

Relaxation Techniques on Meta-Cognition among Higher Secondary Students

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Abstract

The aim of the present study is to find out the impact of relaxation techniques on meta-cognition among the higher secondary students. Meta-cognition which essentially means cognition signifies the first order cognitive control and monitoring of cognitive processes (Papaleontiou-Louca, 2003). Referring to higher order thinking which includes active control over the cognitive processes engaged in learning (Sonowal and Kalita, 2017). Meta-cognition is explained as one's own knowledge of his/her cognitive processes and outcomes or anything related to them (Flavell, 1976). Cognition involves perceiving, understanding, remembering and so on, while meta-cognition is a process which includes individual's own perception, understanding, remembering etc. (Papaleontiou-Louca, 2003). Relaxation training teaches us the posture, breathing, thinking, and muscle release to support emotions of safety and rest over those related to life stressors. Relaxation is a learned skill. As we practice, we will be able to recall a more relaxed feeling whenever we need it. Hence, the present study is focusing on relaxation behavior on meta-cognition among school students at higher secondary level. Reading books / news papers, watching movies, listening music, playing games and chatting with friends are considered as relaxation techniques in the present study, which are commonly used by the students. The data were collected using personal proforma and Meta-Cognition Questionnaire from 1023 higher secondary students (both 11th and 12th standard) from Govt. / Govt. Aided / Private higher secondary schools in and around Coimbatore District. The collected data were analyzed using descriptive and differential statistical tools. Finally the study concludes that the relaxation techniques like reading books, watching movies, listening music, playing games and chatting with friends are influencing on meta-cognition among the selected higher secondary students.

KEYWORDS: Relaxation Techniques, Meta-cognition, Higher Secondary Students.

INTRODUCTION

The concept of meta-cognition is of recent origin in cognitive theory. It is the process of thinking about thinking” and knowing “what we know” and “what we don't know”. It refers to higher order mental processes involved in learning, such as making plans for learning, using appropriate skills and strategies to solve a problem, making estimates of performance and calibrate the extent of learning. It consists of two basic processes occurring simultaneously: monitoring one's progress as one learns and making changes and adapting one's strategies if one perceives one is not doing so well (Winn and Snyder, 1996).

Meta-cognition is a very complex phenomenon. It is a combination of two words: Meta and Cognition. A meta was one of the conical column set on the ground at each end of the circus in Rome to mark the turning point in the race. Similarly, the concept of meta-cognition can be seen as a turning point in our understanding of the mind. The prefix meta refers to something that transcends the subject it is related to whereas

cognition is the internal structure and process that is involved in the acquisition and use of knowledge including sensation, perception, attention, learning, memory, language, thinking and reasoning. It is the ability to retrieve knowledge from memory. Thus, meta-cognition refers to a level of thinking that involves active control over the process of thinking that is used in learning situation.

The term 'meta-cognition' is most often associated with John Flavell. For Flavell (1976) meta-cognition consists of both meta-cognitive knowledge and meta-cognitive experiences or regulation. Meta-cognitive knowledge refers to acquired knowledge about cognitive processes, knowledge that can be used to control cognitive processes. Flavell further divides meta-cognitive knowledge into three categories: (i) person variables or knowledge about one's self and other's thinking (ii) task variables or knowledge that different types of tasks exert different types of cognitive demands and (iii) strategy variables or knowledge about cognitive and meta-cognitive strategies for enhancing learning and performance. Meta-cognitive experiences involve the use of meta-cognitive strategies or meta-cognitive regulation. Meta-cognitive strategies are sequential processes that one uses to control cognitive activities and to ensure that a cognitive goal (understanding a text) has been met. These processes help to regulate and oversee learning and consist of planning and monitoring cognitive activities as well as checking the outcomes of those activities.

Soon after Flavell's introduction, interest in meta-cognition flourished. Brown (1980) applied meta-cognitive theory to reading and differentiated between cognitive and meta-cognitive processes. She identified the meta-cognitive process as reader controlled strategies that include selecting and studying the most important part of text, selecting retrieval cues and estimating readiness for tests. She also distinguished between knowledge about cognition and regulation of cognition. Knowledge about cognition deals with all the concepts which are related to our thinking processes such as self-concept of knowledge, self-intelligence, self-memory, attention, study habits etc. It can be stable, late developing and remains relatively consistent within individuals. Regulation of cognitive processes includes all those mechanisms through which we regulate our thinking process such as orientation, planning, monitoring, testing, repairing, evaluating, reflecting etc. It can be relatively unstable, age independent and changes rapidly from situation to situation.

