Extract from head`s draft report to governors – autumn 2018

Pupil progress and SEND report 2017-18

Takeaway message:
- We continue to teach outstandingly
- The pupils we teach become happier
- They are better able to manage the demands of a classroom over the admission
- The are no groups whose experience is significantly worse than others'
- We are successful in helping most children return or to re-start their education on leaving
- Primary staff, with hospital training were enabled to support a pupil, with a naso-gastric feeding tube, in class.

Progress across the school is measured in a variety of ways. Average change, over the pupils' admission is shown in the chart below:
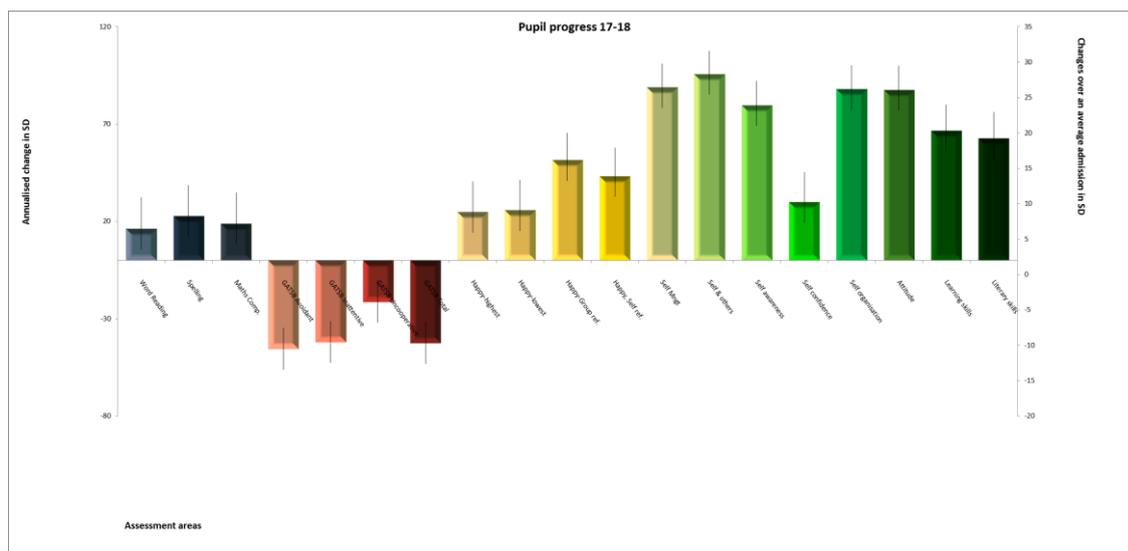
The left hand vertical axis indicates the change adjusted for a pupil year; that is, if we assumed a pupil were to have attended a full year. If we consider that pupils attend school, on average, for 63 days, then progress over a typical admission shown on the right hand axis, is adjusted accordingly.

Units on the vertical axis are in terms of standard deviations, allowing direct comparison between measures. The following link: http://www.teacherstoolbox.co.uk/T_effect_sizes.html shows the typical effect of educational intervention where "An effect size of 1.0 [standard deviation] is clearly enormous": the achievements of our pupils far exceed this.
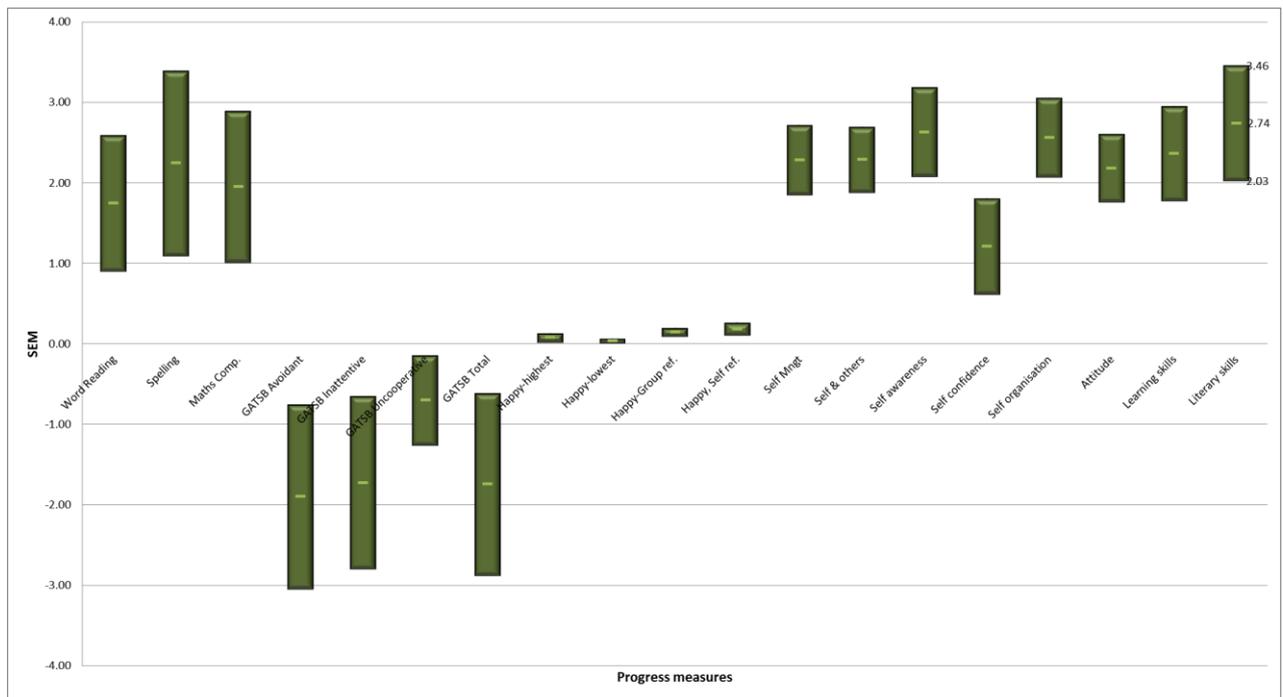
Are these means, shown in Chart 1, an accurate reflection of the broader pupil experience? Chart 2 (above), shows the mean for each scale ± 1 Standard Error of Measurement. The results would be questionable if the error bars straddled the 0.00 horizontal axis line.

What does this mean?
- o Learning: overall pupils learn extremely well at a rate that is exceptional in Word Reading, Spelling and in Maths Computation.
- o Test Behaviour: the GATSB shows that pupils' tendency to be avoidant, inattentive and uncooperative, reduces considerably over a typical admission.
- o Happiness - School-based: pupils rate this as higher over the admission. This includes:
  - Happiness in comparison to that of other pupils (group-referenced)
  - Happiness in relation to their previous experience (self-referenced).
- o Learning Readiness (RRS): the evaluation of whether pupils' ability to manage in class, increases significantly over an admission. In particular, there is an Self-Confidence and Self Awareness.

Our measures
- **The WRAT (Wide Range Achievement Test) – this published psychometric assessment of literacy and numeracy functioning is given at and towards the end of the pupils` admission. Parallel forms are used. This allows two tests of equivalent difficulty containing different items to assess the value added by our teaching. Being a standardised measure, it is possible to see the effect of teaching and learning whilst taking into account the expected changes due to age. Any increase in the standardised score can be ascribed to the school. Pupils who were functioning at a very low and a very high level on entry to the school have been excluded from the following analysis as their inclusion may exaggerate levels of**

progress. These WRAT-only progress results are therefore more conservative estimates than those shown in the chart. The average changes, over a typical admission are:

- In Maths Computation: +27 standard score points.
    - For disadvantaged pupils (looked after children and pupils eligible for the receipt of free school meals), typical progress was +21 standard score points.
    - This would be representative of progress the low average range to the average range (87 to 108).

- In Word Reading: +12 standard score points.
    - For the disadvantaged pupils, typical progress was +3 standard score points.
    - This would be representative of progress within the average range (94 to 97).

- In Spelling: +15 standard score points.
    - For the disadvantaged pupils, typical progress was +22 standard score points.
    - This would be representative of progress from the average range to the High Average range (94 to 116).

