

Original Research

The Correlation Of Cognitive And Memory With Pragmatic Ability In Older People

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ABSTRACT

Background: Older people experience decreased cognitive abilities, decreased memory, confusion, and difficulty understanding what others say and how they use language. The elderly often have conversations that are not fluent and are difficult to listen to. Decreasing speed in processing information and decreasing working memory, especially in terms of the ability to store information in the mind when processing, tend to contribute to a lack of language efficiency in the elderly. This study aimed to determine the relationship between cognitive, memory, and pragmatic abilities in Surakarta's older people.

Methods: This study uses a cross-sectional approach to quantitative research with an observational analytical plan. The sample consisted of 30 respondents living in Surakarta. Bivariate analysis using standard deviation and multivariate analysis using logistic linear regression models. The research instruments used were cognitive-linguistic evaluation, memory examination, and the assessment of pragmatic skills.

Results: The effect of statistical tests with contingency coefficient tests showed that cognitive ability and memory ability affected the pragmatic ability of older people with a p-value of 0.000, 0.01, and a correlation coefficient value of 0.550, 0.531. Meanwhile, the multivariate test using logistic regression results showed a value of $\text{sig.} 0.003 < 0.05$.

Conclusion: There is a relationship between cognitive and memory ability with the pragmatic ability of older people in Surakarta.

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INTRODUCTION

The elderly are in the final period of human life where a person begins to experience changes marked by environmental, psychological, and social changes. So there is a decrease in weakness, increased susceptibility to disease, and environmental and physiological changes. According to the World Health Organization (WHO), quoted by Parasari, Gusti Ayu Trisna and Lestari, (2019) an older person is someone who has reached the age of 60 years and over.

Older people are a human age group that has entered the final stages of life. Groups categorized as elderly will undergo a process called the aging process. The

aging process in humans is a natural event, which means that a person has gone through three stages of life: children, adults, and older people. The aging process also occurs in brain cells.

This results in slow thinking processes, difficulty concentrating, decreased memory abilities, and decreased cognitive function (Wahyuni & Nisa, 2016). Daniluk & Borkowska, (2020) state that the extent to which aging affects pragmatic verbal communication skills may differ depending on the aspects of communication and the characteristics of each individual, namely, the level of cognitive function, education, and gender. This phenomenon indicates that some individuals appear to have more severe deficits than others.

Cognitive function is a mental capacity that includes attention, linguistic skills, memory, visuospatial abilities, conceptual abilities, and intelligence. The problem that occurs in older people is a decrease in organ function. This decrease is caused by a reduced number of cells anatomically, a lack of nutritional intake, a lack of activity, and exposure to pollution and free radicals. The gradually increasing elderly population can cause problems.

The gradually increasing elderly population can cause problems. Women are more at risk of experiencing cognitive decline than men. This is associated with low levels of endogenous sex hormones and estradiol in the body. Older people also experience problems such as decreased memory, confusion, and difficulty understanding what other people are saying or what older people think and want, so they need a way to communicate (SurveyMETER and CAS UI, 2013).

Communication is the process of conveying ideas, hopes, and messages obtained through certain symbols that have meaning and are carried out by the sender of the message to the recipient of the message. Decreasing speed in processing information and reducing working memory, especially in terms of the ability to store information in the mind when processing, tends to contribute to a lack of language efficiency in the elderly. Perceptive velocity decreases significantly in late adulthood, which is strongly related to reduced working memory (Dahm et al., 2022).

Language is an essential form of communication humans use, whether produced or conveyed orally through signs that can be expanded into written form. Language is the comprehension and use of spoken language (speaking and hearing), written language (reading and writing), and symbolic language (gestures and facial expressions). The meaning studied by pragmatics is the meaning of involvement in the context of language use in communication events (Risti & Kurniajati, 2014).

Provinces that have the highest number of elderly in Indonesia are the islands of Java and Bali, which have 7% of the elderly. The increase in the number of older people is partly due to the growing socioeconomic level of the community, advances in health services, and the level of public knowledge, which are also on the rise. An Assessment Study of Elderly Friendly Cities in 14 Cities in Indonesia at the beginning of 2013 Surakarta is one of the ten big cities that have structural and service support as well as a supportive living and social environment as a consequence of physical and social changes from aging (Ristinawati et al., 2022).

