

## Influence of mental imagery on reading comprehension among young adults

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### ABSTRACT

This pilot study is to investigate the role of mental imagery in reading comprehension. A correlation study design had been used to find the relationship between mental imagery and reading comprehension. Participants of the study were students from various departments of Pondicherry University and from Pondicherry Engineering College. Overall, the study consisted of 55 participants (male=26, female=29), using the multistage sampling procedure. The study was conducted in three phases: First, an intelligence test was administered to screen the intelligence level of the sample. Next, a Mental Imagery questionnaire was administered to split the sample into two groups; individuals who are high and average in mental imagery. Finally, a reading comprehension task was conducted on both the groups. Correlation analysis was used to find the correlation between mental imagery and reading comprehension. Linear Regression was done to find the prediction of mental imagery in reading comprehension. T-test and ANOVA was done for the demographic details. The results showed that mental imagery plays a role in reading comprehension. 10% of the variance in this study in reading comprehension is due to mental imagery.

**Keywords:** *Influence, mental imagery, reading comprehension, young adults*

**M**ental imagery has been referred to as a “quasi-perceptual experience”, where the perceptual experience occurs in the mind, without external stimuli (Nigel, 2014). Mental imagery may include various types such as visualizing, feeling and hearing. It is always a form of mental representation.

### *Theories of Mental Imagery*

Theory of propositional representation: Pylyshyn (1973) described mental imagery as an epiphenomenon that accompanies the process of mental imagery. He said that mental imagery in no way tells us how the mind works. Instead, it merely represents that something is happening in the mind. The basic idea behind propositional representation is the relation between objects and it is represented by a symbol rather than a spatial mental image. For

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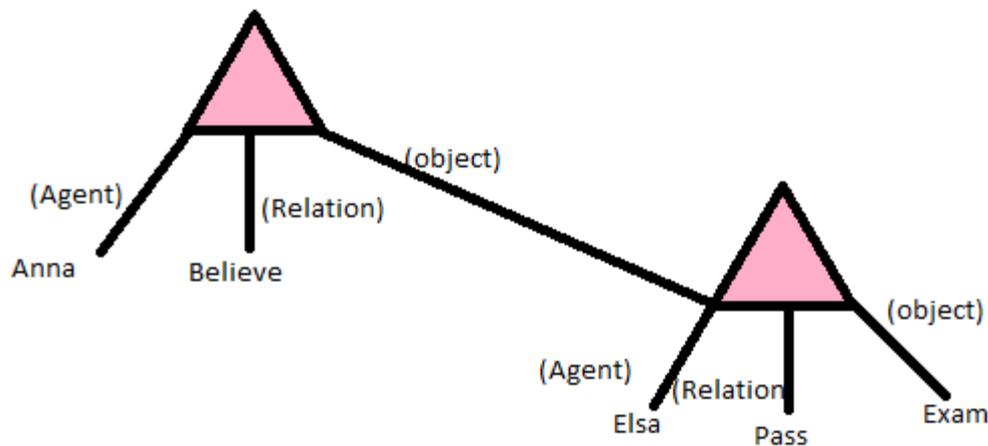
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## Influence of mental imagery on reading comprehension among young adults

example, book under a bench would be represented by a formula consisting of the symbol (BOOK, BENCH) UNDER.

Proposition refers to the smallest possible entity of information, which can either be true or false. It does not mean that when a person attempts to remember something, he remembers it word for word. Instead, it is stored as a propositional network in memory. A propositional network can also have a hierarchy. For example: Anna believes that Elsa will pass the exam.

**Figure:1**



When components are connected to more than one proposition, they form a propositional network. The above figure consists of a representation of a single proposition. A complex object can be made simpler with the help of propositional representation (see hierarchy).

On seeing a complex object, they remember the structure of the object that represents the properties of the object. This resembles the properties of the object. Object, structure and properties of the object contribute to mental imagery of the object.

Hierarchical structure is organized in categories: organizing the structure in our environment in a hierarchical mode helps the individual recognize an object that they may not have seen before. This is because we categorize objects in a way such that we are already aware of it.

Theory of spatial representation: Stephen Kosslyn's theory stated that images are not just represented by propositions. He came up with a spatial representational system that constructs mental, analogous and three-dimensional model. The role of this process is organizing spatial information in such a way that it can be assessed either as perceptual or linguistic mechanism; or a general form.

Coordinate framework is used to describe the location of the object. Its major advantage is that it creates a model of physical and functional aspects of the environment. Thus, we encode information from the outside world through perceptual experiences such as geographical space, language, different communication sources. With the help of these, we gather symbols that act as an element in the external world. Symbols include landmark, word, language that act as an internal trigger.

## **Influence of mental imagery on reading comprehension among young adults**

Bryant (1991) through an experiment, demonstrated that people could create the same sort of spatial memory representation whether they read about it or saw it by themselves in the environment.

### ***Cognitive Neuroscience Aspects in Mental Imagery***

Cognitive neuroscience helps in understanding the mental activities that take place in reasoning and language.

Farah found that a single function does not complete visual mental imagery. Instead, localization of different functions is found in the brain.

Kosslyn's distinct way to create mental imagery involves that some processes are more effective in the right hemisphere, and a few are more effective in the left hemisphere. This highlights the effectiveness of different hemispheres being distinct. Farah reported that the damage in left hemisphere disrupts visual mental imagery. Thus, brain damage patients are slowed down and fail in analogous tasks. Even with an intact right hemisphere, the patients may not be involved in the tasks effectively.

Kosslyn stated that right hemisphere mental imagery is more taxing than left hemisphere mental imagery. Gazzaniga on patients whose corpus callosum was surgically disconnected, found that the mental imagery created by one hemisphere does not cross over to the other hemisphere.

The mental imagery system consists of information bearing structures and information manipulating processes. Long term visual memory structures store information about appearance of objects. The visual buffer, by itself, is not information bearing but a medium through which images occur. The spatial pictorial information bearing structures that are consciously experienced as images are activated, according to a pattern, in the visual buffer. Processes of mental imagery include generation, inspection and loss of imagery.

Generation process involves creating an image in the visual buffer based on information stored in long term visual memory. The pattern of activation is organized by relating the image to its identified parts in the inspection process. Loss of imagery corresponds to loss of various structural or processing imagery components, but does not lead to loss of imagery. It may instead lead to deficits in the visual or spatial thought process.

### ***Language***

It is linked to two basic cognitive modes, one is verbal and the other is non verbal. Verbal is where we can think in terms of words their interrelations and the thus the verbal processes can mediate the language behavior in a way it is directly related to speech. The second code is the non verbal code which is tied closely to the private experience that we call imagery for example when I say a black haired girl is peeling a green orange the comprehension of the phrase is likely to produce some sort of mental picture of the girl and orange together with activities related to peeling the orange rather than silent rehearsal of the words.

