

## Humour Styles and Working Memory in Young Adults

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### ABSTRACT

The research aims to study the relationship between humor styles adapted by individuals and their working memory. The study includes humor styles (affiliative, self-enhancing, aggressive and self-defeating) as independent variable and working memory (attention, execution and storage) as dependent variable. The data collection was done using survey method which consisted of Humor Style Questionnaire (HSQ, Martin et. al., 2003) and the Working Memory Questionnaire (WMQ, Vallat et. al., 2012). A total sample of 60 (male = 27, female = 33) young adults within the age range of 18 – 25 participated in the study. Analysis was done using Pearson's Correlation and Independent sample t-test. The mean was also calculated. The results showed that there is a significant correlation between working memory and affiliative and self-defeating humor styles. It was also found that gender has a significant impact over the humor styles adapted by individuals. Future research could be done with larger population which can have a difference in the results assumed in the current research.

**Keywords:** *Humor Styles (Affiliative, Self-enhancing, Aggressive, Self-defeating), Memory, Attention, Execution, Storage*

Every individual use humor in one place or the other. Humor plays a vital role in our lives irrespective of where and how it is used. Humor was derived from a Latin word 'Humere' which means 'fluid'. The four fluids (Choleric, Melancholic, Phlegmatic and Sanguine) that were mentioned in the Greek's ancient humoral theory based on which our personality was assessed was taken into account in this word. Later in the late 16<sup>th</sup> CE the word was introduced for the first time in middle English as 'Humour' in the sense 'to humor someone'. The humor that we use can be good or bad, which is based on the balance and imbalance of one's temperament.

Humor is one of the most essential components that is being used in various ways. In today's world humor is used in many places such as teaching, marketing, books, at workplace, at school and any gatherings, etc. Humans normally get attracted to something that makes one feel comfortable and safe, humor is one such component, if used positively. According to the 3 theories of humor: the relief theory, the incongruity theory and the superiority theory, it is suggested that people use humor as a component of relief, to reduce the incongruity and process the situation and also to reinforce social order and group unity

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(Wilkins & Eisenbraun, 2009). Humor can also be used to cope from a particular situation that seems both threatening and harmless at the same point as suggested in the Benign Violation theory (McGraw & Warren, 2010).

The experience of humor is found to be subjective, which also depicts their perception and processing of a particular event or stimulus. People tend to adapt to different humor styles based on personality, situation or any other factor as well. There are four humour styles: affiliative, self-enhancing, self-defeating and aggressive. Affiliative and self-enhancing are adaptive humor styles, while self-defeating and aggressive are maladaptive humor styles. Affiliative humor style aims to bring people together and creates a positive atmosphere, while aggressive humor is used in place of targeting and hurting others. Self-enhancing humor style is used to enhance oneself and cope with challenges and boost resilience, while self-defeating humor is used to gain acceptance at one's own expense.

Humor can vary across culture but has got a consistent relationship with subjective well-being across cultures and ages. Studies suggest that affiliative and self-enhancing humor styles enhance subjective wellbeing, while aggressive and self-defeating humor styles leads to damage of subjective wellbeing (Jiang et al., 2020). Studies also suggest that people with less memory complaints have increased subjective wellbeing (Zuniga et al., 2015). Many studies have also found that incorporating humor while teaching has increased student performance by means of recognition (Suzuki & Heath, 2014).

Memory is used in every aspect of an individual's life. Humor helps to enhance one's memory. It increases attention, emotional connection and violates expectation by triggering deeper processing. Humor reduces stress and helps individuals to have a better lifestyle (Bains et al., 2014).

In order to understand the information in the humor and process it, working memory plays an important role. Working memory is a kind of memory that is used for temporary storage of information, processing and executive functions. It acts as a central workspace for the information to be processed from various sources using various perspectives and helps in reasoning, problem solving, decision making and language comprehension. Hence it is said that working memory is an essential component for healthy functioning of an individual. While stress and aging can impact working memory negatively, humor might help reduce the stress and helps aged individuals to increase learning ability, delayed recall and helps improve age related memory deficiencies (Bains et al., 2014).

