The Relationship Between Language Functioning and Cognitive Decline in Elderly Individuals with Disabilities

Walaa Badawy Mohamed Badawy

Assistant professor of clinical psychology, King Khalid University, Saudi Arabia,
wbadwe@kku.edu.sa

Abstracts

This research study aimed to explore the relationship between language functioning, cognitive decline, and functional independence in elderly individuals with disabilities. A cross-sectional research design was employed, and data were collected from a sample of 120 elderly participants. Language functioning was assessed using the Boston Diagnostic Aphasia Examination (BDAE), cognitive decline was measured using the Mini-Mental State Examination (MMSE), and functional independence was evaluated using the Activities of Daily Living (ADL) scale. Correlation analyses were conducted to examine the associations between these variables. The results revealed a significant negative correlation between language functioning and cognitive decline ($r = -0.45^{**}$, $p < 0.01$), indicating that language impairments often co-occur with declines in other cognitive domains. A significant positive correlation was observed between language functioning and functional independence ($r = 0.60^{**}$, $p < 0.01$), highlighting the importance of effective communication in maintaining autonomy in daily living activities. Additionally, a significant negative correlation between cognitive decline and functional independence ($r = -0.55^{**}$, $p < 0.01$) indicated that individuals with greater cognitive decline may experience challenges in performing daily tasks independently. These findings emphasize the need for comprehensive assessments and targeted interventions to support language functioning, cognitive health, and functional independence in elderly individuals with disabilities.

Keywords: Language Functioning, Cognitive Decline, Functional Independence, Elderly Individuals, Disabilities.

Introduction

As global life expectancy continues to rise, the prevalence of age-related cognitive decline and disabilities among the elderly has become a critical public health concern. Cognitive decline encompasses a range of disorders, including mild cognitive impairment (MCI) and dementia, significantly affecting an individual's cognitive abilities and overall quality of life. Among the elderly population, individuals with disabilities represent a vulnerable group that is particularly susceptible to experiencing language impairments and cognitive decline(Murman, 2015).

As people age, they often experience declines in cognitive functioning, including memory loss, decreased problem-solving ability, and difficulties in decision-making. Cognitive decline can

have a significant impact on the daily lives of elderly individuals, affecting their independence, social relationships, and overall quality of life(Harada et al., 2013). Language functioning is also a crucial area of concern for elderly individuals, as communication is necessary for everyday activities such as socializing, expressing needs, and maintaining relationships(Dwivedi et al., 2022).

Memory loss and decline in thinking and reasoning abilities are common forms of cognitive decline in the elderly. Short and long-term memory become impaired, making it difficult to recall events, names and details. Executive functions like planning, organizing, decision making and multi-tasking also decline. Memory aids and strategies can help compensate for some of these issues(MacDonald et al., 2011).

Processing speed and word retrieval abilities typically worsen with age. The elderly tends to speak and think more slowly, and have difficulty finding the right words(Rossi & Diaz, 2016). This impacts their ability to communicate effectively and engage socially. Semantic memory also decreases over time. As a result, the elderly has trouble repeating longer phrases, comprehending complex language and maintaining conversations at a normal pace(Hoffman et al., 2018).

Issues with language functioning exacerbate other problems related to cognitive decline in the elderly. Difficulties communicating isolate them and hinder coping strategies that rely on language. Language interventions focused on conversation, reading and storytelling can help optimize the remaining language abilities of the elderly(Kuca et al., 2015).

Cognitive and language declines tend to progress gradually over time but can accelerate due to conditions like Alzheimer's disease and stroke. Early detection is important so support systems can be implemented to preserve as much independence and quality of life for the elderly as possible. Memory aids, simplified communication and cognitive stimulation may help delay or lessen cognitive and language declines(Livingston et al., 2020).

Language skills begin to decline as people age due to neurological changes and cognitive slowing. Elderly individuals often experience difficulties with word retrieval, language comprehension, repetition and fluency that impact their daily lives and social relationships(Szatloczki et al., 2015). Problems finding the right words are common, as are issues understanding complex language and conveying thoughts at a rapid pace. Repetition of longer phrases also becomes a challenge. These language difficulties stem from declines in memory, processing speed and executive functions that occur with aging. Overall, language functioning is an important area of concern for the elderly as effective communication is so intertwined with cognitive health, independence and quality of life(Feldman, 2019).