### ***Neuropsychological Perspective of Mental Imagery***

PET and fMRI were used to observe the brain activity of the participants when they were forming visual images and when they were not forming visual images. It was found that striate cortex was active when visual images were created. Striate cortex is responsible for visual perception and is located in the primary visual receiving area. Majority of the result

## **Influence of mental imagery on reading comprehension among young adults**

indicate that there was activity in the striate cortex when the subjects were asked to form vivid images.

### ***Memory***

Memory, a type of information processing, is the capacity to store, encode and retrieve information.

**Dual Coding and Common Coding Theories of Memory:** Paivio proposed that mental representations (or codes) are of two forms, verbal representation and mental imagery and that memory has two independently functioning systems or stores, verbal memory and image memory.

Imagery and verbal material interact because a word may trigger image associated with it consciously or unconsciously. As a result, the memory traces of the image and verbal material go to two different memory stores in the form of memory traces that are linked but separated.

Selective interference happens when a person is trying to do two mental tasks at the same time from the same code for example, two verbal task/two imagery. As a result of this subjects performed the task poorly that call upon other code.

When two tasks have the same code, interference between them is stronger because resources are derived from the same memory store for representation and processing. Artificial intelligence research and theories of computation information processing to cognition strongly influence psychological concepts of mental imagery.

**Abstract-Proportional Theory of Memory:** In this theory there is no difference between verbal and nonverbal modes of representations instead representation of experience is described in terms of propositions. Recall of images is much better according to this theory when the person shares some connection to the meaning of the image that is recalled.

### ***Visualization***

Visualizing refers to our skill to create pictures in our heads related on text we read or words we hear. It is one among the skills that makes reading comprehension possible.

Visualizing enhances the reading comprehension skills as students increase more thorough understanding of the text they are reading by knowingly using the words to create mental images. As students gain continuously practice with this skill, the act of visualizing text becomes automatic. Students who visualize as they read not only have a richer reading experience but can recall what they have read for longer periods of time. (Harvey & Goudvis, 2000).

When one read or hear it they also creates personal relation between the readers/listeners and text. Readers who imagine a character as they read are said to be more involved in what they are reading.

### ***When Can One Use Mental Imagery (Visualizing)***

#### **Reading**

Students have their capacity to develop their visualizing skill as they read ,in a study participants are said to listen to a text by their eyes closed as the listen enough pause are

## **Influence of mental imagery on reading comprehension among young adults**

given to allow students to share their image and mental picture with in the class, the capacity to generate visual image from texts become highly important when a student move from well-developed story books in to “chapter book” with relatively few picture. Ease the transition by explaining the language designed to generate image in the readers imaginations helps the students to create their own mental image.

### **Writing**

When a text is easily visualized it is often filled with vivid description or strong verbs discussing any sort of writing which could easily create the image will be helpful to understand the text easier, encouraging the young writers to use language that can develop image will sparkles the writing

### **Math**

Manipulative are used by the students to make math concepts concrete and visualizing is one of the way of internalizing the concept for example in a math class students are studying about the fraction by using fraction bars by discussing comparing the size of common image. Question such as would u have  $\frac{1}{2}$  or  $\frac{1}{3}$  glass of milk is easier for the students to answer by visualizing it rather than calculating numbers inside the head.

### **Social Science**

In history classes the students are presented with a list of dates and names when the students visualize an historic events they need details which might help them in giving a rich picture in mind so the text form should be in such a way it bring a image to the person with a continuity.

### **Science**

Visualizing is helpful while reading something related to science too in a way it is more helpful in studying more abstract concept in science for example when a student tries to memorize the fact that plant needs water to grow the process of it is easier to remember when it is said or read in a way it creates a vivid image in the students mind.

### ***Readers generate image and text –relevant illustrations***

Research says that the illustration help the readers to look in to the information in the text and to remember the information in to useful mental models one way of possibility is that illustration might be more pervasive if attention is given to the picture ,Even though picture intended to produce mental image they might not be so perfect as they could, as a conclusion mental imagery in response to text illustration might affect learning more than illustration alone.

Schallert (1980) hypothesized that optimistic effect of self-generated images and text-relevant illustration might be due to the role that image and illustration are involved in text comprehension. Schallert concluded that image and illustration resulted in high comprehension of prose, this might be the reason of readers’ attention to the task when instruction are said to induce images.

### ***Rationale of the Present Study***

The present study aims to look in to the effect of mental imagery on reading comprehension among young adults the importance of mental imagery and the role it shown to play ,it is hypothesized that on controlling of intelligence individuals with high mental imagery will comparatively score better than individuals with average in mental imagery.

## LITERATURE REVIEW

### *1. Studies on mental imagery and various aspects of research related to it*

The ability of males and females to use visual-spatial imagery as a facilitator of symbolic motor skill acquisition was investigated (Koslow, 1987).

Subjects, ordered by gender into control and mental imagery groups, performed 15 trials on a mirrored drawing task. The results indicated that, although both male and female mental imagery groups performed the task more skillfully than the control groups, the male mental imagery group scores over the early stages of performance were better as compared to the female mental imagery group scores. This difference was eradicated during the latter stages of performance. The findings, in addition to supporting the positive effects of mental imagery, lend support to the hypothesis that sex-related differences in selected visual-spatial tasks may be amendable through training followed by practice.

### *2. The study done by ISAAC and marks (2011) is to find out individual differences in mental imagery experience: developmental changes and specialization.*

This research has two purposes: (1) to study developmental changes and differences in visual and movement imagery in male and female children and adults; (2) to investigate whether systematic differences in imagery vividness can be measured in specialist groups. In Study 1, the Vividness of Visual Imagery Questionnaire and the Vividness of Movement Imagery Questionnaire were administered to 547 individuals in age groups from 7–8 to 50+ years of age. Significant increases in imagery vividness were found in females at 8–9 and in males at 10–11 years. In general females report more vivid imagery than males but at about 50 females' movement imagery reduced in vividness. In Studies 2–5 imagery differences in specialist groups were examined using the same two questionnaires with a total of 655 participants. In Study 2, children aged 7–15 years with poor movement control were found to be extremely poor imagers with 42 per cent reporting no imagery at all. In Study 3, physical education students reported more vivid imagery than students specializing in physics, English, and surveying. In Study 4, significant differences were found between elite athletes' imagery and that of matched controls. In Study 5, air traffic controllers and pilots were found to have significantly more vivid imagery than matched control groups. Introspective reports of imagery experience show a systematic pattern of relationships with age, gender, and specialization requiring high-level performance of perceptual motor skills. These findings support the theory that mental imagery plays a key role in the planning and implementation of action.