Pinard (1991) extends Flavell's definition of meta-cognitive knowledge by distinguishing between factual and strategic meta knowledge. For Pinard, factual meta knowledge not only incorporates the three variables proposed by Flavell but enlarges its scope. According to Pinard, knowledge of meta-cognition consists of: (i) Objective variables which relates to the motivational attitudes that we maintain towards our own learning, (ii) Task variables include problem situations that individuals confront in their everyday lives, (iii) Person variable include cognitive-affective components, such as motivational style, attribution style, self-efficacy and the internal dialogue that one engages in. Pinard's strategic meta knowledge, however, maintains a similar distinction between cognitive and meta-cognitive strategies to the one initially proposed by Flavell where cognitive strategies or production strategies as suggested by Pinard refers to the repertoire of executive strategies that one has at one's disposal for producing a desired result whereas meta-cognitive strategies or self regulatory strategies refers to the higher order strategies which serve to supervise and regulate these and other strategies. Pinard

suggests that self regulation is the key to unifying and integrating the processes at work in meta-cognitive activity, since it functions essentially to co-ordinate the multi dimensional intervention of all the strategic and factual meta knowledge components.

Paris et al (1991), while recognizing the rate of self regulation and motivation in meta-cognition, emphasized self awareness and self-efficacy. Zimmerman et al (1992), on the other hand, while noting the importance of motivation and self-efficacy to self regulation posed that self regulation differentiates between academic success and failure. Thus, meta-cognition tends to be interpreted as a process in head, rather than as interactive one.

NEED AND SIGNIFICANCE OF THE STUDY

Relaxation is a state where we feel calm and able to manage day-to-day life. If we have a busy life, this can be difficult. Relaxation has many mental and physical health benefits, and the techniques can be practiced almost anywhere. Relaxation reduces stress and the symptoms of mental health conditions like depression, anxiety and schizophrenia. Relaxation also has other related health benefits, like lowering heart rate, blood pressure and breathing rate, reducing muscle tension and chronic pain, improving concentration and mood, reducing fatigue, reducing anger and frustration and boosting confidence to handle problems etc. Relaxation techniques are generally considered safe for healthy people. However, occasionally, people report negative experiences such as increased anxiety, intrusive thoughts, or fear of losing control.

People sometimes conflate relaxation with laziness, but relaxation is active. For example, participating in an enjoyable activity can have a more relaxing and lasting effect than sitting around bored. However, it is important to see that rest and relaxation refreshes and restores our creativity and energy when we have been working hard. Learning to relax effectively will support our productivity, physical health, and positive emotions. Relaxation training teaches us the posture, breathing, thinking, and muscle release to support emotions of safety and rest over those related to life stressors. Relaxation is a learned skill. As we practice, we will be able to recall a more relaxed feeling whenever we need it. Hence, the present study is focusing on relaxation behavior on meta-cognition among school students at higher secondary level. Reading books / news papers, watching movies, listening music, playing games and chatting with friends are considered as relaxation techniques in the present study, which are commonly used by the students.

DESIGN OF THE STUDY

Considering the objectives of the study, the survey method was adopted. The higher secondary students who were studying 11th and 12th standard in Coimbatore District were the population for the study. The investigator selected 1023 samples from Government, Government Aided and Private Higher Secondary Schools in and around of Coimbatore district using simple random sampling method. The data were collected from all 1023 samples using Meta-Cognition Questionnaire, which is adopted from Suresh, G. 2016. It has totally 28 items with five point ratings like Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree. All items are positive items. There are five factors like Preparatory activities for learning, Cognitive strategies during Learning, Self-awareness on thought process, Cognitive Management and Task

Management. Thus, the collected were analyzed using descriptive analysis and one way Anova with the help of SPSS.

RESULTS AND INTERPRETATIONS

Hypothesis – 1: There will be significant mean score difference in Meta-cognition between the groups based on Relaxation Techniques among higher secondary students.

Table – 1: Number, Mean and SD in Meta-cognition between the groups based on Relaxation Techniques among higher secondary students.