Declining language abilities in the elderly exacerbate other problems associated with cognitive aging. Communication difficulties result in isolation, loneliness and loss of social networks that help preserve well-being. Problems expressing needs and comprehending information also hinder elderly individuals from managing daily tasks independently(Boamah et al., 2021). Language decline and communication issues make it harder for the elderly to implement coping strategies that require comprehension and articulation. Overall, language skills help enable elderly individuals to navigate the world, pursue interests and remain socially engaged. As these

skills deteriorate, the impact on functioning and quality of life grows more pronounced(Banovic et al., 2018).

The relationship between language functioning and cognitive decline in elderly individuals with disabilities is complex. While language impairments are strongly linked to various forms of dementia, such as Alzheimer's disease and primary progressive aphasia, research on the intersection between language, cognition and disabilities in the aging population remains limited(Kempler & Goral, 2008). Understanding this interaction is crucial for several reasons. It could improve diagnostic accuracy by identifying early linguistic markers of cognitive decline. It may inform the development of targeted interventions that leverage language rehabilitation to slow cognitive deterioration. And it may ultimately enhance the wellbeing and quality of life of elderly individuals with disabilities through better detection and management of cognitive (Perry et al., 2018)

Understanding the relationship between language and cognition in elderly individuals with disabilities has potential implications for diagnostic practices and disease modification. Early changes in linguistic functioning, particularly word retrieval difficulties and fluency deficits, may serve as predictors of underlying cognitive decline and risk for dementia(Johnson & Lin, 2014). Incorporating standardized linguistic measures into diagnostic evaluations could help identify at-risk individuals sooner to provide timely interventions and support. Language interventions may also help preserve cognitive functions by activating neural networks involved in both language and cognition. However, more research is needed to validate specific linguistic markers and treatments.(Townend et al., 2007)

Targeted language and cognitive interventions, when applied early enough, may help slow progression of cognitive decline and deterioration of functional abilities in elderly individuals with disabilities. Lifestyle modifications involving physical activity, cognitive stimulation and social engagement may also support language functioning and delay cognitive changes(Ruthirakuhan et al., 2012). Crucially, effective management of both linguistic and cognitive difficulties can help prolong independence, optimize functioning, and improve quality of life for this vulnerable population. Again, more research is needed to develop and optimize multidomain intervention approaches(Gupta et al., 2021).

Understanding the relationship between language functioning and cognitive decline in elderly individuals with disabilities has the potential to yield significant benefits. Improved diagnostics and tailored interventions may result from a better grasp of how linguistic markers and language-based rehabilitation can be leveraged for earlier detection and timely management of cognitive deterioration.

This could translate to enhanced quality of life for elderly individuals with disabilities by allowing them to preserve independence and functionality for as long as possible. Caregivers may also benefit from receiving training and support earlier once linguistic signs of cognitive decline are identified. A multidomain intervention approach combining cognitive stimulation, contextual support and caregiver education may optimize outcomes compared to unimodal interventions.

A better understanding of the relationship between language and cognition could also inform the development of predictive models and preventative strategies focused on delaying decline through language rehabilitation and cognitive training. This has the potential to significantly reduce the healthcare needs and costs associated with cognitive impairment in elderly individuals with disabilities.

Methodology:

Research design

The study employed a cross-sectional research design, which is a non-experimental and observational approach used to collect data at a specific point in time from a diverse group of participants. This design was chosen for its suitability in examining the relationship between language functioning and cognitive decline in elderly individuals with disabilities.

The cross-sectional design was considered appropriate for this research due to several reasons. Firstly, it allowed for the efficient collection of data from a large and diverse sample of elderly individuals with disabilities at a single time point. Given the potential challenges in recruiting and retaining participants over an extended period, a cross-sectional approach offered a practical advantage.

Secondly, the study aimed to investigate the prevalence of language impairments and cognitive decline within the targeted population at a specific time. By assessing both variables concurrently, the researchers could observe the relationships between language functioning and cognitive decline within the same context, which is particularly relevant for understanding the interplay between these factors in elderly individuals with disabilities.

Participants:

2.1. Inclusion Criteria: a. Elderly individuals aged 65 years and above: To ensure that the study focused on the geriatric population, participants had to be 65 years or older. This age range was selected as it aligns with the definition of the elderly population and the higher risk of cognitive decline in older age (World Health Organization, 2015).

b. Presence of a documented disability, such as physical disability, neurological disorder, or sensory impairment: The inclusion of participants with documented disabilities was a critical criterion to investigate the relationship between language functioning and cognitive decline within this specific subgroup of elderly individuals. Disabilities encompassed a wide range of conditions, including but not limited to mobility impairments, stroke, traumatic brain injury, Alzheimer's disease, and sensory impairments (e.g., visual or hearing impairment).

c. Ability to provide informed consent or, if necessary, obtain informed consent from a legally authorized representative: Participants were required to have the cognitive and communicative capacity to provide informed consent to participate in the study voluntarily. However, considering the presence of cognitive impairments in the targeted population, provisions were made to include participants who lacked the capacity to provide informed consent. In such cases, informed consent was obtained from legally authorized representatives, such as family members or legal guardians, as per the ethical guidelines (World Medical Association, 2013).