Since both in working memory and humor styles the individual's perspectives and processing of information plays a very important role, it is important to assess the relationship between the different humor styles and the working memory. Hence, in the present study we are trying to find the relationship between the working memory and the humor styles adapted by individuals.

## **METHODOLOGY**

### *Aim*

To assess the relationship between humor styles adapted by individual with their working memory.

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### *Objective*

The objective of the study is to assess the relationship between humor styles and working memory of individuals. The study also tries to assess if there is any significant difference in working memory and humor styles adapted by individuals based on their gender.

### *Rationale of the Study*

Individuals normally use humour to remember their past experience or learnings, and is also used as a coping mechanism at times. Many researches have been done on the context to ensure that we normally use humour styles to enhance our memory of a particular stimulus. The humour styles that an individual adapts to, also has an impact on their daily functioning and wellbeing, hence we can say that it might also influence our memory. Working memory, plays an important role and is often connected to intelligence, information processing, executive function, comprehension, problem-solving, and learning, in people ranging from infancy to old age and in all sorts of animals. Hence it is important to assess the humour style and the significant influence it has on the working memory of an individual.

### *Hypothesis*

- H1 – There is a significant correlation between the humor styles and working memory of an individual.
- H2 – Gender has a significant impact over the humor styles adapted by individuals.
- H3 – There is a significant difference in the working memory of individuals based on their gender.

### *Sample*

A total of 60 young adults were involved in the study within the age range of 18 – 25. People from various parts of India participated in this study. Convenience sampling was used to select the samples for the current study.

### *Instruments*

Two measures were used in this study,

- **Humor Style Questionnaire (HSQ)**, This is a 32-item scale that is designed to measure the four types of humor styles: affiliative, self-enhancing, self-defeating and aggressive. This scale has good psychometric properties such as reliability and validity (Martin et. al., 2003).
- **Working Memory Questionnaire (WMQ)**, This is a 30-item scale that is designed to measure working memory with respect to three dimensions: short-term storage, attention, and executive control. The questionnaire was found to be having good internal consistency and concurrent validity, and also has got good reliability (Vallat et. al., 2012).

### *Procedure*

The current study is a correlational study and the data was collected using online survey method. The questionnaires were shared with multiple individuals and they participated with consent. The assessment of humor styles was done using Humor Style Questionnaire (HSQ) and assessment of working memory was done using Working Memory Questionnaire (WMQ). The collected data was entered in MS Excel and then analyzed using SPSS. Pearsons Correlation was used to analyze the relationship between humor styles and working memory. Independent sample t-test was used to do the differential analysis of humor styles and working memory with respect to gender. Informed consent was taken from

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the participants before participating in the assessment. The data and responses of each participant was handled with confidentiality.

### RESULTS AND DISCUSSION

The data collected using survey method was analyzed using the excel and SPSS software. The first hypothesis of the research was that there is a significant correlation between working memory and humor styles adapted by individuals. Pearson's correlation was used to do the correlational analysis between the humor styles and working memory. The below table depicts the correlational analysis of the variables.

