

Gender and Age effects on mental imagery among high school students

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Abstract: The present study was undertaken in an attempt to measure the level of mental imagery by considering few domains like visual, olfactory mental imagery, gustatory, auditory tactile mental imagery, and bodily kinesthetic. There were 205 students who participated. Out of 205 students, 100 are male and 105 are female. High school students belong to the age of 13-17 years. Majority of them from rural background. 127 students are from rural and remaining 78 students are from urban background. The result of the study demonstrates how individual's Gender and area of residence, education (at the age 13-17 years) effects on mental imagery changes as well as the increasing level of mental imagery. There is significant difference in mental imagery domains as on area of residence regarding to visual mental imagery and auditory mental imagery. There is significant difference in mental imagery domains as on age to visual mental imagery and auditory mental imagery at 0.05 level. There was a significant difference between rural and urban on Auditory and visual imagery at 0.01 level.

Keywords; Mental Imagery, gender, Area of residence, age groups

Back ground of the study

Mental imagery is also represented in the absence of a specific sensory stimulus. From a linguistic point of view, the term "image" is not appropriate to refer to a complex mental process, which includes perceptual aspects and self-knowledge (in the form of concepts, shapes, and relations). In particular, a specific term does not exist in the Italian language to define the process of generation of mental imagery. For this reason scientists prefer to use the English word "imagery". Mental imagery - an activity that is sometimes colloquially referred to as "imagining," "looking into the mind's eye," "listening in the head," "imagining the imagination," etc. - a quasi-Perceptual experience. Mental imagery can therefore be intended as an event that is specifically determined by its relationship with sensory characteristics that it can remove, and which can easily be referred to its structure and content. Adopting this perspective, mental imagination can be seen as representing reality. As a result, most psychological research has investigated it as a cognitive phenomenon involving varying levels. Mental imagery - an activity that is sometimes colloquially referred to as "imagination", "looking into the mind's eye", "hearing in the head". Imagining the feeling of, "etc. - is a quasi-perceptual experience. It resembles perceptual experience, but occurs in the absence of appropriate external stimuli. Imaginary experiences, very often, echo the real perceptual experiences people have from their past. , Understood as copies or reconstructions. Imagery is often believed to play a very large, even important role, both in memory (Yates, 19-16; Pavio, 1986) and motivation (McMahon. 1973). Imaginary experiences are, most often, understood by people as echoes, copies, or reconstructions of real perceptual experiences from their past. Imagery is often thought to be a very large, even important roles are played, both in memory (Yates, 19-16; Pavio, 1986) and role in motivation (McMahon, 1973). Indeed, according to a long-dominant philosophical tradition, it plays an important role in all thought processes And provides a semantic grounding language. The nature of these experiences, what makes them possible, and their Work has long been a subject of controversy in research and more recently in philosophy, psychology, cognitive science and, more neuroscience. Although much of the philosophical and scientific investigation of the subject focuses on visual mental imagination, perhaps more notable is still the ability to experience objects or events present in the world through our imagination. (Moran. A.P., 2004) An internal representation defined by the lack of proper sensory input that gives rise to the experience of perception. As the process of obtaining information from the external environment through all our senses (Ungerleider .S, 1996). There are two approaches to defining mental imagery (Wraga and Kosslyn, 2002) innate: the experience of seeing through the mind's eye.

Literature Review

Alfredo Campos (2014) the influence of gender on several measures of mental imagery was assessed using performance tests and imagery questionnaires. A group of 202 female and male university undergraduates were administered three performance test, and three imagery questionnaires. Results revealed that men obtained higher scores than women on the performance tests. No significant gender differences were observed on the imagery questionnaires. Women obtained higher scores than men on the Object scale of the Object-Spatial Imagery and Verbal Questionnaire. The results are discussed and new lines of research are proposed. Liana Palermo et al., (2016) in this study evaluated the impact of ageing and gender on different visual mental imagery processes. Results show that all mental imagery processes with the exception of the maintenance are affected by ageing, suggesting that other deficits, such as working memory deficits, could account for this effect. However, the analysis of the transformation process, investigated in terms of mental rotation and mental folding skills, shows a steeper decline in mental rotation, suggesting that age could affect rigid transformations of objects and spare non-rigid transformations. Their study also adds to previous ones in showing gender differences favoring men across the lifespan in the transformation process, and, interestingly, it shows a steeper decline in men than in women in inspecting mental images, which could partially account for the mixed results about the effect of ageing on

this specific process. We also discuss the possibility to introduce the CVMIB in clinical assessment in the context of theoretical models of mental imagery

