a more in-depth and focused understanding. As such, this literature review aims to fill this knowledge gap, providing a more in-depth understanding of how language impairment affects phonological, syntactic, semantic processes and knowledge application in the context of reading. It is hoped that this will provide a richer and more comprehensive view, and provide a basis for the development of more effective interventions to support individuals with language impairment in improving their reading comprehension.

In this context, this literature review aims not only to summarise previous research on psycholinguistic processes in reading comprehension, but also to identify knowledge gaps and future research opportunities. With a better understanding of the factors that influence reading comprehension in individuals with language impairment, we can develop more effective and targeted interventions to improve reading skills in this population. The conclusion of this literature review is expected to provide a comprehensive view of the current research landscape and developmental directions that can be taken to further our understanding of the relationship between psycholinguistic processes and reading comprehension in individuals with language impairment.

Method

This research is a qualitative literature study research. A literature review is a literature search and study that involves reading various books, journals and other publications related to the research topic to provide a written report on a particular topic or issue (Marzali, 2016). The research method in this literature review begins with establishing the scope of the study, which involves identifying the psycholinguistic aspects and language disorders that are the focus of the study. Next, a literature search was conducted through various sources such as Google Scholar, Scopus, and Garuda using keywords and search terms relevant to the research objectives.

The next step was literature selection and inclusion, where the researcher established clear inclusion and exclusion criteria to select literature appropriate to the focus of the study. This process involved screening the search results to ensure that the literature included could make a significant contribution to the understanding of the relationship between psycholinguistic processes and reading comprehension in individuals with language impairment.

Table 1. Inclusion and exclusion criteria

Inclusion	**Exclusion**
National or international journals relevant to psycholinguistic processes in reading comprehension mechanisms in individuals with language impairment.	National or international journals that are not relevant to psycholinguistic processes in reading comprehension mechanisms in individuals with language impairment.
National or international journals that are appropriate to the title and topic of the research.	National or international journals that do not match the title and topics that match the research topic.
Journals published in 2013-2023.	Journals published less than 2013.
The language used is Indonesian or English.	The language used is either Indonesian or English.

Once the literature was selected, an evaluation of the quality of the research was conducted, which involved assessing the methodology, reliability and validity of the studies included in the literature review. Next, data extraction was conducted, where the researcher gathered key information and findings from the relevant literature, including the research methods used and the psycholinguistic concepts covered in the studies. Inclusion and exclusion criteria were used to decide whether the data found should be used in the literature review or not.

Results and Discussion

Table 2. Analysis of relevant sources

Author(s)	Publication	Research Title	Reserch Results
(Gillam et al., 2019)	*International Journal of Speech-Language Pathology*	Cognitive Predictors of Sentence Comprehension in Children With and Without Developmental Language Disorder: Implications For Assessment and Treatment	Confirmatory Factor Analysis (CFA) results indicated that the most salient characteristics of cognitive processes in children with and without Developmental Language Disorder (DLD) were represented by a measurement model that included four latent variables: fluent reasoning, controlled attention, complex Working Memory (WM), and language knowledge in Long-Term Memory (LTM). Structural Equation Modelling (SEM) indicated that complex WM mediated the relationships between sentence comprehension and fluent reasoning, controlled attention, and long-term memory for language knowledge.
(Montgomery et al., 2018)	*Journal of Speech, Language, and Hearing Research*	Structural Relationship Between Cognitive Processing and Syntactic Sentence Comprehension in Children With and Without Developmental Language Disorder	The structural model shows that complexity of Working Memory (cWM) mediates between predictor factors such as fluid reasoning (FLD-R), Controlled Attention (CATT), Long-Term Memory Language Knowledge (LTM-LK), and sentence comprehension. In typically developing children, comprehension of both sentence types is indirectly influenced by FLD-R (pattern recognition) and LTM-LK. Whereas in children with developmental language disorder (DLD), comprehension of canonical sentences was indirectly influenced by LTM-LK and CATT, while comprehension of non-canonical sentences was indirectly influenced only by CATT.
(Montgomery et al., 2021)	*Language, Speech, and Hearing Services in Schools*	A New Memory Perspective on the Sentence Comprehension Deficits of School-Age Children With Developmental Language Disorder	Research shows that Working Memory (WM) serves as a channel through which syntactic knowledge in Long-Term Memory (LTM), controlled attention, and general pattern recognition indirectly influence sentence comprehension in children with Developmental Language Disorder (DLD) and typically developing children. For typically developing children, language-based LTM and fluency intelligence indirectly affect sentence comprehension. However, for children with DLD, controlled attention played a greater indirect role.
(McMurray et al., 2019)	*Cognition*	A Real-time Mechanism Underlying Lexical Deficits in Developmental Language Disorder: Between-Word Inhibition	The results suggest that children with DLD may have difficulty in holding words that compete with each other, while children without language impairment show better ability in this regard. The findings support the idea that problems at the lexical level, related to word processing, may be the main cause of this language disorder.
(Macchi et al., 2014)	*Research in Developmental Disabilities*	Word and pseudoword reading in children with specific speech and language impairment	The results showed that children with specific speech and language impairment (2SLI) experienced an average reading delay of 3.5 years, with most of them having reading difficulties. This study analysed the reading process using the 'dual route model', finding specific deficits in phonological procedures in 2SLI children. About