Factors in Meta-cognition	Relaxation Techniques	N	Mean	Std. Deviation
Preparatory activities for learning	Reading	241	28.07	3.78
	Watching Movies	217	27.06	5.34
	Listening Music	186	27.32	3.62
	Playing games	159	27.97	3.35
	Chatting with friends	220	28.04	3.80
Cognitive Strategies during learning	Reading	241	25.30	3.31
	Watching Movies	217	23.97	3.65
	Listening Music	186	24.77	3.08
	Playing games	159	25.13	3.26
	Chatting with friends	220	25.84	2.74
Self awareness on thought process	Reading	241	20.54	2.96
	Watching Movies	217	19.56	3.37
	Listening Music	186	20.30	2.74
	Playing games	159	20.64	2.81
	Chatting with friends	220	21.10	2.63
Cognitive Management	Reading	241	20.24	2.94
	Watching Movies	217	19.32	3.16
	Listening Music	186	19.53	2.89
	Playing games	159	19.45	2.94
	Chatting with friends	220	20.21	2.95
Task Management	Reading	241	20.54	3.27
	Watching Movies	217	19.30	3.65
	Listening Music	186	20.75	2.76
	Playing games	159	20.33	2.69
	Chatting with friends	220	20.91	2.64
Meta-cognition (total)	Reading	241	114.27	15.02
	Watching Movies	217	109.21	14.37
	Listening Music	186	112.67	11.50
	Playing games	159	113.52	11.70
	Chatting with friends	220	115.68	13.44

Table 1 shows Number, Mean and SD in Meta-cognition between the groups based on Relaxation Techniques among higher secondary students. According to the table, there are five categories in Relaxation Techniques like reading, watching movies, listening music, playing games and chatting with friends. Each group differs from each other in terms of its numbers, mean and standard deviation. According to the table – 1, among the selected samples, 241 (23.6%) were opted as relaxing through reading books; 217 (21.2%) were watching movies; 186 (18.2%) were listening music; 159 (15.5%) were playing games and 220 (21.5%) were chatting with their friends.

Table – 2: Mean score difference in Meta-cognition between the groups based on Relaxation Techniques among higher secondary students.

Factors in Meta-cognition	Groups	Sum of Squares	Df	Mean Square	F	p-value
Preparatory activities for learning	Between Groups	188.107	4	47.027	2.822	.024
	Within Groups	16961.953	1018	16.662		
Cognitive Strategies during learning	Between Groups	419.162	4	104.790	10.088*	.000
	Within Groups	10574.697	1018	10.388		
Self awareness on thought process	Between Groups	276.774	4	69.193	8.095*	.000
	Within Groups	8701.105	1018	8.547		
Cognitive Management	Between Groups	167.463	4	41.866	4.714*	.001
	Within Groups	9040.081	1018	8.880		
Task Management	Between Groups	346.234	4	86.558	9.243*	.000
	Within Groups	9533.035	1018	9.364		
Meta-cognition (total)	Between Groups	5133.697	4	1283.424	7.085*	.000
	Within Groups	184396.848	1018	181.136		

* Significant at 0.01 level

Table 2 shows mean score difference in Meta-cognition between the groups based on Relaxation Techniques among higher secondary students. According to the table, except the factor preparatory activities for learning, the calculated f-value for all other factors including meta-cognition as total is statistically significant at 0.01 level and hence

hypothesis – 1 is accepted. Further, it is said that the variable Relaxation Techniques does influence on meta-cognition and its factors among higher secondary students.

Table – 3: Scheffe’s post hoc Multiple Comparisons in factor **Cognitive Strategies during learning** (Meta-cognition) between the groups based on Relaxation Techniques among higher secondary students.

Dependent Variable	(I) Relaxation Techniques	(J) Relaxation Techniques	Mean Difference (I-J)	Std. Error	Sig.
Cognitive Strategies during learning	Reading Books	Watching Movies	1.33*	.30	.001
		Listening Music	.53	.31	.578
		Playing games	.18	.33	.990
		Chatting with friends	-.54	.30	.524
	Watching Movies	Reading	-1.33*	.30	.001
		Listening Music	-.80	.32	.192
		Playing games	-1.15*	.34	.020
		Chatting with friends	-1.87*	.31	.000
	Listening Music	Reading	-.53	.31	.578
		Watching Movies	.80	.32	.192
		Playing games	-.36	.35	.902
		Chatting with friends	-1.07*	.32	.025
	Playing games	Reading	-.18	.33	.990
		Watching Movies	1.15*	.34	.020
		Listening Music	.36	.35	.902
		Chatting with friends	-.72	.34	.338
	Chatting with friends	Reading	.54	.30	.524
		Watching Movies	1.87*	.31	.000
		Listening Music	1.07*	.32	.025
		Playing games	.72	.34	.338

* The mean difference is significant at the .05 level.