Alfredo Campos, Andrea Lusters (2018) this study was to examine the influence of gender and age on spatial imagery and image rotation abilities. The results showed significant differences between males and females in image rotation but not in spatial imagery. Significant differences were observed between all age groups in spatial imagery ability and between CSE students and undergraduates in the ability to rotate images. Spatial imagery and image rotation abilities increased with age. No interaction was found between both variables. The results agree with recent studies and are discussed in relation to lines of research.

S M Kosslyn (1990) Age differences were examined in 4 aspects of visual mental imagery, namely, image generation, maintenance, scanning, and rotation. The results suggested that one or more distinct processes are used to carry out each aspect of imagery, and that this is true for 5-year-olds, 8-year-olds, 14-year-olds, and adults. There was no evidence that younger children have fewer processing components, which become differentiated into more specialized subsystems over age. In addition, the results suggested that younger children are relatively poor at scanning, rotating, and generating objects in images, but are relatively good at maintaining images.

Karen P. Y. Liu (2019) this study examined if imagery ability (i.e., vividness and temporal congruence between imagined and executed knee extensions) and imagery perspective preference were affected by ageing and gender. The results suggest that imagery ability may be preserved with ageing. As individuals age, their preference for using an imagery perspective shifts from a more internal to a more external perspective. This understanding is important when designing future imagery research and real-life application or clinical intervention.

METHODOLOGY

AIM To study the effect of gender and age differences in different dimensions of mental imagery.

Objectives of the study:

- To study the level of mental imagery in gender
- To study the level of mental imagery Area of residence
- To study the level of mental imagery of Participants age

HYPOTHESIS

- There is a significant difference between the level of mental imagery in girls and boys
- There is a significant difference between the levels of mental imagery as on area of residence
- There is a significant difference between the levels of mental imagery as on participant's age

Method

There were 205 students who participated. Out of 205 students, 100 are male and 105 are female. Senior secondary students belong to the age of 13-17 years. This study was conducted in Visakhapatnam in Andhra Pradesh state. The study shows that the majority of them are from a rural background. 127 students are from rural and the remaining 78 students are from an urban background.

TOOLS

This scale is developed and designed on the pattern of Likert scaling technique as a six-point scale with six sub-tests. This consists of 6 dimensions each with 15 items (15*6) 90 items.

Similarly, the other sub-test referring to the auditory area is having the items pertaining to only auditory sensory experiences. So also the other sub-tests of the gustatory area, olfactory area, tactual area and bodily movements have items pertaining to only the respective area. Each sub-test measures only the respective quality in a person. Therefore all the sub-tests are determined with content validity method and all the six tests are highly valid.

RELIABILITY

All the 180 statements responded by 40 persons with the response letters were scored according to the procedure. Each response letter was given weightage as already determined. The response of A was given a score of 5, B was given 4, C was given 3, D was given 2, E was given 1, and F was given 0. The statements were critically analyzed whether anybody could respond to these statements in the same manner as these persons. Since each area is to have separate independent sub-test the 30 statements of each area were treated separately. The highest possible score for each test was 150 and the lowest possible score 0. The scores of each sub-test were tabulated separately. Since the reliability and the validity are the prerequisites of any instrument for ascertaining the worthiness of the test, all the six sub-tests were tested with their reliabilities and validities. The internal consistency procedure was adapted for determining the reliability of the six sub-tests.

VALIDITY

The six sub-tests were validated with content validity since the content validity or the face validity is considered to be exclusively a logical type of validity for any type of instrument. The important point behind the logical argument of this validity is that the instrument is designed and developed pertaining to only one variable. The test measures only a particular quality or trait in a person and no other variable is included in this instrument. The researcher is fully satisfied with the items of the instrument that each item is referring to only a special quality. If the investigator is satisfied with this characteristic of the instrument the

instrument is supposed to be a valid one and can be used to any population. In the. Case of the mental imagery questionnaire, there are six sub-tests and each sub-test is treated as a separate test and each test is independent of other tests in this series. For example in the case of visual area, the items of the sub-test are referring to only visual sensory experience and not even a single item differently designed. All the 15 items are pertaining to visual sensation.