Author(s)	Publication	Research Title	Reserch Results
			60% of them showed a reading delay profile, 20% had a phonological profile with impairments in phonological production, 10% had a surface profile with orthographic deficits, and 10% had normal reading ability.
(Earle & Del Tufo, 2021)	*Annals of Dyslexia*	Literacy-supporting skills in college students with specific reading comprehension deficit and developmental language disorder	Differences in reading, word processing, word recall and rapid word recall were found between the groups. People with S-RCD alone showed no weaknesses beyond reading comprehension difficulties. However, when S-RCD coexisted with DLD, there were difficulties in word processing, reading fluency and word recall. These findings suggest that some adults with S-RCD may also experience DLD as a major challenge. This highlights the difference between people with S-RCD alone and those with a combination of S-RCD and DLD.
(Montgomery et al., 2016)	*Journal of Speech, Language, and Hearing Research*	Syntactic Versus Memory Accounts of the Sentence Comprehension Deficits of Specific Language Impairment: Looking Back, Looking Ahead	Sentence comprehension limitations in children with SLI appear to be more fully captured by a memory-based perspective rather than a syntactic deficit perspective.
(Barak et al., 2022)	*Developmental Psychology*	Influences of bilingualism and developmental language disorder on how children learn and process words.	The results showed that children with DLD performed lower than children with TLD, with no influence from bilingualism. In lexical retrieval, the DLD and bilingual groups scored lower than the TLD and monolingual groups. The findings suggest that bilingualism does not impede language learning, but the lower performance in lexical retrieval is due to decreased exposure frequency.
(Meteyard et al., 2015)	*Aphasiology*	Profiling text comprehension impairments in aphasia	From the results of the study, assessment of verbal working memory (VWM) and inference appear to be critical to understanding text comprehension impairments in aphasia. It is possible that rehabilitation input could utilise key meta-cognitive skills (monitoring, strategy use) to support functional reading in the face of existing linguistic, text comprehension and memory impairments.
(Borovsky et al., 2013)	*Journal of Communication Disorders*	Lexical activation during sentence comprehension in adolescents with history of Specific Language Impairment	The paper discusses the benefits of the eye-tracking method in language disorder research. Readers can understand some of the benefits of using this method. Lexical deficits in SLI are explained as possible decreased processing speed and decreased lexical representation. The results show that adolescents with SLI have different eye fixation patterns when interpreting sentences compared to their peers.

