Biological Forum – An International Journal **15(2): 944-947(2023)**

ISSN No. (Print): 0975-1130
ISSN No. (Online): 2249-3239

Does Gender Makes Difference in Visual Perception of Yoga Practitioners?

Seulgi Lee[1*] and Paran Gowda[2]
[1]Research Scholar, Department of Yoga Science,
University of Patanjali, Haridwar (Uttarakhand), India.
[2] Professor, Department of Yoga Science,
University of Patanjali, Haridwar (Uttarakhand), India.

(Corresponding author: Seulgi Lee)*
(Received: 04 January 2023; Revised: 15 February 2023; Accepted: 17 February 2023; Published: 22 February 2023)
(Published by Research Trend)

ABSTRACT: The purpose of the study is to investigate and find any gender difference between male and female member yoga practitioners in Visual Perception (VP).
In this study, we recruited hundred regular yoga practitioners, consisting of 50 males and 50 females, with an average age of 20.8±2.81 years for males and 20.12±2.35 years for females from a Yoga university, Haridwar, India. This study employed a cross-sectional design with a single assessment of a VP by using Motor-free Visual Perception Test-4 (MVPT-4) manual.
As may be seen from the findings that there is a 2.82% difference between the male and female VP mean values with plus or minus standard deviation values. In addition, we performed the 't' test difference in the mean values with Cohen's distance. Except for Visual closure 'p' value, the other four values are non-significant. There is a better Cohen's 'd' values between male and female and its more in the case of spatial relationship values.
We conducted a study on whether gender affects VP abilities in yoga practitioners. The results of this study indicated that there was no difference in VP abilities between male and female yoga practitioners. There is a lack of research on gender differences in VP with the influence of yoga. This study is original, but the small sample size is a significant limitation. Therefore, we recommend increasing the sample size and attempting cross-cultural research in future studies to ensure high reliability.

Keywords: Visual perception, yoga, gender, cognition, university students.

INTRODUCTION

VP is the overall process of accepting and recognizing sensory functions of visual stimuli. The sensory functions and visual receptive components extract and organize information from the external environment, while the components of VP structure, organize, and interpret visual stimuli. It is only when these two components work together that a person can understand what they are seeing, and both are necessary for functional vision. VP abilities include recognizing and identifying characteristics such as objects, shapes, and colors. It can make accurate judgments about the composition, spatial relationships, and size of objects (Schneck, 2009). VP is important because it allows individuals to interpret and understand the world around them through their sense of sight. It plays a crucial role in many daily activities, such as reading, driving, and identifying objects and people. A lack of VP can severely impact an individual's ability to function and carry out daily tasks.

VP is critical for gathering information from the environment and is fundamental to human perception and cognition (Schneck, 2009). Another study found that VP is essential for understanding complex visual scenes, such as recognizing faces and identifying objects (Konkle *et al.*, 2010).

As VP abilities play an important role in our daily lives, there have been many studies in various fields, including a few papers that examine the effect of gender on VP abilities(Asano *et al*., 2014; Chraif, 2013; Lamer *et al.*, 2017; Shaqiri *et al*., 2016; Yamada, 2015). However, it is the first time to study the effect of gender among yoga practitioners on VP abilities.

The word 'yoga' comes from the Sanskrit word 'yuj', which refers to a state of mental concentration more commonly known as samadhi. This is a state where only one mental activity remains or even none. If only one activity or thought remains, this state is called 'ekagra', and if no mental activity is active (all are restrained), it is called 'niruddha'. This is the ultimate goal of yoga, and yoga means restraining the activities of the mind (Ravikanth, 2012). Yoga is a form of exercise using physical movements combined with breath regulation, postural balance, and meditation (Lai *et al*., 2023; Singh Soni and Katoch, n.d.). In yoga, there is a practice called trataka that is good for eyesight, concentration, and cognition. Trataka is a Sanskrit word meaning "to gaze" and is one of the six purification techniques, or shat karma, of hatha yoga. Usually, this practice involves staring at a single point using a candle flame (Muktibodhananda, 1998).