These levels of progress are above those expected of the average child undergoing mainstream education for whom the average score would be expected to stay the same over time.

- **The GATSB** (Guide to the Assessment of Test Session Behaviour) assesses levels of avoidant, inattentive or uncooperative behaviour that can affect a pupil's WRAT assessment. This information is also helpful in thinking about how we may help pupils improve over time. In the above chart, the below-the-line levels suggest there has been a positive change in these areas.

- **The HLM** (Happiness Line Measure) – assesses both what makes a pupil happy in school: how happy they feel compared to both their previous happiest time in school (self-referenced) and in relation to others` perceived happiness (group-referenced).

- **The RRS (Reintegration Readiness Scale)** – a teacher-based assessment of Learning Readiness based on a published measure that gives an indication as to whether the pupil is ready to return to full-time education within a mainstream setting. Assessments are carried out by the key teacher two weeks after admission and towards the end of the pupil`s admission.

- **Analysis of Learning Objectives** – level and complexity: key teachers also review the level and complexity of the pupils` Learning Objectives at and towards the end of the admission.   The focus is on Maths, English or independent learning (where the pupil is

16+ and following an academic or vocational course). The difference in level and quality of successful Learning Objectives (learning outcome expected within a lesson) is rated on a scale from -3 (severe regression) to +3 (considerable progress) over the period that the pupil is with us. This form of assessment has allowed us to capture changes in pupil learning on especially short admissions.

The average progress made across the school using this measure is +1.9 in 2017-18. The chart shows 8 years' of data and the overall trend upwards:
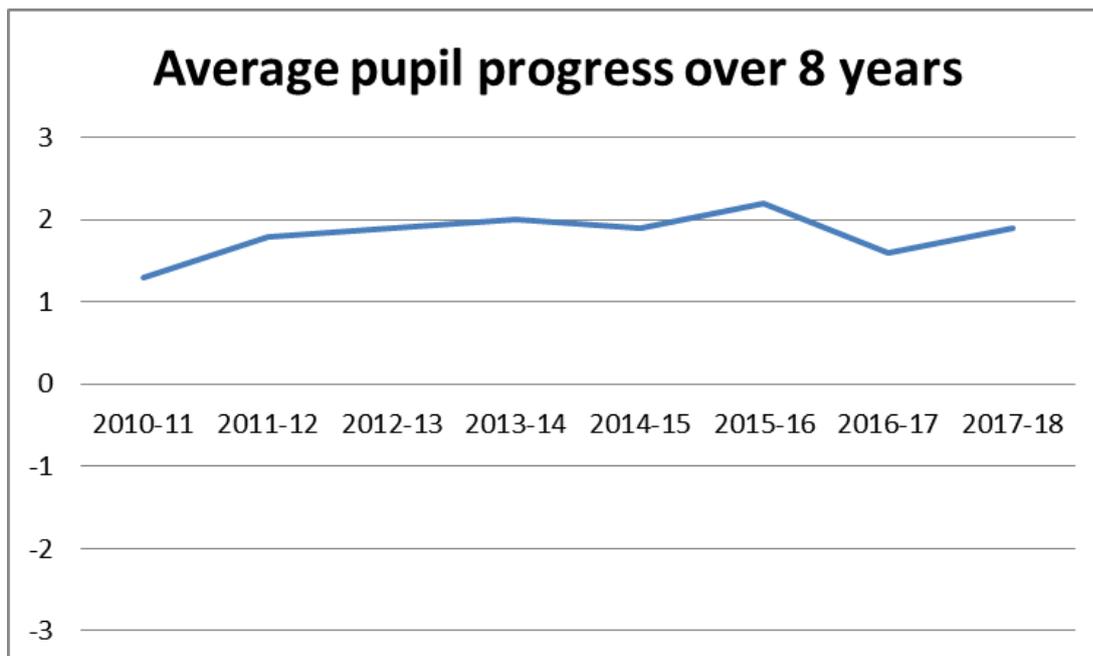
The table below shows comparable progress across the school:

	Average Learning Objective progress over an admission
Primary/Middle class	+ 2.6
Secondary/Learning Skills Centre	+ 1.6
Snowsfields Adolescent Unit	+ 1.7
Intensive Treatment Programme	+ 2.3
PICU	1.4

The relatively lower rate of progress for the PICU may reflect the short stays (4.5 days in school) that may be a feature of the startup.

- **Success at reintegration:** many of our pupils start the school with fragile or non-existent educational placements. The key focus for the school is to ensure they return to education, training or employment. With increasingly shorter admissions, this work becomes more challenging but we are continually seeking ways to ensure success. `In education on discharge` is defined as when a young person has a placement to start the following term with a college or school. The rates of reintegration for last year, by school department, are:

	In Education on admission %	In Education on discharge %
School average	**48**	**86**
ITP	86	100
P/M	45	100
Sec/P16	50	86
Snows	31	78
PICU	0	33

Over the last eight academic years the:

Average percentage across school in education on admission = 48%.
Average percentage across school in education on discharge = 83%.
-

Pupil progress – analysis of pupil progress by groups

Analysis was made of the differential achievement of groups of pupils in relation to: Special educational needs; more able pupils; Disadvantaged pupils; Gender; Ethnicity; English as an additional language and pupils belonging to Vulnerable Groups (e.g. asylum seekers/refugees, at risk of disaffection and exclusion and LGBT).

No significant differences were identified between these groups on the above measures.

Progress shows no significant difference between the 6th form and the rest of the school on all measures.

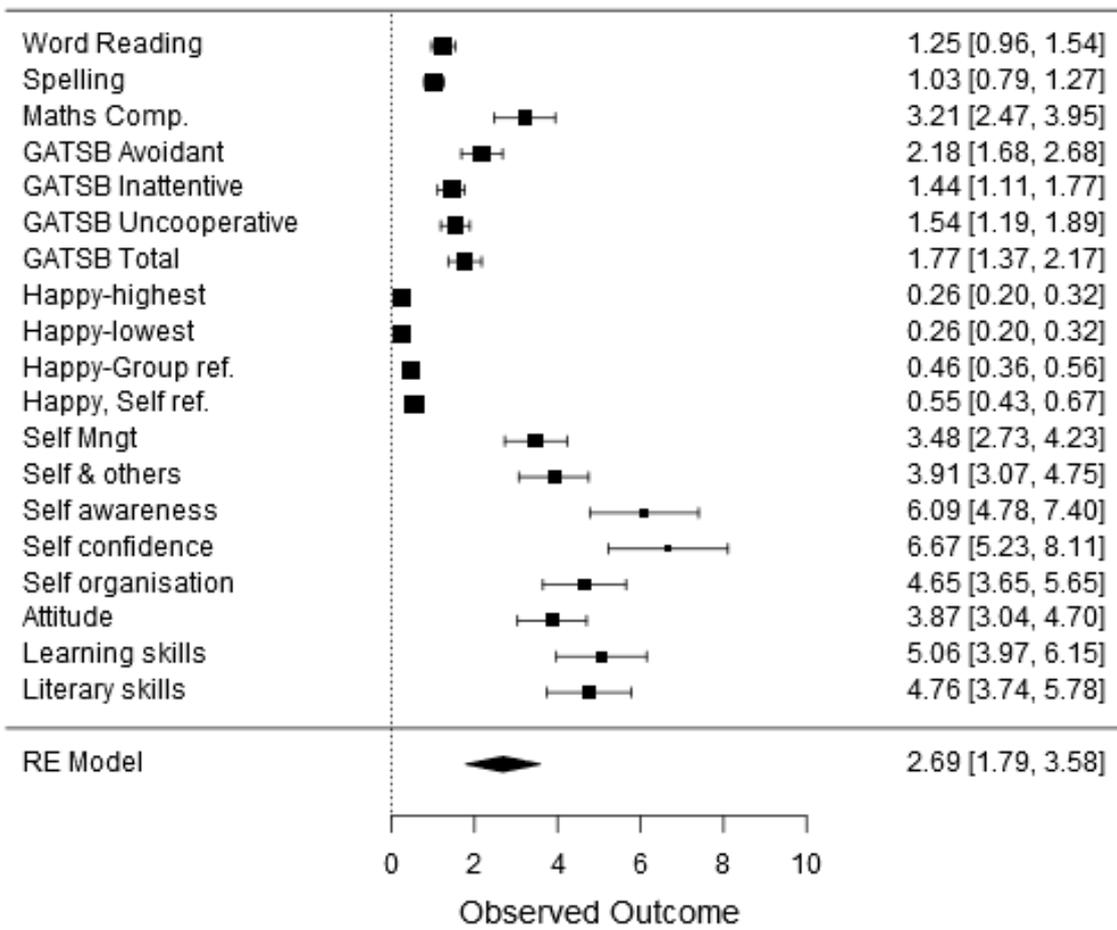**Reintegration Readiness Scale:** No differences between any of the groups.