Author(s)	Publication	Research Title	Reserch Results
(Buiza et al., 2016)	*Research in Developmental Disabilities*	Specific Language Impairment: Evaluation and detection of differential psycholinguistic markers in phonology and morphosyntax in Spanish-speaking children	The data showed that the group with Specific Language Impairment (SLI) had lower performance compared to the subgroup of aged matched (CA) children in 13 verbal tasks. However, there was no significant difference in performance between the SLI group and the linguistically matched (CL) subgroup on most (11 out of 13) tasks. Through stepwise discriminant analysis, it was found that three specific tasks (morphological integration, sentence comprehension, and diadochokinesis) could significantly differentiate between the SLI and CA groups, with a sensitivity rate of 84% and specificity of 90%.
(Daza et al., 2014)	*Research in Developmental Disabilities*	Language skills and nonverbal cognitive processes associated with reading comprehension in deaf children	In a study with 30 participants, good readers showed better vocabulary skills and better performance in attention, memory and executive functions compared to poor readers. Significant correlations were found between better reading comprehension and vocabulary ability and nonverbal cognitive processes. This research suggests that vocabulary knowledge and nonverbal cognitive processes may play an important role in the development of reading comprehension in deaf children.
(Nurwendah et al., 2019)	*Jurnal Pendidikan Bahasa dan Sastra*	Gangguan Berbahasa pada Penyandang Tunagrahita: Studi Analisis Proses Pembelajaran Bahasa Anak Penyandang Tunagrahita	Difficulty learning to read, often called dyslexia, involves a child's ability to understand phoneme sounds, morphemes, semantics and syntax. In general, children with learning disabilities have memory difficulties, which are believed to be neurological in origin. Thus, reading ability is influenced by mental processes such as perception and memory in the brain.
(Nanik, 2018)	*Repository of Universitas Negeri Jakarta*	Pelaksanaan Percakapan Membaca Ideovisual Untuk Pengembangan Bahasa Siswa Tunarungu di TKLB Pangudi Luhur	The results showed that the planning of ideovisual reading conversation for language development of deaf students occurred in the process of heart-to-heart conversation. The material raised is the result of students' spontaneity that will be visualised by the teacher. The result of this visualisation then becomes ideovisual reading material. The implementation of ideovisual reading conversation for deaf students' language development consists of several major activities, including guided reading, processing the reading by doing the process of direct identification and indirect identification, and reflecting back the language that students have received so that it becomes the students' own.
(Imran, 2023)	*Repository of Universitas Hasanudin*	Kompetensi Sintaksis Penyandang Tunarungu Melalui Bahasa Tulis di Media Sosial	The results show that Indonesian Sign Language Speakers/*Penutur Bahasa Isyarat Indonesia* (PTR) have the ability to compose simple Indonesian written sentences with five basic core sentence patterns and various sentence types. PTR syntactic mastery shows distinctiveness with four

Author(s)	Publication	Research Title	Reserch Results
		Facebook	patterns of syntactic deviation, namely omission, addition (redundancy), replacement, and word order errors. It was found that PTRs were less proficient in constructing conjoined sentences, which still resembled a pile of words and were not yet a systemic series of clauses. This finding is important for addressing the problem of written Indonesian sentence mastery for PTRs.

Research by Gillam et al. (2019) discussed the relationship between sentence comprehension of children with language development disorder (DLD) and their cognitive abilities. In the article, the research showed that children with DLD have limitations in long-term language knowledge (long-term memory) which includes a lack of grammatical templates for simple and complex syntactic forms and less specific lexical representations. In addition, they also have limitations in complex working memory and attention skills. This causes them difficulty in processing and understanding complex sentences (Gillam et al., 2019). Gillam et al. (2019) research also showed that sentence comprehension of children with DLD is related to their cognitive abilities, such as working memory, attention, and linguistic knowledge in long-term memory. Children with DLD performed worse on all cognitive tasks tested, including working memory, attention, and linguistic knowledge in long-term memory, compared to children with normal language development (Gillam et al., 2019). Gillam et al. (2019) study, a confirmatory factor analysis was conducted to identify the minimal set of measures representing the most important characteristics of cognitive processing in children with and without DLD. The results showed that a four-factor measurement model consisting of the latent variables fluid reasoning, controlled attention, complex working memory, and language knowledge in long-term memory provided an excellent model for all children tested, including children with DLD (Gillam et al., 2019) .

The psycholinguistic model in Gillam et al. (2019) study assumes that the process of language development involves interactions between cognitive systems, such as working memory, attention, and linguistic knowledge, and language experiences gained from the environment. The model also describes how these systems are interrelated with each other and how language experiences gained from the environment influence the development of cognitive systems and linguistic knowledge. In the article, this psycholinguistic model is used to explain the relationship between sentence comprehension of children with DLD and their cognitive abilities. The model is also used to identify cognitive factors that influence sentence comprehension in children with DLD. As such, this psycholinguistic model provides a useful framework for understanding the process of language development in individuals with and without language impairment. As such, this article provides important insights into the relationship between cognitive ability and language comprehension in children with DLD, as well as providing a basis for the development of more effective clinical approaches in treating language impairment in children.