MATERIALS AND METHODS

Participants. In this study, a total of one hundred yoga practitioners participated, consisting of 50 males with an age range of 20.8±2.81 and 50 females with an age range of 20.12±2.35. The study was conducted in a quiet office room at a yoga university in Haridwar, and data were collected from a total sample of 100 yoga practitioners. The demographic information of the participants are provided in Table 1.

Table 1: Demographic details of participants.

	Yoga Group (n = 100)	
	Male	Female
Age(M±SD)	20.8±2.81	20.12±2.35
Gender (n)	50	50
Duration of Yoga Experience (M±SD)	2.65±1.9	2.72±1.41
Practice Yoga time (M±SD)	52.2±16.93	45.6±16.8

Note: Mean=M; Standard Deviation=SD

Table 1 depicts the basic demographic details of student participants. As seen all male and female participants are good yoga practitioners with roughly about 3 years yoga experience. The average age also by and large are same for both male and female participants.

Design. This study used a comparison cross-sectional design. Participants were administered in single session.

Assessments. In this study, VP was assessed using the MVPT-4.

Data analyses. In this study, we utilized SPSS 29 version to compare the VP abilities of male and female yoga practitioners. Descriptive statistics, such as mean and standard deviation, were used to summarize all quantitative variables. An independent t-test was conducted to determine whether there was a statistically significant difference in means between the two groups.

RESULTS AND DISCUSSION

In this study, we investigated the effect of gender on visual cognitive ability by examining VP. We conducted the study using the MVPT-4 assessment and compared the results between males and females. While all yoga practitioners demonstrated excellent performance on the visual cognitive ability test, our findings revealed no significant difference in visual cognition between genders.

Table 2: Gender of Mean and SD.

Gender	N	Mean	SD
Male	50	36.54	3.38
Female	50	37.60	2.97

Table 2 shows that M±SD for males was 36.54±3.38, while for females it was 37.60±2.97. It appears that the mean value for female participants is slightly higher than that of male participants.

Table 3: VP sub-domains Mean and Standard deviation values.

Gender	M/SD	VD	SR	VM	FG	VC
Male	M	2.70	11.64	7.32	7.46	7.42
	SD	0.46	1.88	0.94	1.05	0.73
Female	M	2.78	12.42	7.46	7.54	7.40
	SD	0.42	1.54	0.91	0.79	0.95

Note: VD = Visual discrimination; SR = Spatial Relationships; VM = Visual Memory; FG = Figure-Ground; VC = Visual Closure.

In Table 3, we analyzed the five components of the VP evaluation by dividing them according to gender. The VD score for male was 2.7±0.46 and for female was 2.78±0.42. The SR score for male was 11.64±1.88 and for female was 12.42±1.54. The VM score for male was 7.32±0.94 and for female was 7.46±0.91. The FG score for male was 7.46±1.05 and for female was 7.54±0.79. The VC score for male was 7.42±0.73 and for female was 7.40±0.95. The results showed that female had slightly higher scores in VD, SR, VM, and FG, while male had slightly higher scores in VC.

Table 4: Descriptive Statistics of Male and Female participants.

Variables	Gender	N	M	SD	*t(p)*
VD	Male	50	2.70	0.46	-0.91(0.37)
	Female	50	2.78	0.42	
SR	Male	50	11.64	1.88	-2.27(0.03)
	Female	50	12.42	1.54	
VM	Male	50	7.32	0.94	-0.76(0.45)
	Female	50	7.46	0.91	
FG	Male	50	7.46	1.05	-0.43(0.67)
	Female	50	7.54	0.79	
VC	Male	50	7.42	0.73	0.12(0.91)
	Female	50	7.40	0.95	
VP total Score	Male	50	36.54	3.38	-1.67(0.10)
	Female	50	37.60	2.97	

Table 4 presents the results of an independent t-test conducted to investigate differences in VP ability scores according to gender. The test revealed the following results: t=-0.91, p=0.37 for VD; t=-2.27, p=0.03 for SR; t=-0.76, p=0.45 for VM; t=-0.43, p=0.67 for FG; t=0.12, p=0.91 for VC; and t=-1.67, p=0.10 for the total score of all five VP tasks. Excluding the SR (p value < 0.03) value, since all other values exceeded the significance level of p-value 0.05, it can be concluded that gender has no significant impact on VP ability scores.