Summary: the database allows us to carry out sophisticated analyses of pupil progress across functioning attainment (academic achievement), levels of well-being (happiness) and classroom functioning. We then look at differences on each of these measures between groups. No significant differences were shown in these assessments: we are equally effective for all pupils.

Analysis of the year's data shows that pupils with the lowest peak in previous school-related happiness and with the lowest initial attainment make the best progress in academic attainments and increase their happiness in school: Students progress well in their learning typically but those with the lowest school-related happiness on entry make even faster progress

This was repeated with the previous 3 years' data that showed a similar pattern of improvement.

Forest plot: Progress over an average admission

- **This chart shows the progress made by those who were not at the extremes (55, 145) on their initial WRAT scores. This avoids 'celling' and 'floor effects' in assessment progress: where the WRAT can't measure low enough or high enough.**
- **For this analysis, progress over the admission, is represented by the squares. If on the right side of the vertical line, then the result is significantly positive.**
- **The size of the square indicates how accurate this result is: the bigger the square, the greater the accuracy.**
- **The lines coming from the squares show a 95% confidence range that these scores are meaningful.**
- **The numbers on the right translate the image into the average effect [low limit, upper limit].**
- **For this analysis the GATSB scores have been reversed (less negative behaviour as a positive outcome)**
- **The diamond at the very bottom summarises the measures into an overall result that adjusts for the accuracy of the measures. Remember that** "An effect size of 1.0 [standard deviation] is clearly enormous"

Word Reading	1.25 [0.96, 1.54]
Spelling	1.03 [0.79, 1.27]
Maths Comp.	3.21 [2.47, 3.95]
GATSB Avoidant	2.18 [1.68, 2.68]
GATSB Inattentive	1.44 [1.11, 1.77]
GATSB Uncooperative	1.54 [1.19, 1.89]
GATSB Total	1.77 [1.37, 2.17]
Happy-highest	0.26 [0.20, 0.32]
Happy-lowest	0.26 [0.20, 0.32]
Happy-Group ref.	0.46 [0.36, 0.56]
Happy, Self ref.	0.55 [0.43, 0.67]
Self Mngt	3.48 [2.73, 4.23]
Self & others	3.91 [3.07, 4.75]
Self awareness	6.09 [4.78, 7.40]
Self confidence	6.67 [5.23, 8.11]
Self organisation	4.65 [3.65, 5.65]
Attitude	3.87 [3.04, 4.70]
Learning skills	5.06 [3.97, 6.15]
Literary skills	4.76 [3.74, 5.78]
RE Model	2.69 [1.79, 3.58]

Observed Outcome

Appendix

Four years' analysis of progress: what are we improving and by how much?

The data was drawn across four years including only pupils whose baseline was above or below the test ceilings of the WRAT. This is a cautious approach and will reduce the overall level of measured improvement whilst improving accuracy.

Two tests were carried out on the data:

- A parametric test, the Student t-test. This assumes the data is normally distributed and provides a more conservative effect size
- A non-parametric test, the Wilcoxon. This does not assume that the data is normally distributed, as was confirmed on a preliminary analysis.

p Probability that there is a significant difference between T1 and T2	Effect size ...of any difference
Yes = p<0.05	.8 = large (8/10 of a standard deviation unit)
No = p>0.05	.5 = moderate (1/2 of a standard deviation)
	.2 = small (1/5 of a standard deviation)
	<.2 = not significant or p>0.05

Paired Samples T-Test

Paired Samples T-Test

		Test	df	p	Effect Size
WRAT Word Reading T1	- Word Reading T2	Student	261	< .001	-0.27
		Wilcoxon		< .001	-0.34
Spelling T1	- Spelling T2	Student	258	< .001	-0.31

Paired Samples T-Test

		Test	df	p	Effect Size
Maths Comp. T1	- Maths Comp. T2	Wilcoxon		< .001	-0.44
		Student	259	< .001	-0.45
		Wilcoxon		< .001	-0.54
GATSB Avoidant T1	- Avoidant T2	Student	275	< .001	0.27
		Wilcoxon		< .001	-0.12
Inattentive T1	- Inattentive T2	Student	275	0.10	0.10
		Wilcoxon		0.45	-0.49
Uncooperative T1	- Uncooperative T2	Student	275	0.32	0.06
		Wilcoxon		0.74	-0.55
GATSB Total T1	- GATSB Total T2	Student	275	0.01	0.17
		Wilcoxon		0.02	-0.09
HLM Happiest ever in a school T1	- Happiest ever in a school T2	Student	271	0.13	-0.09
		Wilcoxon		0.23	-0.62
Unhappiest ever in a school T1	- Unhappiest ever in a school T2	Student	269	0.15	-0.09
		Wilcoxon		0.05	-0.76
Happy now (compared to group) T1	- Happy now (compared to group) T2	Student	270	< .001	-0.55
		Wilcoxon		< .001	-0.76
Happy now (compared to personal experience in schools) T1	- Happy now (compared to personal experience in schools) T2	Student	267	< .001	-0.57
		Wilcoxon		< .001	-0.75
RRS Self management T1	- Self management T2	Student	266	< .001	-0.56
		Wilcoxon		< .001	-0.68
Self & others T1	- Self & others T2	Student	266	< .001	-0.48
		Wilcoxon		< .001	-0.61
Self awareness T1	- Self awareness T2	Student	266	< .001	-0.51
		Wilcoxon		< .001	-0.69
Self confidence T1	- Self confidence T2	Student	266	< .001	-0.49
		Wilcoxon		< .001	-0.79
Self organisation T1	- Self organisation T2	Student	266	< .001	-0.58
		Wilcoxon		< .001	-0.69
Attitude T1	- Attitude T2	Student	266	< .001	-0.49
		Wilcoxon		< .001	-0.62

Paired Samples T-Test

		Test	df	p	Effect Size
Learning skills T1	- Learning skills T2	Student	266	< .001	-0.49
		Wilcoxon		< .001	-0.78
Literary skills T1	- Literary skills T2		266	< .001	-0.47
		Wilcoxon		< .001	-0.82

Note. For the Student t-test, effect size is given by Cohen's *d;* for the Wilcoxon test, effect size is given by the matched rank biserial correlation.

Descriptives Plots

These show the important elements of the data above in graphical form.

