

**Report for Worklife Support on the Relation Between
Well-Being and Climate in Schools and Pupil Performance**

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This document was prepared to report the results of the research conducted by Professor Briner and Dr Dewberry. It is not intended to be a full and comprehensive research report. For more details please contact Rob Briner at r.briner@bbk.ac.uk

Introduction

The four main tasks, as set out in the Second Stage proposals are as follows, along with the rationale for undertaking each task. The results of each task are described in each of the four sections of the report.

1. Further analyses similar to Stage 1 by staff group (teachers, support staff, senior managers) rather than for all staff.

This is likely to show relationships between teacher well-being and SATs scores more clearly and possibly more strongly as the previous analysis included all staff. Clearly, we would expect teacher well-being, rather than the well-being of other staff, to affect school pupils most directly. This would allow to state with more certainty how strong these relationships are and which staff seem to influence SATs scores most strongly.

2. Examine OSRM and associated data for other likely moderating variables and variables which are not of direct interest but that may be affecting well-being or SATs scores (e.g., school size, initial levels of well-being, deprivation level etc). This will involve two stages. In the first stage relevant variables will be identified, and in the second stage extensive statistical analyses will be undertaken on the effects of these variables on the strength of the relationship between well-being and SATs scores. In addition, the associations between well-being and different SATs subject areas will be examined.

These analyses are designed to control for variables that may be influencing or biasing links between well-being and SATs scores. Such analyses will highlight exactly where the strongest relationships between teacher well-being and SATs scores are to be found. Also, it is proposed to look at SATs scores for different subjects differently as it is quite possible that teaching in some subjects and hence SATs scores in those subjects is more strongly influenced by teacher well-being than others. These analyses would allow you to pinpoint more clearly where, and to some extent how, teacher well-being is affecting SATs. Controlling for other variables is likely to increase the strength of the relationships between well-being and SATS scores identified in the Stage 1 analysis reported in August.

3. Further analysis using the climate measures to predict SATs scores

3.1. Identifying climate measures

3.2. Looking at climate > well-being > performance pathways

Given that the OSRM measures climate and well-being, further analyses similar to those conducted for the first stage of this project, will be conducted using climate measures. Such measures will first need to be identified (3.1) and then the links between these measures and performance examined (3.2). This will allow you to compare the relative strengths of well-being and climate as predictors of SATs scores and say more about how Worklife Support and the interventions it proposes may affect climate.

4. Same analysis as already conducted for Stage 1 for secondary schools (but without the longitudinal element). But also examining staff groups separately and controlling for variables identified in point 2 above.

These analyses will allow Worklife Support to examine whether there are similar relationships in secondary schools to those found in primary schools between teacher well-being and school climate and school performance.

The report concludes with a fifth section discussing some conclusions.

Section 1

Analysis of Data from Primary Schools

Section 1 reports the results from Task 1 which was as follows:

Task 1. Further analyses similar to Stage 1 by staff group (teachers, support staff, senior managers) rather than for all staff.

The Stage 1 report also contained a brief literature review describing possible links between well-being and performance on an organizational or team level. For the sake of completeness, this literature review is reproduced here.

Background

Various aspects of well-being or people's feelings at work have been found to relate to different aspects of performance. The most often studied relationship by far has been between job satisfaction and performance. There has been considerable debate about the strength of this relationship, whether it exists, and how it might work. There is, however, broad consensus that there are some causal links between job satisfaction and performance but that such links are probably not as strong or as widespread as is suggested by popular belief. In other words, more satisfied workers may perform better than less satisfied workers but the difference may not be that large and it may depend a lot which the jobs or organizations are being examined.

Before looking at existing research specifically relevant to the Worklife Support research it is important to explain several key issues in understanding how well-being may affect performance.

General job satisfaction versus specific feelings

Most scales measuring job satisfaction tap into quite general perceptions and feelings the individual has towards their job. As mentioned above, the links between well-being and performance are likely to be strongest when looking at specific feelings and specific kinds of performance (see below for discussion of performance). For example, a specific feeling, such as feeling enthusiastic, is likely to be strongly related to performance in a task which requires enthusiasm such as motivating co-workers or selling a product or service over the phone. A more general feeling, such as being broadly satisfied with one's job is likely to be only weakly related to these specific kinds of performance.

