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Examining the relationship between media literacy and memory performance and cognitive health of students

Abstract

This research aims to ascertain the association between media literacy and cognitive health and memory function in Islamic Azad University Kermanshah Branch psychology students. The statistical population for this research is all psychology students enrolled at Islamic Azad University Kermanshah Branch in 2021. The population was estimated to be 384 individuals based on the findings. The stratified random sampling approach was utilized in this investigation, and the sample size calculated using the Cochran formula was 193.cognitive health questionnaire, and the researcher-created performance questionnaire. We used the content validity technique to examine the questionnaire's validity and Cronbach's alpha method to assess the questionnaire's reliability. The data analysis revealed a media literacy coefficient of 0.691 for memory performance and a media message assessment coefficient of 0.703 for cognitive health. As a result, we find a positive and significant association between media literacy, memory function, and cognitive health in both of the research's key hypotheses. The findings indicate a positive and significant association between targeted media usage, media message appraisal, media consumption, memory function, and cognitive health factors. The current research examines the association between media literacy, cognitive health, and memory function to develop a complete model.

Keywords: *Media Literacy, Cognitive Health, Memory Function, Islamic Azad University*

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Introduction

Today's world is dominated by information and communication technology, as well as the expansion and development of science and knowledge, and this matter has necessitated the use of media literacy by everyone, particularly students, in addition to other abilities (Faghih Aram and Ebrahimi, 2017).

Visual, analytical, and Internet literacy are all connected to media literacy. This concept arose with the development and growth of audio-visual media, and with the development and expansion of social networks, it gained more complicated concepts and aspects. It is a form of skill-based knowledge that enables various types of media and media productions to be identified from one another. Media literacy combines successful media productivity strategies and the ability to discern between media types (Potter, 2020). In today's world, media literacy education consists of a combination of strategies for successful use of media goods and the acquisition of the understanding and attitude necessary to realize this point; In an era of media rivalry, which of these mass media can deliver helpfully and required information to public opinion? As a result, anthropologists, sociologists, linguists, historians, and communication specialists have long argued that the change from oral to written culture strengthened individuals' capacity to govern their life and environment (Buckingham, 2010).

On the other hand, human memory is very delicate and susceptible, influenced by various factors. By evaluating these aspects and minimizing their disruptive effects, memory's power and capacity may be improved. Causes and emotional factors are two aspects that impact memory. People often think more than neutrals in emotionally charged circumstances, both negative and positive. People often forget where they watched a particular film, but they will never forget if there is a fire in the theatre when the film is being shown (Hampson, 2018). Health psychology studies psychological and behavioral processes during health, sickness, and health care. This field is concerned with determining the role of cultural, behavioral, and psychological variables in physical health and illness (Johnston, 1994). Health psychologists may enhance health by working directly with patients or indirectly on large-scale public health projects by studying the psychological aspects that may impact health and employing this science constructively.

In this regard, this study examines the memory function, also known as the information processing system, as the part of the brain responsible for encrypting, classifying, and re-reading information code, all of which affect our future actions, as well as the dimensions of media literacy, which include targeted media use, media message evaluation, and media use technique. Another significant aspect, cognitive health, allows for a more thorough approach. The users and beneficiaries of this type of literacy and skills in contemporary Iranian society, in conjunction with the process of globalization, can move citizens from a passive to a dynamic state via the media, universities, and cultural institutions and force the audience to decide which mass media messages and products are helpful to them and can be exploited and applied. Given the above, this research aims to determine the association between media literacy and cognitive health among psychology students

enrolled at Islamic Azad University's Kermanshah branch in 2021. We presented the following hypotheses in this regard:

The main hypothesis

- There is a significant relationship between media literacy and the cognitive health of psychology students.
- There is a significant relationship between media literacy and the memory function of psychology students.