Note:

- the vertical axis shows the mean difference in scores between T1 and T2,
- the lines above and below these means show the confidence interval;
- where the top and bottom of these bars overlap, then the difference is not significant

Wide Range Achievement Test (WRAT4)

Word Reading T1 - Word Reading
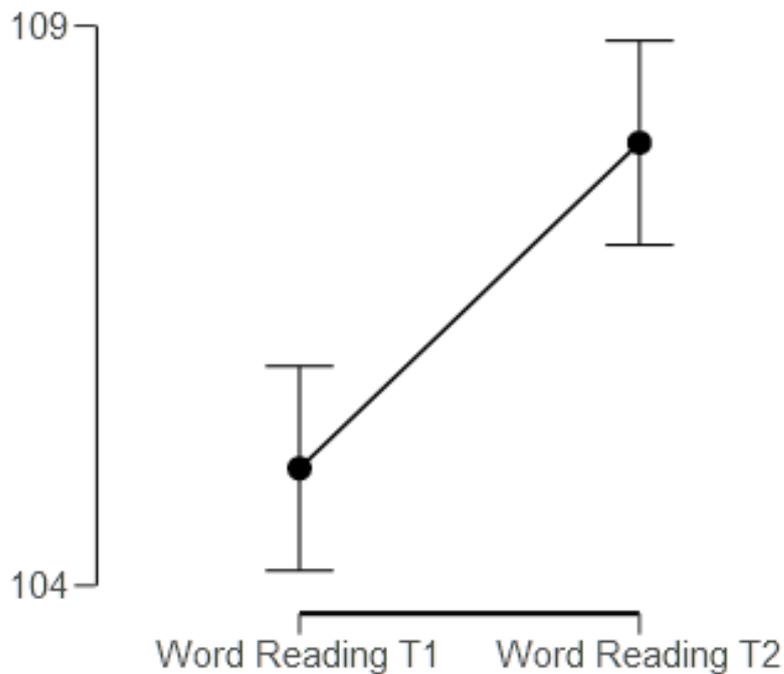
T2

Spelling T1 - Spelling T2
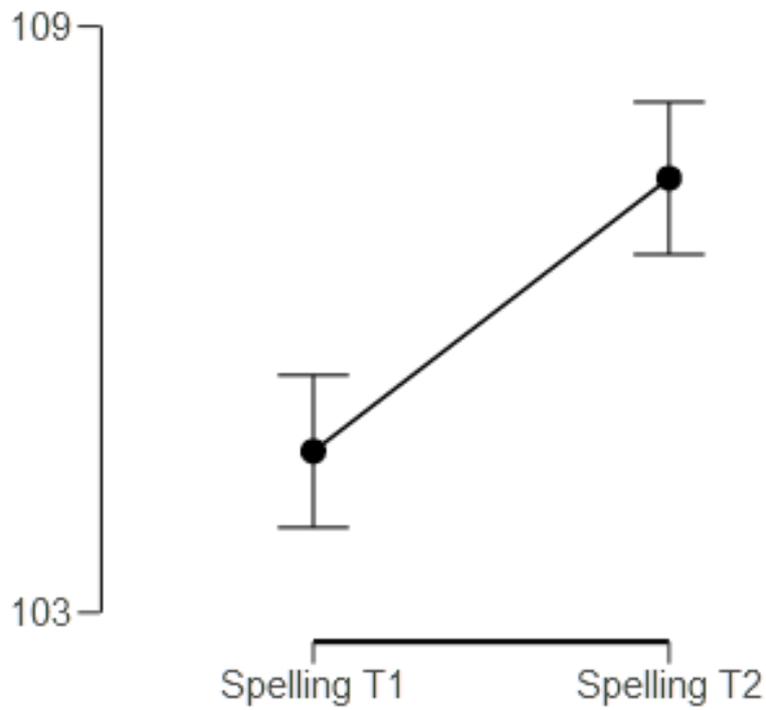
Maths Comp. T1 - Maths Comp. T2
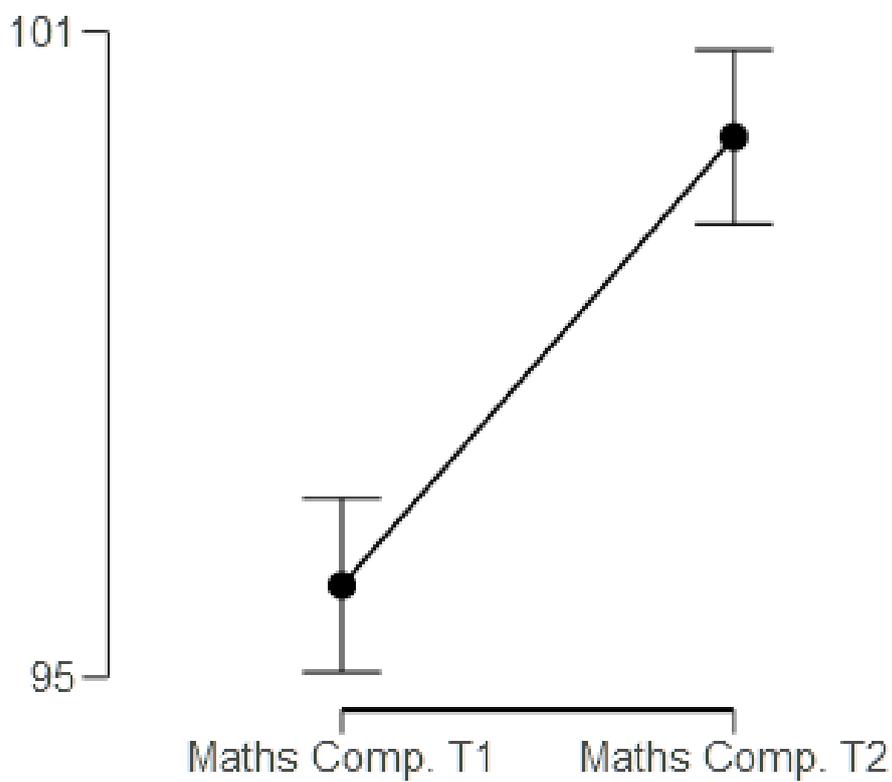
Guide to the Assessment of Test Session Behavior (GATSB)