Therefore, when considering the results of any study linking well-being to performance it is reasonable to assume that general measures of well-being, such as job satisfaction, are unlikely in any situation to be very strongly related to performance. In the present Worklife Support research we have attempted to use questionnaire items which do seem to assess more specific feelings.

Job attitudes versus well-being

While job satisfaction can be considered to be a very general measure of well-being it has also been argued that job satisfaction is actually more of an attitude than a feeling and therefore does not really assess well-being. Attitudes are more concerned with perceptions and evaluations than feelings though clearly feelings play a role in attitudes. The central problem is that individuals may report they are satisfied with their job but on a day-to-day level they may experience few positive feelings while at work or in relation to their work.

Job satisfaction may be an interesting thing to assess but it is also important to bear in mind that what is assessed in measures of job satisfaction is not necessarily the same thing as well-being. For this reason we have attempted to pick out items from the questionnaire which reflect well-being rather than attitudes or workplace perceptions.

What kind of performance?

In most jobs, and certainly in a teacher's job, performance is difficult to define and measure. While school pupils' results can be seen as a good indicator of how well a teacher is doing their job we also know that a huge range of factors, most outside teachers' control, play a much stronger role in determining how well school pupils perform in exams. Similarly, a salesperson's performance may be judged on the number of deals they close. But if the product they are selling is just unattractive to customers even the best salesperson is unlikely to perform well. While outcomes such as these seem like the ultimate measure of performance they are also difficult to interpret as in most cases an employee's behaviour may only have a limited effect on these outcomes compared to other influences. In addition, as mentioned later, it may be that team or organizational performance is a better way of measuring performance rather than looking at how individuals perform.

In addition to these outcomes, inputs, such as time on task or time spent on role-relevant activities, can also be considered as measures of performance. However, other sorts of behaviours such as volunteering, helping, and other organizational citizenship behaviours may be vital for the overall performance of an organization yet such behaviours are extra-role and therefore reduce employees' time on role-relevant tasks. This raises the question of which inputs or behaviours are important for organizational performance.

Being clear about what performance means and how it is being assessed is useful in thinking through why and if relationships between well-being and performance are found. In this research, performance is being assessed in terms of the performance of students rather than the inputs or behaviours of teachers in schools. As mentioned above, there are many other factors that will affect school pupil performance. In addition, it is important to start to consider exactly how teacher well-being may affect both teacher behaviour and school pupil behaviour in ways that may impact on school pupil exam performance. This is discussed in more detail below.

Individual level versus unit level

Nearly all research on the links between well-being and performance – and in particular research on job satisfaction and performance – focuses on individuals. In other words both well-being and performance are assessed on an individual level with a sample of participants and associations between these two measures are then examined. This allows us to explore whether individuals who report higher job satisfaction, for example, also report or are perceived by a supervisor to have higher levels of performance.

While looking at the effects of well-being on performance in this way makes some sense, it has also been argued that such individual level analyses are missing important and stronger effects that may be occurring on the level of work units, such as teams or whole organizations. In other words, the links between the average level of well-being in a unit and that unit's overall performance may be stronger than relations found between individual level well-being and performance. Why might this be the case? The most obvious explanation is that in many jobs performance depends not just on individuals but on cooperation and interaction between those individuals hence looking at performance on a unit level is actually more meaningful. Hence individual well-being will be less important than collective or shared levels of well-being. For example, if we look at 20 teams in which individuals work together to achieve some kind of output it seems to make little sense to examine well-being and performance on an individual level; rather, we should look at the average level of well-being in each team and relate this to the overall performance of the team.

As discussed later, researchers have examined well-being and performance on the level of teams, sub-units of organizations (e.g. branches of a bank) and whole organizations. The current Worklife Support likewise is examining links between well-being and performance on the level of the unit and specifically in this case on the level of the school as it is on this level that school pupil performance data are available. However, given school pupils of this age spend most of their time with the same teacher, it could be argued that the most appropriate level of analysis would be individual level teacher well-being and average performance in that teacher's class.

