



A Comparative Study Of Cognitive Abilities Among Working Professionals And Artists

Srujan Hiral Gaurang¹, and Dr. Supriya Sioni²

1 Student, St. Xavier's College (Autonomous), Ahmedabad, Department of Psychology, Gujarat, india

2 Assistant Professor, St. Xavier's College (Autonomous), Ahmedabad, Department of Psychology, Gujarat, india

Abstract: This research examines and compares cognitive abilities between working professionals and artists. The study aims to understand the differences in cognitive abilities between these two groups. The research involves 60 participants, 33 working professionals and 27 artists, all of whom are between the ages of 25 and 40 and live in Gujarat. Purposive sampling method was used to guarantee that job profiles were diverse. Data was collected using the Cognitive Ability Test (CAT-GMLB-2018) developed by Prof. (Dr.) Madhu Gupta and Ms. Bindiya Lakhani. Obtaining oral permission, developing rapport with participants, and giving the assessment instrument were all part of the data collecting procedure. The data was analysed using Student's t-test. The findings indicate that working professionals have higher cognitive abilities in general. Working professionals have a higher level of awareness, memory, reasoning ability and problem solving ability. There is no significant difference in understanding between working professionals and artists. The study's goal is to give significant insights into how occupational differences affect cognitive abilities in individuals.

Index: Cognitive Ability, Working Professionals, Artists

I. INTRODUCTION

Cognitive ability, which includes a variety of mental functions such as perception, memory, reasoning, problem-solving, and creativity, Awareness and Understanding, is essential when assessing an individual's occupational and creative pursuits. Cognitive abilities are a certain set of cognitive capacities that enable an individual to adapt and thrive in any given environment and those cognitive abilities include abilities like memory, retrieval, problem solving and so forth (Simonton, 2003). It has an impact not only on job performance but also on creative expression and innovation. Understanding of cognitive abilities can guide individuals in optimising their performance and adaptability in various domains (Autor, Levy, & Murnane, 2003). Cognitive aptitude, which includes the ability to understand complicated information, adapt to unexpected conditions, and innovate, is considered as a powerful predictor of professional achievement.

Alfred Binet's intelligence tests, set the foundation for future studies in the field of cognitive ability (Binet & Simon, 1916). Multiple concepts and paradigms developed throughout the following decades, including Piaget's stages of cognitive development (Piaget, 1952), Gardner's theory of multiple intelligences (Gardner, 1983), and the information processing model (Sternberg, 1969). These ideas have not only helped to comprehend cognitive abilities, but they have also influenced educational methods, cognitive testing, and therapies. Cognitive abilities are not a separate phenomenon; they are inseparably linked to academic advancement, job success, and overall well-being (Deary et al., 2010; Schmidt & Hunter, 1998). The research of cognitive abilities has implications for career choice, employment dynamics, and social growth (Hanushek & Woessmann, 2008; Neisser et al., 1996).

Cognitive ability research has covered a wide range of topics and subdomains. Cognitive ability and academic achievement (Deary et al., 2007), professional performance (Schmidt & Hunter, 1998), and even physical wellness (Gottfredson, 2004) have all been studied. Furthermore, recent cognitive neuroscience research has revealed important insights into the neurological basis of cognitive ability. Neuroimaging studies have offered information on how different brain areas and networks are engaged in memory activities (Squire, Stark, & Clark, 2004), problem-solving tasks (Duncan, 2010), and decision-making tasks (Bechara et al., 1994).

Working professions are those who work in occupations or industries that need special knowledge, skills, and abilities, such as medical, engineering, law, academics, or scientific research. These professionals are identified by their level of education, training, and knowledge application in their respective disciplines.

The following are some frequent job positions held by working professionals: (Indeed,2023)

- Research Scientist
- Engineer
- IT Manager
- Financial Analyst
- Investment Banker
- Architect
- Doctor
- Lawyer
- Teacher/Professor
- Accountant
- Airline Pilot

In working professionals cognitive capacity is typically linked to problem-solving, decision-making, and adaptability (Campion et al., 2005). Professionals in engineering, finance, and medicine rely heavily on their cognitive abilities to perform difficult tasks and make accurate judgements. Cognitive ability tests are highly predictive of job performance across a wide range of occupations, emphasizing the significance of cognitive aptitude in professional achievement (Schmidt & Hunter, 1998). The challenging nature of cognitive tasks in professions such as medicine (McManus et al., 2012), engineering (Cronbach, 1988), and law (Neisser et al., 1996), emphasizes the significance of cognitive ability in these fields.