Avoidant T1 - Avoidant T2
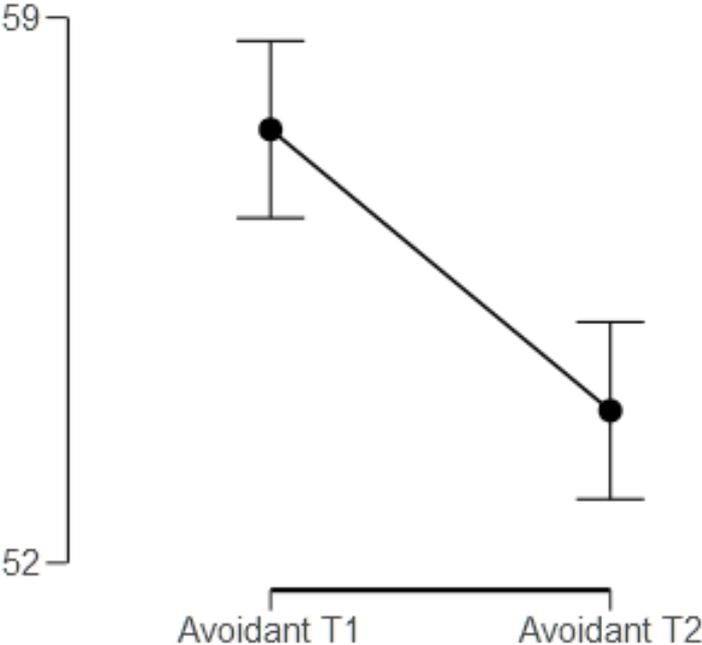
Inattentive T1 - Inattentive T2
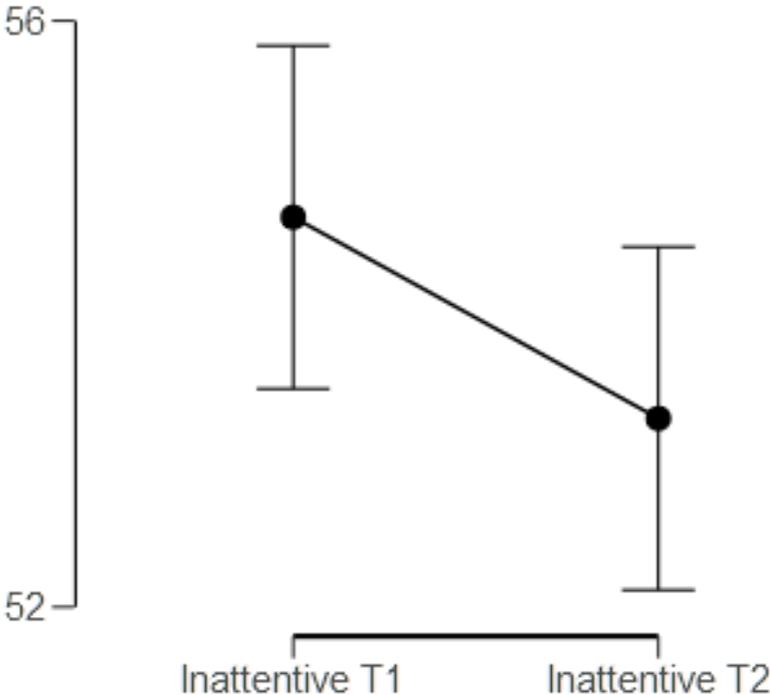
Uncooperative T1 - Uncooperative T2
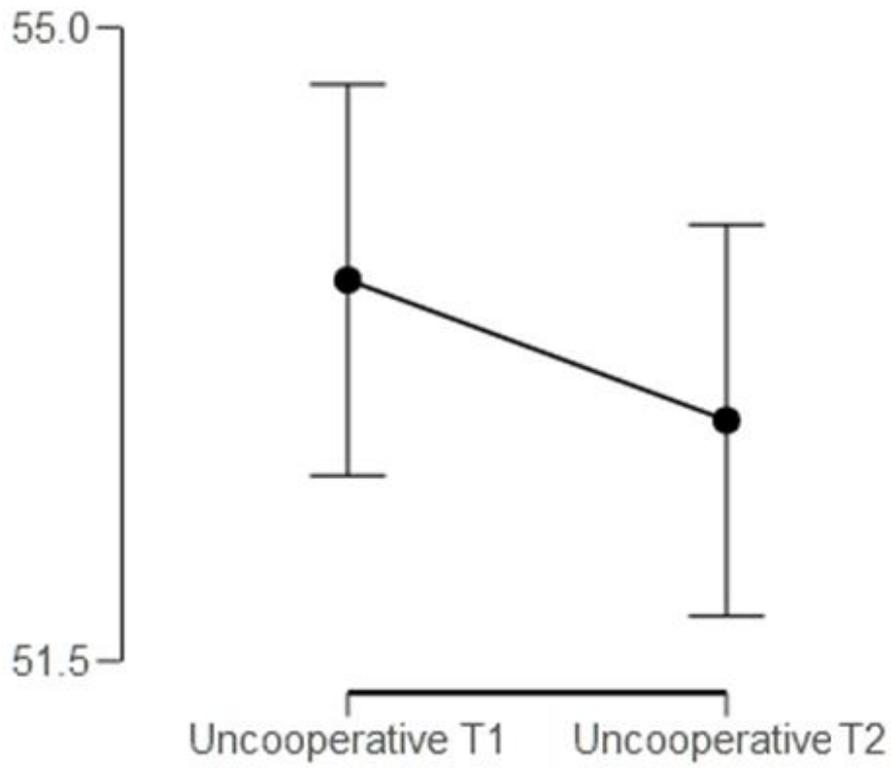
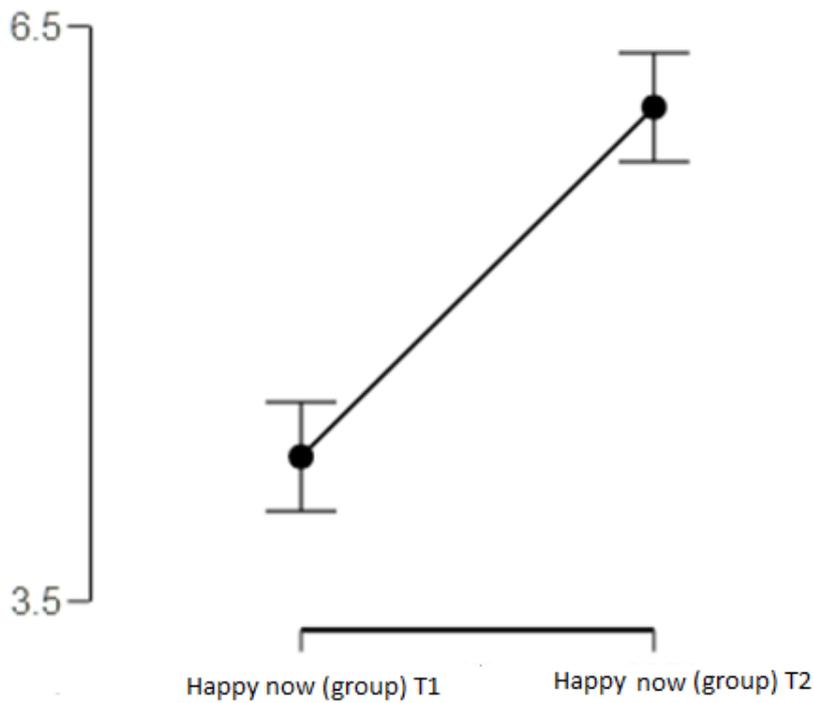**GATSB Total T1 - GATSB Total T2**
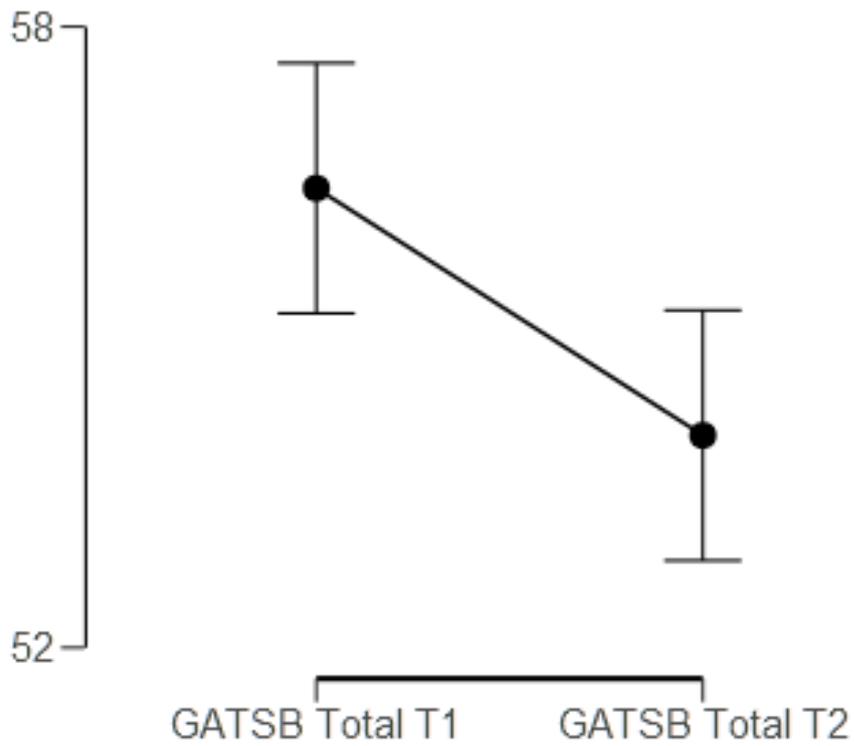
Happiness Line Measure (HLM)