### *3. The study is to investigate the differences between perception and mental imagery, was motivated by previous neuroimaging data.*

Unlike these neuroimaging studies that demonstrate great similarity between the two processes, results obtained in behavioral studies have not always been consistent. assumed that this inconsistency was a consequence of methodological differences.

Hence, explored the two processes with a modified behavioral procedure. The additional exploration of gender differences was motivated by the discrepancy between our findings and the existing literature. In two experiments, participants estimated the lines constituting the horizontal-vertical illusion, either in perception or imagery task. Results confirmed that there was no significant difference between perception and imagery: the illusion was equally strong in both tasks. In the second experiment, an additional factor was tested, stimulus size. The results showed that, although there was no significant difference in illusion strength, there was a gender difference in the size of mental image for medium and large stimuli.

## **Influence of mental imagery on reading comprehension among young adults**

While male subjects performed equally in the two tasks, female subjects tended to underestimate size in the imagery task. This tendency intensified as the stimulus size increased. The results not only inform us about the status of illusions in imagery but also offer some answers about the spatial nature of mental representations. We hope that such precise measurements of mental representation might provide better understanding of reasoning that uses mental images.

### ***4. Studies Related to Mental Imagery and Reading Comprehension***

A study done by Gambrel and Linda (1981) investigated the hypothesis that mental imagery, facilitates access to prior knowledge and therefore enhances the ability to infer and make text-relevant predictions.

The subjects, 29 first grade and 29 third grade students, were randomly assigned to either an experimental group where they were instructed to make pictures in their head to help them remember the story as they read, or a control group where they were told simply to think about what they were reading to help them remember.

A short story, which was written at first grade and third grade readability levels, was divided into five sections at points in the story where predictions about forthcoming events could be made and used as stimuli. Immediately following the silent reading of each of the five sections of the story, the subjects responded to a prediction question. The recorded responses were scored for reference to explicit facts, prediction statements, and accuracy of prediction. The results supported the hypothesis that induced mental imagery enhances the ability to infer and make text predictions for third grade students, but not for the younger subjects.

### ***5. The study investigated the influence of mental imagery on improving reading, writing, and spelling abilities of grade 4 children with learning disabilities [Booth, Lyndall 2006]***

A learning disability, by inhibiting learning, renders the scholastic years of a young child fraught with trying and frustrating experiences. Cases of learning disabilities that are being identified are however on the increase. Thus, with the prevalence rate growing and with the knowledge that learning disabilities in the areas of reading, writing and spelling account for large majority of all diagnosed cases, it has become necessary to devise alternative teaching methods.

The Targeted Revisualization programmed which is a high imagery based programme being one such program that might ease the difficulties that such a child may experience. This research hence aimed to explore the link between mental imagery and memory and to further explore the effectiveness of the Targeted Revisualization programme on reading, writing and spelling abilities of grade 4 children with learning disabilities. Using a primarily qualitative methodology, in particular the aggregative case-survey method, this aim was achieved. The sample - obtained from Japari Remedial School - constituted eight children in grade 4 who had been diagnosed as having learning disabilities in the areas the Targeted Revisualization programme addresses. The sample strategy employed may thus be considered quota, non-probability sampling. The eight children in the sample were then assigned to either the experimental group - receiving tutoring using the programme - or to the contrast group that received traditional remedial tutoring, both of a six month duration. With the end analysis the sample illustrating that both groups benefited from their respective tutoring and that the Targeted.

## **Influence of mental imagery on reading comprehension among young adults**

Revisualization programmed proved an effective tool for the improving of reading, writing and spelling abilities of such children. Furthermore, it was found from this research that children with learning disabilities do use mental imagery as a learning aid for learning words and that there is indeed a strong link between mental imagery and memory.

### ***6. This study conducted by Margaret (2009) investigated the effects of mental imagery instruction using science expository texts on middle school students.***

Using a quasi-experimental pretest posttest design, four intact classes (56 students) were randomly assigned to either an experimental or comparison group. Students in the experimental group received instruction on mental imagery strategies while comparison group students received no mental imagery instruction. After the 2-week intervention, students took Posttest 1.

The comparison group students then received mental imagery instruction. Throughout the rest of the school year, all students were prompted at least two to three times a week to use mental imagery strategies. At the end of the school year, all participants took Posttest 2.

Results indicated that there was a statistically significant interaction of time and group for the selected response (SR) portion of expository science text comprehension measure. Both groups appeared to make gains between Posttest 1 and Posttest 2, once both had received mental imagery instruction. The comparison group, which by chance included stronger readers, outperformed the experimental group.

There were no statistically significant differences on the brief constructed response (BCR) measure.

### ***7. This study is focused only with the visual imagery that grows out of children's reading, the author worked with two groups of children and their teachers. (Elizabeth, Fennema2015).***

Group I was composed of children who had completed third grade and were attending the Summer Laboratory School of the University of Wisconsin, Group II was made up of children who were just beginning fourth grade in a public school in Madison, Wisconsin.

In observing the pupils, the author noticed that the children who formed the fewest mental images were often the fastest readers in the group. Perhaps these children read so fast that they do not take time to form mental images. Some fast readers understand and remember less of what they read than the slower reader does.

Perhaps the explanation lies in the fact that fast readers do not form mental images as they read. Perhaps it is easier to read for literal meaning if any inclination to form mental images is checked. Yet in reading for pleasure or for creative purposes, it may be essential to form mental images. Research in this area could make valuable contributions to our present knowledge of the reading process. Of special importance is the role that mental images seemed to play in the reading of children who had low intelligence scores. For these children, mental images may be necessary to understand the material read

### ***8. Studies Related to Reading Comprehension***

Investigated whether sex differences in reading comprehension are affected by variations in the interest level of the material. (Asher, Steven, Markell, Richard 1974) 49 male and 38 female 5th graders' interests were assessed using a picture-rating technique. Each child then

## **Influence of mental imagery on reading comprehension among young adults**

read material that corresponded to his or her high- and low-interest areas. The cloze procedure was used to measure comprehension. Results indicate that boys read as well as girls on high-interest material but that they were significantly poorer readers of low-interest material.

The present experiments examined whether readers spontaneously simulate implied auditory elements of sentences. [Brunyé TT, Ditman T, Mahoney CR, Walters EK, Taylor HA Natick 2010] Participants read sentences that implicitly conveyed details that could provoke auditory imagery (e.g., The engine clattered as the truck driver warmed up his rig.), and then performed an unrelated sound categorization task during which they classified sounds as real (occurring in the world) or fake (computer generated).

