



Research Article

AGE AND GENDER VARIATIONS IN COGNITIVE LINGUISTIC PERFORMANCE OF GERIATRIC POPULATION LIVING IN OLD AGE HOMES

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ABSTRACT

Background: Available researches in geriatric population show a high prevalence of cognitive impairment, dependency in activities of daily living (ADL), pain, and neuropsychiatric symptoms. The focus of this study was to find out the possible age/gender variations in cognitive linguistic performance of geriatric population living in old age homes.

Methods: The total numbers of participants selected for the study were 60 normal elderly persons residing at old age homes, between the age group 55-95 years. The participants were grouped on the basis of age and gender.

Results: The results show that no difference between male and female participants occurred for the total scores in all the domains. Moreover, results of individual subtests revealed that the gender effects were not consistent across the different subtests in a domain.

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INTRODUCTION

Aging can be defined as a progressive functional decline or a gradual deterioration of physiological function with age, including a decrease in fecundity (Patridge & Mangel, 1999), or the intrinsic, inevitable, and irreversible age-related process of viability and increase in vulnerability (Comfort, 1964).

Changes in language production in old age have a practical as well as theoretical significance as language production is a critical component of interpersonal communication. If aging impairs language production, it will disrupt interpersonal communication contributing to social disruption. (Ryan, See, Meneer & Trovato, 1994). Cognition and language depend upon each other and interlinked to each other. Language comprehension is frequently necessary for cognitive skills as the acquisition of new knowledge, through reading, listening to lectures and gaining knowledge through sharing.

Language and cognition are inseparable. Language processes are considered as metacognitive processes. Cognition or intelligence includes abilities such as use of symbols and abstractions, acquiring new information, and adapting to changing situations. The intelligence quotient was developed to provide an index of cognition, including assessment of mathematical reasoning, word fluency, vocabulary, inductive reasoning, and spatial orientation.

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Intelligence, learning, and memory are three key cognitive domains that normally change during aging and have implications for maintaining independence and quality of life (Hooymann & Kiyak, 2007).

Need of the study

Cognitive and language functions declines with age. Language in old ages has been an active research area since early experimental investigations in cognitive aging. (e.g., Craik, F.I.M., & Masani, P.A.(1967). However it seems unclear, whether age related decline is more pronounced on both gender or not. The present study compares the effect of aging on cognitive linguistic functions of Malayalam healthy speakers, in the age range of 55-to- 95 years, who are residents of any old age homes.

Aim of the study

The main objective of the study is to observe age-related changes and gender contingent variations (if any) on a range of cognitive-linguistic skills among Malayalam speaking elderly population.

Methodology

The total numbers of participants selected for the study were 60 normal elderly persons residing at old age homes, between the age group 55-95 years. The participants were grouped on the basis of age and gender. On the basis of age, the participants were grouped as Group 1 (age group 56-75 years), Group 2 (76 to 95years of age) with each group consisting of

30 participants respectively. On the basis of gender these groups were further divided into subgroups A and A1, B and B1 respectively with each group containing a number of 15 participants (A and B consisting of females and A1 and B1 consisting of males).

A screening protocol was administered before testing began to confirm the inclusionary criteria. The Mini Mental State Examination, (MMSE; Folstein, Folstein & McHugh, 1975) was administered on all participants. All participants scoring greater or equal to 26 points on the MMSE were included in the study. The MMSE is a popular screening tool for identification of individuals with cognitive deficits and evaluates orientation to person, place and time, general knowledge, memory, communication and copying. The MMSE requires 5-10 minutes to administer and the total possible score is 30. The cut off score of less than 26 was used as recommended by Monsch and colleagues (Monsch et al., 1995).

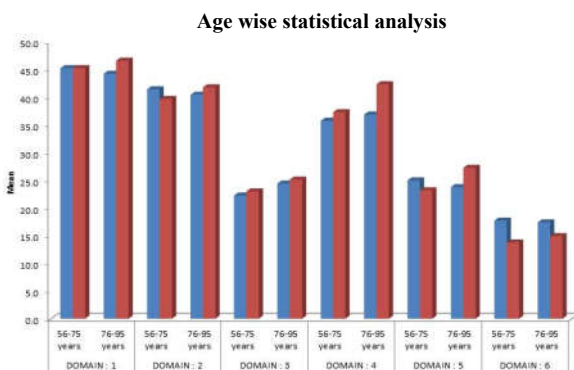
Cognitive Linguistic Assessment Protocol (CLAP) was administered in Malayalam and the scores were compared between all the groups. The test material Cognitive Linguistic Assessment Protocol contains four domains including attention (visual & auditory category), memory (episodic, working & semantic), problem solving (sentence disambiguation, sentence formulation, comparing and contrasting two objects, predicting the outcome of a described situation, predicting cause of a described situation, answering 'why' questions & sequential task analysis) and organization (categorization, analogies & sequencing of events).