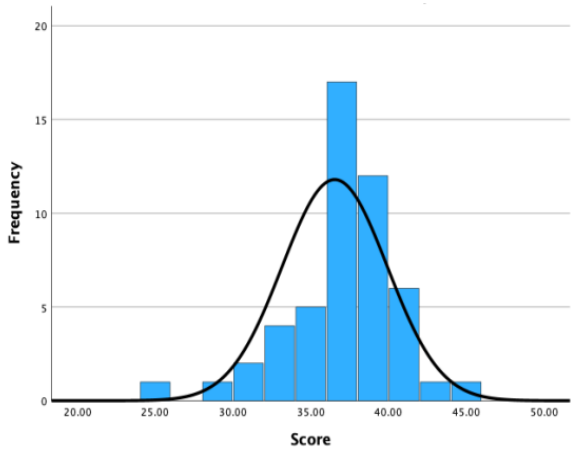
Table 5: Cohen's 'd' for the 5 – sub domains of VP.

Variables	Cohen's d
VD	0.44
SR	1.72
VM	0.92
FG	0.93
VC	0.85
VP	3.18

Note: Cohen's d uses the pooled standard deviation.

It may be seen from the Table 5, that the Cohen's distance 'd' for 5-sub-domains of VP between the two means of female and male of male and female participants. The differences are negligible in FG and VM compared to the other sub-domain parameters.

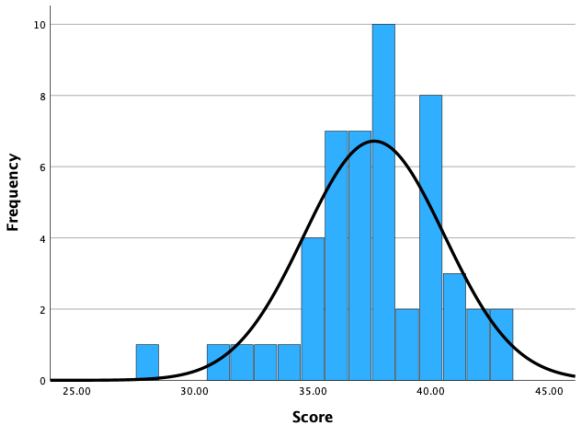
In our present studies, female observers showed a greater level of significance compared to their male counterparts and were more susceptible to the influence of the yoga context. Without the inclusion of yoga, our study observations align with those found in previous VP studies (Norman *et al.*, 2018). While clinical studies by Zakaria *et al.* (2021) found that visual images were not affected by gender, our cross-sectional studies largely echo this finding that VP is not influenced by gender. However, it is possible that with the inclusion of yoga, slight deviations in VP may be observed. Although gender differences are well established in cognition and somato-sensation, there are few studies examining gender differences in VP with the influence of yoga. Sample sizes in vision experiments are often small due to large effect sizes, but small sample sizes are not suitable for testing gender differences. One limitation of our study is the relatively small sample size that was used.



Note: M =36.5, SD= 3.38 n=50

Fig. 1. Frequency of Male VP score.

Fig. 1 shows the histogram with normality distribution around the mean values. The frequency plots versus scoring. The repletion of scoring rates may be seen in the form of frequency of the score. The M is 36.5 with SD value of 3.38 for a sample size of 50 male yoga participants.



Note: Note: M = 37.60, SD = 2.97 n = 50

Fig. 2. Frequency of Female VP score.