Sampling Procedure:

The sampling procedure for this study involved a combination of purposive and convenience sampling methods to recruit a diverse and representative sample of elderly individuals with disabilities. The goal was to ensure that the study population included individuals with a range of disabilities and cognitive functioning levels, allowing for a comprehensive exploration of the relationship between language functioning and cognitive decline.

1. Purposive Sampling: Purposive sampling was used to target specific individuals who met the inclusion criteria defined in the study. This sampling method is characterized by researchers deliberately selecting participants who possess certain characteristics that align with the research objectives (Palinkas et al., 2015). In the context of this study, the following steps were taken to employ purposive sampling:

a. Identification of Eligible Participants: Researchers identified potential participants who were 65 years of age or older and had documented disabilities, including physical disabilities, neurological disorders, or sensory impairments. Eligibility was determined based on medical records, clinical assessments, or documented diagnoses.

b. Targeted Recruitment: Once eligible participants were identified, the research team reached out to them directly or through healthcare providers, rehabilitation centers, and community organizations catering to the elderly or individuals with disabilities. The aim was to recruit individuals representing a wide range of disabilities and cognitive abilities.

c. Subgroup Representation: To ensure sufficient representation of various disability types and severity levels, the purposive sampling process sought to recruit participants with different disabilities. For instance, efforts were made to include individuals with mobility impairments, stroke survivors, those diagnosed with Alzheimer's disease, and individuals with sensory impairments.

2. Convenience Sampling: Convenience sampling, a non-probability sampling technique, was also utilized to recruit participants for the study. This approach involves selecting participants based on their ease of accessibility and availability (Palinkas et al., 2015). Given the complexities of recruiting elderly individuals with disabilities, convenience sampling facilitated practicality and ensured a feasible recruitment process. The following steps were followed in employing convenience sampling:

a. Selection of Convenient Sites: Various healthcare settings, rehabilitation centers, community centers for the elderly, and support groups for individuals with disabilities were chosen as sites for participant recruitment. These locations were selected based on their willingness to collaborate and the availability of potential participants.

b. Engagement with Participants: The research team engaged with potential participants during their visits to the selected sites. Information sessions were conducted to explain the study's objectives, procedures, and benefits to prospective participants. This helped in building rapport and trust with the elderly individuals and their caregivers, encouraging their interest in participating in the study.

c. Optimal Sample Size: The sample size (120 elderly) was determined based on the research objectives, statistical considerations, and the practical constraints of data collection. The research team aimed to achieve a sample size that allowed for meaningful analyses while considering available resources and time constraints.

3. Data Collection Methods:

Data were collected through a combination of standardized assessments, interviews, and self-report measures.

3.1. Language Functioning Assessment: a. The Boston Diagnostic Aphasia Examination (BDAE) was administered to assess different aspects of language functioning, including comprehension, verbal expression, and repetition (Goodglass & Kaplan, 1983).

3.2. Cognitive Functioning Assessment: a. The Mini-Mental State Examination (MMSE) was administered to screen for global cognitive functioning and detect signs of cognitive decline (Folstein et al., 1975).

3.3. Self-Report Measures: Participants were asked to complete self-report measures, such as: The Activities of Daily Living (ADL) scale to evaluate functional independence (Katz et al., 1963). .

4. Data Analysis Procedures: Data analysis was performed using appropriate statistical software (e.g., SPSS, R). Descriptive statistics were used to summarize demographic characteristics and prevalence rates of language impairments and cognitive decline in the study population. Pearson correlation or Spearman rank correlation was used to examine the relationships between language functioning, cognitive decline, and other relevant variables.

Furthermore, multiple regression analysis was conducted to identify potential risk factors and comorbidities associated with language impairments and cognitive decline. Subgroup analyses were performed to explore differences based on the type of disability and severity of cognitive decline.

Ethical Considerations:

The research adhered to ethical guidelines for conducting research involving human subjects. Informed consent was obtained from all participants or their legally authorized representatives. Participants' privacy and confidentiality were strictly maintained, and data were stored securely. The research obtained approval from the Institutional Review Board (IRB) or Ethics Committee before data collection.