Sub-hypotheses

- There is a significant relationship between targeted media consumption and psychological students' cognitive health.
- There is a significant relationship between media message evaluation and psychological students' cognitive health.
- There is a significant relationship between students' media consumption and cognitive health.
- There is a significant relationship between students' targeted media consumption and memory function.
- There is a significant relationship between students' evaluations of media messages and their memory performance.
- There is a significant relationship between students' media use and memory function.

In this regard, Diergarten et al. (2021), in their study entitled The Impact of Media Literacy on Children's Learning from Movies and Media, examined the possible impact of media literacy on the role of educational media in children's and the factors influencing that learning. This research aims to determine the influence of media literacy on the acquisition of knowledge via television and hypermedia contexts. Computer tests were used to measure media literacy in a sample of 150 children with a mean age of 5.33 years, with diagnosis and socioeconomic status as independent factors. Even after controlling for other confounding variables such as intellect, hierarchical regression analyses revealed media literacy is a significant predictor of media learning.

In Canada, a study entitled Media Literacy for Children in the Internet Age, undertaken by the Defense Advanced Research Agency in January 2008, is a statistical sample of children under the age of 18. The statistical sample included 5200 children aged 6 to 17 years old who were randomly chosen. The survey method is used to conduct the study. The samples were given media literacy training during a course, a questionnaire was provided to them before the course, and another was given after the session. Consequently, children spend most of their time on mail, messenger, online games, downloading movies and music, blogging, and searching. People may learn and have fun in various ways thanks to new and digital media, and their usage can be helpful and is a prerequisite for good interactive communication. Parental supervision of children and their Internet usage has the most significant impact on media literacy, and parents may serve as excellent role models for children. Children develop media literacy skills when they learn how to protect themselves online, realize their rights, and discern commercial objectives. In their study, Mirani Sargazi et al. (2020) concluded, "Study of the relationship between media literacy management, academic excitement, and students' cognitive creativity in cyberspace," that the relationship between media literacy management, cognitive creativity, and all of its components is positive and meaningful. However, the data indicate an inverse (negative) and significant association between academic enthusiasm and cognitive creativity in general. Educational enthusiasm has an inverse (negative) and significant influence on all four components of cognitive creativity, whereas media literacy management has a positive and significant effect on all four components of cognitive creativity. In their study on The role of parents' media literacy and social identity on students' media consumption, Jafari Bahadori Khosroshahi and Barghi (2018) acknowledge a positive and significant relationship between media literacy of parents and social identity with media consumption in adolescents. Additionally, regression analysis revealed that media access and usage characteristics, capacity to analyze and evaluate, individual and social identity, critical thinking about media messages, and communication with media messages might all predict teenagers' media use. Therefore, focusing on parents' media literacy and social identity might significantly impact teenagers' media intake. Faghih Aram and Ebrahimi (2017) acknowledge in their study titled The relationship between media literacy and information literacy with metacognitive abilities and creativity of students at Islamic Azad University Islamshahr Branch that media literacy and information literacy with metacognitive abilities and creativity is positive and significant. Additionally, media and information literacy have a favorable and significant association with the components of creativity, including fluidity, initiative, adaptability, and expansion. Bani Hashem et al. (2017) stated no significant association between media literacy and information literacy among male and female students in their research entitled comparison and study of media literacy and information literacy among male and female students.

According to Kiarasi and Kiarasi (2016), the results of their research entitled analysis of the position of critical media literacy in the education system, the Ministry of Education pays the most attention in its documents to the component of understanding, and it is a necessary understanding. No policy has been developed to improve the component of communication.

According to the findings of Kiarasi and Kiarasi (2016)'s study, "Analysis of the position of critical media literacy in the educational system," the Ministry of Education pays the most attention in its documents to the component of understanding, which is a critical understanding, and no policy has been developed to improve the communication component.