RESULTS AND DISCUSSION

Statistical Analysis was done using Independent sample t-test using SPSS Software Version 22. It was found that no significant difference exists in cognitive linguistic function across gender groups. In all subtests, all the age groups showed no gender variations. Overall results shows there is a decline in cognitive skills as the age increases.

Age wise statistical analysis

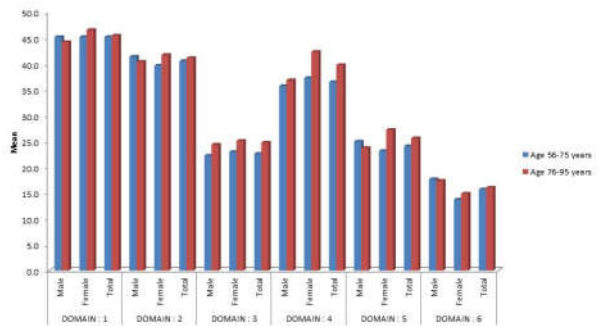
Domains	Age	Mean (gender)	
		Male	Female
DOMAIN : 1	56-75 years	45.1	45.1
	76-95 years	44.1	46.1
DOMAIN : 2	56-75 years	41.3	39.6
	76-95 years	40.4	41.7
DOMAIN: 3	56-76 years	22.2	22.9
	76-95 years	24.2	25.1
DOMAIN: 4	56-76 years	35.7	37.2
	76-95 years	36.8	42.3
DOMAIN: 5	56-76 years	24.9	23.1
	76-95 years	23.7	27.2
DOMAIN: 6	56-76 years	17.7	13.7
	76-95 years	17.4	14.9



Gender wise statistical analysis

Domains	Sex	Mean (Age)	
		56-76	76-95
DOMAIN: 1	MALE	45.1	44.1
	FEMALE	45.1	46.5
	TOTAL	45.1	45.4
DOMAIN: 2	MALE	41.3	40.4
	FEMALE	39.6	41.7
	TOTAL	40.5	41.1
DOMAIN : 3	MALE	22.2	24.4
	FEMALE	22.9	25.1
	TOTAL	22.6	24.7
DOMAIN: 4	MALE	35.7	36.8
	FEMALE	37.2	42.3
	TOTAL	36.4	39.7
DOMAIN: 5	MALE	24.9	23.7
	FEMALE	23.1	27.2
	TOTAL	24.0	25.6
DOMAIN: 6	MALE	17.7	17.4
	FEMALE	13.7	14.9
	TOTAL	15.7	16.0

Gender wise statistical analysis



Group Statistics

Group	N	Mean	Standard Deviation	Standard Error	
				Mean	
Domain 1	GROUP 1	30	45.1333	11.15945	2.03743
	GROUP 2	30	45.4000	8.81456	1.60931
Domain 2	GROUP 1	30	40.1333	6.13488	1.12007
	GROUP 2	30	41.0667	5.34295	.97548
Domain 3	GROUP 1	30	22.5667	4.25630	.77709
	GROUP 2	30	24.7333	4.52528	.82620
Domain 4	GROUP 1	30	36.4333	7.50027	1.36936
	GROUP 2	30	39.7000	8.24266	1.50490
Domain 5	GROUP 1	30	24.0333	13.27035	2.42282
	GROUP 2	30	25.5667	11.75228	2.14566
Domain 6	GROUP 1	30	14.4333	5.95780	1.08774
	GROUP 2	30	16.0333	6.41380	1.17099