Results:

The demographic result table provides a clear and concise summary of the characteristics of the 120 elderly participants in the study on "The relationship between language functioning and cognitive decline in elderly individuals with disabilities." The table effectively organizes the data into different categories, making it easy to interpret and analyze the demographic distribution of the study population.

The age distribution of the participants is well-represented, with a balanced distribution across different age groups. Approximately 25% of the participants fall within each age group, ranging from 65 to 69 years, 70 to 74 years, 75 to 79 years, and 80 years and above. This balanced representation allows for a comprehensive examination of the relationship between language functioning and cognitive decline across different age segments of the elderly population.

The study has an equal representation of male and female participants, with 50% each. This balanced gender distribution enhances the generalizability of the study findings and ensures that any potential gender-specific effects on language functioning and cognitive decline can be appropriately addressed.

The participants' distribution across different types of disabilities, such as physical disabilities, neurological disorders, sensory impairments, and multiple disabilities, is well-represented. This diverse representation enables the investigation of the relationship between language functioning and cognitive decline within each disability subgroup and allows for the exploration of potential differences in language impairments based on the type of disability.

The participants' education levels are well-distributed, with a significant proportion having completed tertiary education (37.5%), followed by secondary education (33.3%). This diversity in educational backgrounds allows for the examination of potential associations between education levels and language functioning and cognitive decline.

The living arrangements of the participants are represented across three categories: living alone, living with family, and living in care facilities. This distribution offers insights into the potential influence of living arrangements on language functioning and cognitive decline in elderly individuals with disabilities.

The table presents data on various comorbidities experienced by the participants, including hypertension, diabetes, cardiovascular disease, respiratory disease, and others. The prevalence of comorbidities provides valuable information for understanding their potential impact on language functioning and cognitive decline.

Table 1.Demographic Characteristics of Elderly Participants (N=120)

Demographic Variable	Frequency (n)	Percentage (%)
Age (Years)		
- 65 to 69	30	25.0
- 70 to 74	40	33.3
- 75 to 79	25	20.8
- 80 and above	25	20.8
Gender		
- Male	60	50.0
- Female	60	50.0
Type of Disability		
- Physical Disability	35	29.2
- Neurological Disorder	45	37.5
- Sensory Impairment	20	16.7
- Multiple Disabilities	20	16.7
Education Level		
- No Formal Education	10	8.3

- Primary Education	25	20.8
- Secondary Education	40	33.3
- Tertiary Education	45	37.5
Living Arrangements		
- Living Alone	20	16.7
- Living with Family	75	62.5
- Living in Care Facilities	25	20.8
Comorbidities		
- Hypertension	55	45.8
- Diabetes	30	25.0
- Cardiovascular Disease	25	20.8
- Respiratory Disease	20	16.7
- Others	40	33.3

The presented table(2) provides valuable insights into the Language Functioning Assessment results of 120 elderly participants using the Boston Diagnostic Aphasia Examination (BDAE). It succinctly displays the frequency distribution of different aphasia types observed within the study population.

Anomic Aphasia appears to be the most prevalent type, with 30 participants (25%) exhibiting this specific language impairment. This finding suggests that difficulty in naming objects or finding the right words might be relatively common among the elderly individuals with disabilities in the study.

Broca's Aphasia and Wernicke's Aphasia follow as the second and third most frequent types, with 25 participants (20.8%) and 20 participants (16.7%), respectively. Broca's Aphasia is characterized by expressive language difficulties, while Wernicke's Aphasia involves comprehension deficits. The relatively higher prevalence of these two types highlights the importance of assessing both verbal expression and comprehension abilities in this population.

Global Aphasia, which involves severe impairments in both comprehension and verbal expression, is observed in 15 participants (12.5%). This finding indicates that a subset of elderly individuals with disabilities in the study might experience significant language deficits affecting both understanding and production of speech.

Conduction Aphasia is less prevalent, observed in 10 participants (8.3%), indicating that this specific type, characterized by difficulties in repeating words and phrases, is relatively less common in the studied population.

Additionally, the table identifies "Other Types," representing 20 participants (16.7%). These might include less common or mixed forms of aphasia that require further investigation to delineate their specific language impairments

Table 2:Language Functioning Assessment: The Boston Diagnostic Aphasia Examination (BDAE) Results (N=120)

Aphasia Type	Frequency
Anomic Aphasia	30
Broca's Aphasia	25
Wernicke's Aphasia	20
Global Aphasia	15

Conduction Aphasia	10
Other Types	20

The presented frequency table(3) of the Cognitive Functioning Assessment using the Mini-Mental State Examination (MMSE) results provides valuable insights into the cognitive functioning levels of the 120 elderly participants with disabilities.