According to Esmaiel Pounaki et al. (2016), in their study titled "Study of the relationship between media literacy and information literacy of students of communication science, information science, and cognition," the findings indicated that students have an optimal level of media literacy and information literacy. There is a significant direct association between students' economic situation and the variable and its aspects of media literacy. However, pupils' socioeconomic standing is only directly associated with the media literacy variable's "communication ability" feature. Additionally, Pearson's Correlation Coefficient revealed a significant direct correlation between media literacy and information literacy.

In their research "Study of media and information literacy of students of Isfahan University of Medical Sciences," Ashrafi et al. (2013) found that media and information literacy among Isfahan University of Medical Sciences students is above average and relatively desired. However, students poorly initiate research, establish a study subject, and assess a website. In general, both students and educators must pay close attention to the variables impacting the growth of media and information literacy as a fundamental competence for print and electronic media.

Abbasi, Zahra (2013) recognizes the following research findings in her paper titled The link between media literacy and students' health literacy while using the internet (from the viewpoint of students at the University of Tehran and Tehran University of Medical Sciences): Students have an average degree of media literacy and health literacy. Media literacy and health literacy are inextricably linked. Gender does not correlate with media literacy. Gender does not correlate with health literacy. There is a correlation between media literacy and the utilization of health information on the internet.

In their research The study of media literacy status of North Khorasan students in the information society, Shojaei and Amirpour (2012) acknowledge that there is a significant difference in average media literacy between departments, and based on the research findings, these students are average in terms of media literacy level.

Research Methods

In terms of data collecting, this research is a survey since the goal is to look at the link between media literacy, memory function, and students' cognitive health.

In 2020, the statistical population of this research will cover all students at the Kermanshah branch of Islamic Azad University. The population was estimated to be 384 individuals based on the findings. The Stratified Random Sampling technique was utilized in this investigation, and the sample size calculated using Cochran's formula was 193. The questionnaire results were examined using descriptive statistics (frequency, percentage, mean and standard deviation) and inferential statistics such as Kolmogorov-Smirnov, Pearson correlation coefficient, and KMO-Bartlett test.

The media literacy variable was assessed using the Ashrafi Rizi et al. (2014) Media Literacy Questionnaire. This questionnaire is based on the UNESCO Media Literacy Indicators and uses a 5-point Likert scale ranging from strongly agree (5 points) to strongly disagree (5 points) (score 1). The researcher-created memory function questionnaire consists of a series of words and phrases that you rate on a scale of how simple or difficult they are to learn and recall. Additionally, a five-point scale is included. Mahdad et al. (2012) reported Cronbach's alpha for nine subscales and the entire questionnaire in the Cognitive Health Questionnaire. Total questionnaire 94%, external goals created 76%, opportunity to control 59%, opportunity to use skills 89%, environmental diversity 66%, environmental clarity 56%, access to money 50%, physical security 79%, opportunity to contact others 88% and valuable social status 92%. Total questionnaire 94%, external goals created 76%, opportunity to control 59%, opportunity to use skills 89%, environmental diversity 66%, environmental clarity 56%, access to money 50%, physical security 79%, opportunity to contact others 88% and valuable social status 92%. Mahdad (2010) reported a Cronbach's alpha of 87%, and Mahdad et al. (2012) reported a Cronbach's alpha of 94% for this questionnaire. Mahdad et al. (2012) used exploratory component analysis with varimax rotation to build the validity of this questionnaire, based on Kaiser, Mir, and Olkin scales of 92 percent and Bartlett's Test of Sphericity 5306.77, which is significant $p> 0.001$. The examination and amendment of the rotating component matrix revealed that most of the questions are based on the questionnaire's nine content components. We employed the content validity method to determine the questionnaire's validity in this research. The original questionnaire had 63 questions and was sent to ten university professors, managers, and specialists from the standard office. Fifty-seven questions were authorized after certain questionnaire elements were deleted or modified.

The reliability of the measuring instrument (in this case, the questionnaire) is one of its most essential characteristics. This term refers to how measuring devices generate the same findings when subjected to identical circumstances. The Cronbach's alpha method is one of the most often used in determining the questionnaire's reliability (reliability). Table 1-1 contains information on the questionnaire's reliability.

