



**Short Communication**

# Who Remembers Better? Sex Differences in Memory Among Higher Education Students in Nepal



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## Abstract

There are manifestations that conclude sex plays a role in the memory function and thus sex tends to favour a memory type. This comparative study was conducted with higher education boy and girl students to assess the difference in different types of memory between sexes. The assessment done was based on Post Graduate Institute (PGI) memory scale developed by Pershad and Wig (1988). Sex was sole independent variable and dependent variables were ten memory subscales. Data collected were analysed by computing the mean and t-test. Comparison between two groups indicates significant difference in five subscales i.e., remote memory, recent memory, mental balance, attention and concentration and retention of dissimilar pairs. Among five subscales except in recent memory male score has outperformed and the difference in the score was significant. As such computing mean also demonstrated higher mean average in male side. However, the difference in memory between male and female has been demonstrated to some extent though it has followed distinct pattern.

**Keywords:** *Memory; Memory Subscales; Sex Difference*

## Background

Memory and gender have been fascinating subjects for the professionals of human behaviour. Memory entitled as a storage house of mind or the reservoir is defined as an organism's ability to store, retain and recall information and experiences (Atkinson & Shiffirin 1968). This process of accumulating information is a highly complex phenomenon. The ability to retain and reproduce impression undergoes various

processing via stages like encoding, storage and retrieval (Best, 1986). The intensity and the frequency of the memory are believed to be determined by these processes to some extent. Beyond the process, intentional retrieval of the information as well as the intensity of retrieval depends upon the interest, rehearsal and the exposure of subject. Memory is also affected by the age, time, mood, and stress and disease condition (Gale et al., 2007; Hau et al., 2010; Wang et al., 2011).

As such the wonder fact of being a biological creature and its ability to recall the information (i.e., memory) varies from person to person that we bring innately (Kimura, 1983). Despite innately brought qualities, some of our abilities and qualities are determined by the socialization process as part of being a social creature or labelled by our circle and society because of our shared identity, expectation, roles, and a sense of belonging to a particular group (Dhakal, 2019; Gurung & Rajbanshi, 2020). Labelled roles, responsibilities, cultural factors and social context have always many things to do with traits, tendencies, and characteristic we develop. They also play a motivational role. However, such aspects have some advantages and some disadvantages in respective field. Among them being man and woman are alleged to be different from each other not only by the biological aspect but also by every aspect of like in social and psychological functioning. The variation in the amount of detail in the internal representation and the process of retrieval have association with more elaborative coding or more efficient semantic processing that may arise from role related experience as well as motivational explanation that have been associated with masculine or feminine

gender roles (Maitland et al., 2004). That is a social aspect related to socially constructed roles and attributes that are given to a sex of humankind as being male or female so that they are labelled as man and woman.

The term sex and gender sometime seem to be overlapping in this study though they have distinct term but inseparable in many contexts as in our society sex determines gender in no exceptional cases. Sex is defined as a biological characteristic mark as an essentially biological distinction between women and men that is based upon their anatomical, physiological or chromosomal properties. Gender is a social feature marks a socio-cultural distinction between men and women on the basis of the traits, roles, behaviour, activities and attributes those are conventionally regarded as characteristic of an appropriate to the two groups of people.

We have been hearing about the cognitive difference in male and female from the early period of tracing human behaviour. It is usually claimed that men outperformed women in mathematical and spatial abilities (Lauer et al., 2019). Though genetically based difference between the quality of

male and female memory is unknown but possible theories have been presented from the early period of the study. Basically, those theories have been categorized into i.e. biological and social. Based on several studies (Heisz et al., 2013; Lewin & Herlitz, 2002; Wang et al., 2011) attributions towards the differences have been given to the social role, different biological construct of male and female. Particularly anatomical difference in the brains structure and the social roles were more prominent.

Buckner and Fivush 1998, state the similar gender difference in child memory. In certain memory task associated with masculine or feminine gender roles. From the finding it has been said that different memory skill that arises from role related experience may lead to more efficient semantic processing. As such according to Crawford et al. (1989), experiment in every day memory subjects had demonstrated the significant difference in memory between genders. Particularly where there was cue related to gender like “he” or “she” condition. Associated gender seemed to perform better and in the condition of neutral instruction no such differences were found. All those early studies from

Loftus et al. (1987, Who remembers what) to Herlitz et al., 1997, Colley et al. (2002), Marcia and Suzanne (2007) purposed study in Memory for emotional and neutral information have concluded that fact of motivational explanation in gender role association that the cue may invoke related stored knowledge that facilitates encoding and that varies the different role related experience of man and women. As such above mentioned researches have suggested the fact of verbal and verbal included information women have outperformed. For this outcome credit has given to encoding process that may be assisted by more elaborate categories for encode. Difference between men’s and women’s gender role socialization may result in elaborate categories of coding. Same sort of reason has been given in case of episodic memory favouring women whereas visuospatial have the more weightage toward men side.