In Experiment 1 these two tasks were performed in sequence; in Experiment 2 they were separated into three experimental blocks to rule out the possibility that readers strategically formed auditory imagery as a result of task demands. In both studies, readers were faster to correctly categorize sounds as 'real' when the sounds had been implied by a preceding sentence.

These results suggest that readers mentally simulate the implied auditory characteristics of sentences, even in the absence of tasks that promote mental simulation. Mentally simulating described events is not limited to visual and action-based modalities, further demonstrating the multimodal nature of the perceptual symbols spontaneously activated during reading. The present study investigated the conditions under which multitasking impairs reading comprehension. (Cho , Altarriba, Popiel)

Participants read prose passages (the primary task), some of which required them to perform a secondary task. In Experiment 1, we compared two different types of secondary tasks (answering trivia questions and solving math problems). Reading comprehension was assessed using a multiple-choice test that measured both factual and conceptual knowledge.

The results showed no observable detrimental effects associated with multitasking. In Experiment 2, the secondary task was a cognitive load task that required participants to remember a string of numbers while reading the passages. Performance on the reading comprehension test was lower in the cognitive load conditions relative to the no-load condition. The present study delineates the conditions under which multitasking can impair or have no effect on reading comprehension. These results further our understanding of our capacity to multitask and have practical implications in our technologically advanced society in which multitasking has become common placed. The current concerns hypothesis suggests that directing attention towards unfulfilled plans of the individual prior to a task would result in more off-task thoughts (or mind wandering) (Kopp, D'Mello , Mills 2015)

In this experiment, participants were asked to read a scientific text and self-report instances of mind wandering by indicating when they were experiencing task-unrelated thoughts (TUTs) or task-related interferences (TRIs). Prior to reading, participants in the individual plans experimental condition were asked to reflect upon their short-term plans by making a "to do" list while participants in a control condition were asked to make a list of the components of an automobile.

In support of the current concerns hypothesis, directing attention towards the short-term plans resulted in significantly more TUTs, but not TRIs. Furthermore, participants in the

## **Influence of mental imagery on reading comprehension among young adults**

individual plans condition had significantly lower scores on an assessment of reading comprehension, and this relationship was mediated by the frequency of TUTs

### **METHODOLOGY**

#### ***Research question***

Does mental imagery play a role in reading comprehension among young adult?

#### ***Objectives***

1. To study whether mental imagery plays a role in Reading comprehension
2. To find out whether there are gender differences in reading comprehensions and mental imagery
3. To find the difference in the level of mental imagery among students from different fields of education
4. To investigate whether socio economic status play a role in mental imagery and reading comprehension
5. To observe the effect of birth order in mental imagery
6. To study the impact on mental imagery of individuals from different geographical area
7. To compare the effect of interest in sports or games on mental imagery
8. To observe the effect of hobbies on mental imagery
9. To find out the difference on mental imagery among individuals who are interested in motion picture and tv programs

#### ***Hypothesis***

There will be influence of mental imagery on reading comprehension ,there will be no gender differences, in mental imagery and Reading comprehension ,birth order does not have any influence on mental imagery and reading comprehension ,there will be difference in income, fields of education, geographical area, sports and games, hobbies and individual who prefer watching motion picture, tv programs among mental imagery and reading comprehension.

#### ***Sampling Procedure***

Multistage sampling was used it had three phases.

#### ***In phase 1***

Intelligence test was administered on 80 students from various departments the group test of general mental ability scale was used it had 100 questions and the students must complete it in 20 minutes. M.com business finance, M.com Accounting and taxation, MBA International business, Msc. Earth Science, Msc. Psychology, Msc Bioinformatics, Msc Mathematics, Msc Chemistry, MA French, MA Anthropology MA Social work, MA Political science, and B.E students.

#### ***In phase 2***

From these 55 students who fell under average category of intelligence were moved to the next phase In second phase MIQ Mental imagery questioner it had 6 subtest each subtest had 15 questions overall 90 questions it was administered to categories the student in to two different groups one group consist of students with high mental imagery and the other group consist of students with average mental imagery.

## **Influence of mental imagery on reading comprehension among young adults**

### **In Phase 3**

A reading comprehension passage was given the subjects must read all the passage and should answer the question given in order to find the role of mental imagery while reading the passage both the groups are restricted to stick on to the timing all were given 25 minutes to read the passage and to answer the questions.

### ***Study participants***

The study was conducted on a sample of 55 students from Pondicherry university who all belong to various departments like M.com business finance, M.com Accounting and taxation, MBA International business, Msc. Earth Science, Msc. Psychology, Msc Bioinformatics, Msc Mathematics, Msc Chemistry, MA French, MA Anthropology MA Social work, MA Political science, and from Pondicherry engineering college B.E students from the department of IT Information technology and EEE Electrical and Electronic Engineering.

### ***Study design***

Correlation study design was used it is used to check whether there is a relationship between mental imagery and reading comprehension

### ***Operational definition***

Mental imagery, also called visualization and mental rehearsal, is defined as experience that resembles perceptual experience, but which occurs in the absence of the appropriate stimuli for the relevant perception ([plato.stanford.edu/entries/mental-imagery/](http://plato.stanford.edu/entries/mental-imagery/)).

Reading comprehension is the construction of meaning of a written or spoken communication through a reciprocal ,holistic interchange of ideas between the interpreter and the message...the presumption here is that meaning resides in the intentional problem-solving, thinking process of the interpreter...that the content of the meaning is influenced by that persons prior knowledge and experience (Harris &Hodges,1995)

### ***Study Tools***

Dr. S. Jalotas, The group test of general mental ability scale consist of 100 items divided in to vocabulary group of ten similar plus ten opposite items and group of twenty classification items a set of twenty items of number series a group of ten items for selection of best answer plus ten items of reasoning and twenty of analogies thus it has five separate categories of twenty task each (i)vocabulary,(ii)classification,(iii)number series,(iv)analogies and (v)reasoning. The terms were mixed and arranged in an empirically determined order of increasing difficulty. The item total correlation range from .783 to .979

Mental imagery questioner developed by Dr. M. Rajamanickam (M.A., M.LITT., PH.D. ) This test material is named as Mental imagery questionnaire as it is designed to assess the sensory experiences of the individuals. The mental imagery questionnaire consist of six sub-test referring to six areas of sensory experience. The area of sensory experiences are (1)visual(2) auditory (3)gustatory (4)olfactory (5)tactual and (6)bodily on determining the reliability and validity of each test by the method of item discrimination analysis 15 item in each which were retained on the basis and high discrimination power of the statements. the rest of them were dropped. Therefore, the final form of each sensory area has 15 items which constitute a sub-test. All the six areas have uniformly 15 items. In each test all the 15 items are referring to an event of the experience which every one might have had in his/her life

## Influence of mental imagery on reading comprehension among young adults

In every item one phrase referring to some event or characteristics or quality features of a person name of some object and its nature and characteristic type of experience, type of experience one can have from an object is given. Each item is not a complete sentence. The participants is required to respond suitably for each item by making cross(x)on any one of the cells of six alternatives.