Artists, is a person who makes artworks, often through visual, auditory, or performance methods. Artists use their imaginations and creative talents to communicate ideas, feelings, or messages to a wide range of audiences. It can include paintings, sculptures, music, writing, drawing, dance, photography, theater, or any other kind of creative expression.

The following are some frequent job positions held by artists: (Throsby & Hollister, 2003)

- Writer/Author
- Photographer
- Painter
- Sculptor
- Musician
- Dancer
- Singer
- Actor

Artists such as painters, musicians, authors, and performers, use cognitive ability to guide their creative pursuits. Memory, creativity, and creative thinking are all cognitive skills that help artists create masterpieces (Zaidel, 2013). According to research, artists frequently have unique cognitive profiles defined by heightened creativity and diverse thinking (Dietrich & Kanso, 2010). Cognitive abilities in artists go beyond standard problem-solving and decision-making skills, embracing a larger range of imaginative and expressive abilities (Boccia et al., 2015). Creative thinking, emotional intelligence, and the capacity to

comprehend and interpret abstract concepts into physical forms are all required for artistic endeavours (Barron & Harrington, 1981; Runco & Jaeger, 2012). Research on artists' cognitive abilities has shown the cognitive processes involved in artistic expression (Dietrich & Kanso, 2010). Studies have shown that development of cognitive abilities affects reading practice, receptive skills (Ravi, 2004) and writing skills (Manjula, Saraswati, & Prakash, 2009). Painters such as Leonardo da Vinci, Vincent van Gogh, and Frida Kahlo acting notable examples of artists whose works transcend time and continue to captivate audiences worldwide. Divergent thinking is a cognitive talent required for creative problem-solving and idea development (Guilford, 1950).

II. OBJECTIVE OF THE STUDY

To investigate the cognitive ability (Awareness, Memory, Understanding, Reasoning Ability, Problem Solving Ability) between working professionals such as engineer, doctor, advocate, scientist, pilot, teacher/Professor & manager and artists such as musician, dancer, painter, singer, actor, photographer, writer and Macrame artist.

III. RESEARCH METHODOLOGY

The research method employed in this study was a quantitative approach using a purposive sampling method to select 60 participants, consisting of 33 working professionals and 27 artists, aged between 25 and 40 years, with a minimum of three years of relevant work experience. Data was collected using a self-made data sheet for demographic information and the Cognitive Ability Test (CAT-GMLB-2018) to measure cognitive ability. The test was administered after obtaining oral consent and ensuring confidentiality, and the raw data was statistically analyzed using a Student t-Test to compare the cognitive abilities of working professionals and artists. The study ensured reliability and validity of the test through various methods, including test-retest, face validity, content validity, item validity, construct validity, and cross validity.

IV. RESULTS AND DISCUSSION

The following results were obtained from this research study

Table 1. Mean, SD and t-Value for Cognitive Ability between Working Professionals and Artists:

Groups	N	Mean	SD	t-Value	t-Critical	Level of Significance
Working Professionals	33	26.79	6.51	3.91	2.66	0.01
Artists	27	20.67	5.40			

In Table 1, the study examined the cognitive ability of working professionals and artists. The mean of cognitive ability for working professionals is 26.97 with a standard deviation of 6.51, while artists have a mean score of 20.67 with a standard deviation of 5.40. The t-value of 3.91 suggests a significant difference between the two groups in terms of cognitive ability. At a significance level of 0.01, this result indicates that working professionals exhibit significantly higher levels of cognitive ability compared to artists. Therefore, H_0 is rejected.

Table 2. Mean, SD and t-Value for Awareness between Working Professionals and Artists:

Groups	N	Mean	SD	t-Value	t-Critical	Level of Significance
Working Professionals	33	6.48	1.66	2.40	2.00	0.05
Artists	27	5.48	1.55			

In Table 2, the study examined the awareness of working professionals and artists. The mean of awareness for working professionals is 6.48 with a standard deviation of 1.66, while artists have a mean score of 5.48 with a standard deviation of 1.55. The t-value of 2.40 suggests a significant difference between the two groups in terms of awareness. At a significance level of 0.05, this result indicates that working professionals exhibit significantly higher levels of awareness compared to artists. Therefore, Ho2 is rejected.

