

Cognitive Training in Local Setting: Two Methodological Versions

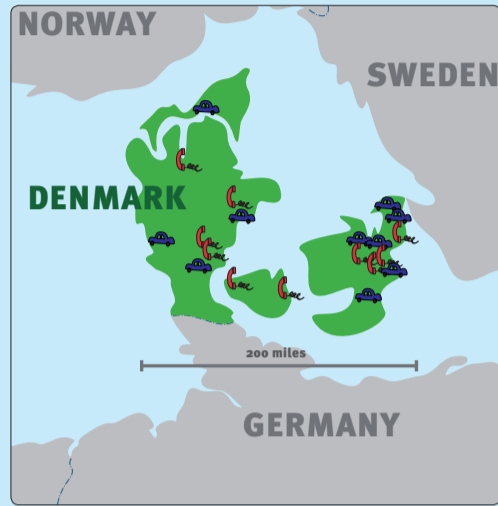
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Introduction

The purpose of this study is to test different ways of implementing the cognitive training programme AMAT-c in the local setting. As AMAT-c (Amsterdam Memory and Attention Training for children) has already been proved to have a significant effect through testing in the Netherlands, Sweden and Denmark, the purpose of this project is to test ways of implementing the programme outside the hospital setting, where the programme was originally developed and tested. In other words, it is the procedure rather than the method/programme itself, which is in focus. The programme runs for 20 weeks during which the child practices different assignments all weekdays (approximately 45 minutes) coached by a trainer who receives weekly supervision. The training takes place on a one-to-one basis.



Procedures

Two procedures for the weekly supervision of the daily trainer were employed:

Phone supervision

Supervision by phone only concerning the actual training.

Travel supervision

Supervision through the supervisor's participation in a training session with trainer and child with the possibility of discussing things not strictly related to the actual training. Trainers receiving travel supervision had to phone parents weekly to inform them of the current training and how this could be supported in the home/by the parents.

All included children who completed the programme have been tested neuropsychologically and in terms of school performance before and after the training period. Also, parents, teachers and trainers have answered questionnaires and the children have been interviewed before and after the programme.

Subjects

20 children with different types of acquired brain injury were recruited for the project. Inclusion criteria were difficulties in attention and/or memory. Some of the children attended specialist schools, others attended ordinary school (N=20, ϵ^{TM} : 10/10, IQ: \bar{X} = 88.6 [58-146], age: \bar{X} = 12.8 [9-17], time since injury: = 5.1 [1.8-13.2]). The children were matched on type of injury, age, time since injury and school type. Five of the included children did not complete the programme due to the following reasons: suspicion of premorbid reasons for low functioning (1), progression of illness (1), lack of motivation (1) and problems with the school (2).

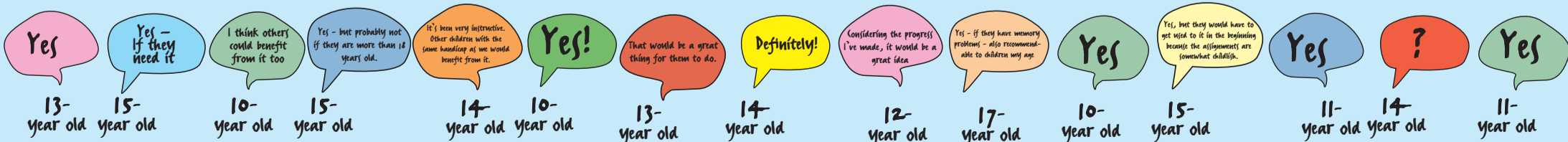
Children who completed the cognitive training programme						
	Number	Gender	IQ	Age	Type of injury	School
Phone supervision group	N = 8	♂ 4 ♀ 4	\bar{X} = 93.5 SD: 27.9 [58-146]	\bar{X} = 12.6 SD: [9-17]	3 Traumatic 3 Tumour 1 Infection 1 Stroke	5 Ordinary 3 Specialist
Travel supervision group	N = 7	♂ 3 ♀ 4	\bar{X} = 85.9 SD: 15.5 [59-105]	\bar{X} = 13.2 SD: 2.6 [9-17]	2 Traumatic 2 Tumour 1 Infection 1 Stroke 1 Anoxia	4 Ordinary 3 Specialist

Additions to the cognitive training programme

What we have added to the 'pure' AMAT-c (strictly following the instructions in the manual) is elements surrounding the AMAT-c programme itself, mainly preparatory and finalising work but also additions and individualisation of the 20 weeks of training. This could be called the orchestration of the programme and is illustrated in the timeline at the bottom of this poster.



Would you recommend this training programme to other children?