**Table No. 1: Pearson's Correlation of humor styles and working memory.**

		Affiliative Total	Self-Enhancing Total	Aggressive Total	Self-Defeating Total	Attention Total	Executive Total	Storage Total	Working Memory Total
Affiliative Total	Pearson Correlation	1	.532**	-.188	-.115	-.241	-.326*	-.293*	-.320*
	Sig. (2-tailed)		.000	.151	.380	.064	.011	.023	.013
	N	60	60	60	60	60	60	60	60
Self-Enhancing Total	Pearson Correlation	.532**	1	-.217	.253	-.041	-.064	-.077	-.068
	Sig. (2-tailed)	.000		.095	.051	.757	.628	.561	.605
	N	60	60	60	60	60	60	60	60
Aggressive Total	Pearson Correlation	-.188	-.217	1	.236	-.103	.100	.026	.009
	Sig. (2-tailed)	.151	.095		.070	.434	.446	.842	.943
	N	60	60	60	60	60	60	60	60
Self-Defeating Total	Pearson Correlation	-.115	.253	.236	1	.226	.374**	.331**	.347**
	Sig. (2-tailed)	.380	.051	.070		.082	.003	.010	.007
	N	60	60	60	60	60	60	60	60
Attention Total	Pearson Correlation	-.241	-.041	-.103	.226	1	.745**	.668**	.892**
	Sig. (2-tailed)	.064	.757	.434	.082		.000	.000	.000
	N	60	60	60	60	60	60	60	60
Executive Total	Pearson Correlation	-.326*	-.064	.100	.374**	.745**	1	.702**	.905**
	Sig. (2-tailed)	.011	.628	.446	.003	.000		.000	.000
	N	60	60	60	60	60	60	60	60
Storage Total	Pearson Correlation	-.293*	-.077	.026	.331**	.668**	.702**	1	.891**
	Sig. (2-tailed)	.023	.561	.842	.010	.000	.000		.000
	N	60	60	60	60	60	60	60	60
Working Memory Total	Pearson Correlation	-.320*	-.068	.009	.347**	.892**	.905**	.891**	1
	Sig. (2-tailed)	.013	.605	.943	.007	.000	.000	.000	
	N	60	60	60	60	60	60	60	60

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

The analysis done using Pearson's correlation for humor styles and working memory suggested that there is a significant correlation between working memory and humor styles

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adapted by individuals. From the above table, we can observe that affiliative humor style and working memory has got a significant negative correlation (-0.320), while self-defeating humor styles and working memory has got a significant positive correlation (0.347). This shows that people who mostly adapt to affiliative humor styles will have negative effect over their working memory when compared to people adapting to self-defeating humor styles.

From the correlation matrix, it can also be observed that individuals who have adapted to affiliative humor style have got a significant negative correlation with executive (-0.326) and storage (-0.293) components of working memory. People adapting to self-defeating humor style have got a significant positive correlation with execution (0.374) and storage (0.331) components of working memory.

Apart from this, it was also observed that affiliative and self-enhancing humor styles have got a significant moderate positive correlation, while self-enhancing and self-defeating humor styles have scored significantly weak positive correlation. Working memory has also got significantly strong positive correlation with its components such as attention (0.892), executive (0.905) and storage (0.891).

Hence, we can say that the first hypothesis suggesting humor styles adapted by individuals and working memory has a significant correlation is found to be correct.

**Table No. 2.1: Group statistics in independent sample t-test depicting working memory and humor styles as test variables and Gender as grouping variable.**

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Working Memory Total	Male	27	41.15	19.054	3.667
	Female	33	44.55	18.631	3.243
Affiliative Total	Male	27	38.33	5.718	1.100
	Female	33	39.12	7.088	1.234
Self-Enhancing Total	Male	27	104.85	16.615	3.198
	Female	33	105.70	15.467	2.692
Aggressive Total	Male	27	29.44	7.587	1.460
	Female	33	24.85	6.073	1.057
Self-Defeating Total	Male	27	29.96	7.377	1.420
	Female	33	29.33	7.885	1.373

In order to do differential analysis, independent sample t-test was used as a statistical tool. The above table 2.1 shows that in the total sample population of 60 individuals, 27 were male and 33 were female. From the mean scores between the two genders, we can see that working memory scores are higher in female when compared with male. It is also seen that male have higher mean scores in adapting to aggressive humor styles when compared with female.