According to the social division of the Central Statistics Agency for the Surakarta area, the number of elderly women in the Surakarta area is 24,740, while the number of older adults is 18,315. The increasing number of old age will have positive and negative impacts, including negative impacts that may appear on the older person related to biological or physical aspects, social aspects, and psychological or emotional aspects.

One of the problems from the psychological aspect is the decline in self-concept due to setbacks in old age.

The developmental tasks of the older person include being able to accept changes in appearance and resilience. Older people with low self-concepts do not value care and are less likely to seek help for physical or emotional health (Putra & Widiastuti, 2020).

MATERIALS AND METHOD

The research type is quantitative research. The research design was descriptive correlational. This correlative descriptive model is used to explain the relationship between two independent and dependent variables (Murti B., 2010).

The population of interest was elderly in Surakarta City. The sample tested in this study consisted of 30 individuals. The sampling technique employed intentional sampling. Independent variables are cognition skills and memory. The dependent variable is pragmatic ability.

Data analysis was carried out using univariate analysis to find out the characteristics of the sample and bivariate analysis to find out the relationship between the independent variables (cognitive and memory) with a nominal data scale and the dependent variable (pragmatic ability) with a nominal data scale. Therefore, the bivariate analysis used was the multi-variate and contingency coefficient using the multiple logistic regression test model.

RESULTS

Results of univariate analysis of cognitive ability, memory capacity, and practical ability.

Table 1. Distribution of Cognitive Ability Levels

Cognitif Ability	Quantity	Percentage
Below average	17	56.7%
Above average	13	43.3%
Total	30	100.00%

Table 1 above shows respondents with cognitive abilities below the average of 17 people (56.7%) and above the average of 13 people (43.3%). It can be stated that the respondents are dominated by older people with below-average cognitive abilities.

Table 2. Distribution of Memory Ability Levels

Memory Ability	Quantity	Percentage
Below average	14	46,7%
Above average	16	53,3%
Total	30	100.00%

Table 2 above shows that respondents with memory abilities below the average are 14 people (46.7%) and above the average are 16 people (53.3%). It can be stated that the respondents are dominated by older people who have above-average memory abilities.

Table 3. Distribution of Pragmatic Ability Levels

Pragmatic Ability	Quantity	Percentage
Below average	18	60.0%

Pragmatic Ability	Quantity	Percentage
Above average	12	40.0%
Total	30	100.00%

Table 3 above shows that the respondents with pragmatic abilities below the average were 18 people (60.0%) and 12 people (40.0%) above the norm. It can be stated that the respondents were dominated by older people who had below-average pragmatic abilities.

The Correlation of Cognitive Ability with Pragmatic Ability in Older People in Surakarta

The results of the two-dimensional analysis of the relationship between cognitive and pragmatic capacities of the elderly in Surakarta.

Table 4. Analysis of the correlation of cognitive abilities with pragmatic abilities

Cognitive Ability	Pragmatic Ability				Total		P value
	Below average		Above average		n	%	
	N	%	N	%			
Below average	15	50.0%	2	6.7%	17	56.7%	0.000
Above average	3	10.0%	10	33.3%	13	43.3%	
Total	18	60.0 %	12	40.0 %	30	100%	

Table 4 shows that older people with below-average cognitive abilities have below-average pragmatic abilities are 15 people (50.0%). Elderly with below-average cognitive abilities who have above-average pragmatic skills, as many as two people (6.7%). Elderly with above-average cognitive abilities who have below-average pragmatic skills as many as three people (10.0%). Elderly with above-average cognitive skills and above-average pragmatic abilities, as many as ten people (33.3%).

Based on the results of the statistical test of the contingent coefficient, the p-value of 0.000 ($p < 0.05$) and the contingent coefficient value of 0.550 show that statistically, there is a positive and significant impact of cognitive abilities on the pragmatic skills of the elderly in Surakarta.

The Correlation of Memory Ability with Pragmatic Ability in Older People in Surakarta

The results of a bivariate analysis of the relationship between memory abilities and pragmatic abilities of older people in Surakarta.