The table reveals a relatively balanced distribution of MMSE scores across different score ranges, ranging from 0 to 30. This balanced distribution indicates that the study's sample encompasses elderly individuals with a wide range of cognitive abilities, ranging from relatively intact cognitive functioning (MMSE scores of 25-30) to severe cognitive impairment (MMSE scores of 0-9).

The largest frequency (40 participants) falls within the score range of 25 to 30, suggesting that a substantial portion of the elderly individuals in the study exhibit relatively preserved cognitive abilities. This finding is promising as it suggests that a significant number of participants are maintaining higher levels of cognitive functioning despite their disabilities.

The group of participants with MMSE scores in the range of 20 to 24 (35 participants) indicates mild cognitive impairment or early signs of cognitive decline. This group requires careful monitoring and proactive interventions to address cognitive changes early on and support cognitive health.

The presence of 25 participants with MMSE scores in the range of 15 to 19 highlights the existence of moderate cognitive impairment in a subset of the study population. This finding underscores the need for targeted interventions and support to address the more pronounced cognitive challenges faced by these individuals.

The 15 participants with MMSE scores in the range of 10 to 14 demonstrate severe cognitive impairment, indicating significant cognitive decline. These individuals likely require specialized care and assistance in managing their cognitive difficulties and daily activities.

Lastly, the presence of 5 participants with MMSE scores in the range of 0 to 9 suggests a particularly vulnerable subgroup experiencing significant cognitive impairment or severe cognitive decline. These individuals are likely to require intensive care and support to address their cognitive needs comprehensively.

Table 3.Cognitive Functioning Assessment: The Mini-Mental State Examination (MMSE) Results (N=120)

MMSE Score Range	Frequency
25 - 30	40
20 - 24	35
15 - 19	25
10 - 14	15
0 - 9	5

In this frequency table, the distribution of ADL scores among the 120 elderly participants is presented. The ADL scores assess the participants' ability to perform various activities necessary for daily living and functional independence.

The majority of participants (40) achieved ADL scores in the range of 6 to 8, indicating a high level of functional independence. This finding suggests that a significant proportion of the elderly individuals with disabilities in the study are capable of performing most activities of daily living without assistance.

35 participants obtained ADL scores in the range of 3 to 5, suggesting a moderate level of functional independence. These individuals may require some assistance or support in certain activities, but they still demonstrate a considerable degree of independence in their daily functioning.

25 participants scored in the range of 1 to 2, reflecting a lower level of functional independence. This group likely needs significant assistance or supervision to perform various activities of daily living due to their disabilities.

Lastly, 20 participants received an ADL score of 0, indicating complete dependence on others for all activities of daily living. This finding highlights a particularly vulnerable subgroup of elderly individuals who require constant support and care to meet their daily needs.

Table 4.Activities of Daily Living (ADL) Scale Results for Functional Independence (N=120)

ADL Score Range	Frequency
6 - 8	40
3 - 5	35
1 - 2	25
0	20

The data in table 5 shows The correlation between Language Functioning and Cognitive Decline is represented by a negative value of -0.45**, indicating a significant negative relationship between these two variables. This finding suggests that as language functioning declines, cognitive abilities tend to decrease as well.

The correlation between Language Functioning and ADLs is positive with a coefficient of 0.60**. This positive correlation indicates a significant relationship between language functioning and functional independence in activities of daily living. Elderly individuals with better language functioning may also exhibit higher levels of functional independence in their daily activities.

Similarly, the correlation between Cognitive Decline and ADLs is negative, with a coefficient of -0.55**. This significant negative correlation suggests that as cognitive decline increases, functional independence in activities of daily living tends to decrease. Individuals experiencing greater cognitive decline may require more assistance or support in performing daily tasks.

Table 5.Correlation Table: Language Functioning, Cognitive Decline, and Activities of Daily Living (ADLs) (N=120)

Variables	Language Functioning	Cognitive Decline	ADLs
Language Functioning	1.00	-0.45**	0.60**
Cognitive Decline	-0.45**	1.00	-0.55**
ADLs	0.60**	-0.55**	1.00

Note: ** Correlation is significant at the 0.01 level (2-tailed).

Discussion

The present study aimed to investigate the relationship between language functioning, cognitive decline, and functional independence in elderly individuals with disabilities. The findings of the study shed light on the complex interactions between these variables and provide valuable insights into the challenges faced by this vulnerable population.

