

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

**Instructional and Improvisational Models of Music Therapy with  
Adolescents who have Attention Deficit Hyperactivity Disorder (ADHD):  
A Comparison of the Effects on Motor Impulsivity**

**A thesis presented to fulfil the requirements for the degree of  
Master of Music Therapy  
at Massey University, Wellington, New Zealand**

**Daphne Joan Rickson**

**2004**

## **ABSTRACT**

This study compared the impact of instructional and improvisational music therapy approaches on the level of motor impulsivity displayed by adolescent boys who have Attention Deficit Hyperactivity Disorder (ADHD). Measures included numbers of errors made on a Synchronised Tapping Task (STT); and Conners' Rating Scales (Conners, 1997). Participants (n=13), aged 11 – 16 years, were enrolled in a special residential school. A combination of a multiple contrasting treatment and an experimental control group design was used. Students were randomised to three groups; control (Group A) and two treatment groups. Students in Group B received eight sessions of improvisational music therapy followed by eight sessions of instructional music therapy, while the order was reversed for Group C.

There was no statistical difference between the impacts of the contrasting music therapy approaches on the level of motor impulsivity displayed by the students as measured by the STT and the Restless-Impulsive and Hyperactive-Impulsive Conners' subscales. However all students significantly improved on the STT across each phase of treatment and improvement was slightly greater during the instructional treatment periods for both groups. During these same periods teachers reported a small decrease in restless and impulsive behaviours. The results therefore cautiously imply that the instructional approach might contribute to a reduction in motor impulsivity in the classroom.

Significant improvement on STT without the corresponding improvement in motor impulsivity suggested that increased accuracy on the STT might be attributable to progress in other developmental domains. Teacher report of significant improvement for treatment groups on the DSM-IV Total Subscale adds weight to this suggestion, and implies that combined music therapy approaches might have contributed to a reduction in DSM-IV symptomology in the classroom.

Rickson's (2001) tentative suggestion that creative music-making might over-arouse students with ADHD was not confirmed. Students did make more errors

when tested on the STT a second time on the same day but this was regardless of whether they had been involved in instructional, improvisational or no music therapy programme. It is possible that students who have ADHD are easily aroused by the general school milieu and classroom or music room interactions with peers.

## **ACKNOWLEDGEMENTS**

**The author thanks and acknowledges the assistance of**

Dr Robert Krout, Supervisor,  
Music Therapy Programme Leader,  
College of Design, Fine Arts, and Music,  
Massey University, Wellington

Associate Professor Chris Frampton, Biostatistician,  
Christchurch School of Medicine & Health Sciences

**Plus**

Staff at Halswell Residential College, especially  
Graeme Daniel, Principal  
Colin Simpson, Day School Principal  
Jeannie Tacon, Music Therapy Assistant

**Special thanks to**

Malcolm and Angela Rickson and  
Joan Webster, Music Therapist  
for all your love and support.

**FINALLY I WISH TO EXPRESS MY SINCERE GRATITUDE TO THE  
STUDENTS WHO PARTICIPATED SO WILLINGLY IN THIS  
RESEARCH PROJECT – THANKYOU MY FRIENDS!**

Ethics approval was gained from  
Massey University Human Ethics Committee (MUHEC: WGTN Protocol –  
03/106)

and  
Canterbury Ethics Committee (CTY/03/12/CPD).

## TABLE OF CONTENTS

<b>ABSTRACT.....</b>	<b>ii</b>
<b>ACKNOWLEDGEMENTS AND ETHICAL DECLARATION .....</b>	<b>iv</b>
<b>TABLE OF CONTENTS.....</b>	<b>v</b>
<b>LIST OF TABLES.....</b>	<b>viii</b>
<b>LIST OF FIGURES.....</b>	<b>ix</b>
<b>BACKGROUND AND INTRODUCTION.....</b>	<b>1</b>
<b>LITERATURE REVIEW.....</b>	<b>4</b>
1. ADHD – The Medical Model.....	4
2. ADHD – The Psychosocial Model.....	7
3. Cognitive Processes in ADHD.....	8
4. Definitions of Impulsivity.....	11
5. Varying Perspectives of Rhythm Perception and Production.....	12
6. Time Perception and Reproduction in ADHD.....	13
7. Music Therapy with Children and Adolescents who have ADHD.....	16
8. Planning and Structuring Group Work.....	18
9. Determining a Music Therapy Approach.....	19
a. An Instructional Approach.....	22
b. An Improvisational Approach.....	23
10. Summary and Aims of the Study.....	25
<b>METHOD.....</b>	<b>27</b>
1. Population Sample.....	27
2. Ethics Approval.....	27
3. Inclusion Criteria.....	27

4. Study Sample.....	28
5. Assignment to Groups.....	29
6. Research Design and Procedures.....	29
7. Testing and Treatment Setting.....	30
8. Measures – Dependent Variables.....	30
9. Treatment Variables.....	38
a. An Instructional Approach.....	38
b. An Improvisational Approach.....	38
<b>RESULTS.....</b>	<b>40</b>
1. STT Data – Hypothesis #1.....	40
2. Conners’ Rating Scales – Hypothesis #2.....	43
3. Other Findings.....	45
a. Error Times.....	45
b. Error Numbers and Times at Separate Speeds.....	46
c. Difference Before and After Sessions.....	50
d. Are the Errors Premature or Late Responses?.....	52
e. Students’ Ability to Begin on Cue.....	53
f. Conners’ Parent and Teacher Rating Forms - Other Findings...54	
g. Effects of Medication.....	61
4. Group Dynamics and Within-Session Measures.....	62
<b>DISCUSSION.....</b>	<b>67</b>
1. Hypothesis #1.....	67
2. Hypothesis #2.....	67
3. Interpretation.....	69
4. Attending Behaviour and the Inattention Subscales.....	70
5. General Cognitive Ability and the Conners’ Cognitive Problems Subscale.....	72
6. Findings from Other Conners’ Subscales.....	74
7. Reliability of Conners’ Data.....	76
8. The Synchronised Tapping Task as a Dependent Variable.....	77

