

Effectiveness of Meditation Therapy on The Working Memory and Behavioral Problems of Underachievers at Primary Leve

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Abstract:

Parents are integral part of the early childhood education process. Often educators refer to parents as the child's "first and best teacher". But most of the parents these days, are very busy and it's hard for them to set aside time every night for something like reading a story to their child, have least time to find out if the child is struggling with school?. Many children are associated with difficulties in school, behavioural problems, and negative self- concepts and so on. In this research, researcher is trying identify and work over such problems among underachievers at primary level.

Aim: To compare the mean scores of working memory of Underachievers belonging to meditation Therapy group and control group by considering pre-working memory as a covariate. Pretest-Posttest control group design was used. Purposive sampling technique was used for sample selection. The sample consists of total 40 (20 in experimental group & 20 in control group) which include both boys and girls of age group 6 to 10 years. For find out the behavioral and working memory problems among underachievers Problem Behavior Check-List (PBCL-VD) scale and Six Letter Cancellation Test (SLCT) for measuring the working memory was used. One way ANCOVA was used to find out the effectiveness of the meditation therapy the working memory and behavioral problems of among underachievers at primary level.

Finding and conclusions: findings of the study show the working memory of the under achievers receiving meditation therapy increased effectively, behavioral problems of underachievers receiving meditation therapy decreases effectively.

Keywords: working memory, behavioral problems, mediations, underachievers, primary level.

I. INTRODUCTION

It is very important for parents to stay engaged in their child's learning process even if they are getting most of their education from a daycare, day home, school etc. The knowledge learnt from a parent will be more cherished and remembered by a child, then, if any other person taught them, especially at an early age. Researchers and early childhood educators both view the parents as an integral part of the early childhood education process. Often educators refer to parents as the child's "first and best teacher.

But, most of the parents these days are very busy and it's hard for them to set aside time every night for something like reading a story to their child, have least time to find out whether the child struggle with school? Does he or she dread reading out loud, writing an essay, or tackling a math problem? while every kid has trouble with homework from time to time. They are also faced with violence in school, at home, or on television, which may teach them express their feelings in a violent way (Garbarino, 1995) many are confronted with pressure of divorce, which according to Amato and Keith (1991) may be associated with difficulty in school, behavior problems, negative self-concepts, and problems with peers. These issues have an adverse effect on society's children with the fast paced mentality children may feel there are few resources that will help them cope.

Shastri (2009) in his article writes, according to World Health Organization (WHO) report examines that one in every 5 child has a mental health issue, like underachievers, learning disability, memory problems, and language, expression problems and so on. According to the ten percent of 5-15 year olds have a diagnosable mental health disorder. Around 90% of children with a mental health disorder are not currently receiving any specialist service. As it is rightly said that "Prevention is Better than Cure". It is possible to prevent the majority of behavior disorders in preschool and school environment itself.

Jean Piaget, Erik Erikson, John Dewey and Lucy Sprague Mitchel explained in their theories that the development of child is based on the approach and focuses on learning through discovery. There are five domains for the child developments are as following:

- Physical: physical development includes biological and physical functions, along with eyesight and motor skills
- Social: social development includes child interacts with others Children, understanding of their own responsibilities and rights towards the family and community, as well as ability to relate and work with others.

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- Emotional: emotional development helps emotional connections and develops self-confidence.
- Language: the way in which a child communicates, including how they present their feelings and emotions. At 3 months, children employ different cries for different needs. At 6 months they can recognize and imitate the basic sounds of spoken language. In the first 3 years, children need to be exposed to communication with others in order to pick up language. "Normal" language development is measured by the rate of vocabulary acquisition.
- Cognitive skills: this is the important part in child development as, child organizes information. Cognitive skills include problem solving, creativity, imagination and memory. They embody the way in which children make sense of the world. Piaget believed that children exhibit prominent differences in their thought patterns as they move through the stages of cognitive development: sensor motor period, the pre-operational period, and the operational period.