Table 1-1. Questionnaire reliability

Component	Number of Questions	Cronbach's Alpha
Cognitive Health	16	0.770
Memory Function	21	0.733

Media Literacy	20	0.716
Purposeful use of the media	5	0.710
Evaluation of media messages	8	0.724
Method of using the media	7	0.704
Total	57	0.763

Cronbach's alpha correlation coefficient is a number between 0 and 1. The Cronbach's alpha value is more than 0.7 if a questionnaire is reliable, and the closer this number is to 1, the more reliable the questionnaire is (Sarmad, 2011). Table 1-4 shows that the analyzed variables possess the required reliability.

SPSS 24 and AMOS 24 software were used to evaluate and analyze the connection between the variables. Pearson correlation coefficient was employed as a valid indication for identifying the association between variables. Methods such as producing a table, charting, and summarizing the obtained data are used in descriptive statistics to organize and summarize the data. In other words, the descriptive statistics section uses various methods and ideas to create an abstract and visual representation of the observed data using standard figures and tables. The descriptive statistics section evaluated data on the respondents' personal, societal, and professional qualities. The data is analyzed using descriptive statistics such as frequency indices, relative frequency, cumulative frequency percentage, mean, standard deviation, coefficient of variation, minima, and maxima.

First, the media literacy desired by each student was determined. Then the relationship between this index (media literacy) and memory function and psychological health was examined to review the data and answer the research questions using the analysis of the questionnaire results and the questionnaire key. The questionnaire results were examined using descriptive statistics (frequency, percentage, mean and standard deviation) and inferential statistics such as Kolmogorov-Smirnov, Pearson correlation coefficient, and KMO-Bartlett test.

Findings

The sample's individual and societal characteristics are investigated and summarized using tables and graphs. These factors include gender, age, level of education, and service history. The data show that 34.20% (66 people) are under the age of 20, 42.49% (82 people) are between the ages of 20 and 25, 15.54% (30 people) are between the ages of 25 and 30, and 7.77% (15 people) are beyond the age of 30. 69.43% (134 people) of these individuals have a bachelor's degree, 21.76% (42 people) have a master's degree, and 8.81% (17 people) have a Ph.D.

We utilized the Kolmogorov-Smirnov test to determine the normality of the variable distribution. The null hypothesis is that the variable distribution is normal in this test. If the significance level of the test is less than 0.05, we reject the null hypothesis and conclude that the desired variable's distribution is not normal.

Table 1-2. Results of the Kolmogorov-Smirnov test were used to determine if data conform to the normal distribution

Variables	**Smirnov-Kolmogorov statistic value**	**Significance Level**
Cognitive Health	0.142	0.289
Memory Function	0.211	0.310
Media Literacy	0.134	0.259
Purposeful use of the media	0.125	0.197
Evaluation of media messages	0.095	0.112
Method of using the media	0.142	0.289
Evaluation of media messages	0.068	0.087

According to Table 1-2, since all variables have a significance level greater than 0.05, we may infer that they all follow a normal distribution.

The Pearson correlation coefficient is used to assess the correlation between variables since the normal data distribution. The Pearson correlation coefficient was utilized to explore the research's primary and secondary hypotheses, the most critical statistical analysis aspect. The Pearson correlation coefficient between variables is shown in Tables 1-3.

Table 1-3. Pearson correlation coefficient

	Cognitive Health	Memory Function	Media Literacy	Purposeful use of the media	Evaluation of media messages	Method of using the media
Cognitive Health	1	0.614 **	0.574 *	0.729 *	0.606 **	0.564 *
Memory Function	0.614 **	1	0.559 **	0.657 *	0.649 **	0.679 *
Media Literacy	0.574 *	0.559 **	1	0.535 **	0.626 *	0.563 **
Purposeful use of the media	0.729 *	0.657 *	0.535 **	1	0.723 **	0.588 *
Evaluation of media messages	0.606 **	0.649 **	0.626 *	0.723 **	1	0.623 *
Method of using the media	0.564 *	0.679 *	0.563 **	0.588 *	0.623 *	1

The correlation coefficients between the variables are shown in Tables 1-3. Correlation coefficients with a * sign are significant at the 0.05 level, while those with a ** sign are significant at the 0.01 level.