The participant on reading each item in a test should close his/her eyes for few seconds and search for such experience he/she had in his /her life and form an image or the mental picture of the past experience and judge it clearly and vividly on the quality of the mental picture of the sensory experience the person must decide how far it is clear and should make out the range clarity of the image of the sensory experience. If the image of the past experience is very clear and vivid like the original experience then the person should be awarded 5 score if the image of the experience is fairly vivid then he /she should be awarded 2 score if the image is dim 1 score is to be given and if the person could not form an image of the sensory experience is described in a six point scale.

The mental imagery questioner is designed and developed on the pattern of liker scaling technique as a six point scale with subtest .Each test is independent and measure only one aspect .Since the weight are given as 5,4,3,2,1and 0 for very clear ,fairly vivid ,just clear somewhat clear dim and no image respectively and each item is rated with these weight the highest possible score ,if a person rated all the 15 items with the weight of 5, is 75 (15x5)and if the person rated all the 15 items with the weight of 0,then the lowest possible score is 0(15x0).But the rating chances for higher rating are with the weight 5,4,3 and the chances for lower rating are with weights0,1,2 But generally no person would rate all the items with the weight of 5 and no person would rate all the items with the weight of 0 .Therefore the highest point 75 and the lowest point0 will never take place unless there were some extraordinary cases of one or two in a big sample.

### ***Ethical Considerations***

Ethical issues were taken into consideration. Data was collected at a time and date convenient to the concerned authorities.

Participation in the study was completely voluntary. The students of the classes for which permission had been obtained were given the choice to participate or not participate. They were told that they could withdraw from the study at any point, in case they found answering any of the items uncomfortable. Informed consent was obtained from all of the participants with the help of a consent form detailing the broad objectives and nature of the study. Confidentiality of the data provided by the respondents was guaranteed.

### ***Data Analysis***

Descriptive analysis was carried out in order to understand the background information of the study population. Further analysis included Pearson's Product Moment Correlation, 't' tests, Analysis of Variance and post-hoc analysis.

## **RESULTS**

***Table 1 Correlation analysis between the mental imagery and reading comprehension***

<b>Variables</b>	<b>Reading comprehension (rc)</b>
Mental imagery (MI)	0.355**

\*\*p < 0.01

## Influence of mental imagery on reading comprehension among young adults

There is a positive and moderate correlation between mental imagery and reading comprehension ( $r=0.355$ ,  $p<0.01$ )

**Table 2 Prediction of reading comprehension by mental imagery**

Predictor Variable	Dependent Variable	Standardized Beta Value	t value	Model Summary
Mental Imagery	Reading Comprehension	0.36	2.76	R= 0.355 R <sup>2</sup> = 0.126 Adjusted R <sup>2</sup> =0.109 F=7.623

There is a significant change in reading comprehension because of mental imagery, the above table shows that the 12% of variance in reading comprehension is due to mental imagery, and the results also show that almost 10% of the variance in the reading comprehension is because of mental imagery with reference to the sample of this study. From the above table it is seen that the model is significant as the value is significant at both the levels ( $r=.008$ ,  $p<0.01$ )

The regression analyses show that mental imagery is found to predict reading comprehension among students.

**Table 3 t-test between sports and games and study variable**

Variables	Sports and games	Mean	SD	T
Mental imagery	1(41)	322.02	58.561	-.219
	2(12)	326.08	48.269	-.244
Reading comprehension	1	6.37	2.615	-1.391
	2	7.50	1.931	-1.641

(1= students who show interest in sports and games, 2= students who are not interested in sports) From the above table it is shown that there is no significant difference between sports and games in mental imagery and reading comprehension.

**Table 4 t-test between male and female scores and the study variable**

Variables	Gender	Mean	SD	T
Mental imagery	Male (27)	323.33	53.009	.313
	Female (28)	318.57	59.632	
Reading comprehension	Male	6.41	2.635	-.616
	Female	6.82	2.342	

The finding from the above table shows that there is no significant difference found between male and female in mental imagery and reading comprehension.

**Table 5 t-test between motion picture and Tv-program scores and the study variable**

Variables	MOT/TV	Mean	SD	T
Mental imagery	1(37)	323.19	53.066	.430
	2(18)	316.22	62.974	

The finding from the above table shows that there is no significant difference found between motion picture and Tv-programs in mental imagery and reading comprehension.

**Influence of mental imagery on reading comprehension among young adults**

**Table 6 one way ANOVA difference between age and the study variable**

Variable	Age	Mean	SD	F	Post hoc
Mental imagery	1.00 (18)	291.61	59.810	7.313**	3vs1,2
	2.00(23)	319.87	48.469		
	3.00(14)	360.29	38.931		

\*\*p < 0.01 (1=20 & 21, 2=22, 3=23 & 24)

From the above table it can be seen that there is a significant difference between age and mental imagery it also shows that students who belong to the age group of 23-24 seems to be higher in mental imagery when compared to the age group of 20-22. There is no significant difference between age and reading comprehension.

**Table 7 one-way ANOVA difference between fields of education and the study variable**

Variable	Fields of education	Mean	Sd	F	Post hoc
Mental imagery	1(15)	340.93	62.313	6.361**	4vs2,1,3
	2(9)	331.44	31.189		
	3(15)	342.40	44.301		
	4(16)	276.06	47.357		
Reading comprehension	1	8.20	2.484	9.171**	4,2vs3,1
	2	5.67	2.646		
	3	7.60	1.993		
	4	4.75	1.065		

\*\*p < 0.01 (1=Science, 2=Arts, 3=Management, 4=Engineering)

The above table shows that there is a significance difference between field of education and the study variable (mental imagery and reading comprehension)

**Table 8 one way ANOVA difference between geographical area and study variable**

Variable	Geographical area	Mean	Sd	F
Mental imagery	1(21)	337.43	42.849	6.242**
	2(20)	288.70	63.127	
	3(14)	342.14	43.104	
Reading comprehension	1(21)	7.29	2.610	2.876
	2(20)	5.60	1.729	
	3(14)	7.07	2.841	