In line with Gillam et al.(2019) and Montgomery et al. (2018) researchs (explains psycholinguistic processes in reading comprehension mechanisms in individuals with language disorders (DLD) discussed in depth. The study identified four cognitive mechanisms that play a role in sentence comprehension in children with and without DLD, namely language knowledge, central working memory, controlled attention, and analytical processing. Language knowledge involves an understanding of grammar and vocabulary, while central working memory involves the ability to retain information in short-term memory. Controlled attention involves the ability to focus attention on relevant information and ignore irrelevant information, while analytical processing involves the ability to break down sentences into smaller parts to understand their meaning. The study showed that children with DLD have difficulties in all these four cognitive mechanisms, leading to difficulties in sentence comprehension. However, the study also showed that with the right intervention, children with DLD can improve their ability in all these four cognitive mechanisms and improve their sentence comprehension. In conclusion, this study shows that sentence comprehension in children with DLD involves complex psycholinguistic processes and that appropriate interventions can help improve their abilities in the cognitive mechanisms involved in sentence comprehension.

In a different study, Montgomery et al. (2021) explained that language knowledge in long-term memory plays an important role in working memory function through the concepts of better input grouping and memory space preservation. Furthermore, it is mentioned that better syntactic knowledge in long-term memory can lead to better input grouping and memory space preservation. This suggests that language knowledge in long-term memory may affect sentence comprehension ability in children with language development disorders. Therefore, assessments and interventions that focus on improving syntactic knowledge in children with

language development disorders may help improve their sentence comprehension ability (Montgomery et al., 2021).

Research by Macchi et al. (2014) discussed in depth the mechanisms of reading comprehension in children with specific language impairments, including the involvement of psycholinguistic processes such as phonological processing and orthographic processing in word reading. This provides valuable insights into how language impairment can affect reading comprehension mechanisms in children. The reading comprehension process in individuals with language impairment involves phonological processing and orthographic processing (Macchi et al., 2014). The article discusses how specific language impairments can affect children's ability to understand the mechanics of reading comprehension, especially in terms of phonological processing (the relationship between letters and sounds) and orthographic processing (visual recognition of words). In addition, the article also highlights the role of working memory in reading comprehension mechanisms in children with specific language impairment. As such, the article provides a deep insight into how specific language impairment affects reading comprehension processes in children.

Earle and Del Tufo (2021) research entitled "Literacy-supporting skills in college students with specific reading comprehension deficit and developmental language disorder" which discusses skills that support literacy in college students with specific reading comprehension disorders and developmental language disorders. The study discussed the results of a study that combined data from several groups of college students to understand the challenges faced by individuals with developmental language disorder and specific reading comprehension disorder in adulthood (Earle & Del Tufo, 2021). The study found that skill profiles differed between groups, but there was no evidence of weakness beyond the core deficits in reading comprehension observed in individuals with only specific reading comprehension impairment. However, when specific reading comprehension impairment co-occurred with developmental language impairment, weaknesses were observed in phonological processing, as well as fluent reading skills and verbal working memory. Although the article does not specifically address the reading comprehension process in individuals with language impairment, the study provides a clear picture of the comparison of literacy skill profiles between groups of college students with specific reading comprehension impairment and developmental language impairment.

The discussion of psycholinguistic processes in reading comprehension mechanisms in individuals with language impairment (SLI) was not specifically included in Montgomery et al. (2016). The main focus of the research was on the comprehension of spoken sentences in children with SLI, as well as the memory limitations associated with sentence comprehension. The article discussed the limitations of sentence comprehension in children with SLI and its relationship with memory limitations. Children with SLI have extensive sentence comprehension limitations, including difficulties in understanding complex and simple syntactic structures (Montgomery et al., 2016). There are two main theoretical views put forward to explain sentence comprehension limitations in SLI: the syntax-specific deficit view and the memory-based view. Based on the available evidence, the memory-based view is more supportive of the broad profile of sentence comprehension limitations in SLI than the syntax-specific deficit view. Memory limitations, particularly verbal working memory, appear to be an important factor in sentence comprehension limitations in children with SLI (Montgomery et al., 2016). There is a more integrated memory-based framework in the adult sentence comprehension literature, which can be applied to SLI research to further understand sentence comprehension limitations in children with SLI (Montgomery et al., 2016).