Example of individualisation

For all children, the Start Page and SHARP methods were personalised in order to strengthen the use of these outside the training sessions. The individualisation consists of removing or adding relevant items as well as trying out in which settings they are useful to the child. Other adjustments include designing individual versions, e.g. a format which fits in the pencil case or on the fridge at home. The Start Page is introduced in week 2 and is used every day with each assignment throughout the remainder of the training period. The purpose of the Start Page method is to make the child prepare to start an assignment by removing distracters and focusing his or her energy and attention on the assignment. The SHARP method is introduced in week 10 and is also used daily once it has been introduced. The purpose of the SHARP method is to guide the child through an assignment by describing the steps in the work process, i.e. make a plan, carry out and evaluation etc.

Jens' start page

I am about to do an assignment or homework but first I have to think about the following:

- Do I need to go to the bathroom?
- Have I removed everything which may distract me from my desk?
- Have I got the things I need to carry out the assignment?
- Is my desk tidy?
- Is my pencil sharpened and good enough?
- Is there anything which disturbs me; clothes that are too tight, and too hot or cold or is the temperature just right, am I sitting okay?
- Are there other things which I need to do in order to be able to work well and concentrate, such as turning off the radio or tv, closing a window, turning on the light?
- I take deep breaths, slowly and calmly, in and out, twice.
- Now I can begin

Jens' SHARP Method

- S** Skim the assignment
What is the assignment?
- H** Hatch a plan
What should I do?
Which things do I need?
In which order should I do the different steps?
- A** Accomplish the assignment
Carry out the assignment calmly and thoroughly.
- R** Review the result
What went well?
What I've made...What was it about?
Is it correct?
- P** Ponder the assignment
What didn't go so well?
Have I done a good job?

Results

Preliminary results show that the training has a positive effect on neuropsychological measures. Here, we will present results from the evaluation questionnaires answered by parents and trainers to see how the differences in phone and travel supervision have influenced the evaluations. Furthermore, we will look at the pre-post differences in the children's Beck Youth Inventories profiles as well as trainer and child motivational measures for the group as a whole.

Awareness of own strengths and weaknesses

Parents and trainers were asked to rate the child's awareness of own difficulties before and after the training programme. The difference between these two ratings was calculated and the results range from 0 (no change) over 1 (a small positive change) to 2 (a large positive change). There appears to be a larger positive change in the parent and trainer travel supervision group responses compared to the phone supervision responses. For both groups it seems that there is an increase in the children's awareness of own difficulties post-training as more than half of the parents and trainers report an increase in this measure.

Parent and trainer assessment of the child's pre-post awareness of own strengths and weaknesses					
	Parent		Trainer		
	phone	travel	phone	travel	
0	3	1	1	0	0
1	4	4	3	5	5
2	1	2	1	2	2
No reply	0	0	3	0	0

Use of the SHARP and the Start Page methods at home and in school

The travel supervision group parents report a more frequent use of these two methods in the home compared to the phone supervision group parents. Interestingly, the opposite is reported by trainers; it appears that the children in the phone supervision group use the two methods more in school than do their travel supervision peers.

The wider use of the methods in the home by the travel supervision group children is easily explained by the formalised weekly contact between trainer and home, where parents are asked to encourage the use of the methods if the child appears to benefit from this. The fact that the phone supervision children use the methods more at school than the travel supervision group is less obvious.

Use of SHARP method at home and in school				
	Parent		Trainer	
	phone	travel	phone	travel
Every day	0	2	1	1
Every week	2	3	6	1
Every month	0	0	0	2
Never	2	1	0	2
Don't know	4	1	1	1

Use of Start Page method at home and in school				
	Parent		Trainer	
	phone	travel	phone	travel
Every day	0	0	3	1
Every week	1	2	3	1
Every month	0	0	0	2
Never	3	1	2	2
Don't know	3	3	0	3
No reply	1	0	0	0

Frequency of contact between trainer and parents and assessment of contact frequency

Not surprisingly, the travel supervision group parents and trainers report more frequent contact with each other than do phone supervision group parents and trainers.

It appears that contact between the trainer and the home fulfils a need for the parents as those parents who have had a higher frequency of contact with the trainer (travel supervision group) are overall more satisfied with the frequency of the contact while this doesn't seem to make a difference for the trainer's assessment of the frequency.

Frequency of contact between trainer and parents				
	Parent		Trainer	
	phone	travel	phone	travel
Daily	0	0	0	0
Weekly	0	6	0	6
Fortnightly	0	1	0	0
Monthly	2	0	5	0
Every half year	3	0	2	0
Never	3	0	1	0
Don't know	0	0	0	0
	Mann-Whitney, Z = -3.38, p < .005, one-tailed		Mann-Whitney, Z = -3.42, p < .005, one-tailed	

Assessment of contact frequency				
	Parent		Trainer	
	phone	travel	phone	travel
Too rarely	6	1	3	1
Suitable	2	6	5	6
Too often	0	0	0	0
Don't know	0	0	0	0
	Mann-Whitney, Z = -2.27, p < .05, one-tailed			

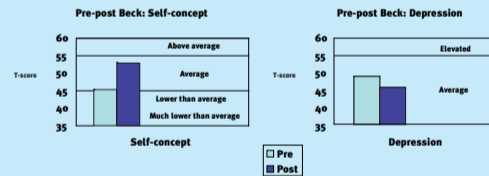
Overall satisfaction with the training programme

Parents and trainers were asked to rate their overall satisfaction with the training programme on a scale from 1-5 with 1 meaning not satisfied at all and 5 meaning very satisfied. While parents in the travel supervision group are more satisfied with the training programme as a whole compared to the phone supervision group parents, there is no particular difference in the trainer's responses. It should be noted that the overall satisfaction with the training programme across groups is very positive with the majority of parents and trainers rating their satisfaction between 4 and 5.