Many studies related to the difference in human memory before 1987, were seem to focus on functional aspects of memory till the study of Loftus et al. in 1987 make an attempt to figure out who remembers what based on the predetermined set of predication about the memory in the domain of verbal,

spatial, face, autobiographical and eyewitness memory. Subject in the study had acted in accordance with the stereotype beliefs regarding sex difference in memory. After that attempt topic memory drawn the attention beyond the functional or mechanism aspect. the heard issues from the early period of time in human behaviour clutches the tracks and more studies and research were done in several aspects of memory such as everyday memory performance, short term memory, episodic memory, autobiographic memory and so on. However, those studies were confined to the major type and subtype of memory for an e.g., episodic, autobiographic and everyday memory. This particular study was undertaken in the other aspect of memory. In this study memory had viewed in ten memory subscales these are: remote memory, recent memory, mental balance, attention and concentration, delayed recall, immediate recall, visual retention and recognition. These scales of memory are based on the PGI memory scale developed by Pershad and Wig (1988). This study was focus to mark if there is gender difference in memory subscale based in PGIM. As far as our probing none of the previous

studies has cover the elementary aspect of memory

In this study sex has been used as independent variables. Sex has biological characterization on the basis of which a person develops his or her gender identities. Thus the notion of sex influences gender. The term memory and gender have both psychological and social dimensions. The dependent variables in this study were ten subscales.

The objective of this study was to assess differences in the different types of memory subscales between male and female higher education students in Nepal. To meet the objective, following hypotheses were conceived.

- There will be significant difference in memory subscale's score between male and female
- There will be significant difference in value of each memory subscale between male and female

In the sections below, the study methodology followed by study results is described.

## Methods

To progress this study quantitative research method was adopted. This was a descriptive study. Tribhuvan University Campus and Trichandra

Sex	Level				Total
	B. A	B.SC	M.A	M.SC	
Female	8	31	48	13	100
Male	10	24	43	23	100
Total	18	55	91	36	200

Campus of Kathmandu district were the sites of the study. Students from the Faculty of Humanities and Social Sciences and the Faculty of Science were the study population. A total of 200 samples were selected for the study. The sample size was equally distributed to both sexes. The demographic characteristic of the study population included age, sex, education and subject faculty as given below:

*Table 1: Description of Respondents*

Characteristics	Number (n=200)	Percent (%)
<b>Age</b>		
21-25 Years	110	55%
26 – 30 Years	90	45%
Total	200	100%
<b>Sex</b>		
Male	100	50%
Female	100	50%

### Science Students

Male 47 52%

Female 44 48%

### Humanities and Social Science

Male 53 49%

Female 56 51%

### Campus

T.C 159 79.5%

T. U 41 20.5%

*Table 2: Level and Subject Details of Respondents*

P.G.I.M scale was used for assessing the memory subscales on both genders. Certain socio demographic factors were used in the process of data collection. PGI memory scale was constructed and standardized in 1977 and was revised in 1988 by Pershad and Wig. The PGIMS provides a comprehensive and simple scale to measure verbal and nonverbal memories on the basis of neurological theory: very short term, short term and long-term memories on the basis of experimental evidences and remote, recent and immediate memories on the basis of clinical practice of evaluation of memory. It contains 10 subscales: 1. Remote memory, 2. recent memory, 3. mental balance, 4. Attention and Concentration, 5. Delay recall, 6. immediate recall, 7. Retention for similar pairs, 8. Retention for dissimilar

pairs, 9. Visual retention, and 10. Recognition (Kour et al., 2015).

This study was done within the period of three months from June to September 2013. Field work included pretesting, modification in some statements of P.G.I memory scale, individual data collection was done in face-to-face setting. To ensure validity, a pre-test of the scale was done on 8 students and some modifications in scale-I remote memory and scale-II recent memory were done to make the test more appropriate for college student. Each test took approximately 20-25 minutes to complete.

Data were analysed by using Statistical Package for the Social Sciences (SPSS) program V17 Analysis was made on the basis of objectives and variables. As such, data were statistically analysed

and conclusion was drawn by computing percentages, mean, standard deviation and T-test. Moreover, necessary ethical protocols of 'responsible research practice' (Dhakal, 2016) in social sciences were carefully considered during all phases of the study.