Though, we are responsiveness towards the mental disorders across the population at the same time we are insensitivity towards the impact of mental disorder. Several researchers are going on in the area of identifying the mental disorders but there are very least studies conducted in the area of therapies, development, training program and implementation in India. The main focus of this study is to draw attention of the parents and teachers on early childhood problems.

Purpose of this study is to review the literature with regard to the enhancing the working memory and sinking behavioral problems of the underachievers with the help of yogic intervention. After intensely studying general literature of the enhancement of the working memory and sinking behavioral problems of the underachievers, the effectiveness of the meditation therapy has been specifically investigated. Few literature reviews are given below. The following research question had guided the review:

- 1) How the working memory and behavioral problems is enhanced & Reduced respectively with meditation therapy?
- 2) How the effectiveness of the meditation therapy is measured?
- 3) What are the difficulties with the current research methods and traditional methods used to research for enhancing the working memory and sinking behavioral problems?

II. LITERATURE REVIEW

Moore and Malinowski (2010) this study investigated the link between meditation, self-reported mindfulness and cognitive flexibility as well as other attentional functions. It compared a group of meditators experienced in mindfulness meditation with meditation – naïve control group. Results suggest that attention performance and cognitive flexibility are positively related to meditation practice and levels of mindfulness. Meditators performed significantly better than non- meditators on all measures of attention. This pattern of results suggests that mindfulness is intimately linked to improvements of attention functions and cognitive

flexibility. The relevance of these findings for mental balance and well-being are discussed.

Pradhan and Nagendra (2010) investigate the effect of two yoga-based relaxation techniques, namely, cyclic meditation (CM) and supine rest (SR), using the six letter cancellation task (SLCT). For assessment SLCT was used before and immediately after both yoga-based relaxation techniques. Results show that after both practices, the total and net scores were significantly increased. The net score change in the CM session was significantly larger than the change in the SR, whereas, there was no significant change in the wrong cancellation score. After either practice, the total and net scores were significantly increased, irrespective of gender and age. Both CM and SR led to improvement in performance, as assessed by SLCT, but the change caused by CM was larger than SR.

Zeidan, Jhonson, Diamond, David and Goolkasian (2010) aimed to out weather the brief mindfulness training effects cognition and mood when compared to an active control group after four sessions of mediation training or listening to a recorded book participants with no prior mediation training were assessed to measures of mood, verbal fluency, visual coding and working memory. Both interventions were effective at improving mood also reduced fatigue, anxiety and increased mindfulness. Moreover, this training significantly improved visuo-spatial process, working memory and executive attention.

Marieke and Amishi (2011) investigated whether mindfulness training (MT) influences information processing in a working memory task with complex visual stimuli. Participants were tested before (T1) and after (T2) participation in an intensive one-month MT retreat, and their performance was compared with that of an age- and education-matched control group. Accuracy did not differ across groups at either time point. Response times were faster and significantly less variable in the MT versus the control group at T2. Mathematical modeling approach was used to analyze, results suggested that MT leads to improved information quality and reduced response conservativeness, with no changes in non-decisional factors. The noisy exemplar model further suggested that the increase in information quality reflected a decrease in encoding noise and not an increase in forgetting. Thus, mathematical modeling may help clarify the mechanisms by which MT produces salutary effects on performance.

Mohan, Sharma and Bjjlani (2011) objective was to study the effects of the mediation on the stress- induced changes in cognitive functions. It was found that computer game stress was associated with a significant increase in physiological (GSR, EMG, HR, QTc/QS2) and psychological (acute stress questionnaire scores) markers of stress. Meditation was associated with relaxation (significant decrease in GSR, EMG, QTc/QS2, and acute stress questionnaire scores). Meditation, if practiced before the stressful event, reduced the adverse effects of stress. Memory quotient significantly increased, whereas cortisol level decreased after both stress meditation. Practice of meditation produce a relaxation even in young adult subject who had never practiced mediation before. The practice of mediation reduced the physiological stress responses without taking away the beneficial effect of stress, namely improving memory.