The results of Barak et al. (2022) research showed that children with Language Learning Disorder (DLD) had lower performance compared to children with normal language development (TLD), without any influence from bilingualism. When performing lexical retrieval, the children with DLD and the bilingual group scored lower than the children with TLD and the monolingual group. This finding highlights that bilingualism is not a barrier in children's language learning. However, the lower performance in lexical retrieval was due to the decreased frequency of exposure to words. This study provides insight into the different mechanisms in the effects of bilingualism and language impairment on children's lexicon development. The conclusions of this study may support better educational and intervention strategies for children with DLD, especially in bilingual contexts.

Research by Meteyard et al. (2015) on the profile of text comprehension impairment in individuals with aphasia. The researchers conducted a case study of four individuals with aphasia to explore the components of the reading process that are important in text comprehension. They highlighted the importance of assessing complex skills such as reading speed, language skills, text representation, inference, working memory and metacognitive skills in determining appropriate rehabilitation approaches. Thus, this article provides an in-depth insight into text comprehension impairment in individuals with aphasia and its relevance to rehabilitation treatment. In the article, the researchers explored several cognitive processes that are important for text comprehension in

individuals with language impairment. Firstly, reading speed is an important factor in text comprehension, where individuals who read slowly or not fluently may have difficulty in comprehending text. Second, language skills such as word and sentence comprehension, as well as the ability to access lexical, semantic, and syntactic representations are also important factors in text comprehension. Third, text representation, i.e. the ability to represent text in the form of propositions and situation models, is also an important factor in text comprehension. Fourth, inference, both local and global, is also an important factor in text comprehension, where individuals must be able to connect information in the text to build a more complete understanding. Fifth, working memory, which is the ability to retain information in the short term, is also an important factor in text comprehension. Finally, metacognitive skills, such as the ability to monitor and use strategies, are also an important factor in text comprehension. By understanding these factors, researchers can target appropriate rehabilitation approaches to improve text comprehension in individuals with language impairment.

Research by Borovsky et al. (2013) discusses lexical activation in real-time sentence comprehension in adolescents with a history of Specific Language Impairment (SLI) and their typically developing (TD) peers. This study explored how lexical deficits in individuals with SLI emerge in real-time sentence comprehension. Participants listened to sentences consisting of the form, Article-Agent-Action-Article-Theme, while viewing pictures of four objects that varied in relation to the Agent and Action of the sentence. The results showed that adolescents with SLI were as fast as their peers in attending to the last item of the sentence (Target), yet differed in visual attention after action onset to items related to the action. An additional exploratory analysis of the spatial distribution of their visual attention showed that the SLI group had a qualitatively different pattern of visual attention to object pictures compared to the control group. These findings suggest that adolescents with SLI integrate lexical information among words to anticipate possible or expected meanings with similar fluency and relative speed as their peers. However, the SLI group's failure to show increased attention to action-related items after action onset suggests a lexical integration deficit resulting in a failure to consider alternative sentence interpretations.

Study by Buiza et al. (2016) aimed to determine the psycholinguistic markers that best define the profile of Spanish-speaking children with Specific Language Impairment (SLI) in phonology and morphosyntax. With this aim, a group of Spanish-speaking children with SLI was compared with two control groups: one commensurate with chronological age and the other commensurate with psycholinguistic age. All participants in the study were assessed with a series of tasks that had been specifically designed for the study. The results showed that the group of children with Specific Language Impairment (SLI) showed lower performance compared to the subgroup of age-matched children (CA) in 13 verbal tasks. However, there was no significant difference in performance between the SLI group and the subgroup of children with linguistic match (CL) on most (11 out of 13) tasks. Stepwise discriminant analysis revealed that three specific tasks (morphological integration, sentence comprehension, and diadochokinesis) could significantly discriminate between the SLI and CA groups, with sensitivity levels reaching 84% and specificity reaching 90% (Buiza et al., 2016).