Frequency of contact between trainer and parents				
	Parent		Trainer	
	phone	travel	phone	travel
1	0	0	0	0
2	1	0	0	0
3	2	0	1	0
4	3	4	2	3
5	2	3	5	4

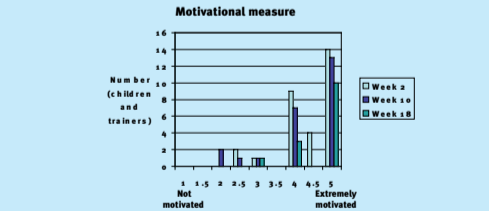
Beck

The pre-post results of the Beck Youth Inventories responses show that the children improve on all five domains (self-concept, anxiety, depression, anger and disruptive behaviour). The results are statistically significant for two domains: self-concept (Wilcoxon; 3 neg, 11 pos, 1 tie, Z = -2.93, p < .01, one-tailed) and depression (11 neg, 3 pos, 1 tie, Z = -1.70, p < .05, one-tailed). Thus, there is a very positive effect in relation to the children's overall well-being.



Motivation

Trainers were asked to rate their own and the child's motivation on a scale from 1 (not motivated) to 5 (extremely motivated) in weeks 2 (N=15), 10 (N=14) and 18 (N=7). Some trainers conferred with the child concerning the rating of the child's motivation. There is no significant increase or decrease in motivation ratings, which range from 2-5. The results thus show that the motivation is quite stable for both trainers and children throughout the training period.



Conclusion

The purpose of this project was to test ways of implementing the programme outside the hospital setting, where the programme was originally developed and tested. We find the locally-based model to be successful in many ways. So far, we have come to the following conclusions based on the presented results and the experiences gained during the project:

- Contact and cooperation between school and home is essential for the training programme as a whole to be a success. This is supported by the greater sense of satisfaction with the contact frequency and the programme as a whole of parents who have had regular contact with the trainer. Also, the formalised contact between trainer and parents strengthen the use of learnt methods outside the school context.
- There are many possible ways of individualising the AMAT-c programme to fit the individual child's needs. Despite the wide range in age, IQ as well as cognitive and other impairments (almost blind (N=1), not able to write (N=1)), the children were able to keep up motivation and complete the programme.
- Phone supervision appears to trigger more independent and creative behaviour from the trainer but involves a greater risk for methodological misinterpretations. It is positive that the trainer is generally more well-prepared and takes greater responsibility while the more creative interpretation can result in 'wrong' training (i.e. not cognitive).
- Travel supervision allows for broader coaching concerning the child's school performance and overall well-being.
- The results show that the children improve their overall well-being as seen on the depression and self-concept indexes. We believe this to be related to the continuous focus on the child's cognitive strengths and weaknesses during the training sessions which increases the child's awareness hereof.
- Even though the programme is very demanding in terms of time and effort, the children give very positive feedback post-training. For instance, all children in the project would recommend the programme to peers.

In conclusion, we believe that the success of the method – as confirmed by the positive responses and improved well-being – demonstrates that the programme is useful in working with more than solely cognitive aspects of the children's lives. Thus, working with their level of awareness, the children realise that there are more things they are capable of doing and many ways of solving cognitive problems. This realisation provides them with a wider behavioural range.

Future method

Based on experiences gained in this project, we have decided that the method around the AMAT-c programme will in future comprise the following:

- There must always be weekly contact between trainer and parents.
- Supervision will take place at the school for the first six weeks (travel supervision). From then on the supervision can take place as a combination of phone or face-to-face meetings, depending on distance, economy etc.
- We will continue adding the 'music' to the 'pure' AMAT-c programme as it seems to ensure high motivation and satisfaction.
- Finally, the importance of visual contact during supervision has inspired us to try out the use of webcams for supervision when large distances are involved.

AMAT-c references

- Hendriks (1996) Attention and Memory Training in Childhood Cancer Survivors Eur Cancer Soc Newsletter 5, 13-4.
- Kihlgren et al. (2004). Cognitive Rehabilitation Therapy as a Part of a Rehabilitation Program for Children with Acquired Brain Injury. Poster presentation at the 8th Nordic Neuropsychology Congress, Turku, Finland.
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