

Examining the effects of 'The Listening Programme' on girls with Rett syndrome

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INTRODUCTION

This study investigated the effect of 'The Listening Programme' (TLP) on a group of children with Profound and Multiple Learning Difficulties (PMLD), including five girls with Rett syndrome. Positive outcomes have been reported in children with autism and sensory processing difficulties; in increased attention, concentration, social engagement and decreased anxiety.

TLP (Doman et al 1999) is based on the auditory processing theory of Dr. Alfred Tomatis, and is closely aligned to Sensory Integration (SI) principles (Jean Ayres, 1979). The authors' hypothesis is that by digitally analyzing segments of classical music to enhance certain frequencies, the neural fibres of the inner ear are stimulated to process a wider spectrum of sounds. The user develops the ability to 'filter' extraneous sounds, thus improving concentration, anticipation and engagement. This in turn leads to reduction of anxiety and development of emotional regulation. We asked whether this programme could have a similar effect on girls with Rett syndrome that was recognisable by school & care staff and by their family.

METHOD

Multiple single case study, cross-over trial
Participants: Twelve students at St. Margaret's School for PMLD and complex health needs (SMS), including five girls with Rett syndrome (12-18 y). Ethical approval was granted, parental consent received and students' own responses noted. *Inclusion criteria:* those having difficulty with tolerating or maintaining concentration on sounds/speech, engaging with people/activities, anxiety associated with change.
Exclusion criteria: profound hearing loss, uncontrolled/pervasive epilepsy, medical instability

PROCEDURE

The Programme took place daily (15 min x5 weekly) for 16 weeks. Each session comprised 3 x 5minute segments of specially prepared classical music, the middle segment containing digitally enhanced/alttered frequencies. Students were randomly allocated a period of 4 weeks 'regular listening' either after (Group A) or before TLP (Group B). As well as reducing observer bias, this provided an opportunity to observe any differences between the effects of regular classical music and TLP.

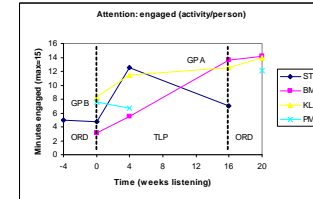
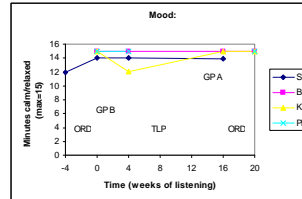
Measurements-

- Fifteen minute video recordings were made at weeks 0,4,16, and 20 (4/5 participants).
- Classroom observation for 2 hours post listening.
- Annual review data using St. Margaret's School Developmental Curriculum & assessment tool.
- Staff/parents' comments were sought regarding changes in behaviour noted, or special change in circumstances, during programme.

RESULTS

There were indications of increased engagement in all participants. Mood changes were less marked, and were also evident after listening to regular classical music alone.

Video recordings of participants involved in typical class activities showed a strong trend towards increased engagement in tasks/person interaction following TLP (Fig.1).



Group B Students showed some improvement in mood with regular music alone, but increase in engagement only began after TLP commenced.

Group A Most students maintained their improved level of engagement after TLP with regular music alone (N.B. TLP authors describe a typical carry-over period of up to 9 months).

Staff/parents' comments noted:

Increase in:

- Tolerating change in routine (1/5)
- Eye contact/listening to what is said (5/5)
- Understanding what is said (?)
- Concentration/involvement in activities(5/5)
- Using voice (3/5)

Decrease in:

- Anxiety over change (2/5)
- Distractibility (5/5)
- Eating difficulties (1/5)
- Daytime drowsiness (2/5)

Review on

Profound Education SMS Curriculum
 3/5 students showed 'Achieved' level improvements (fig.2):

Task	HF	ST	PM
Attention to task	✓	✓	✓
Anticipation of events	✓	✓	✓
Attention to speech	✓		
Signaling preferences	✓	✓	✓
Eye contact		✓	✓
Facial expression		✓	
Turn taking	✓	✓	✓
Requesting attention	✓		

DISCUSSION

- During a 20-week programme it is inevitable that there will be many other factors (positive and negative) influencing children with complex needs. Medical, social and educational factors were noted. There were difficulties in consistent programme delivery, due to ill health/staffing. The TLP authors' recommended schedule was followed in these instances, and variations in performance considered against gaps in attendance, etc. Changes must be interpreted with caution in the light of this.
- However, of the 12 students participating in the study, 10 showed improvement, and 2 did not. The 5 girls with Rett syndrome showed the strongest trend towards increased engagement following TLP. The 2 students with Cerebral Palsy did not show any change. Anecdotal reporting supported the video evidence in all cases except one. Despite difficulties in collecting consistent, reliable data in this context, the combination of these two sources suggest a possible outcome greater than chance.
- The level of change observed in the girls with Rett syndrome is of particular interest given that TLP is thought to effect change in sensory processing, and that Rett syndrome is associated with sensory processing difficulties.
- Engagement was positively affected in all 5 of the girls, although mood change occurred in only 3, and with 1 of those was after regular music alone. This trend could indicate change resulting from TLP itself.

CONCLUSION

- Regular, consistent exposure to this musical programme had a positive effect for girls with Rett syndrome and it is possible that TLP had a beneficial effect on increasing engagement and decreasing anxiety; however a larger controlled study is needed.
- There are indications that participants with underlying sensory processing difficulties may benefit most from TLP.

REFERENCES

1. Doman, GA & Lockhart Lawrence, D (1999) 'The Listening Programme' www.advancedbrain.com
2. Ayres, J. (1979) 'Sensory integration and the child'. Los Angeles: Western Psychological Services
3. St. Margaret's School (2006) 'Profound Education' Developmental curriculum and assessment tool www.thechildrenstrust.org.uk/PMLD_education/curriculum

ETHICAL APPROVAL obtained from Surrey Research Ethics Committee

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