Kachanathu, Verma and Khanna (2012) conducted a study with the purpose to estimate the contribution of Music Therapy (MT) and Mindfulness Meditation Therapy (MMT) training on shooting performance of shooters. 165 professional male shooters age of 29.5±4.3years were examined in three groups Group A, B, and C, MT, MMT, and as a Control respectively, n= 50±3 in each group. Duration of the study was 4 weeks. Pre and post data of quantitative Performance Score (PS) were analyzed. Results of the study showed positive correlation, highly significant (p<0.0001) post-intervention PS. Ultimately resulted in reduction of competition stress level and increase in PS. Comparatively Group A and B, and group A shown marginal improvement than Group B. Whereas the Control group has been shown non-significant result compare to experimental groups (p<0.05). Study concluded that relaxation therapies such as MT and MMT interventions along with routine sports specific training may decrease Competition Stress (CS) level and will enhance sports performance and also found MT has been shown better effectiveness than MMT in 4 weeks of training.

Van de Weijer-Bergsma, E., Formsmma, A.R., de Bruin, E.I. et al. J Child Fam Stud (2012) they studied on effectiveness of mindfulness training on behavioral problems and attentional functioning in adolescents with ADHD. They provided 8-weeks mindfulness training for adolescents aged 11-15 years with ADHD. After, mindfulness training, adolescents' attention and behavior problems reduced, while their executive functioning improved, as indicated by self-report measures as well as by father and teacher report.

Jared and Robert (2013) the current study examined that the effect of mediation on the knowledge retention of students. Three experimental studies were conducted where participants were given mediation training, rest and listening to a class lecture. To assess the student's knowledge post-lecture quiz was conducted. The results indicated that meditation training improved students' retention of the information conveyed during the lecture in each of the three experiments.

III. OBJECTIVES

1. To compare the mean scores of working memory of Underachievers belonging to meditation Therapy group and control group by considering pre-working memory as a covariate.
2. To compare the mean scores of behavioral problems of Underachievers belonging to meditation Therapy group and control group by considering pre-behavioral problems as a covariate.

IV. HYPOTHESES

1. There will be no significant difference in the mean scores of working memory of Underachievers belonging to meditation Therapy group and control group by considering pre-working memory as a covariate.
2. There will be no significant difference in the mean scores of behavioral problems of Underachievers by considering pre-behavioral problems as a covariate.

V. METHODS

Variables: The variables for the study have been categorized as follow:

Independent Variable: Meditation.

Dependent Variable: Working Memory and Behavioral Problem.

Relevant Variables:

Age: 6-10years of age

Sex: male and female

Area: population from India (state Odisha)

Economic status: MIDDLE CLASS SOCIO-ECONOMIC Statuses

Inclusion Criteria: Those who were Underachievers and have poor academic performance

Design:

To study the effect of I.V. on D.V. Counter Balanced pretest-posttest control group experimental design will be used.

VI. PROCEDURE OF THE STUDY

Phase- 1: Pre-test

Firstly the underachievers were selected using purposive sampling technique, form different school from Orissa state with the help of academic records and the teacher's observation in class rooms, then working memory Six Letter Cancellation Test (SLCT) for measuring the working memory and behavioral problems were measured by and Problem Behavior Check-List (PBCL-VD) scale respectively.

Phase – 2: Experimental phase

The researcher conducted meditation session for 45 minutes daily, for a month, excluding Sunday. The meditation session was prepared according to the quality of the students.

Phase- 3: post-test

Working memory and behavioral problems were measured again.

Phase 4: analysis and conclusion

Results of the pre-test and post-test was analyzed and compared by using one way ANCOVA in order to draw the final conclusion.

Sample:

20 participants were there in meditation therapy group and control group too had 20 participants in this study. Purposive samples were selected from various school of Odisha state. The age group of the sample was 6 to 10; gender was both male and female.