\*\*p < 0.01 (1=Agricultural, 2=Industrial, 3=Metropolitan area)

From the above table its understood that there is a significant difference between geographical area and mental imagery and there is no significant difference between geographical area and mental imagery it also shows that students who belong to agricultural area are low in mental imagery when compared to the students who belong to agricultural and metropolitan area

**Table 9 One way ANOVA difference between geographical area and study variable**

Variable	Income	Mean	Sd	F	Post hoc
Mental imagery	1(29)	340.72	50.844	2.234	-
	2(18)	306.62	59.252		
	3(8)	328.13	44.283		
Reading comprehension	1	7.06	2.437	3.104*	2 vs 1,3
	2	5.93	2.154		
	3	8.13	3.044		

\*p < 0.05 (1=less than 20,000, 2=20001-50,000,3=above 50,000)

## Influence of mental imagery on reading comprehension among young adults

The above table shows that there is a significant between income and reading comprehension, it also shows that there is no significant difference between income and mental imagery, to proceed further the table shows that students family income between 20001-5000 shows low significant difference when compared to students family income of less than 20,000 and above 50,000.

**Table 10 One way ANOVA difference between Hobbies and study variable**

Variable	Hobbies	Mean	Sd	F	Post hoc
Mental imagery	0(36)	315.27	51.713	4.226*	2vs 0,1
	1(15)	315.03	54.623		
	2(4)	395.00	35.749		
Reading comprehension	0	6.27	2.219	.403	-
	1	6.83	2.646		
	2	6.00	2.000		

\*p < 0.05

(0=students who are not interested in any hobbies, 1= students who are interested in two or less than two hobbies, 2 = students who are interested in more than two hobbies)

The above table shows that there is a significant difference between mental imagery and students who have more than two hobbies when compared to the students those are not interested in hobbies and those who are interested in less than two hobbies and it also shows that there is no significant difference between reading comprehension.

## DISCUSSION

The finding of the study contributes to research on mental imagery and its influence on reading Comprehension the pilot study involved 55 postgraduate students (28-female and 27-male) who all fall under similar intelligence level in this study students who all fell under average intelligence level was taken in to the study from Pondicherry university the departments involved are (M.com business finance, M.com Accounting and taxation, MBA International business, Msc. Earth Science, Msc. Psychology, Msc Bioinformatics, Msc Mathematics, Msc Chemistry, MA French, MA Anthropology MA Social work, MA Political science) and Pondicherry engineering college [B.E IT (Information technology) and B.E EEE (Electrical and electronic engineering)]

It was hypothesized that there will be a correlation between mental imagery and reading comprehension and as supported by the study result the hypotheses have been accepted from the current study. The students who are good at visualizing the picture mentally simultaneously while reading is said to score better. table 1 it is said that the present study shows a positive moderate correlation between mental imagery and reading comprehension the present study substantiates the findings of previous studies (Gambrell & Bales, 1986) the study is to investigate the effect of mental imagery upon comprehension-monitoring performance of poor readers the result of this study shows that subject who were instructed to induce imagery identified both explicit and implicit inconsistencies in text significantly more often than did the subjects in the control group. The results are interpreted as support of the use of mental imagery as a comprehension-monitoring strategy.

The result of table 2 indicate that there is a significant change in reading comprehension because of mental imagery , about 12% of variance in reading comprehension is due to mental imagery, and the current results also shows that almost 10% of the variance In the reading comprehension is because of mental imagery with reference to the sample of the

## **Influence of mental imagery on reading comprehension among young adults**

present study it clearly shows that mental imagery is one of the major factor which helps the student to score well thus (Jenkins ,2009 ) using a quasi-experimental design he studied the effect of mental imagery instruction using science expository texts on middle school students in the experimental group received instruction on mental imagery strategies while comparison group student did not receive instruction on mental imagery after 2 week intervention post test 1 was conducted the comparison group received mental imagery instruction and throughout the rest of the school year all students were promoted with two or three times a week to use mental imagery strategies and all took post test 2 the result showed that Both groups appeared to make gains between Posttest 1 and Posttest 2, once both had received mental imagery instruction.

The table 3 talks about the influence of mental imagery on sports and games and it shows that there is no significant difference between mental imagery and reading comprehension in one of the study by Roure et al, 1999 cited at The Effects of Mental Imagery on Athletic Performance Annie Plessinger conducted a experimental study they establish six specific autonomic nervous system (ANS) responses that correlated with mental rehearsal, thereby improving sports performance. The subject was split in to two groups imagery group and control group. The task calculated in each group was based on their ability to pass an opponent's set a given teammate, in the sport of volleyball.

This study showed that mental imagery induces a specific pattern of autonomic response. These include: decreased amplitude, shorter duration and negative skin potentials when compared to the control group. As a consequence of the ANS, the imagery group was associated with better performance. In light of this experiment, Roure suggested that metal imagery may help in the construction of schema which can be reproduced, without thinking, in actual practice even though the previous study support the significance of mental imagery in sports the current study shows that there is no significant difference in sports and mental imagery this might be due to the reason that participants in this study are not professional sports or game players they are individuals who play in their leisure time they don't spend much time on games.

The fourth table shows there is no significant difference between gender and mental imagery. This is supported by a study done by Majors (2006) on reported use of imagery strategy in reading comprehension. It shows that there is no gender difference in mental imagery and reading comprehension. This might be because in the present century both male and female are equally educated and exposed to various interesting activity, so there is no much gender difference found. They have equal opportunities to be trained.

The Table 5 shows that there is no significant difference between motion picture ,television program in mental imagery and reading comprehension this might be the reason because when one is watching a movie or a television show the image has already been presented to the individual rather than evoking the image by own interpretation and perception so it clearly shows that the role of mental imagery is possibly low in such situation.

The table 6 shows that there is a significant difference between age and mental imagery ,but there is no significant difference between age and reading comprehension there are previous studies supporting the current study (Kosslyn, Stephen M 1994 )there were (18-23aged) younger adult and (55-71 aged) elderly performed 4 visual mental imagery tasks, each of which tapped different processes. The elderly had relatively impaired image rotation and image activation (the process of accessing and activating stored visual memories), and there

## **Influence of mental imagery on reading comprehension among young adults**

was a suggestion that aging may impair the ability to maintain images. In contrast, the elderly were able to compose (the process of generating the segments of the shape, one by one) and scan visual mental images as well as young adults. However, when the authors correlated the mean performance of each age group across all the tasks, they found that the reaction times (RTs) of the elderly were almost perfectly predicted by the performance of the young but that the error rates were not correlated. These findings suggest that although there is slowing with age, individual imagery processes are affected selectively by aging.