Language Functioning and Cognitive Decline

The results revealed a significant negative correlation between language functioning and cognitive decline ($r = -0.45^{**}$, $p < 0.01$). This finding aligns with previous research demonstrating that language impairments often co-occur with cognitive decline in elderly individuals(Bialystok & Poarch, 2014). As language is a complex cognitive function, declines in language abilities are frequently associated with declines in other cognitive domains, such as memory, attention, and executive functions. The observed negative correlation emphasizes the importance of addressing both language and cognitive functioning when assessing and managing the needs of elderly individuals with disabilities.

Language Functioning and Functional Independence

The study also identified a significant positive correlation between language functioning and functional independence in activities of daily living ($r = 0.60^{**}$, $p < 0.01$). This finding suggests that elderly individuals with better language functioning tend to exhibit higher levels of functional independence. The ability to effectively communicate and understand instructions plays a crucial role in carrying out daily tasks and maintaining autonomy(Sobral et al., 2018). Improved language functioning may enhance an individual's capacity to interact with their environment, follow instructions, and express their needs, leading to greater independence in daily living activities. These results underscore the importance of supporting and enhancing language skills to promote functional independence in elderly individuals with disabilities.

Cognitive Decline and Functional Independence

The study found a significant negative correlation between cognitive decline and functional independence ($r = -0.55^{**}$, $p < 0.01$). This result is consistent with previous research linking cognitive decline to decreased functional abilities and increased dependency on others for daily tasks(Chang et al., 2021). As cognitive abilities decline, individuals may experience challenges in memory, decision-making, and problem-solving, impacting their ability to perform complex activities of daily living(Lee et al., 2017). The observed negative correlation highlights the need for comprehensive assessments and targeted interventions to support functional independence and maintain quality of life in elderly individuals experiencing cognitive decline.

Implications and Clinical Significance

The findings of this study have significant implications for clinical practice and the development of interventions for elderly individuals with disabilities. Understanding the interplay between language functioning, cognitive decline, and functional independence can guide healthcare professionals in tailoring personalized care plans to address the specific needs of each individual.

Speech-language therapy, cognitive rehabilitation, and occupational therapy interventions can be designed to improve language abilities, cognitive functioning, and daily living skills (Diller et al., 2019).

Furthermore, early detection and intervention are crucial to mitigate the impact of cognitive decline and language impairments on functional independence. Regular screenings for language and cognitive functioning in elderly individuals with disabilities can help identify potential challenges at an early stage, allowing for timely intervention and support (Whitney et al., 2018). Interdisciplinary collaborations between speech-language pathologists, neuropsychologists, and occupational therapists are essential for providing comprehensive care and optimizing functional outcomes for this population.

Limitations and Future Directions

Despite the valuable insights provided by this study, there are several limitations that should be acknowledged. First, the study employed a cross-sectional design, which limits the ability to establish causal relationships between variables. Future longitudinal studies could explore the temporal dynamics of language functioning, cognitive decline, and functional independence over time.

Second, the study focused on a specific population of elderly individuals with disabilities, which may limit the generalizability of the findings to other elderly populations. Future research could include broader samples to examine the relationship between these variables in different contexts and disability types.

Additionally, the study relied on standardized assessments for language functioning, cognitive decline, and functional independence, which may not capture the full complexity of these constructs. The inclusion of qualitative measures and patient-centered outcomes could provide a more comprehensive understanding of the experiences and perspectives of elderly individuals with disabilities.

In conclusion, the present study contributes to the existing literature by demonstrating the relationships between language functioning, cognitive decline, and functional independence in elderly individuals with disabilities. The significant correlations observed highlight the interconnectedness of these variables and underscore the importance of addressing language and cognitive needs to support functional independence. The study's findings have clinical implications for the development of targeted interventions and care plans, emphasizing the importance of interdisciplinary collaboration in the management of elderly individuals with disabilities.

Funding: None

Acknowledgment

"The authors extend their appreciation to the Deanship of Research and Graduate Studies at King Khalid University for funding this work through Large Research Project under grant number RGP2/355/45 "

Conflicts of interest: The authors declare that no conflicts of interest related to

WORKS CITED

Banovic, S., Zunic, L., & Sinanovic, O. (2018). Communication Difficulties as a Result of Dementia. Materia Socio Medica, 30(2), 221. https://doi.org/10.5455/msm.2018.30.221-224

Bialystok, E., & Poarch, G. J. (2014). Language experience changes language and cognitive ability. Zeitschrift Für Erziehungswissenschaft, 17(3), 433–446. https://doi.org/10.1007/s11618-014-0491-8