The following section examines the factor structure of all variables. The results are from the KMO-Bartlett test.

Following that, the structural equation model in standard estimate mode will be addressed; however, the multivariate distribution of data and its normalcy is a point of contention that researchers often overlook, resulting in incorrect findings. The most frequently used approach for estimating parameters and their standard errors, namely maximum likelihood, is predicated on the assumption that multivariate is normal. Because the assumption of multivariate normality is not established in this research, bootstrapping may be used to evaluate many models with the same data and pick the best-suited one. Bootstrapping, as a technique based on retesting a sample in a circumstance where the assumption of multivariate normality has been broken, may assist in more precisely estimating the parameters and associated standard error.

Table 1-4. Investigating the relationships between variables using structural equation modeling

Hypothesis number	Hypothesis	Standardized Coefficient	Unstandardized Coefficient	T-Value	Significance Level	Result
Main Hypothesis 1	There is a positive and significant relationship between media literacy and cognitive health of psychology students of Islamic Azad University Kermanshah Branch in 2020.	0.634	0.527	4.267	0.002	Approved
Main Hypothesis 2	There is a positive and significant relationship between media literacy and memory performance of Islamic Azad University Kermanshah Branch psychology students in 2020.	0.691	0.613	5.416	0.014	Approved
Sub-hypothesis 1	There is a positive and significant relationship between targeted media use and cognitive health of Islamic Azad University Kermanshah Branch psychology students in 2020.	0.716	0.694	6.827	0.021	Approved

Sub-hypothesis 2	There is a positive and significant relationship between media message evaluation and cognitive health of Islamic Azad University Kermanshah psychology students in 2020.	0.703	0.676	6.120	0.003	Approved
Sub-hypothesis 3	There is a positive and significant relationship between media use and cognitive health of Islamic Azad University Kermanshah psychology students in 2020.	0.681	0.534	5.267	0.016	Approved
Sub-hypothesis 4	There is a positive and significant relationship between targeted media use and memory performance of Islamic Azad University Kermanshah psychology students in 2020.	0.711	0.681	6.237	0.020	Approved
Sub-hypothesis 5	There is a positive and significant relationship between media message evaluation and memory performance of Islamic Azad University Kermanshah psychology students in 2020.	0.673	0.544	4.910	0.019	Approved
Sub-hypothesis 6	There is a positive and significant relationship between media use and memory performance of Islamic Azad University Kermanshah psychology students in 2020.	0.655	0.433	6.530	0.004	Approved

The model fit indices are shown in Tables 1-5. According to the findings and their comparison to the intended range shown in the table, it can be concluded that all of the above model's fitness indicators fall within this range, and the percentage of data acquired using the model is desirable. As a result, the structural equation model's suitability is established.

Table 1-5. Structural equation model fit indices

	Result	Statistical Value	Index Title
Chi-squared	Model approval	2.364	$\frac{x^2}{df}$
Root Mean Square Error of Approximation	Model approval	0.032	RMSEA
Root Mean Square Residual	Model approval	0.120	RMR
Goodness of Fit	Model approval	0.916	GFI
Adjusted Goodness of Fit Index	Model approval	0.929	AGFI
Normed Fit Index (Bentler-Bonnet)	Model approval	0.937	NFI
Comparative Fit Index	Model approval	0.918	CFI
Incremental Fit Index	Model approval	0.900	IFI