Daza et al. (2014) study aimed to explore the relationship between linguistic and non-linguistic skills with deaf children's reading success in tasks that require understanding the meaning of phrases, not just solving individual words. The study compared linguistic skills (phonological awareness and vocabulary knowledge) as well as nonverbal cognitive processes (selective attention, visuospatial working memory, and executive function components) in deaf children who performed differently in reading comprehension tasks (good readers vs. poor readers). The results showed that there were significant differences in reading comprehension achievement between the two groups, but no differences in factors such as gender, age, level of hearing loss, cause of deafness, and cochlear implant use. The analysis showed that good readers have better vocabulary skills, and these skills can be a predictor of success in reading comprehension, in accordance with previous findings in deaf and normal hearing children. In addition, this study highlights the important role of nonverbal cognitive processes, such as selective attention, visuospatial working memory, and executive functions, in the development of reading comprehension in deaf children. Results show that poor readers have difficulties in focusing visual attention and identifying the target stimulus, as well as showing limitations in visuospatial working memory. Executive functions, specifically in conceptual thinking tasks and motor changes, were also related to reading success in deaf children. In conclusion, this study supports the hypothesis that deaf children, despite having low phonological skills, can achieve good levels of reading comprehension through alternative pathways that do not rely on spoken language. Nonverbal cognitive processes, such as visual attention, visuospatial working memory, and executive functions, may play an important role in this alternative pathway. The results of this study are expected to provide a better understanding of how deaf children develop reading skills, as well as contribute to the planning of educational programs that consider training nonverbal cognitive processes.

Nurwendah (2019) research discusses language disorders in children with disabilities and language learning approaches that can be used to help them. Language disorder is one type of disorder in communication that results in difficulty or loss in the symbolization process. Children with disabilities have limitations in thinking and reasoning, so they experience difficulties in the development of their thinking power and their entire personality. In this study, data were collected through observation, interviews, and documentation. The data was then analyzed to find themes and formulate working hypotheses. Data validity was also checked through diligent observation and triangulation techniques. In language learning for children with disabilities at SLB Pertiwi Ponorogo, an approach that suits individual needs is needed. Learning is carried out with a focus on developing cognitive, language and social skills. Teachers also need to provide detailed and lengthy explanations so that children can provide answers to pictures or questions well. Inclusive education is also important in helping children with disabilities. The school has the role of a workshop that is tasked with improving students from incapable to capable, ignorant to understanding, and immoral to moral. Inclusive education aims to educate students to be smart and help them find the best end state according to their potential.

Nanik (2018), research revealed that ideovisual reading conversation planning for deaf students' language development involves a spontaneous heart-to-heart conversation process. The material raised in this process comes from students' spontaneous expressions, which are then visualized by the teacher so that the results of the visualization can become ideovisual reading material. In addition, the implementation of ideovisual reading conversations for deaf students' language development involves several major activities, such as guided reading, processing reading by conducting direct identification and indirect identification processes. Furthermore, students are also asked to reflect back on the language they have received so that the language really belongs to the students.

Imran (2023) research entitled "Syntactic Competence of Deaf People Through Written Language on Facebook Social Media" shows that Indonesian Sign Language Speakers (PTR) have the ability to compose simple Indonesian written sentences with five basic core sentence patterns and various sentence types. PTR syntax mastery shows distinctiveness with four patterns of syntactic deviation, namely omission, addition (redundancy), replacement, and word order errors. In this context, it was found that PTRs were less proficient in constructing conjoined sentences, which still resembled a pile of words and did not yet form a systemic series of clauses. This finding has important implications for addressing the problem of PTRs' mastery of written Indonesian sentences, by highlighting areas of inadequacy specifically in conjoined sentence construction. The research shows that PTRs have the ability to combine two categories of words and form core sentence archetypes. There are five basic patterns of core sentences formed by PTR, namely (1) KB+KK, (2) KB+KS, (3) KB+KNum, (4) KB+KB, and (5) KB+KDep. Although PTRs are able to construct various sentence types, the research shows difficulties in perfecting the merging of coordinative and subordinative compound sentences into systemic mixed compound sentences. This difficulty was particularly evident in the use of the coordinating conjunctors and, or, and but. Four categories of syntactic rule deviations were found in PTR written language, namely errors of omission, addition, selection, and ordering. Errors of ordering were the most dominant type of deviation.