Table 3. Mean, SD and t-Value for Memory between Working Professionals and Artists:

Groups	N	Mean	SD	t-Value	t-Critical	Level of Significance
Working Professionals	33	6.03	1.63	2.51	2.00	0.05
Artists	27	4.89	1.89			

In Table 3, the study examined the memory of working professionals and artists. The mean of memory for working professionals is 6.03 with a standard deviation of 1.63, while artists have a mean score of 4.89 with a standard deviation of 1.89. The t-value of 2.51 suggests a significant difference between the two groups in terms of memory. At a significance level of 0.05, this result indicates that working professionals exhibit significantly higher levels of memory compared to artists. Therefore Ho3 is rejected.

Table 4. Mean, SD and t-Value for Understanding between Working Professionals and Artists:

Groups	N	Mean	SD	t-Value	t-Critical	Level of Significance
Working Professionals	33	4.88	1.27	0.70	2.66	NS
Artists	27	4.63	1.47			

NS= Not Significant

In Table 4, the study examined the understanding of working professionals and artists. The mean of understanding for working professionals is 4.88 with a standard deviation of 1.27, while artists have a mean score of 4.63 with a standard deviation of 1.47. The t-value of 0.70 suggests a non-significant difference between the two groups in terms of understanding. This result indicates that there is no significant difference in terms of understanding between working professionals and artists. Therefore we fail to reject Ho4.

Table 5. Mean, SD and t-Value for Reasoning Ability between Working Professionals and Artists:

Groups	N	Mean	SD	t-Value	t-Critical	Level of Significance
Working Professionals	33	4.82	1.94	3.78	2.66	0.01
Artists	27	2.96	1.83			

In Table 5, the study examined the reasoning ability of working professionals and artists. The mean of reasoning ability for working professionals is 4.82 with a standard deviation of 1.94, while artists have a mean score of 2.96 with a standard deviation of 1.83. The t-value of 3.78 suggests a significant difference between the two groups in terms of reasoning ability. At a significance level of 0.01, this result indicates that working professionals exhibit significantly higher levels of reasoning ability compared to artists. Therefore Ho5 is rejected.

Table 6. Mean, SD and t-Value for Problem Solving Ability between Working Professionals and Artists:

Groups	N	Mean	SD	t-Value	t-Critical	Level of Significance
Working Professionals	33	4.58	1.90	4.08	2.66	0.01
Artists	27	2.70	1.59			

In Table 6, the study examined the problem solving ability of working professionals and artists. The mean of problem solving ability for working professionals is 4.58 with a standard deviation of 1.90, while artists have a mean score of 2.70 with a standard deviation of 1.59. The t-value of 4.08 suggests a significant difference between the two groups in terms of problem solving ability. At a significance level of 0.01, this result indicates that working professionals exhibit significantly higher levels of problem solving ability compared to artists. Therefore Ho6 is rejected.

4.1. Discussion:

The study's findings reveal a significant difference in cognitive ability between working professionals and artists, with working professionals displaying a higher level of cognitive ability than artists. Professionals in STEM (Science, Technology, Engineering, and Mathematics) fields often exhibit advanced cognitive skills due to the analytical demands of their work (Kyndt et al., 2015). While artists may emphasise divergent thinking and creative innovation over standardised cognitive assessments (Rhodes, 1961). This difference may also be attributed to differences in education and training, with medical professionals and engineers undergoing specialised cognitive development. (Van Dijck et al., 2013). Individuals engaged in intellectually demanding professions, such as medicine and engineering, tend to demonstrate superior cognitive abilities due to the intricate problem-solving demands of their work (Crutcher et al., 2009). Artists often rely on divergent thinking and creative skills, which may not necessarily translate into higher cognitive test scores (Chan et al., 1998).

The study's findings reveal a significant difference in awareness between working professionals and artists, with working professionals displaying a higher level of awareness than artists. Working professionals, particularly those in healthcare and scientific fields, often require heightened levels of awareness due to the critical nature of their tasks, such as patient care and laboratory research (Kyndt et al., 2015). Artists may

prioritise creative expression and may not be as attuned to specific details in their immediate environment (Van Dijck et al., 2013). In healthcare, high levels of awareness are crucial for patient safety and effective diagnosis (Arora & Sevdalis, 2017). Artists' creative processes may prioritise a broader, more intuitive form of awareness (Robinson, 2019).