9. Students' Ability to Self Correct.....	79
10. Motor Coordination.....	80
11. Error Times.....	81
12. Practice Effect.....	82
13. Pre-test Sensitisation.....	83
14. Motivation and Reward.....	83
15. Arousal.....	85
16. Ethical Issues.....	87
17. Treatment Protocol and Integrity.....	87
18. Medication.....	88
19. ADHD and Comorbid Diagnoses.....	91
20. Group Dynamics and Within-Session Measures.....	92
21. Order of Treatments.....	93
22. Number of Treatment Sessions and Length of Programme.....	94
23. Normal Controls.....	95
24. Sample Size.....	96
25. Implications for Clinical Practice.....	96
26. Suggestions for Future Study.....	100
<b>SUMMARY .....</b>	<b>103</b>
<b>CONCLUSION.....</b>	<b>105</b>
<b>REFERENCES.....</b>	<b>106</b>
<b>LIST OF APPENDICES.....</b>	<b>114</b>



## **LIST OF TABLES**

### **METHOD**

1. Research Design.....	29
2. Error Time Calculations.....	32
3. Data Collection & Organisation (Baseline vs Phase 1 and Phase 2) .....	34
4. Data Collection & Organisation (Phase 1 Data vs Phase 2 Data).....	34

### **RESULTS**

5. Mean Error Numbers, ANOVA at Combined Speeds (4 vs 4).....	42
6. Error Numbers Instructional vs Improvisational Sessions.....	42
7. Mean Error Numbers, t-tests at Combined Speeds (8 vs 8).....	42
8. Mean Scores, Conners' Global Index Restless-Impulsive Subscale.....	43
9. Mean Scores, Conners' DSM-IV Hyperactive-Impulsive Subscale.....	44
10. Mean Error Times, Combined Speeds (4 vs 4).....	46
11. Mean Error Numbers @ 40bpm.....	48
12. Mean Error Numbers @ 75bpm.....	48
13. Mean Error Times @ 40bpm.....	49
14. Mean Error Times @ 75bpm.....	50
15. Mean Error Times, Before-and-after-Session Scores by Group.....	51
16. Mean Error Times, Before-and-after-Session Scores, all Students.....	52
17. Conners' Cognitive Problems Subscale (Parent), Ph1 vs Ph 2.....	57
18. Conners' Cognitive Problems Subscale (Parent), Baseline vs Ph 2.....	57
19. Conners' Cognitive Problems Subscale (Teacher), Baseline vs Ph 1.....	57
20. Mean Error Numbers and Error Times – Medication Effects.....	61
21. Themes from Music Therapy Group Work, Phase 1.....	63
22. Themes from Music Therapy Group Work, Phase 2.....	63

## LIST OF FIGURES

1. A Student at the Computer Undertaking the STT.....	31
2. How the Synchronised Tapping Task was Analysed.....	35
3. Error Numbers at Baseline.....	41
4. Error Numbers (Combined Speeds).....	41
5. Conners' Restless-Impulsive Subscale (Parent Version).....	43
6. Conners' Restless-Impulsive Subscale (Teacher Version).....	43
7. Conners' Hyperactive-Impulsive Subscale (Parent Version).....	45
8. Conners' Hyperactive-Impulsive Subscale (Teacher Version).....	45
9. Error Times (Combined Speeds).....	46
10. Error Numbers @ 40bpm.....	47
11. Error Numbers @ 75bpm.....	47
12. Error Times @ 40bpm.....	49
13. Error Times @ 75bpm.....	49
14. Percentage of Premature Responses at 40bpm.....	53
15. Percentage of Premature Responses at 75bpm.....	53
16. Group B – Beginning on Signalled Cue.....	54
17. Group C – Beginning on Signalled Cue.....	54
18. Conners' Oppositional Subscale (Teacher Version).....	56
19. Conners' Cognitive Problems Subscale (Parent Version).....	56
20. Conners' Cognitive Problems Subscale (Teacher Version).....	56
21. Conners' Anxious-Shy Subscale (Parent Version).....	58
22. Conners' Anxious-Shy Subscale (Teacher Version).....	58
23. Conners' Psychosomatic Subscale (Parent Version).....	59
24. Conners' Emotional Lability Subscale (Teacher Version).....	59
25. Conners' Inattentive Subscale (Parent Version).....	60
26. Conners' Inattentive Subscale (Teacher Version).....	60
27. Conners' DSM-IV Total Subscale (Teacher Version).....	60
28. Conners' Global Index Total Subscale (Teacher Version).....	60
29. Error Numbers at Baseline – Medication Effects.....	62
30. Error Times at Baseline – Medication Effects.....	62
31. Session Observations – Mean Number of ADHD Symptoms.....	66