Table 5. Analysis of the correlation of memory ability with pragmatic ability

Memory Ability	Pragmatic Ability				Total		P value
	Below average		Above average		n	%	
	N	%	N	%			
Below average	13	43.3%	1	3.3%	14	46.7%	0.001
Above average	5	16.7%	11	36.7%	16	53.3%	
Total	18	60.0%	12	40.0%	30	100.0%	

Table 5 shows that 13 (43.3%) older adults with below-average memory abilities also have below-average pragmatic abilities. There are 1 (3.3%) elderly people with

below-average memory skills and above-average pragmatic abilities. Older people with above-average memory abilities and below-average pragmatic abilities are five people (16.7%). There are 11 (36.7%) older adults with above-average memory skills who also have above-average pragmatic abilities.

Based on the results of the statistical test analysis of the contingent coefficient, the p-value was 0.001 ($p < 0.05$) and the value of the contingent coefficient was 0.531, so statistically, it shows that there is a positive and significant effect of memory capacity on the pragmatic capacity of the elderly in the town of Surakarta.

Correlation Analysis of Cognitive Ability and Memory Ability with the Pragmatic Ability of Older People in Surakarta

The results of a multivariate analysis of the relationship between cognitive and memory abilities and the pragmatic abilities of older people in Surakarta.

Table 6. Results of Logistics Regression Analysis

Step	-2 Log Likelihood	Cox & Snell R Square	Nagelkerke R Square	Hosmer and Lemeshow Test		
				Chi-Square	df	Sig.
1	21.344	0.470	0.635	2.389	2	0.003

Table 6 shows a significance value of 0.003 ($p < 0.05$), which means that cognitive capacity and memory capacity variables simultaneously affect the pragmatic capacity of the elderly in the town of Surakarta. The table above also shows the Nagelkerke R Square value of 0.635, which means that cognitive ability and pragmatic ability affect the pragmatic ability of older people in Surakarta City by 63.5%; the remaining 36.5% is determined by other variables not included in this study.

DISCUSSION

The Correlation of Cognitive Ability with Pragmatic Ability in Older People in Surakarta

Based on the analysis results of the contingency coefficient statistical test, a p-value of 0.000 ($p < 0.05$) and the value of the contingency coefficient of 0.550. Statistically show a positive and significant effect of cognitive abilities on the pragmatic skills of the elderly in Surakarta City. Cognitive is a complex concept that involves at least aspects of memory, attention, executive function, perception, language, and psychomotor function (Nehlig, 2010).

The older people indicated that one of their cognitive problems was the inability to produce audible words. Older people with dementia often have problems with communication, namely an impaired ability to understand language. Poor ability to understand language is a person's inability to communicate linguistically with others, such as through verbal communication systems (words) and non-verbal writing (Risti & Kurniajati, 2014).

Cognitive changes in the elderly include a reduced ability to enhance intellectual function, a reduced effectiveness of nerve transmission in the brain (causing information processes to slow down and much information to be lost during transmission), a reduced ability to accumulate new knowledge and retrieve data from memory, and the ability to recall past events better than the ability to recall events that have just occurred (Manurung et al., 2016). Several studies on age-appropriate aging found that intellectual

abilities begin to decline at the age of 80 years. In long-term studies, verbal IQ decreased by approximately 5% at 70 and 10% at 80.

However, some reach the age of 90 with relatively stable cognitive function. The appearance of good cognitive function must also be supported by good attention or concentration. Disturbed attention will impact other cognitive functions such as memory, language, and executive function (Westoby et al., 2009).

The decline in cognitive abilities in older people the end affects the communication skills (pragmatic) of older people. It occurs related to the aging process of brain cells that work for the function of remembering (memory). Decreased memory is the ability to name objects and the speed of retrieving stored information and learning new things. Other cognitive abilities such as thinking power, abstraction, language skills, and visuospatial abilities do not decrease with increasing age.

Normal forgetting that is still following increasing age is if it occurs only occasionally, only part of the event is forgotten (not entirely), there is a slowdown in remembering but is still able to recognize if given a help note. From a functional point of view, individuals are usually still independent and active (Tucker et al., 2006).

The Correlation Of Memory Ability With Pragmatic Ability of The Older People in Surakarta

Based on the results of the statistical contingency coefficient test analysis, the *p*-value was determined to be 0.001 ($p < 0.05$) and the Contingency Coefficient value was 0.531. So statistically showed that memory capacity had a positive and significant impact on the pragmatic capacity of the elderly in Surakarta Yanuar A et al., (2020) shows that training focused on the ability of strategies in verbal memory, such as orientation, is practical for older people. This research states that older people can improve verbal memory strategies, such as orientation related to place, time, and people.