Fig 1-1 shows the fit of the structural model of the research

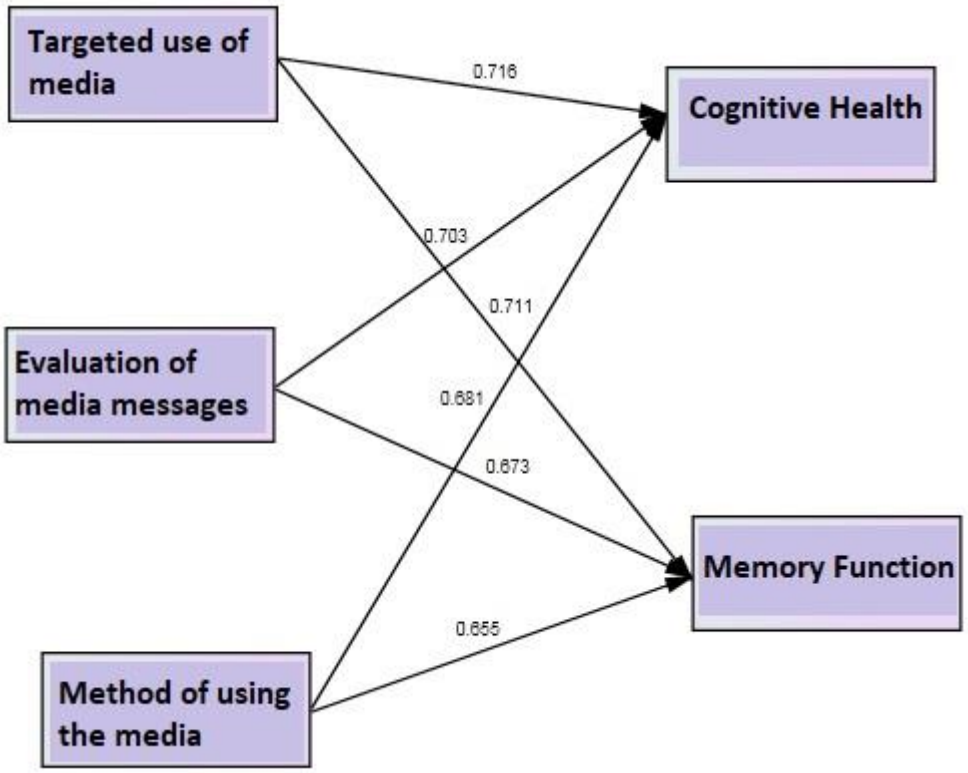

Figure 1-1. Analysis of structural equation research model

Conclusion

The definition of literacy has altered with the arrival of the twenty-first century and the rise of the knowledge-based society. Literacy no longer refers to the ability to read and write; it also encompasses digital literacy, information literacy, and media literacy. Given that the definition and degree of literacy have changed today, all members of society must be literate in a new sense. A person who can read and write and even has a university degree but does not understand how to utilize and search the internet, or is unable to comprehend media messages, is not regarded as literate in the modern period. The current research examines the relationship between media literacy, cognitive health, and memory function, intending to develop a complete model. The following sections evaluate and discuss the hypothesis test's results.

discussion

Main Hypothesis 1: There is a positive and significant relationship between media literacy and cognitive health of psychology students of Islamic Azad University Kermanshah Branch in 2020.

According to Table 4-25, the impact of media literacy on cognitive health is 0.634, and since the significance level is 0.002 and less than 0.05, it can be concluded that media literacy has a positive influence on cognitive health during the analysis of the data and it is meaningful. As a result, we conclude that primary hypothesis 1 is true. These findings corroborate Abbasi, Zahra (2013), Shojaei, and Amirpour (2012), Dichoolen et al. (2021), Myrafyvashtayn (2020), and James Potter (2019).

Main Hypothesis 2: There is a positive and significant relationship between media literacy and memory performance of Islamic Azad University Kermanshah Branch psychology students in 2020.