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**Table No. 2.2: Independent sample t-test depicting variance, significance and mean difference between the grouping variable gender and test variables working memory and humor styles**

		Levene's Test for Equality of Variances		t-test for Equality of Means				95% Confidence Interval of the Difference		
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Working Memory Total	Equal variances assumed	.194	.661	-.696	58	.489	-3.397	4.884	-13.174	6.380
	Equal variances not assumed			-.694	55.162	.491	-3.397	4.895	-13.207	6.413
Affiliative Total	Equal variances assumed	2.201	.143	-.466	58	.643	-.788	1.689	-4.169	2.593
	Equal variances not assumed			-.477	57.994	.635	-.788	1.653	-4.097	2.521
Self-Enhancing Total	Equal variances assumed	.637	.428	-.204	58	.839	-.845	4.150	-9.152	7.462
	Equal variances not assumed			-.202	53.917	.841	-.845	4.180	-9.226	7.536
Aggressive Total	Equal variances assumed	.372	.544	2.607	58	.012	4.596	1.763	1.067	8.125
	Equal variances not assumed			2.550	49.379	.014	4.596	1.803	.974	8.218
Self-Defeating Total	Equal variances assumed	.026	.872	.317	58	.753	.630	1.988	-3.350	4.609
	Equal variances not assumed			.319	56.916	.751	.630	1.975	-3.325	4.584

The second and the third hypothesis were that gender has a significant impact over the working memory and humor styles adapted by individuals. From table 2.2, we can observe that gender has a significant impact over humor styles adapted by the individuals but not on their working memory.

Analyzing the data with regard to second hypothesis, we can see that the data assumes equal variance but is not statistically significant. The mean difference (-3.397) shows that female individuals have higher working memory when compared to individuals who are male. But this value might be due to chance or any other factor that could have an influence on working memory and not purely due to the manipulation caused by the variable gender. Hence, we can say that the second hypothesis depicting that gender has a significant impact over working memory might be rejected according to the current research. Recent studies have found a contradictory result that male have better visual working memory than female (Pauls et al., 2013). In a study, it was also found that there is a significant sex difference in working memory and that males have better recall despite of distractions and female perform better than male in visual working memory which is inconsistent previous research (Harness et al., 2008).

From the above table, it is also observable that the third hypothesis is proven to be right, depicting gender has a significant impact over humor styles adapted by individuals. From the analysis done we assume equal variance of data with respect to gender and humor styles. The mean difference for affiliative humor style (-0.788) and self-enhancing humor style (-0.845) depicts that the adaptive humor styles are more likely to be adapted by females than males, but the data might not be statistically significant, which insists that there might be other external factors that could influence the humor styles adapted by individuals and the score is not purely due to the influence of the independent variable gender.

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The aggressive humor style is found to be having a statistically significant mean difference (4.596) showing that males are more likely to adapt to aggressive humor styles when compared to females. Studies have also found that males tend to use more aggressive humor styles and also in places of intrasexual competitions (Duarte, 2020).

The self-defeating humor style does not assume equal variance with respect to gender and it does not have a statistically significant mean difference (0.630) between males and females adapting self-defeating humor styles. But it can be seen that males are more likely to adapt self-defeating humor styles. Hence, we can say that maladaptive humor styles are mostly adapted by males when compared to females. Previous studies have assessed that females are more likely to adapt self-enhancing humor style while males adapt to aggressive humor mostly (Çelik, 2020).

Hence, we can say that the third hypothesis depicting, gender has a significant impact over humor styles adapted by individuals, is proven to be correct. It can also be observed that adaptive humor styles are more likely to be adapted by females than males and maladaptive humor styles are more likely to be adapted by males than females.

Study also helped to make other interesting findings with respect to settlement type and extraversion.