Happiest ever in a school T1 - Happiest ever in a school T2
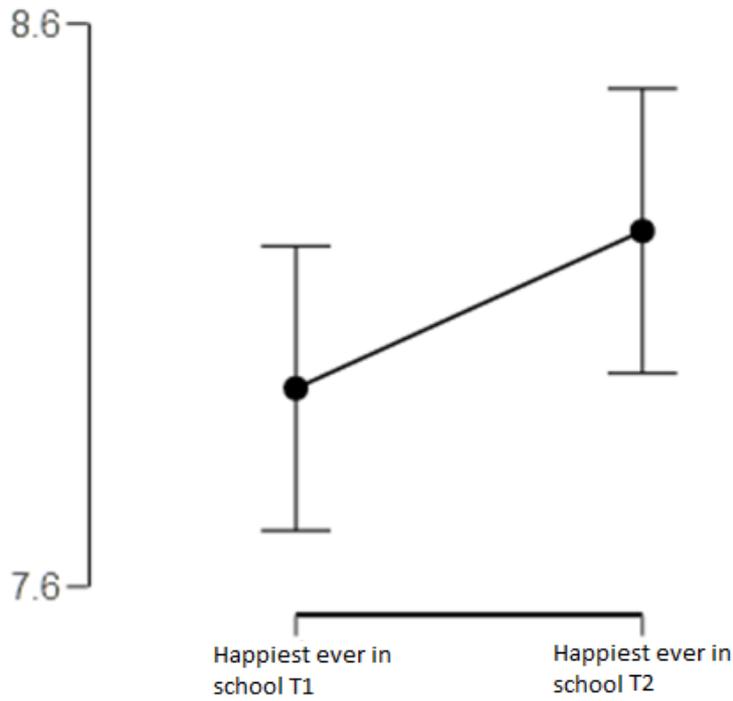
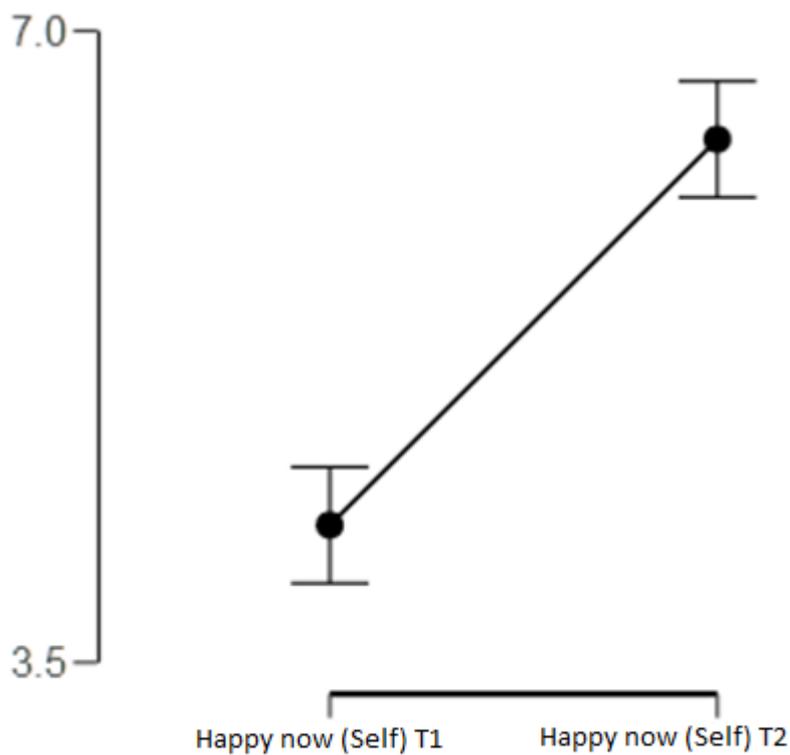## Unhappiest ever in a school T1 - Unhappiest ever in a school T2
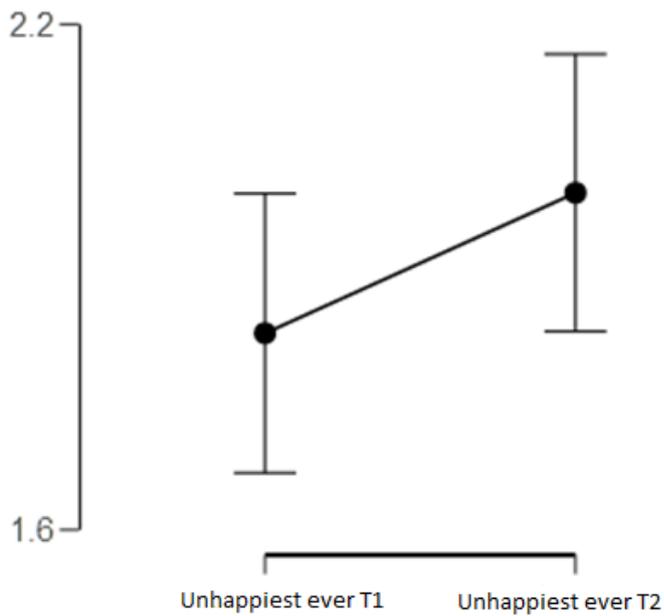
Happy now (compared to group) T1 - Happy now (compared to group) T2

Happy now (compared to personal experience in schools) T1 - Happy now (compared to personal experience in schools) T2

Reintegration Readiness Scale (RRS)

The black titles indicate that the improvement does not reach reintegration thresholds '≥0'

Orange titles indicate improvement above '0' threshold T1 starting points

Green titles indicate that improvement moves from below <0 to above >0, the successful reintegration threshold (0 marked with a line)

RRS Total

An initial test of the RRS totals at T1 and T2 showed a change from a negative to a positive likelihood of success.

Paired Samples T-Test

	Test	df	p	Effect Size	95% Confidence interval for Effect Size	
					Lower	Upper
RRS total T1 - RRS total T2	Student	266	< .001	-0.601	-0.730	-0.470
	Wilcoxon		< .001	-0.671	-0.740	-0.588

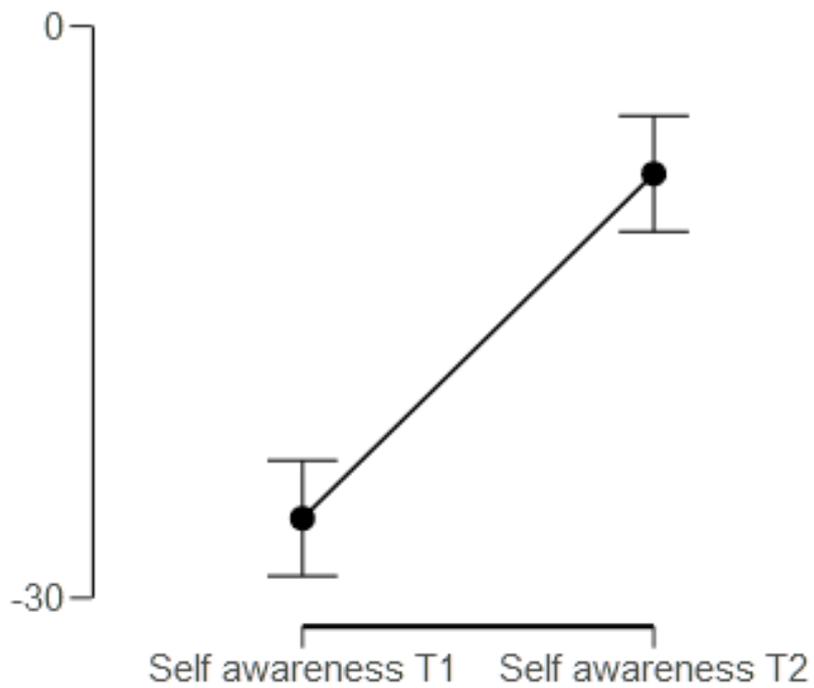## RRS total T1 - RRS total T2
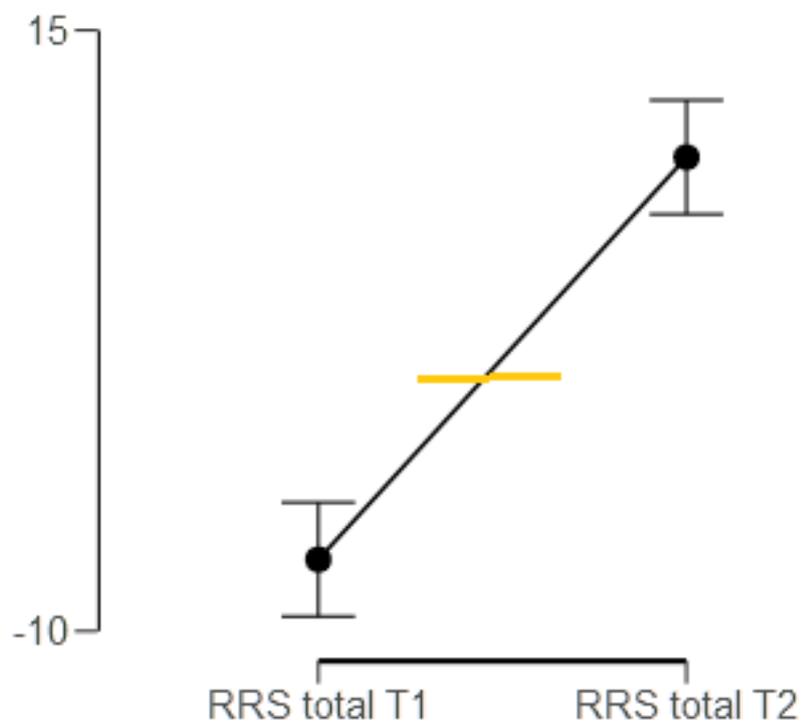
Self management T1 - Self management T2
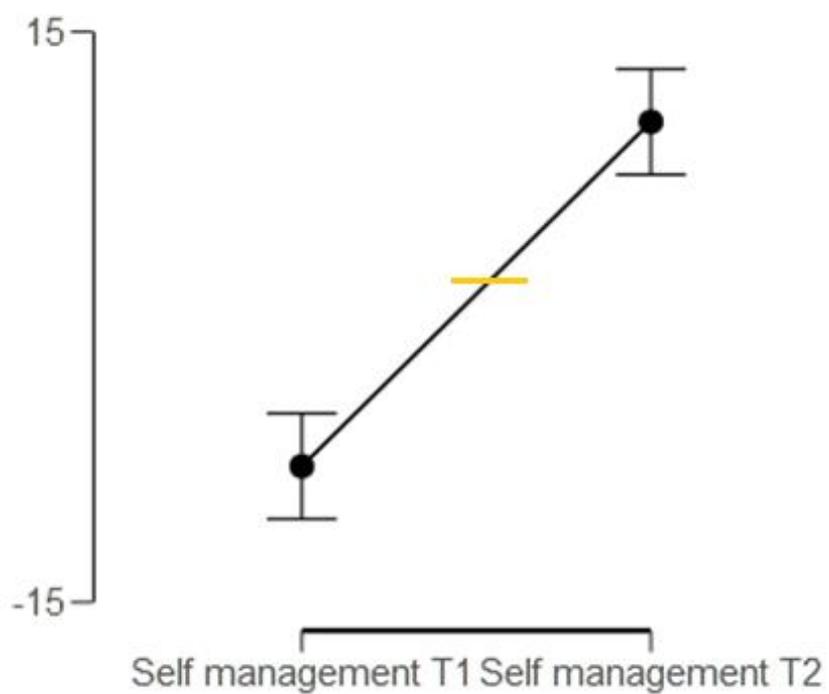
Self & others T1 - Self & others T2