VII. TABULATION OF THE METHODS

Design	pretest-posttest control group design	
Total Sample	20 for meditation therapy group	20 for control group
Sampling technique	Purposive sampling	
Statistical Technique	one way ANCOVA was applied for statistical analysis	
Tool used	➤ Six Letter Cancellation Test (SLCT) for measuring the working memory ➤ Problem Behaviour Check-List (PBCL-VD) scale for measuring behavioral problems.	

Statistical Technique:

One way ANCOVA was applied for statistical analysis.

Tools:

Six Letter Cancellation Test (SLCT) by Natu and Agrawal 1997 for measuring the working memory and Problem Behavior Check-List (PBCL-VD) scale by Veeraraghavan&Arachana for measuring behavioral problems.

Effectiveness of Meditation Therapy in Terms of Working Memory

The first objective was to “To compare the mean scores of working memory of Underachievers belonging to meditation Therapy group and control group by considering pre-working memory as a covariate” and the data collected for this objective was analyzed with the help of one way ANOVA.

The summary of the analysis is given in the following table.

Table 1: Summary of One Way ANOVA for Group in respect of working memory

Source	Sum of Squares	df	Mean Square	F	Sig.
Group	318.184	1	318.184	162.974	.000
Error	72.237	37	1.952		
Corrected total	1788.775	39			

The above table reveals that the calculated F-value for Group is 162.974 with df of 1/37 and its two-tailed probability of significance is .000 which is less than 0.01. Hence this value is significant at 0.01 levels which suggest that adjusted mean scores of working memory of underachievers receiving meditation Therapy differ significantly when pre-working memory was taken as a covariate.

In the light of this, the null hypothesis that “there will be no significant difference in the mean score of working memory of under achievers belonging to meditation therapy group and control group by considering pre- working memory as covariate” is rejected. This can be further analyzed through the adjusted mean scores of working memory of the two groups which are given in table no. 2

Table 2: Group-wise adjusted mean of working memory

Group	Mean
Meditation Group	24.905 ^a
Control Group	19.245 ^a

Further it can also be seen that the adjusted mean scores of working memory of meditation group are 24.905 which is significantly higher than that of control group which is 19.245. It can thus be concluded that there is significant effect of treatment on the working memory of under achiever. The working memory of the under achievers receiving meditation therapy increased effectively.

Effectiveness of Meditation Therapy in Terms of Behavioral Problems

The Second objective was to “To compare the mean scores of behavioral problems of Underachievers belonging to meditation Therapy group and control group by considering

pre-behavioral problems as a covariate” and the data collected for this objective was analyzed with the help of one way ANOVA. The summary of the analysis is given in the following table.

Table 3: Summary of One Way ANOVA for Group in respect of behavioral problems

Source	Sum of Squares	df	Mean Square	F	Sig.
Group	612.987	1	612.987	114.067	.000
Error	198.835	37	5.374		
Corrected total	811.822	39			

The above table reveals that the calculated F-value for Group is 114.067 with df of 1/37 and its two-tailed probability of significance is .000 which is less than 0.01. Hence this value is significant at 0.01 levels which suggest that adjusted mean scores of behavioral problems of underachievers receiving meditation Therapy differ significantly when pre- behavioral problems was taken as a covariate.

In the light of this, the null hypothesis that “there will be no significant difference in the mean score of behavioral problems of under achievers belonging to meditation therapy group and control group by considering pre- behavioral problems as covariate” is rejected. This can be further analyzed through the adjusted mean scores of behavioral problems of the two groups which are given in table no. 4

Table 4: Group-wise adjusted mean of behavioral problems

Group	Mean
Meditation Group	97.935 ^a
Control Group	105.765 ^a

Further it can also be seen that the adjusted mean scores of behavioral problems of meditation group are 97.935 which is significantly lower than that of control group which is 105.765. It can thus be concluded that there is significant effect of treatment on the behavioral problems of under achiever. The behavioral problems of the under achievers receiving meditation therapy decreased effectively.

VIII. FINDINGS

The major findings of the present study were as following:

1. The working memory of the under achievers receiving meditation therapy increased effectively.
2. The behavioral problems of the under achievers receiving meditation therapy decreased effectively.