Boamah, S. A., Weldrick, R., Lee, T.-S. J., & Taylor, N. (2021). Social Isolation Among Older Adults in Long-Term Care: A Scoping Review. Journal of Aging and Health, 33(7–8), 618–632. https://doi.org/10.1177/08982643211004174

Chang, Y.-H., Wu, I.-C., & Hsiung, C. A. (2021). Reading activity prevents long-term decline in cognitive function in older people: evidence from a 14-year longitudinal study. International Psychogeriatrics, 33(1), 63–74. https://doi.org/10.1017/S1041610220000812

Dwivedi, Y. K., Hughes, L., Baabdullah, A. M., Ribeiro-Navarrete, S., Giannakis, M., Al-Debei, M. M., Dennehy, D., Metri, B., Buhalis, D., Cheung, C. M. K., Conboy, K., Doyle, R., Dubey, R., Dutot, V., Felix, R., Goyal, D. P., Gustafsson, A., Hinsch, C., Jebabli, I., … Wamba, S. F. (2022). Metaverse beyond the hype: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. International Journal of Information Management, 66, 102542. https://doi.org/10.1016/j.ijinfomgt.2022.102542

Feldman, H. M. (2019). How Young Children Learn Language and Speech. Pediatrics In Review, 40(8), 398–411. https://doi.org/10.1542/pir.2017-0325

Gupta, A., Prakash, N. B., & Sannyasi, G. (2021). Rehabilitation in Dementia. Indian Journal of Psychological Medicine, 43(5_suppl), S37–S47. https://doi.org/10.1177/02537176211033316

Harada, C. N., Natelson Love, M. C., & Triebel, K. L. (2013). Normal Cognitive Aging. Clinics in Geriatric Medicine, 29(4), 737–752. https://doi.org/10.1016/j.cger.2013.07.002

Hoffman, P., Loginova, E., & Russell, A. (2018). Poor coherence in older people's speech is explained by impaired semantic and executive processes. ELife, 7. https://doi.org/10.7554/eLife.38907

Johnson, M., & Lin, F. (2014). Communication Difficulty and Relevant Interventions in Mild Cognitive Impairment. Topics in Geriatric Rehabilitation, 30(1), 18–34. https://doi.org/10.1097/TGR.0000000000000001

Kempler, D., & Goral, M. (2008). LANGUAGE AND DEMENTIA: NEUROPSYCHOLOGICAL ASPECTS. Annual Review of Applied Linguistics, 28, 73–90. https://doi.org/10.1017/S0267190508080045

Kuca, K., Maresova, P., Klimova, B., Valis, M., & Hort, J. (2015). Alzheimer’s disease and language impairments: social intervention and medical treatment. Clinical Interventions in Aging, 1401. https://doi.org/10.2147/CIA.S89714

Lee, W.-J., Liang, C.-K., Peng, L.-N., Chiou, S.-T., & Chen, L.-K. (2017). Protective factors against cognitive decline among community-dwelling middle-aged and older people in Taiwan: A 6-year national population-based study. Geriatrics & Gerontology International, 17, 20–27. https://doi.org/10.1111/ggi.13041

Livingston, G., Huntley, J., Sommerlad, A., Ames, D., Ballard, C., Banerjee, S., Brayne, C., Burns, A., Cohen-Mansfield, J., Cooper, C., Costafreda, S. G., Dias, A., Fox, N., Gitlin, L. N., Howard, R., Kales, H. C., Kivimäki, M., Larson, E. B., Ogunniyi, A., … Mukadam, N. (2020). Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. The Lancet, 396(10248), 413–446. https://doi.org/10.1016/S0140-6736(20)30367-6

Otero, X., Santos-Estevez, M., Yousif, E., & Abadía, M. F. (2023). Images on stone in sharjah emirate and reverse engineering technologies. Rock Art Research: The Journal of the Australian Rock Art Research Association (AURA), 40(1), 45-56.

Nguyen Thanh Hai, & Nguyen Thuy Duong. (2024). An Improved Environmental Management Model for Assuring Energy and Economic Prosperity. Acta Innovations, 52, 9–18. https://doi.org/10.62441/ActaInnovations.52.2

Girish N. Desai, Jagadish H. Patil, Umesh B. Deshannavar, & Prasad G. Hegde. (2024). Production of Fuel Oil from Waste Low Density Polyethylene and its Blends on Engine Performance Characteristics . Metallurgical and Materials Engineering, 30(2), 57–70. https://doi.org/10.56801/MME1067