Memories change with age, but not all memories work the same way. The main aspects of memory and the aging process are episodic memory, semantic memory, and cognitive resources (such as working memory and perceptual speed), memory beliefs, and non-cognitive factors such as health, education, and socioeconomic factors (Rianto et al., 2019). Memory impairment is one of the most common cognitive disorders in older adults. There are two types of memory which include both declaratory and non-discretionary memory. Declarative remembrance is the ability to remember specific facts and events.

There are two kinds of declaratory memory: semantic and episodic. Episodic memory usually declines with age, whereas semantic memory only declines at the end of life. Nondeclarative memory or implicit memory is the memory that is not realized. This nondeclarative memory is usually unaffected or slightly decreased with age (Laksmidewi, 2016). Decreased speed in information processing and decreased working memory, especially regarding the ability to store information in the mind when processing, contribute to the lack of language efficiency in older people (Shipley & McAfee, 2021).

Older people can put their strategic abilities into the activities of daily living. Orientation is included in short-term or primary memory. Short-term memory includes verbal memory in evaluating the new memory on the orientation and ability of individual strategies to learn new things. Guidance for the elderly, time, and location are important information. The verbal exchange of information about people, time, and

place in daily life activities is seen through the words that individuals use to speak (Daniluk & Borkowska, 2020).

The Correlation Of Cognitive Ability and Memory Ability With Pragmatic Ability of The Elderly in Surakarta

Based on binary logistic regression analysis, a significance value of 0.003 (<0.05) was obtained, which means that cognitive abilities and memory skills simultaneously affect the pragmatic abilities of the older people in Surakarta City. The researchers discovered contradictory information about changes in speech (extensive verbal expression in speech or writing) with aging. One aspect of speech where an age difference was found involved telling a story or giving instructions to accomplish a task. Older adults tend to omit critical elements when engaging in this type of speaking, creating less fluent conversations and more challenging to listen to (Saefudin, 2018).

In older people, pragmatic abilities have a very close relationship with functional language use which is affected by cognitive and memory decline. A decrease in cognitive abilities such as abstraction, calculation, fluency, verbal ability, and orientation shows a decline in the cognitive abilities of older people. The decline in cognitive abilities is affected by several factors, including motivation, expectations, personality, learning patterns, intellectual abilities, educational level, sociocultural background, and health status. The decline in cognitive abilities is often seen as a typical problem and is natural to older people. Decreased cognitive ability is characterized by much forgetting, one of the early symptoms of senility (Bosco, 2021).

Decrease in overall cognitive ability and especially in the process of processing information. Decreases associated with aging are illustrated by speed, short-term memory, working memory, and long-term memory. These changes are also associated with structural and functional changes in the brain. Outline of the various post-mortem changes in the aging brain, including reduced brain volume and weight, ventricular enlargement and widening of the sulci, loss of nerve cells in the neocortex, hippocampus, and cerebellum, reduced brain morphology, decreased synapse density, mitochondrial damage and decreased DNA repair ability.

The occurrence of white matter hyperintensity, which is not only in the frontal lobe but can also spread to the posterior region due to reduced cerebral perfusion. The deterioration of the frontal lobe with aging has led to the frontal lobe hypothesis, assuming the decline in cognitive function of older people is the same as that of patients with frontal lobe lesions. Both populations show disturbances in working memory, attention, and executive function (Westoby et al., 2009).

CONCLUSION

A positive and significant relationship exists between older people's cognitive and pragmatic abilities in Surakarta City, with a p-value of 0.000. There is a positive and significant relationship between memory skills and the pragmatic abilities of the elderly in the town of Surakarta, with a p-value of 0.001. There is a relationship between cognitive and memory ability and pragmatic ability, with a significance value of 0.003.

Older people with cognitive abilities above the average will have a higher pragmatic ability 0.550 times compared to those with cognitive abilities below the average. Older people with above-average memory abilities will have higher pragmatic abilities of 0.531 compared to those with below-average memory abilities. Cognitive and memory abilities are related to the pragmatic abilities of older people in Surakarta

City by 63.5%; the remaining 36.5% is determined by other variables not included in this study.

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