Independent Samples Test

	t	df	Sig.(2-tailed)	Mean difference	Std. Error Difference	95% confidence interval of the Difference	
						Lower	Upper
						t-test for equality of means	
Domain 1	Equal variances assumed	-1.03	58	.919	-.26667	2.59634	-5.4638 4.9304
	Equal variances not assumed	-1.03	55.04	.919	-.26667	2.59634	-5.4697 4.9364
Domain 2	Equal variances assumed	-.628	58	.532	-.93333	1.48530	-3.9064 2.0398
	Equal variances not assumed	-.628	56.92	.532	-.93333	1.48530	-3.9076 2.0410
Domain 3	Equal variances assumed	-1.91	58	.061	-2.16667	1.13423	-4.4370 .10374
	Equal variances not assumed	-1.91	57.78	.061	-2.16667	1.13423	-4.4372 .10392
Domain 4	Equal variances assumed	-1.60	58	.114	-3.26667	2.03466	-7.3394 .80615
	Equal variances not assumed	-1.60	57.49	.114	-3.26667	2.03466	-7.3402 .80692
Domain 5	Equal variances assumed	-.474	58	.637	-1.53333	3.23635	-8.01159 4.94492
	Equal variances not	-.474	57.165	.637	-1.53333	3.23635	-8.01360 4.94694

	assumed						
Domain 6	Equal variances assumed	-1.00	58	.321	-1.60000	1.59825	-4.79925 1.59925
	Equal variances not assumed	-1.00	57.687	.321	-1.60000	1.59825	-4.79962 1.59962

Domain 1: Attention, discrimination and perception

Visual subtest and auditory subtest were assessed.

Across group and within group comparison was done using paired t test.

Gender effect: No significant differences were found in letter cancellation, contingent letter cancellation and word cancellation. Under auditory subtest, in letter pair discrimination, word pair discrimination, counting of sound and month backward counting also didn't show any significant difference between genders.

Age and gender interaction: No interaction effects were found in age and gender across each group.

Domain 2: Memory

Episodic memory, working memory and semantic memory were assessed. Recent memory questions were asked under episodic memory. Working memory was assessed using digit backward and digit forward. Whereas in semantic memory, coordinate naming, super ordinate naming, word naming fluency, generative naming, sentence repetition, and carry out commands were the tasks given. Across group and within group comparison was done using paired t test.

Gender effect: No significant differences were found in episodic memory, working memory and semantic memory.

Age and gender interaction: No interaction effects were found in age and gender across each group.

Domain 3: Language

Verbal fluency, repetition and comprehension were assessed. Across group and within group comparison was done using paired t test.

Gender effect: No significant differences were found in Verbal fluency, repetition and comprehension

Age and gender interaction: No interaction effects were found in age and gender across each group.

Domain 4: Problem solving

Sentence formulation, compare and contrast, 'WH' questions, sentence disambiguation, predicting outcome and predicting cause were the tasks given under problem solving. Across group and within group comparison was done using paired t test.

Gender effect: No significant differences were found in Sentence formulation, compare and contrast, 'WH' questions, sentence disambiguation, predicting outcome and predicting cause.

Age and gender interaction: No interaction effects were found in age and gender across each group.

Domain 5: Visuospatial skills

Clock drawing, copying and matching were assessed under visuospatial skills.

Domain 6: Organisation

Sequencing events, categorization and analogies were assessed.

Domain 5 and domain 6 showed no gender effect and also no age and gender interaction. In both the domains, the mean scores obtained were very less compared to other domains.

Aruna (2001) developed a standardized procedure for assessment of cognitive linguistic skills for Kannada speaking adults, the Cognitive Linguistic Assessment Protocol (CLAP). Although slight declines were observed with age in a small group of adults in the age group of 40-to-60 year-olds, no significant age related decline of performance on cognitive linguistic tasks was observed in their study.

Present study is in close consonance with the study by Lakshmi.S (2010), which shows there are no significant age gender interactions across four domains of the CLAP test; their overall interpretation suggests that the cognition declines as the age advances.

Study done by Sampath Kumar and Lakshmi Venkatesh (2011) revealed that as a group, male participants performed better than female participants for total scores in the domains of auditory attention, memory and problem solving in CLAP as well as attention and memory domains. No difference between male and female participants occurred for the total scores in other domains. Moreover, results of ANOVAs performed on individual subtests revealed that the gender effects were not consistent across the different subtests in a domain.

SUMMARY AND CONCLUSION

Present study was designed to find out cognitive linguistic performance of Malayalam speaking individual across different age, gender and 4 domains i.e. attention, perception and discrimination, memory, problem solving and organisation. The main focus was to find out cognitive linguistic skills in elderly population staying in old age homes. No difference between male and female participants occurred for the total scores in all the domains. Moreover, results of individual subtests revealed that the gender effects were not consistent across the different subtests in a domain. This information may be useful in future studies comparing cognitive linguistic skills in elderly population and adult groups also in institutions and residential population and for the indigenous studies on cognitive linguistic assessment.

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