The frequency distribution with normality curve is shown in Fig. 2. The frequency scoring may be seen for females little higher than the male counter parts. The M is 37.60 with SD value of 2.97 for a sample size of 50 female yoga participants.

CONCLUSIONS

In the current study, it can be stated that there was no significant impact of gender on VP assessment among yoga practitioners. There may be slight variations in VP and its 5 components with the practice of yoga. While gender differences in cognition and somato-sensation have been well-established, there is a lack of research on gender differences in VP with the influence of yoga. In vision experiments, sample sizes of participants are often small due to the large effect sizes. However, small samples are not ideal for testing gender differences. The limitation of these studies is the lack of a large sample size.

FUTURE SCOPE

There is a significant potential for further research with a larger sample size through a cross-sectional study. In addition, it is crucial to conduct various studies that examine how gender influences VP and diverse cognitive abilities, as well as whether there are cultural differences.

Conflicts of Interest. None.

REFERENCES

Asano, K., Taki, Y., Hashizume, H., Sassa, Y., Thyreau, B., Asano, M., Takeuchi, H. and Kawashima, R. (2014). Healthy children show gender differences in correlations between nonverbal cognitive ability and brain activation during visual perception. *Neuroscience Letters*, *577*, 66–71.

Chraif, M. (2013). Gender Influences in Peripheral and Central Visual Perception for the Young. *Procedia - Social and Behavioral Sciences*, *84*, 1100–1104.

Konkle, T., Brady, T. F., Alvarez, G. A. and Oliva, A. (2010). Scene Memory Is More Detailed Than You Think: The

Role of Categories in Visual Long-Term Memory. *Psychological Science*, *21*(11), 1551.

Lai, Y. T., Huang, H. L., Hsieh, C. C., Lin, C. H., Yang, J. C., Tsou, H. H., Lin, C. C., Li, S. Y., Chan, H. L. and Liu, W. S. (2023). The Effects of Yoga Exercise on Blood Pressure and Hand Grip Strength in Chronic Stroke Patients: A Pilot Controlled Study. *International Journal of Environmental Research and Public Health*, *20*(2), 1108.

Lamer, S. A., Weisbuch, M. and Sweeny, T. D. (2017). Spatial cues influence the visual perception of gender. *Journal of Experimental Psychology: General*, *146*(9), 1366–1371.

Muktibodhananda, S. (1998). *Hatha Yoga Pradipika* (3rd editio). Yoga Publications trust, Munger, Bihar, India.

Norman, J. F., Dowell, C. J., Higginbotham, A. J., Fedorka, N. W. and Norman, H. F. (2018). Sex and age modulate the visual perception of distance. *Attention, Perception & Psychophysics*, *80*(8), 2022–2032.

Ravikanth, B. (2012). *Yoga Sutras of Patanjali*. Sanskrit Works.

Schneck, C. M. (2009). *Occupational Therapy Intervention : Performance Areas*.

Shaqiri, A., Brand, A., Roinishvili, M., Kunchulia, M., Sierro, G., Willemin, J., Chkonia, E., Iannantuoni, L., Pilz, K., Mohr, C. and Herzog, M. (2016). Gender differences in visual perception. *Journal of Vision*, *16*(12), 207–207.

Singh Soni, G. and Katoch, S. (n.d.). *Management of Visual Ailments in Regular Computer Users in Himachal Pradesh Universities through Yoga Practices*.

Yamada, Y. (2015). Gender and age differences in visual perception of pattern randomness. In *Science Postprint*.

Zakaria, M. N., Tahir, A., Zainun, Z., Salim, R., MohdSakeri, N. S. and Abdul Wahat, N. H. (2021). The influence of type of visual image and gender on the perception of horizontality: a subjective visual horizontal (SVH) study. *Acta Oto-Laryngologica*, *141*(1), 62–65.

How to cite this article: Seulgi Lee and Paran Gowda (2023). Does Gender Makes Difference in Visual Perception of Yoga Practitioners ? *Biological Forum – An International Journal*, *15*(2): 944-947.