Self awareness T1 - Self awareness

T2

Self confidence T1 - Self confidence

Self confidence T1   Self confidence T2

T2

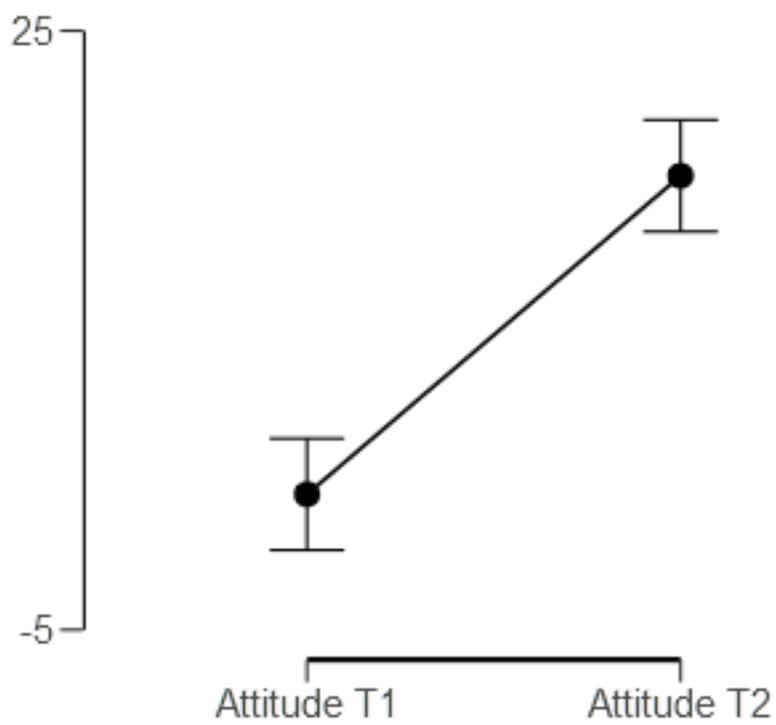## Self organisation T1 - Self organisation T2
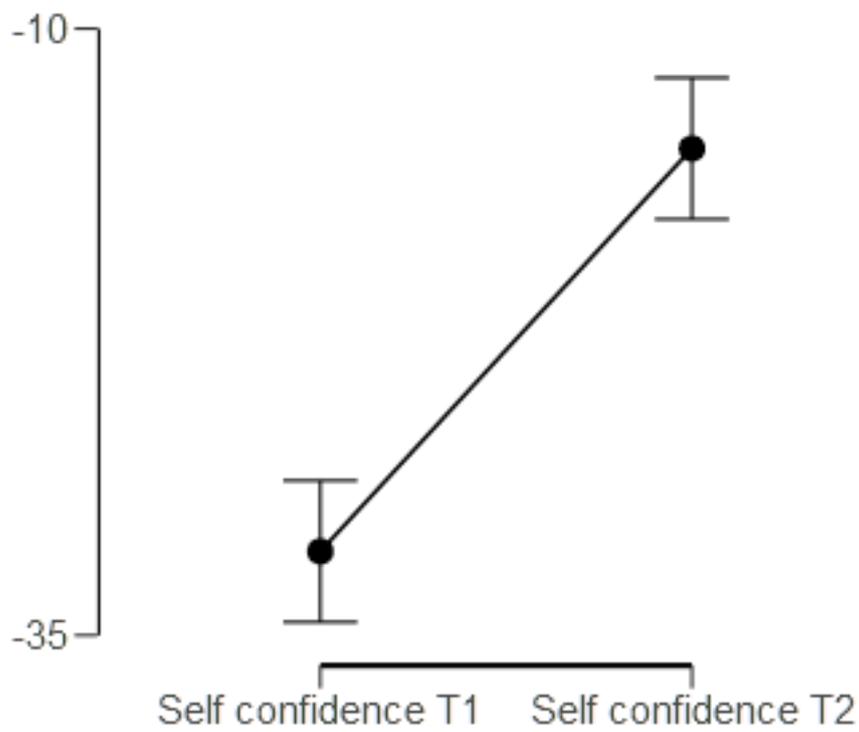
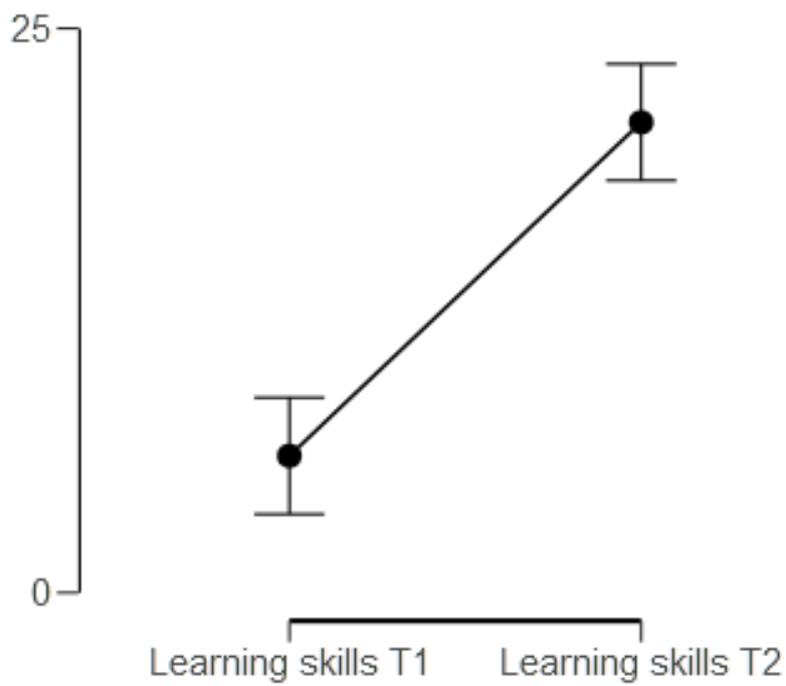Self organisation T1   Self organisation T2
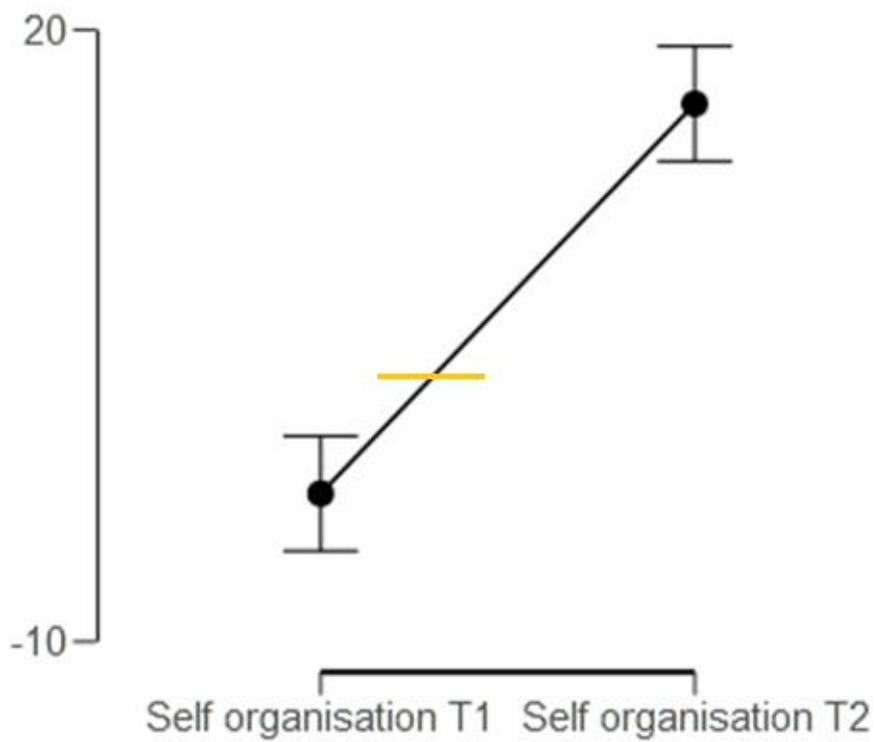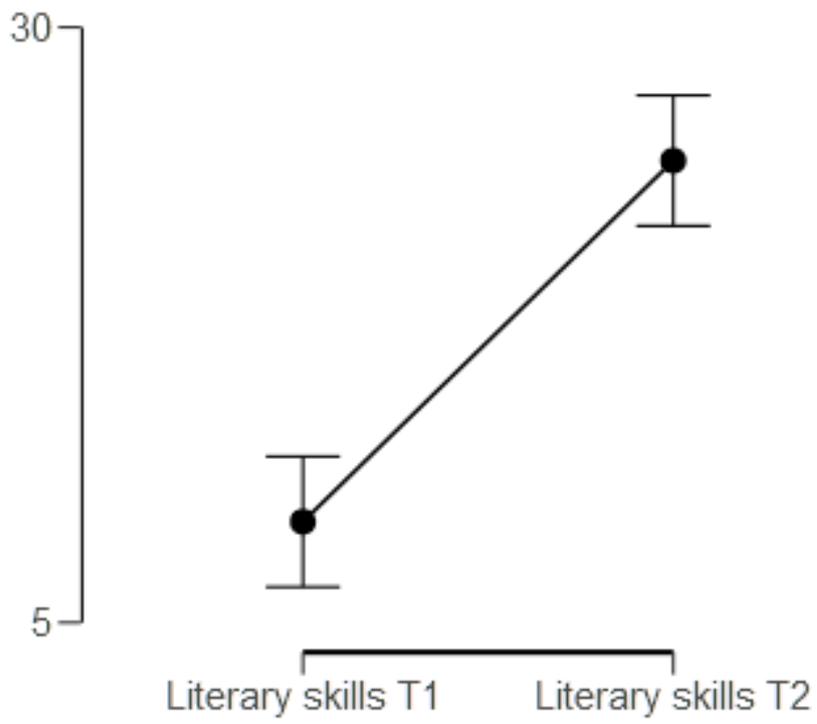
Attitude T1 - Attitude