The above study shows that there is a difference seen in production of mental imagery with related to age. The present study shows the people who belong to the age of 23 and 24 are comparatively high than students who belong to the age group of 20-22. There was a mild difference noticed in between the age in the current study. This might be because as people grow they are been exposed to various source which will help in improving mental imagery skill as part of enriching the knowledge of mental imagery even though there is a different between the group it does not make much change when difference is found within the group.

The table 7 shows that there is a significant difference between fields of education in mental imagery and reading comprehension it shows that engineering students are comparatively low in mental imagery than science arts and management students this might be the reason because engineering students read more on coding and computer languages and show less descriptive ,students who belong to science arts or management are habituated to read the passage and try to understand the concept of the study by visualizing the reading in the mind the syllabus format differ between engineering students and more or less science arts and management students syllabus might be in a way which help to evoke mental imagery in some way or the other. as one of the supportive study of reading comprehension and mental imagery.

Teaching through visualization or in Tomlinson's (1998) terms "the ability to build mental pictures or images while reading" is known as an efficient strategy in language learning. Thus, this research was done to investigate the role of this strategy on ESP reading comprehension ability of Iranian students whose syllabus mostly focuses on this skill. the researchers compared the participants' performances to study such an effect. The findings revealed the significant advantage of using visualization in promoting ESP reading comprehension ability of university students. When it comes to the study of computer coding and its language there was not much research done.

Table 8 shows that there is a significant difference between geographical area in mental imagery and no significant difference reading comprehension the table also shows that student who belong to industrial area are said to be high in mental imagery when compared to agricultural and metropolitan area the reason behind this might be students who are in industrial area have neutral experience in visual stimuli metropolitan area are bombarded too much of visual stimuli in a way they find it hard to manage individual who belong to agricultural area are less exposed visual stimuli.

Now a days everybody have come to know about the importance to education so in a way there is no significant difference in reading comprehension it shows in individuals who belong to all the geographical area are more or less equal in education level.

Table 9 shows that there is a significant difference among income and reading comprehension and it does not have any influence on mental imagery this might be because

## **Influence of mental imagery on reading comprehension among young adults**

Students who belong to middle class family feel more responsible to achieve in life and thus they concentrate in each aspect of improving the life style .student who belong to higher income family feel that they are already good in life and they get whatever they want and so the are less exposed to the situation which might made him /her to think improving once skill in every aspect of life is needed. Students who belong to lower economic status might have not got the opportunity to know about various source of help that might improve once skill thus student who stands in the middle of the economic status might be accessible to opportunities as well use it in a proper way.

The table 10:shows that there is a significant difference between hobbies and mental imagery it also shows that individual who are interested in more than two hobbies are said to be higher in mental imagery when compared to individuals who are not interested in any hobbies and those who have interest less than two hobbies this might be because hobbies like painting and sculpture involve mental imagery more when compared to singing and dancing reading novel might help lot in creating mental imagery painting sculpture and various other hobbies which involve creative thinking help the person to enhance mental imagery there are many theories in psychology argued that imagery play a major role in creative process the study is to find the relation between vividness of imagery and four aspects creativity fluency flexibility originality and elaboration and it was found that there is a significant relation found between creative imagination and imagery control for 208 women however for 95 men creative imagination correlated only with imagery vividness for women there were more consistently related.

### **CONCLUSION**

Mental imagery is said to play a role in reading comprehension individual who are high in mental imagery perform better when compared to students who find difficult to evoke mental picture in their mind the present study shows that almost 10%of the variance In the reading comprehension is because of mental imagery with reference to the sample of this study.

With respect to mental imagery there is no gender difference. Mild difference seen with in young adults no difference is found in individual who are interested in sports and people who are not. Not much difference established in individuals who are interested in watching movies and TV program. Students who belong to industrial area are said to be good at mental imagery. Income of students' family does not play a role in it. Individuals who show interest in more than one hobby are found to be high in mental imagery.

The overall finding from the study shows that mental imagery is influenced by various different factors of once interest and their life style. It is thus, reflected in the reading comprehension.

### ***Implications***

The study shows that there is an impact of mental imagery in read comprehension it can be enhanced by using various method visualizing training will be helpful in a class room set up for the students to understand the concept in a simpler and easier form, motor skill training in a imagery form will be helpful for the athlete in the game field.

Text books which is provided with more descriptive language / words and pictures in the text book should be in a way it evoke mental imagery when the reader reads it simultaneously. Mental image can be linked to memory, in the sense that recall of past

## Influence of mental imagery on reading comprehension among young adults

experiences enhances one's mental imagery. Thus, alongside visualization training, memory techniques can also be taught to students.

### **Limitation**

1. Larger sample size could have been used.
2. The sample was restricted to the Pondicherry University and Pondicherry engineering student population.
3. The sample could've been expanded to incorporate people from different departments.

### **Recommendation**

Further studies on geographical area and mental imagery can be carried to find out for finding the underlining concept of why people who belong to one area are good at mental imagery when compared to others.

It is found that individual who are interested in more than two hobbies are good at mental imagery when compared to people who are interested in less than two hobbies further studies can be done to investigate in which particular hobby people are more in mental imagery.

## **REFERENCES**

- Asher, S. R., & Markell, R. A. (1974). Sex differences in comprehension of high-and low-interest reading material. *Journal of Educational Psychology*, 66(5), 680.
- Ashton, A. A. (2012). *Mental Imagery and Reading Comprehension Proficiency in English Second Language Learners: An Exploratory Study* (Doctoral dissertation, Faculty of Humanities, University of the Witwatersrand, Johannesburg).
- Babin, L. A., & Burns, A. C. (1997). Effects of print ad pictures and copy containing instructions to imagine on mental imagery that mediates attitudes. *Journal of Advertising*, 26(3), 33-44.
- Blanuša, J., & Zdravkovic, S. (2015). Horizontal-vertical illusion in mental imagery: quantitative evidence. *Name: Frontiers in Human Neuroscience*, 9, 33.
- Booth, L. (2006). *Imagery, cognition and memory: the influence of mental imagery on improving reading, writing, and spelling abilities of grade 4 children with learning disabilities* (Doctoral dissertation).
- Brunyé, T. T., Ditman, T., Mahoney, C. R., Walters, E. K., & Taylor, H. A. (2010). You heard it here first: Readers mentally simulate described sounds. *Acta psychologica*, 135(2), 209-215.
- Bunzeck, N., Wuestenberg, T., Lutz, K., Heinze, H. J., & Jancke, L. (2005). Scanning silence: mental imagery of complex sounds. *Neuroimage*, 26(4), 1119-1127.
- Cebrian, A. N., & Janata, P. (2010). Influences of multiple memory systems on auditory mental image acuity. *The Journal of the Acoustical Society of America*, 127(5), 3189-3202.
- Cho, K. W., Altarriba, J., & Popiel, M. (2015). Mental juggling: when does multitasking impair reading comprehension? *The Journal of general psychology*, 142(2), 90-105.
- Cui, X., Jeter, C. B., Yang, D., Montague, P. R., & Eagleman, D. M. (2007). Vividness of mental imagery: individual variability can be measured objectively. *Vision research*, 47(4), 474-478.
- Denis, M. (2008). Assessing the symbolic distance effect in mental images constructed from verbal descriptions: A study of individual differences in the mental comparison of distances. *Acta Psychologica*, 127(1), 197-210.