IX. DISCUSSION

This study evaluated the effectiveness of the mediation on the working memory and behavioral problems among underachievers at primary level. Base the data analysis done above, noticeable changes are found among the underachiever with low working memory and high behavioral problems. Statistically the difference between mean score of mediation on working memory of meditation group is 24.905 and control group is 19.245, where as the behavioral problem mean score of meditation group is 97.935 and control group is 105.765, which shows that children

having low working memory problems was enhanced with the help of meditation as well as children suffering from high behavioral problems has had a sinking in the intensity of behavioral problems.

Directly after intervention, working memory problems and behavioral problems were found to be reduced. Improvement in working memory were conformed by examining the progress records of the particular student in the semester exams. Follow-up studies after completion of intervention conforms sink in the intensity behavioral problems. Follow-up study with teachers and parents it was found that there was vast change in the selected sample regarding their studies and behavior.

The majority of results point out improvement in concentration and attention in class room as well as change in behavioral problems. Researchers say that memory and behavioral problems are related each other *Alloway Tracy Packiam, Rajendran Ganathusharn, Archibald Lisa M.D. (2009)* reported that differential memory profiles on the basis of the following developmental disorders: specific language impairment, Developmental Coordination Disorder (DCD), Attention-Deficit/Hyperactivity Disorder, and Aspersers Syndrome (AS). Specifically, language impairments were associated with selective deficits in verbal short-term and working memory. Another finding show that such problems can be reduced with help of meditation Van de Weijer-Bergsma, E., Formsa, A.R., de Bruin, E.I. et al. *J Child Fam Stud* (2012) they studied on effectiveness of mindfulness training on behavioral problems and attentional functioning in adolescents with ADHD. They provided 8-weeks mindfulness training for adolescents aged 11-15 years with ADHD. After, mindfulness training, adolescents' attention and behavior problems reduced, while their executive functioning improved, as indicated by self-report measures as well as by father and teacher report. During meditation anxiety is extinguished because of the relaxation state the negative reinforcement reduces which was previously associated with avoidance or escape from the feared stimulus (Goleman & Schwartz, 1984). Thus child can overcome the behavioral problem anxiety; this will help the child to concentrate on any work.

From the perspective of western psychology meditation has been described as a method of enhancing awareness or mindfulness of ongoing behavior and cognitions. From behavioral point of view, meditation has been described as a form of "global desensitization", in which meditative practice acts as a form of counter conditioning similar to Wolpe's systematic desensitization as a treatment for fear and anxiety. Meditation is described as the counter conditioning, in which state of meta-cognitive awareness and relaxation replaces the positive and negative reinforcement previously associated with engaging in behavioral problem (Glasser 1976). Therefore meditation is more than just a copy strategy for dealing with urges and temptations: it could also be a gratifying replacement or substitute for behavioral problems.

When we compare the meditation with CBT and AA (Alcoholics Anonymous) it can be attributed to similar components found in CTB & AA. For example, the surrender and acceptance of one's powerlessness are persistent themes in the 12th step of AA. Similarly in meditation like Vipassana there some fundamental steps acceptance one's thoughts,

feelings and sufferings. (Alexander, 1997). Similarly CBT also focuses on changing thoughts, becoming aware of cognitions, such as self-doubt, and realizing how an initial reaction of though lead to physically or mentally harmful behavior. Mindfulness / meditation helps to enhance coping skills, improves self efficacy and lower the desires.

Thus AA, CBT and mindfulness/ Meditation each shares several common ingredients and have been of great benefit to many individuals struggling with behavioral problems and memory problems. Researcher aim is not dismiss the value of these approaches, rather to offer a promising alternative to those for whom CBT or AA may not represent the best fit their needs or belief systems.

X. ACKNOWLEDGMENT

First, I would like to thank the underachievers, school management, teachers and parents who gave their time and effort to participate in this study. I also like to thank my supervisor *Prof. Dr. S. Bharsakle* for his assistance in the preparation of the study.

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