Table – 3 shows Scheffe’s post hoc Multiple Comparisons in factor Cognitive Strategies during learning (Meta-cognition) between the groups based on Relaxation Techniques among higher secondary students. According to the table, there is a mean significant mean score difference between Reading books and watching movies; playing games and watching movies; chatting with friends and watching movies; listening music and chatting with friends. Hence, it is concluded that the relaxation techniques are influencing factor Cognitive Strategies during learning (meta-cognition) among the selected higher secondary students.

Table – 4: Scheffe’s post hoc Multiple Comparisons in factor **Self Awareness on thought Process** (Meta-cognition) between the groups based on Relaxation Techniques among higher secondary students.

Dependent Variable	(I) Relaxation Techniques	(J) Relaxation Techniques	Mean Difference (I-J)	Std. Error	Sig.
Self awareness on thought process	Reading	Watching Movies	.99*	.27	.012
		Listening Music	.24	.29	.949
		Playing games	-9.17E-02	.30	.999
		Chatting with friends	-.56	.27	.385
	Watching Movies	Reading	-.99*	.27	.012
		Listening Music	-.74	.29	.167
		Playing games	-1.08*	.31	.015
		Chatting with friends	-1.54*	.28	.000
	Listening Music	Reading	-.24	.29	.949
		Watching Movies	.74	.29	.167
		Playing games	-.33	.32	.891
		Chatting with friends	-.80	.29	.111
	Playing games	Reading	9.17E-02	.30	.999
		Watching Movies	1.08*	.31	.015
		Listening Music	.33	.32	.891
		Chatting with friends	-.46	.30	.675
	Chatting with friends	Reading	.56	.27	.385
		Watching Movies	1.54*	.28	.000
		Listening Music	.80	.29	.111

		Playing games	.46	.30	.675
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* The mean difference is significant at the .05 level.

Table – 4 shows that the Scheffe’s post hoc Multiple Comparisons in factor Self Awareness on thought Process (Meta-cognition) between the groups based on Relaxation Techniques among higher secondary students. According to the table, there is a significant mean score difference between Reading books and watching movies; watching movies and playing games; chatting with friends and watching movies. Hence, it is concluded that the relaxation techniques are influencing factor Self Awareness on thought Process (meta-cognition) among the selected higher secondary students.

Table – 5: Scheffe’s post hoc Multiple Comparisons in factor **Cognitive Management** (Meta-cognition) between the groups based on Relaxation Techniques among higher secondary students.

Dependent Variable	(I) Relaxation Techniques	(J) Relaxation Techniques	Mean Difference (I-J)	Std. Error	Sig.
Cognitive Management	Reading	Watching Movies	.92*	.28	.029
		Listening Music	.71	.29	.198
		Playing games	.79	.30	.148
		Chatting with friends	2.70E-02	.28	1.000
	Watching Movies	Reading	-.92*	.28	.029
		Listening Music	-.20	.30	.976
		Playing games	-.12	.31	.997
		Chatting with friends	-.89*	.29	.045
	Listening Music	Reading	-.71	.29	.198
		Watching Movies	.20	.30	.976
		Playing games	8.03E-02	.32	1.000
		Chatting with friends	-.69	.30	.254
	Playing games	Reading	-.79	.30	.148
		Watching Movies	.12	.31	.997
		Listening Music	-8.03E-02	.32	1.000
		Chatting with friends	-.77	.31	.192
	Chatting with	Reading	-2.70E-02	.28	1.00

	friends			0	
		Watching Movies	.89*	.29	.045
		Listening Music	.69	.30	.254
		Playing games	.77	.31	.192

* The mean difference is significant at the .05 level.

Table – 5 reveals that the Scheffe’s post hoc Multiple Comparisons in factor Cognitive Management (Meta-cognition) between the groups based on Relaxation Techniques among higher secondary students. According to the table, there is a significant mean score difference between reading books and watching movies; watching movies and chatting with friends. There is no significant mean score difference between other groups. However, it is concluded that the relaxation techniques are influencing factor Cognitive Management (meta-cognition) among the selected higher secondary students.