## Influence of mental imagery on reading comprehension among young adults

- Dror, I. E., & Kosslyn, S. M. (1994). Mental imagery and aging. *Psychology and aging*, 9(1), 90.
- Erfani, S. M., Iranmehr, A., & Davari, H. (2011). Deepening ESP reading comprehension through visualization. *Journal of Language Teaching and Research*, 2(1), 270-273.
- Feyereisen, P., & Havard, I. (1999). Mental imagery and production of hand gestures while speaking in younger and older adults. *Journal of nonverbal behavior*, 23(2), 153-171.
- Foroughi, C. K., Werner, N. E., Barragán, D., & Boehm-Davis, D. A. (2015). Interruptions Disrupt Reading Comprehension.
- Gambrell, L. B. (1981). Induced Mental Imagery and the Text Prediction Performance of First and Third Graders.
- Gambrell, L. B., & Bales, R. J. (1986). Mental imagery and the comprehension-monitoring performance of fourth-and fifth-grade poor readers. *Reading Research Quarterly*, 454-464.
- Gambrell, L. B., & Bales, R. J. (1986). Mental imagery and the comprehension-monitoring performance of fourth-and fifth-grade poor readers. *Reading Research Quarterly*, 454-464.
- Gambrell, L. B., & Jawitz, P. B. (1993). Mental imagery, text illustrations, and children's story comprehension and recall. *Reading Research Quarterly*, 265-276.
- Ghazanfari, M. (2009). The Role of Visualization in EFL Learners Reading Comprehension and Recall of Short Stories. *Iranian Journal of Applied Language Studies*, 1.
- Holmes, E. A., Lang, T. J., Moulds, M. L., & Steele, A. M. (2008). Prospective and positive mental imagery deficits in dysphoria. *Behaviour Research and Therapy*, 46(8), 976-981.
- Holmes, E. A., Mathews, A., Dalgleish, T., & Mackintosh, B. (2006). Positive interpretation training: Effects of mental imagery versus verbal training on positive mood. *Behavior Therapy*, 37(3), 237-247
- Imagining stereotypes away: The moderation of implicit stereotypes through mental imagery Irene V. Blair, Jennifer E. Ma, Alison P. Lenton Journal: Journal of Personality and Social Psychology 2001 DOI: 10.1037//0022-3514.81.5.828 The ecological approach to visual perception J. J. Gibson 1979
- Isaac, A. R., & Marks, D. F. (1994). Individual differences in mental imagery experience: developmental changes and specialization. *British Journal of Psychology*, 85(4), 479-500.
- Jenkins, M. H. (2009). The effects of using mental imagery as a comprehension strategy for middle school students reading science expository texts.
- Just, M. A., Newman, S. D., Keller, T. A., McEleney, A., & Carpenter, P. A. (2004). Imagery in sentence comprehension: an fMRI study. *Neuroimage*, 21(1), 112-124.
- Kemps, E., & Newson, R. (2005). Patterns and predictors of adult age differences in mental imagery. *Aging, Neuropsychology, and Cognition*, 12(1), 99-128.
- Knauff, M., & May, E. (2006). Mental imagery, reasoning, and blindness. *The Quarterly Journal of Experimental Psychology*, 59(1), 161-177.
- Kopp, K., D'Mello, S., & Mills, C. (2015). Influencing the occurrence of mind wandering while reading. *Consciousness and cognition*, 34, 52-62.
- Koslow, R. E. (1987). Sex-related differences and visual-spatial mental imagery as factors affecting symbolic motor skill acquisition. *Sex Roles*, 17(9-10), 521-527.
- Laeng, B., Bloem, I. M., D'Ascenzo, S., & Tommasi, L. (2014). Scrutinizing visual images: The role of gaze in mental imagery and memory. *Cognition*, 131(2), 263-283.
- Libby, L. K., & Eibach, R. P. (2013). The Role of Visual Imagery in Social Cognition. *The Oxford Handbook of Social Cognition*, 147.

## Influence of mental imagery on reading comprehension among young adults

- Logie, R. H., Pernet, C. R., Buonocore, A., & Della Sala, S. (2011). Low and high imagers activate networks differentially in mental rotation. *Neuropsychologia*, 49(11), 3071-3077.
- Majors, S. M. (2006). *Reported use of imagery strategy in reading comprehension instruction* (Doctoral dissertation, Oklahoma State University).
- Mast, F. W., & Kosslyn, S. M. (2002). Visual mental images can be ambiguous: Insights from individual differences in spatial transformation abilities. *Cognition*, 86(1), 57-70.
- Morina, N., Deeprose, C., Pusowski, C., Schmid, M., & Holmes, E. A. (2011). Prospective mental imagery in patients with major depressive disorder or anxiety disorders. *Journal of Anxiety Disorders*, 25(8), 1032-1037.
- O'Craven, K. M., & Kanwisher, N. (2000). Mental imagery of faces and places activates corresponding stimulus-specific brain regions. *Journal of cognitive neuroscience*, 12(6), 1013-1023.
- On Cognitive Neuroscience Stephen M. Kosslyn Journal: Journal of Cognitive Neuroscience 1994 DOI: 10.1162/jocn.1994.6.3.297
- Pictet, A., Coughtrey, A. E., Mathews, A., & Holmes, E. A. (2011). Fishing for happiness: The effects of generating positive imagery on mood and behaviour. *Behaviour research and therapy*, 49(12), 885-891.
- Wang, L., Lawson, M. J., & Curtis, D. D. (2014). The effect of image quality training on reading comprehension of EFL students using the keyword method. *Language Teaching Research*, 1362168814541718.
- Zwaan, R. A., & Pecher, D. (2012). Revisiting mental simulation in language comprehension: Six replication attempts. *PloS one*, 7(12), e51382.

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