Conclusion

The studies reviewed highlight the complexities and differences in sentence comprehension and psycholinguistic mechanisms in individuals with language impairment. Children with developmental language disorder (DLD) show limitations in long-term language knowledge, working memory, and attention. The psycholinguistic model describes the complex interaction between cognitive systems and language experience. Cognitive mechanisms, such as language knowledge, working memory, controlled attention and analytical processing, also play a role in sentence comprehension of children with DLD. Research in children with specific language impairments explores the impact of phonological and orthographic processing on reading comprehension. Although children with Learning Language Disorder (DLD) still face challenges in lexical retrieval, overall, a complex understanding of the relationship between sentence comprehension, cognitive skills and language impairment may open the door to the development of more effective clinical approaches in addressing these issues.

Recommendations

Based on the literature review, recommendations for the development of clinical approaches and interventions in individuals with language impairment include several important aspects. First, it is recommended to integrate

cognitive-based interventions, which focus on improving cognitive abilities such as working memory, attention, and linguistic knowledge, due to the close relationship between sentence comprehension and these cognitive abilities. Psycholinguistic models can also be a key foundation in designing interventions, helping to identify cognitive factors that play a role in the language comprehension of individuals with language impairment. Furthermore, there is a need to focus on the development of reading skills, particularly phonological and orthographic processing, with approaches that can be individually adapted according to each individual's skill profile. Inclusive education is also considered crucial in providing a supportive environment for the language development of children with language impairment. The important role of working memory and executive function in sentence comprehension emphasizes the need for interventions that consider the development of these skills specifically. For individuals who use Penutur Bahasa Isyarat Indonesia (PTR), the focus of intervention should be on the development of syntactic and sociolinguistic skills, with an emphasis on developing connected sentences and written language skills. Furthermore, understanding the mechanisms of reading comprehension in deaf children suggests that educational strategies need to consider phonological skills and nonverbal cognitive processes. These recommendations can guide the development of more effective clinical approaches in addressing different aspects of language impairment in individuals.

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References

Ampuni, S. (1998). Proses kognitif dalam pemahaman bacaan. *Buletin Psikologi*, *6*(*2*),16-26.

Barak, L., Degani, T., & Rama, N. (2022). Influences of Bilingualism and developmental language disorder on how children learn and process words. *Developmental Psychology*, *58(*5),821.

Borovsky, A., Burns, E., Elman, J. L., & Evans, J. L. (2013). Lexical activation during sentence comprehension in adolescents with history of specific language ımpairment. *Journal of Communication Disorders*, *46*(5–6), 413–427.

Buiza, J. J., Parra, M. J. R., Sanchez, M. G., & Adrian, J. A. (2016). Specific language impairment: Evaluation and detection of differential psycholinguistic markers in phonology and morphosyntax in Spanish-speaking children. *Research in Developmental Disabilities*, *58*, 65–82.

Daza, M. T., Phillips-Silver, J., Ruiz-Cuadra, M. del M., & López-López, F. (2014). Language skills and nonverbal cognitive processes associated with reading comprehension in deaf children. *Research in Developmental Disabilities*, *35*(12), 3526–3533.

Earle, F. S., & Del Tufo, S. N. (2021). Literacy-supporting skills in college students with specific reading comprehension deficit and developmental language disorder. *Annals of Dyslexia*, *71*(2), 282–298.

Gillam, R. B., Montgomery, J. W., Evans, J. L., & Gillam, S. L. (2019). Cognitive predictors of sentence comprehension in children with and without developmental language disorder: Implications for assessment and treatment. *International Journal of Speech-Language Pathology*, *21*(3), 240–251.

Imran, M. A. (2023). *Kompetensi sintaksis penyandang tunarungu melalui bahasa tulis di media sosial Facebook*.(Doctoral dissertation, Universitas Hasanuddin).