Scoring Procedure and Scoring Key:

S.NO	Range of scores	Degree of mental imagery	Weight
1	67.6- 75.0	Very clear and vivid image	5
2	52.6- 67.5	Fairly vivid image	4
3	37.6- 52.5	Just clear image	3
4	22.6- 37.5	Somewhat clear image	2
5	7.6 - 22.5	Dim image	1
6	0- 7.5	No image	0

Results

NH⁰ There will be no significant difference between the level of mental imagery in girls and boys

Table-2 T-test for mental Imagery domains as on Gender

Domains	Gender	N	Mean	SD	t-value	p-value
Visual	Male	100	3.6400	.73195	2.249**	.026
	Female	105	3.3905	.84915		
Auditory	Male	100	4.2600	.74698	3.995*	.000
	Female	105	3.8476	.73092		
Gustatory	Male	100	4.1000	.84686	1.429	.155
	Female	105	3.9333	.82353		
Olfactory	Male	100	3.8100	1.0219	.078	.938
	Female	105	3.8000	.81335		
Tactual	Male	100	3.9600	.88671	-.594	.553
	Female	105	4.0286	.76532		

*,p<0.05,**,p<0.01

The above table depicted that t-test scores to compare the Mental imagery domains on gender Regarding to visual imagery There was significant difference in scores for male (M = 3.6400, SD = .73195) and females (M = 3.3905, SD=.84915); t (205) = 2.249**, p = .026 <0.05,Hence there was a significant difference between male and female on Visual imagery.

Regarding to Auditory imagery There was significant difference in scores for male (M = 4.2600, SD = .74698) and females (M = 3.8476, SD=.73092); t (205) = 2.249**, p = .020 <0.01, Hence there was a significant difference between male and female on Auditory imagery.

Hence Null hypothesis rejected and Research hypothesis accepted that there was a significant difference between male and female on audio and visual mental imagery.

NH⁰ There will be no significant difference between the levels of mental imagery as on area of residence

Group Statistics: Area of Residence

Variable	Area of residence	N	Mean	SD	t-value	p-value
Visual	Rural	127	3.4173	.83038	-2.181*	.030
	Urban	78	3.6667	.73266		
Auditory	Rural	127	4.1417	.72072	2.240*	.026
	Urban	78	3.8974	.81527		
Gustatory	Rural	127	3.9764	.84951	-.834	.405
	Urban	78	4.0769	.81813		
Olfactory	Rural	127	3.8504	.93502	.905	.367
	Urban	78	3.7308	.89258		
Tactual	Rural	127	3.9370	.87965	-1.288	.199
	Urban	78	4.0897	.72409		

*, p<0.05, **, p<0.01

The above table describes that t-test scores to compare the Mental imagery domains as on area of residence Regarding to visual imagery There was significant difference in scores for rural (M = 3.4173, SD = .8303) and urban (M = 3.6667, SD=.73266); t (205) = -2.181**, p = .030 <0.05,Hence there was a significant difference between rural and urban on Visual imagery. Regarding to Auditory imagery There was significant difference in scores for rural (M = 4.1417, SD = .72072) and urban (M =

3.8974, SD=.81527); $t(205) = 2.240^{**}$, $p = .026 < 0.05$, Hence research hypothesis accepted and null hypothesis rejected that there was a significant difference between rural and urban on Auditory and visual imagery.