According to Table 4-25, the coefficient of influence of media literacy on memory performance is 0.691, which is less than 0.05 according to the significant threshold of 0.014. After examining the data, it is clear that media literacy has a positive and significant influence on memory performance, implying that primary hypothesis 2 is verified.

Sub-hypothesis 1: There is a positive and significant relationship between targeted media use and cognitive health of Islamic Azad University Kermanshah Branch psychology students in 2020.

According to Table 4-25, the impact factor of focused media usage on cognitive health is 0.716, and its significance level is 0.021, which is less than 0.05, indicating that targeted media use has a positive and significant influence on cognitive health. As a result, sub-hypothesis one is verified.

Sub-hypothesis 2: There is a positive and significant relationship between media message evaluation and cognitive health of Islamic Azad University Kermanshah psychology students in 2020.

According to Table 4-25, the impact factor of media message evaluation on cognitive health is 0.703, and with a significance level of 0.003 and less than 0.05, we conclude that media

message evaluation has a positive and significant effect on cognitive health and thus the hypothesis sub-hypothesis two is approved.

Sub-hypothesis 3: There is a positive and significant relationship between media use and cognitive health of Islamic Azad University Kermanshah psychology students in 2020.

According to Table 4-25, the impact factor of media usage on cognitive health is 0.681, and its significance level is 0.016, which is less than 0.05, indicating that media use has a positive and significant effect on cognitive health. As a result, sub-hypothesis three is verified.

Sub-hypothesis 4: There is a positive and significant relationship between targeted media use and memory performance of Islamic Azad University Kermanshah psychology students in 2020.

According to Table 4-25, the impact factor of targeted media usage on memory performance is 0.711, and since the level of significance is equal to 0.020 and less than 0.05, targeted media use has a positive and significant effect on memory performance; therefore hypothesis sub-hypothesis four is confirmed.

Sub-hypothesis 5: There is a positive and significant relationship between media message evaluation and memory performance of Islamic Azad University Kermanshah psychology students in 2020.

According to Table 4-25, the effect factor of media message assessment on memory performance is 0.673, which is less than 0.05 due to its significant threshold of 0.019. Consequently, analyzing the media message has a significant positive effect on memory performance, confirming sub-hypothesis 5.

Sub-hypothesis 6: There is a positive and significant relationship between media use and memory performance of Islamic Azad University Kermanshah psychology students in 2020.

According to Table 4-25, the impact factor of media usage on memory performance is 0.655, and since the level of significance is less than or equal to 0.004, we conclude that media use has a positive and significant effect on memory performance; therefore the hypothesis sub-hypothesis six is approved.

With the advancement of new information and communication technologies, new opportunities and perspectives for community development in various disciplines have been created. However, a new set of competencies is necessary to use these technologies' possibilities, including skills, knowledge, and attitudes toward that technology. Although it is sometimes considered that students have appropriate health literacy, this research discovered that most students had poor and insufficient cognitive health. Moreover, the data indicate that most students obtained knowledge regarding disease and health through the internet. As a result of students' strong interest, programs and information linked to illness and health might be made available to them through the internet and social media. Students like to gain their academics via connection with their pals due to their sense of confidence and private setting. It is advised that positive currents be generated by investigating the impacts of this critical component. When students from low- and middle-income families lack access to the media, they inevitably lose access to other aspects of media literacy. They are less likely to participate in information processing when they utilize a variety of media and applications and frequently consume the material that does not need sophisticated analysis and is simple to comprehend. Consequently, when kids do not make active choices, their information processing abilities stay underdeveloped, and their media literacy remains low. According to the Knowledge Gap hypothesis, as the loss of mass media information to the social system increases, sections of the population with higher economic and social status acquire this information faster than sections of the people with lower status, increasing rather than decreasing the gap in awareness between these sectors.

Concerning the study's limitations, it should be noted that because of the spread of Covid 19 at the time of the surveys and the lack of courses, the sampling technique was altered from random sampling to convenience sampling in the research design, which may affect the results of research to some extent.

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