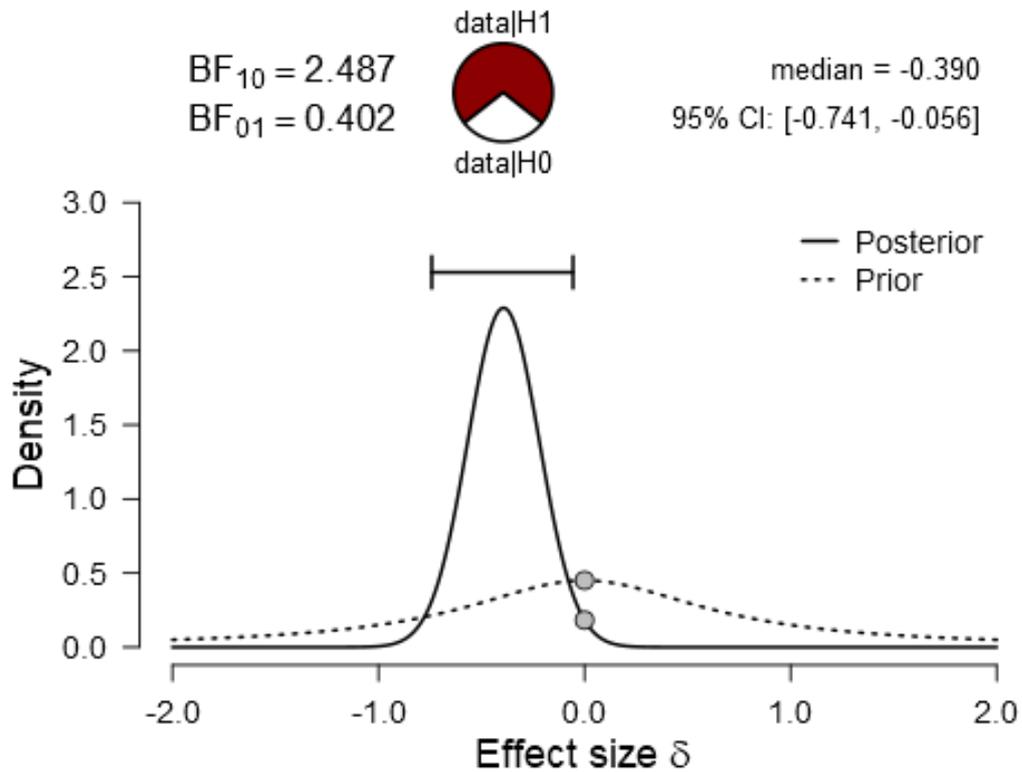## Learning skills T1 - Learning skills T2

Literary skills T1 - Literary skills T2

The best RRS predictor of who will return successfully to education is Attitude at T1

Bayesian independent samples T-test: Prior and Posterior

$$BF_{10} = 2.487$$
$$BF_{01} = 0.402$$

data|H1

data|H0

median = -0.390
95% CI: [-0.741, -0.056]

The 'Pizza' plot at the top of the chart shows the support for the hypothesis that Attitude at T1 is a predictor of reintegration success; the larger red 'slice', indicates the supporting evidence. It will be useful to pick up pupils at entry who both have low RRS Attitude scores and who have not been in a stable educational setting on a consistent basis.