NH⁰ There will be no significant difference between the levels of mental imagery as on respondent's age

Table-2 T-test for mental Imagery domains as on participant's age

Variable	Education	N	Mean	SD	t-value	p-value
Visual	13-15 years	100	3.4900	.84680	-.386	.700
	15-17 years	105	3.5333	.76040		
Auditory	13-15 years	100	4.2300	.69420	3.392*	.001
	15-17 years	105	3.8762	.79294		
Gustatory	13-15 years	100	4.1100	.73711	1.598	.112
	15-17 years	105	3.9238	.91667		
Olfactory	13-15 years	100	3.8000	.87617	-.074	.941
	15-17 years	105	3.8095	.96172		
Tactual	13-15 years	100	4.1100	.76403	1.958*	.042
	15-17 years	105	3.8857	.86951		

*, $p < 0.05$, **, $p < 0.01$

The above table describes that an independent-samples t-test scores to compare the mental imagery domains as on age. There were two groups divided as on participant age. (Group 1; 13-15 years)(Group 2; 15-17 years).Regarding to Auditory imagery There was significant difference in scores for 15-17 years ($M = 4.2300$, $SD = .69420$) and 13-14 years ($M = 38762$, $SD=.79294$); $t(205) = 3.392^{**}$, $p = .001 < 0.05$. Regarding to Tactual imagery There was significant difference in scores for 15-17 years ($M = 4.1100$, $SD = .76403$) and 13-14 years ($M = 3.8857$, $SD=.86951$); $t(205) = 1.958^*$, $p = .042 < 0.05$. Hence null hypothesis rejected and research hypothesis accepted that there was a significantly differed both age groups on Mental imagery

Discussion There was 205 students were participated. Out of 205 students, 100 are male and 105 are female. Senior secondary studied students belongs to age of 13-17 years. majority of them from rural background. 127 students are from rural and remaining 78 students are from urban background. Results show that significant differences were found among males and females on mental imagery domains. As on gender regarding to visual imagery, there was significant difference in the scores of males and females. Hence there was a significant difference between males and females on visual mental imagery. Whereas there was a significant difference between males and females on auditory mental imagery. There was a significant difference in scores of rural and urban on visual imagery and auditory imagery. Mental imagery domains as on age regarding to auditory imagery there was a significant difference between age groups. Present study results indicated that 15-17 years age group significantly differs on auditory imagery than the 13-15 years age group. 13-15 years age group significantly differs in tactual imagery than 15-17 years age group.

CONCLUSION

Imagery experiences are, very often, understood by people as echoes, copies, or reconstructions of actual perceptual experiences from their past. At other times they may seem to anticipate possible, often desired or feared, future experiences. As contemporary researchers use the expression, mental images or imagery can comprise information from any source of sensory input; one may experience auditory images, olfactory images, and so forth significant differences were found among males and females on the mental imagery domains of visual mental imagery and auditory mental imagery. There is no significant differences among males and females on mental imagery domains of gustatory mental imagery, olfactory mental imagery, tactual mental imagery, organic mental imagery. Both visual mental imagery and auditory mental imagery are significant at different levels. There is significant difference in mental imagery domains as on area of residence regarding to visual mental imagery and auditory mental imagery. There is significant difference in mental imagery domains as on education regarding to visual mental imagery and auditory mental imagery.

REFERENCES

- [1] Alfredo Campos (2014) Gender differences in imagery. DOI: 10.1016 /j.paid. 2013.1 2.010. March 2014 Personality and Individual Differences 59:107-111
- [2] Itiel E Dror(1994) Mental imagery and aging Mental imagery and aging. April 1994 Psychology and Aging 9(1):90-102 DOI: 10.1037/0882-7974.9.1.90 .Source PubMed
- [3] Liana Palermo , Laura Piccardi , Raffaella Nori , Fiorella Giusberti , Cecilia Guariglia (2016) The impact of ageing and gender on visual mental imagery processes: A study of performance on tasks from the Complete Visual Mental Imagery Battery (CVMIB) J Clin Exp Neuropsychology. PMID: 27134072 DOI: 10.1080/13803395.2016.1161735
- [4] S M Kosslyn , J A Margolis, A M Barrett, E J Goldknopf, P F Daly(1990) Age differences in imagery abilities, Child Dev, . 1990 Aug; PMID: 2209202 61(4):995-1010.
- [5] Karen P. Y. Liu , Monica Lai, Shirley S. M. Fong , and Michelle Bissett (2019) A Study of Their Relationship and Age- and Gender-Related Changes. Behavioural Neurology .Volume 2019, Article ID 7536957, 8 pages <https://doi.org/10.1155/2019/7536957>