Shakhobiddin M. Turdimetov, Mokhinur M. Musurmanova, Maftuna D. Urazalieva, Zarina A. Khudayberdieva, Nasiba Y. Esanbayeva, & Dildora E Xo'jabekova. (2024). MORPHOLOGICAL FEATURES OF MIRZACHOL

OASIS SOILS AND THEIR CHANGES. ACTA INNOVATIONS, 52, 1–8. https://doi.org/10.62441/ActaInnovations.52.1

Yuliya Lakew, & Ulrika Olausson. (2023). When We Don't Want to Know More: Information Sufficiency and the Case of Swedish Flood Risks. Journal of International Crisis and Risk Communication Research , 6(1), 65–90. Retrieved from https://jicrcr.com/index.php/jicrcr/article/view/73

Szykulski, J., Miazga, B., & Wanot, J. (2024). Rock Painting Within Southern Peru in The Context of Physicochemical Analysis of Pigments. Rock Art Research: The Journal of the Australian Rock Art Research Association (AURA), 41(1), 5-27.

Mashael Nasser Ayed Al-Dosari, & Mohamed Sayed Abdellatif. (2024). The Environmental Awareness Level Among Saudi Women And Its Relationship To Sustainable Thinking. Acta Innovations, 52, 28–42. https://doi.org/10.62441/ActaInnovations.52.4

Kehinde, S. I., Moses, C., Borishade, T., Busola, S. I., Adubor, N., Obembe, N., & Asemota, F. (2023). Evolution and innovation of hedge fund strategies: a systematic review of literature and framework for future research. Acta Innovations, 50,3, pp.29-40. https://doi.org/10.62441/ActaInnovations.52.4

Andreas Schwarz, Deanna D. Sellnow, Timothy D. Sellnow, & Lakelyn E. Taylor. (2024). Instructional Risk and Crisis Communication at Higher Education Institutions during COVID-19: Insights from Practitioners in the Global South and North. Journal of International Crisis and Risk Communication Research , 7(1), 1–47. https://doi.org/10.56801/jicrcr.V7.i1.1

Sosa-Alonso, P. J. (2023). Image analysis and treatment for the detection of petroglyphs and their superimpositions: Rediscovering rock art in the Balos Ravine, Gran Canaria Island. Rock Art Research: The Journal of the Australian Rock Art Research Association (AURA), 40(2), 121-130.

Tyler G. Page, & David E. Clementson. (2023). The Power of Style: Sincerity's influence on Reputation. Journal of International Crisis and Risk Communication Research , 6(2), 4–29. Retrieved from https://jicrcr.com/index.php/jicrcr/article/view/98

Perry, W., Lacritz, L., Roebuck-Spencer, T., Silver, C., Denney, R. L., Meyers, J., McConnel, C. E., Pliskin, N., Adler, D., Alban, C., Bondi, M., Braun, M., Cagigas, X., Daven, M., Drozdick, L., Foster, N. L., Hwang, U., Ivey, L., Iverson, G., … Golden, T. (2018). Population Health Solutions for Assessing Cognitive Impairment in Geriatric Patients. Innovation in Aging, 2(2). https://doi.org/10.1093/geroni/igy025

Rossi, E., & Diaz, M. (2016). How aging and bilingualism influence language processing. Linguistic Approaches to Bilingualism, 6(1–2), 9–42. https://doi.org/10.1075/lab.14029.ros

Ruthirakuhan, M., Luedke, A. C., Tam, A., Goel, A., Kurji, A., & Garcia, A. (2012). Use of Physical and Intellectual Activities and Socialization in the Management of Cognitive Decline of Aging and in Dementia: A Review. Journal of Aging Research, 2012, 1–14. https://doi.org/10.1155/2012/384875

Sobral, A. I. G. da P., Araújo, C. M. T. de, & Sobral, M. F. F. (2018). Mild cognitive impairment in the elderly Relationship between communication and functional capacity. Dementia & Neuropsychologia, 12(2), 165–172. https://doi.org/10.1590/1980-57642018dn12-020009

Szatloczki, G., Hoffmann, I., Vincze, V., Kalman, J., & Pakaski, M. (2015). Speaking in Alzheimer's Disease, is That an Early Sign? Importance of Changes in Language Abilities in Alzheimer's Disease. Frontiers in Aging Neuroscience, 7. https://doi.org/10.3389/fnagi.2015.00195

Townend, E., Brady, M., & McLaughlan, K. (2007). A Systematic Evaluation of the Adaptation of Depression Diagnostic Methods for Stroke Survivors Who Have Aphasia. Stroke, 38(11), 3076–3083. https://doi.org/10.1161/STROKEAHA.107.484238