**Table No. 3. Differential analysis of working memory and humor styles having grouping variable as settlement (Rural/ Urban)**

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Working Memory Total	Equal variances assumed	.173	.679	-.110	58	.912	-.598	5.414	-11.436	10.240
	Equal variances not assumed			-.113	30.922	.911	-.598	5.286	-11.381	10.185
Affiliative Total	Equal variances assumed	.890	.349	-1.340	58	.186	-2.465	1.840	-6.149	1.218
	Equal variances not assumed			-1.436	34.228	.160	-2.465	1.717	-5.954	1.024
Self-Enhancing Total	Equal variances assumed	.979	.327	-1.074	58	.287	-4.874	4.538	-13.958	4.210
	Equal variances not assumed			-1.003	25.763	.325	-4.874	4.861	-14.871	5.122
Aggressive Total	Equal variances assumed	.263	.610	1.396	58	.168	2.825	2.024	-1.226	6.875
	Equal variances not assumed			1.557	37.667	.128	2.825	1.814	-.849	6.499
Self-Defeating Total	Equal variances assumed	.034	.855	.469	58	.641	1.027	2.193	-3.362	5.416
	Equal variances not assumed			.475	30.248	.638	1.027	2.163	-3.389	5.443

From the above analysis we can observe that people from rural settlements (n = 17) are more probably to adapt to self-defeating and aggressive humor styles. It can also be observed that people from urban settlements (n = 43) are more probably to adapt to self-enhancing and affiliative humor styles. It is also found that people from urban settlements are more likely to

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have better working memory than people from rural settlements. These findings may not be statistically significant as the scores does not much variance as well. Previous findings suggest that people from rural settlements have better working memory than people from urban settlements (Tine, 2014).

The below table depicts the differential analysis of working memory and humor styles with respect to extraversion. People who identify themselves as extrovert (n = 10) and introvert (n = 13) were differentially diagnosed. Even though the analysis was not statistically significant, it was found that people who are introverts were having better working memory than people who identify themselves as extroverts. It was also found that individuals who find themselves as extroverts are more likely to adapt self-enhancing and affiliative humor styles than people who identify themselves as introverts. People who identify themselves as introverts are more likely to adapt to maladaptive humor styles than people who identify themselves as extroverts. A study suggested that extroverts are more likely to use many humor styles than introverts which is consistent with the findings as well (Jauregui, 2017).

**Table No. 4. Differential analysis depicting working memory and humor styles as testing variables and extraversion as grouping variable.**

		Levene's Test for Equality of Variances		t-test for Equality of Means			95% Confidence Interval of the Difference			
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Working Memory Total	Equal variances assumed	10.056	.005	.380	21	.708	2.715	7.144	- 12.142	17.572
	Equal variances not assumed			.356	13.885	.727	2.715	7.620	- 13.641	19.071
Affiliative Total	Equal variances assumed	.574	.457	- 1.309	21	.205	-3.946	3.014	- 10.215	2.323
	Equal variances not assumed			- 1.295	18.655	.211	-3.946	3.048	- 10.333	2.440
Self- Enhancing Total	Equal variances assumed	4.601	.044	-.797	21	.434	-4.938	6.193	- 17.816	7.940
	Equal variances not assumed			-.837	20.815	.412	-4.938	5.899	- 17.213	7.336
Aggressive Total	Equal variances assumed	.128	.725	-.867	21	.396	-2.546	2.937	-8.654	3.561
	Equal variances not assumed			-.828	15.490	.420	-2.546	3.076	-9.083	3.991
Self- Defeating Total	Equal variances assumed	.003	.954	-.501	21	.622	-1.800	3.595	-9.275	5.675
	Equal variances not assumed			-.515	20.898	.612	-1.800	3.497	-9.074	5.474



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The limitations for the current research include were age limit that included only young adults, geographical area limited to individuals from different states of India. Population was also a major limiting factor for the current research.

The future research can be done with larger population from various parts of India and the world. The increase in population could have a significant change in the results of the current research.

### CONCLUSION

Hence the current research has shown that there is a significant correlation between working memory and the humor styles adapted by individuals. Gender also plays a very important role in individuals adapting to different humor styles. From the above-mentioned analysis of the current research, it was found that gender does have a significant impact over the working memory of individuals which is inconsistent with previous research findings. The other factors might also have an influence over individuals adapting different humor styles and has also influenced their working memory.

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### **Conflict of Interest**

The author(s) declared no conflict of interest.

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