Table – 6: Scheffe’s post hoc Multiple Comparisons in factor **Task Management** (Meta-cognition) between the groups based on Relaxation Techniques among higher secondary students.

Dependent Variable	(I) Relaxation Techniques	(J) Relaxation Techniques	Mean Difference (I-J)	Std. Error	Sig.
Task Management	Reading	Watching Movies	1.24*	.29	.001
		Listening Music	-.21	.30	.974
		Playing games	.21	.31	.978
		Chatting with friends	-.37	.29	.794
	Watching Movies	Reading	-1.24*	.29	.001
		Listening Music	-1.45*	.31	.000
		Playing games	-1.03*	.32	.035
		Chatting with friends	-1.61*	.29	.000
	Listening Music	Reading	.21	.30	.974
		Watching Movies	1.45*	.31	.000
		Playing games	.42	.33	.807
		Chatting with friends	-.16	.30	.991
	Playing games	Reading	-.21	.31	.978
		Watching Movies	1.03*	.32	.035
		Listening	-.42	.33	.807

		Music			
		Chatting with friends	-.58	.32	.506
	Chatting with friends	Reading	.37	.29	.794
		Watching Movies	1.61*	.29	.000
		Listening Music	.16	.30	.991
		Playing games	.58	.32	.506

* The mean difference is significant at the .05 level.

Table – 6 exhibits that Scheffe’s post hoc Multiple Comparisons in factor **Task Management** (Meta-cognition) between the groups based on Relaxation Techniques among higher secondary students. According to the table, there is a significant mean score difference between all the groups, which is statistically significant at 0.05 level. Hence, it is concluded that the relaxation techniques are influencing factor Task Management (meta-cognition) among the selected higher secondary students.

Table – 7: Scheffe’s post hoc Multiple Comparisons in **Meta-Cognition** (total) between the groups based on Relaxation Techniques among higher secondary students.

Dependent Variable	(I) Relaxation Techniques	(J) Relaxation Techniques	Mean Difference (I-J)	Std. Error	Sig.
Meta-cognition (total)	Reading	Watching Movies	5.06*	1.26	.003
		Listening Music	1.60	1.31	.828
		Playing games	.75	1.38	.990
		Chatting with friends	-1.41	1.25	.868
	Watching Movies	Reading	-5.06*	1.26	.003
		Listening Music	-3.45	1.34	.160
		Playing games	-4.30*	1.40	.053
		Chatting with friends	-6.47*	1.29	.000
	Listening Music	Reading	-1.60	1.31	.828
		Watching Movies	3.45	1.34	.160
		Playing games	-.85	1.45	.987
		Chatting with friends	-3.01	1.34	.284
	Playing games	Reading	-.75	1.38	.990
		Watching	4.30*	1.40	.053

		Movies			
		Listening Music	.85	1.45	.987
		Chatting with friends	-2.16	1.40	.666
	Chatting with friends	Reading	1.41	1.25	.868
		Watching Movies	6.47*	1.29	.000
		Listening Music	3.01	1.34	.284
		Playing games	2.16	1.40	.666

* The mean difference is significant at the .05 level.

Table – 7 shows that the Scheffe's post hoc Multiple Comparisons in Meta-Cognition (total) between the groups based on Relaxation Techniques among higher secondary students. According to the table, except the groups between listening music and other groups, there is a significant mean score difference between all the groups, which is statistically significant at 0.05 level. Hence, it is concluded that the relaxation techniques are influencing meta-cognition among the selected higher secondary students.

CONCLUSIONS OF THE STUDY

As per the results and interpretations, the present study concludes that there is a significant means score difference in meta-cognition between the groups based on relaxation techniques among the higher secondary students. Hence, it is concluded that the relaxation techniques such as reading books, watching movies, listening music, playing games and chatting with friends are highly influencing meta-cognition among the selected higher secondary students. Further, the findings of the present study recommend that there must be wider scope give to have such a relaxation activities for students. Many research findings proved that the school students at all levels are undergoing very much stressful and anxiety over the academic activities. Especially at higher secondary level, the academic burden is heavy since they have to switch over to higher education sector. Hence, it is an urge that the relaxation techniques must be encouraged among school students in order to avoid academic stress; because then only it is possible to improve their meta-cognitive knowledge.

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