Irdawati, I., Yunidar, Y., & Darmawan, D. (2014). Meningkatkan kemampuan membaca permulaan dengan menggunakan media gambar kelas 1 di MIN Buol. *Jurnal Kreatif Online*, *5*(4).

Kase, S. (2019). *Penerapan semantik dalam pembelajaran bahasa Indonesia di sma negeri 3 gorontalo*. *deas: Jurnal Pendidikan, Sosial, dan Budaya*, *5*(2), 145-156.

Macchi, L., Schelstraete, M.-A., & Casalis, S. (2014). Word and pseudoword reading in children with specific speech and language impairment. *Research in Developmental Disabilities*, *35*(12), 3313–3325.

Marzali, A. (2016). Menulis Kajian literatur. *Jurnal Etnografi Indonesia*, *1*(2), 27–36.

McMurray, B., Klein-Packard, J., & Tomblin, J. B. (2019). A real-time mechanism underlying lexical deficits in developmental language disorder: Between-word inhibition. *Cognition*, *191*, 104000.

Meteyard, L., Bruce, C., Edmundson, A., & Oakhill, J. (2015). Profiling text comprehension impairments in aphasia. *Aphasiology*, *29*(1), 1–28.

Montgomery, J. W., Evans, J. L., Fargo, J. D., Schwartz, S., & Gillam, R. B. (2018). Structural relationship between cognitive processing and syntactic sentence comprehension in children with and without

developmental language disorder. *Journal of Speech, Language, and Hearing Research*, *61*(12), 2950–2976.

Montgomery, J. W., Gillam, R. B., & Evans, J. L. (2016). Syntactic versus memory accounts of the sentence comprehension deficits of specific language ımpairment: Looking back, looking ahead. *Journal of Speech, Language, and Hearing Research*, *59*(6), 1491–1504.

Montgomery, J. W., Gillam, R. B., & Evans, J. L. (2021). A new memory perspective on the sentence comprehension deficits of school-age children with developmental language disorder: ımplications for theory, assessment, and ıntervention. *Language, Speech, and Hearing Services in Schools*, *52*(2), 449–466.

Nanik, U. (2018). *Pelaksanaan percakapan membaca ideovisual untuk pengembangan bahasa siswa tunarungu di tklb pangudi luhur*. (Doctoral dissertation).Retrieved from http://lib.unj.ac.id/tugasakhir/index.php

Natsir, N. (2017). Hubungan psikolinguistik dalam pemerolehan dan pembelajaran bahasa. *Jurnal Retorika, 10*(1), 20-29.

Nurwendah, Y. D., Mahera, I. A., & Setiawan, A. (2019). Gangguan berbahasa pada penyandang tunagrahıta : studı analisis proses pembelajaran bahasa anak penyandang tunagrahıtA. *Jurnal Pendidikan Bahasa dan Sastra Arab*, *1*(1),16-35.

Ocktaviana, D. (2023). Pemerolehan bahasa pada anak dengan rıwayat perilaku tantrum: Analısıs perkembangan kosakata dan kemampuan komunıkası. *Journal of Education for the language and literature of Indonesia*, *1*(1),9-18.

Pratama, R. Y. (2022). Analisis gangguan bahasa pada anak melalui kajian psikolinguistik. *Fashohah : Jurnal Ilmiah Pendidikan Bahasa Arab*, *2*(1), 40–48.

Indah, R.N. (2017). *Gangguan berbahasa kajian pengantar* (p.199). Malang, Indonesia: Uin-Maliki Press.

Siroj, M. B., & Arianti, D. (2023). Produksi satuan sintaksis anak autis SLB C yayasan autisma semarang. *Transformatika: Jurnal Bahasa, Sastra, dan Pengajarannya*, *6*(2), 123-136.

Suharti, S., Dwi Khusnah, W., Sri Ningsih,S…& Purba, J. H. (2021). *Kajian psikolinguistik*. Indonesia: Yayasan Penerbit Muhammad Zaini.

Wulandari, S. (2023, July 17). Keterampilan berbahasa anak usia dini. Badan Pengembangan Dan Pembinaan Bahasa. Retrieved from https://badanbahasa. kemdikbud. go. id/

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