## Results

Computing mean demonstrated higher average in the subscales of memory those subscales in which female had scored higher average is sub scale II recent memory and sub scale v delayed recall. In subscale VII that was verbal retention for similar pair both variables had same average value. In total too male had higher mean score. As that the total SD value was also greater in male. That indicated greater deviation of male from mean than female.

*Table 3: 0-1 Independent T-test of Two Groups*

Variables	Statistic of female		Statistic of male		d.f	t-ratio	p-value	P-Value for (2-tailed)
	Mean	SD	Mean	SD				
Remote Memory(I)	5.27	0.58	5.29	0.48	198	0.27	0.06	.79
Recent Memory (II)	4.90	0.30	4.76	0.47	198	2.49	0.00	.01
Mental Balance (III)	6.91	1.02	7.50	1.12	198	3.91	0.07	.00
Attention and	39.34	10.76	43.91	12.19	198	2.81	0.26	.01

Concentration (IV)								
Delayed Recall(V)	8.88	1.30	8.71	1.59	198	-0.83	0.08	.41
Immediate Recall (VI)	5.97	1.95	6.44	2.67	198	1.42	0.00	.16
Verbal Retention for Similar Pairs (VII)	4.98	0.14	4.98	0.14	198	0.00	1.00	1.00
Verbal Retention for dissimilar pairs (VIII)	12.60	2.64	13.41	1.96	198	2.46	.01	.02
Visual Retention (IX)	11.53	1.84	12.01	1.73	198	1.90	.06	.06
Recognition(X)	7.96	1.21	8.27	1.18	198	1.84	.60	.07
Total	108.34	14.89	115.28	17.45	198	3.03	.11	.003

Among ten subscales, in four subscales i.e., subscale-I (remote memory), subscale-III (mental balance), subscale-IV (attention and concentration), and subscale-VIII (retention of dissimilar pairs) obtained score for male was higher than female and the difference of score was significant. As such in one subscale i.e., in recent memory (subscale II) females score outperformed males. In other five subscales i.e., subscale V (delayed recall, subscale VI (immediate recall), Subscale VIII (verbal retention of dissimilar pairs), subscale IX (visual retention) and subscale X (recognition) no significant difference was obtained.

The total score of males was higher than females and that difference in the score was significant. That proved significant

difference in memory score between men and women. However, in five individual scales there was no significant difference between men and women.

This study was intended to see the relationship between memory and gender. Somehow this study has shown that fact as in five memory subscales there is significant difference in the score obtained. Though the findings are impaired in some extent it doesn't reject the hypothesis that memory tends to favour the gender. In most of the subscales when mean score was compared male seemed to have high score than female, in subscale like verbal retention for similar pairs, verbal retention for dissimilar pair and recognition female were supposed to



outperformed male but the findings of this study didn't support that presumptions. In six subscales there was no significant difference between male and female ability to memorize. It is usually said that memory differs in male and female. More specifically it has been found that in the cases of episodic memory, remembering emotional information, eyewitness memory, recognition, everyday memory, multiple tasks and moreover to verbal explanation women are said to be better than men. In the other hand there are proven results on non-linguistic information favouring men. This disparity has been attributed to possible gender role and socialization in stored knowledge. Which are supposed to support by more elaborative categories for encoding information. Memory has been found to be influenced by expectations, belief concerning about owns ability to recall, motivational explanation, gender cues, learning rehearsal, exposure, context and interest

Besides this in above mentioned studies has attributed to cognitive dissimilarity between male and females by categorizing their cognitive ability into systematizing and empathizing model. Empathizing is labelled as female's cognitive style that is related with

facilitating interaction with social world. Next is thought to be a male's cognitive style which is related to rules, system and logic. Hence cognitive style of male and female may also affect the memory of men and women. The prime cause of findings of this study not being happened as per the expectation may be due to not having such cues related to gender has been mentioned in the study neither prior to the administration. Which might not evoke role related experience by then no motivational explanation and stereotypes threat could play role for efficient semantic processing. In this particular study too memory subscales tend to favour gender but in quite contrast outcomes. More specifically in remote memory, delayed recall, verbal retention and recognition female were expected to have upper hand because it was an acquired concept. However, we can conclude that memory tends to favour gender or gender makes difference in memory.

## **Disclosure Statement**

The author declares that no potential conflict of interest exists.

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