The study's findings reveal a significant difference in memory between working professionals and artists, with working professionals displaying a higher level of memory than artists. Working professionals in analytical roles exhibit superior memory performance due to the information-intensive nature of their work (Smith & Johnson, 2017). Artists, whose creative work often involves divergent thinking and innovation, may prioritise different cognitive functions (Van Dijck et al., 2013). The study on memory and cognition supports the idea that working professionals, particularly those in knowledge-intensive fields, may have a cognitive advantage (Crutcher et al., 2009). Cognitive demands in professional settings often require individuals to maintain, access, and apply complex information, thus potentially enhancing memory functions (Chan et al., 1998). Artists, while excelling in creative domains, might not emphasise memory to the same extent, as their cognitive demands tend to revolve around innovative thinking and artistic expression.

The study's findings reveal a non-significant difference in understanding between working professionals and artists. The capacity for empathy and understanding is a universal human trait that goes beyond the professional boundaries (Smith & Johnson, 2017). While there may be variations in cognitive dimensions between working professionals and artists, the fundamental human quality of understanding remains relatively consistent. Understanding is a multifaceted attribute influenced by factors such as educational backgrounds, personal experiences, and cultural diversity, rather than just occupational categories (Brown and White, 2019).

The study's findings reveal a significant difference in reasoning ability between working professionals and artists, with working professionals displaying a higher level of reasoning ability than artists. Working professionals in knowledge-intensive fields, such as engineering and medicine, tend to demonstrate advanced reasoning skills due to the complexity and analytical nature of their work (Lauer & Danner, 2003). Artists, while highly creative, may not prioritise the same level of reasoning abilities as professionals in analytical roles, as evidenced by (Van Dijck et al., 2013). Creative professionals like artists may prioritise divergent thinking over deductive reasoning (Baker & Harper, 2021).

The study's findings reveal a significant difference in problem solving ability between working professionals and artists, with working professionals displaying a higher level of problem solving ability than artists. Working Professionals such as doctors, engineers and lawyers often engage in complex problem-solving tasks in their respective careers, fostering advanced cognitive abilities required for efficient and effective decision-making (Lauer & Danner, 2003). Artists may prioritise creative thinking over structured problem-solving (Amabile, 1996). The Problem-solving ability can be attributed to variations in educational backgrounds, training, and the specific demands of the respective fields, (Rhodes, 1961)

V. FINDINGS AND CONCLUSION

This research highlights notable differences in cognitive abilities, awareness, memory, reasoning, and problem-solving between working professionals and artists. Working professionals, particularly those in fields such as healthcare, engineering, and science, exhibit higher levels of cognitive abilities such as, awareness, memory, reasoning, and problem-solving. This is largely attributed to the analytical and information-intensive demands of their professions. On the other hand, artists, renowned for their creative and divergent thinking, may emphasise creativity and innovative expression over standardised cognitive assessments. While understanding remains a universal human trait, it did not exhibit significant differences across occupational boundaries. These findings shed light on the multifaceted nature of human cognition and recognise the diverse cognitive strengths across various professions.

VI. LIMITATIONS OF THE STUDY

- Sample size is small and limited to Gujarat, India which may limit generalizability.
- Cross-sectional design restricts the ability to draw causal conclusions between cognitive ability and work profile.
- Longitudinal research could provide comprehensive understanding of evolution of cognitive abilities.

VII. IMPLICATIONS OF THE STUDY

This research has implications for several aspects of work dynamics, education, job choices, and personal development. It emphasises how important it is to identify and value the various cognitive profiles of people working in various professions. Programs for education and training can be designed to support cognitive strengths in accordance with a person's chosen job path, maximising performance and flexibility. This knowledge can help career advice and counselling services better support people in making decisions that are in line with their cognitive abilities. Utilizing the distinct cognitive capacities of professionals from a variety of backgrounds can improve workforce cooperation and perhaps lead to more creative and comprehensive problem-solving approaches. . With implications for people, educators, and employers alike, this research offers a helpful viewpoint on how cognitive capacities connect with different vocational domains and adds to a richer understanding of cognitive variety.

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