Direction of causality and causal processes

While most research in this area tends to assume that well-being affects performance rather than vice versa it seems equally plausible that if an individual is performing effectively this may enhance their well-being. This is also likely on a unit or organizational level. Individuals within teams or organizations that are performing well in terms of, for example, effectiveness or profitability, and who receive feedback about this performance are likely to be affected by such feedback. In the context of the Worklife Support research it seems quite plausible that school-level feedback about school pupil performance from the Statutory Assessment Tests (SATs) will affect teacher well-being. While the current research is only considering the effects of well-being on performance it is important to bear in mind that performance may also affect well-being.

Another key issue in addition to causality are the causal processes we believe may be operating to connect well-being to performance. In most cases such processes are likely to be reasonably elaborate. In the Worklife Support research, as mentioned earlier, this is made even more complex by the fact that it is school pupil performance rather than teachers' performance behaviours that is being used as the indicator of performance. Yet another potentially complicating factor is that it is teachers themselves who administer the SATs and it may be possible, though we have no evidence for this, that teacher well-being affects the way in which SATs are conducted which in turn affects the performance measurement obtained.

While we can only speculate about the sorts of causal processes involved it remains important to do so. As mentioned earlier, there are probably two main pathways. The first of these suggests that teacher well-being affects teacher behaviour which in turn affects school pupil behaviour. So, for example, a teacher who experiences more enthusiasm and excitement may be more persistent and focused in their efforts to encourage particular pupils who are having difficulties and in turn those pupils make greater effort or overcome their problems more effectively. The second pathway involves the more direct impact of teacher well-being on pupil behaviour. A teacher who, for example, feels bored and unenthusiastic while teaching may invoke feelings of boredom in pupils which in turn affects the attention and effort pupils make when engaging in learning activities.

Given the available data and aims of the current research it is not possible to explore the direction of causality of these or other causal pathways. Therefore, in interpreting the results reported later, it is important to be aware that we have no information about how or why teacher well-being may relate to pupil performance.

Previous relevant research

The above discussion suggests that while specific aspects of well-being are likely to be related to specific aspects of performance it is unclear in the current context what these are likely to be. This uncertainty is also reflected to some extent in previous research as most of it tends to take a rather broad-brush approach to examining the links between well-being and performance tending to focus on job-satisfaction, rather than specific aspects of well-being, and using the sorts of performance measures that are already available in the organization rather than ones which may be more specific and hence more strongly related to particular aspects of well-being.

While there is now a very large body of research on well-being and performance, a relatively small proportion of it examines well-being and performance on a unit or organizational level and hence much of it is not relevant to the current study. It is worth noting that there is an increasing trend for exploring well-being and performance on this level for the sorts of reasons discussed earlier.

In addition, much of the small body of research on unit-level employee attitudes and performance tends to use measures of climate or perceptions of the workplace rather than measures of well-being. For this reason this research is not discussed here.

Given the relatively few directly relevant research articles available these will be discussed individually rather than collectively summarized.

One of the earliest and most directly relevant pieces of research (Ostroff, 1992) examined the links between teacher satisfaction, stress (and attitudes) and a range of school performance indicators including academic achievement, student behaviour, student satisfaction and teacher turnover. Data were collected from 13,808 teachers across 298 schools and (as it true of all the studies reported here) analyses were conducted on the level of the school. Given many other factors can influence these outcomes, the analyses also controlled for or took into account some of these factors including the proportion of nonminority students, the age of the school building, the proportion of students receiving free or subsidized lunches, and the staff-student ratio. Moderate and statistically significant associations were found between many of the well-being and attitude measures and some of the school performance measures. Of particular relevance here were the associations between satisfaction, stress, and student performance. Correlations between teacher satisfaction and a range of student exam performance measures ranged from .20 to .31. However, correlations between stress (a measure of work overload) and student exam performance were all below .10 and did not reach statistical significance. After controlling for other factors affecting student performance the strength of the relationships between job satisfaction and student performance was reduced but remained statistically significant. In the case of the relationships between the measure of stress and student performance which had been previously non-significant, stress was now significantly related to two of the student performance measures. It should be noted that this study was not longitudinal and so no causal inference could be made. In other words it is not possible to suggest whether or not teacher satisfaction or stress were a cause of student performance.

A study of 42 branches of a financial services organization (with an average of 41 staff in each branch) was conducted over a two year period by Ryan, Schmit & Johnson (1996). A number of attitude and well-being measures were taken at two time points including job satisfaction and stress. Performance measures included branch productivity (assessed by an array of financial data) and customer satisfaction. Both satisfaction and stress were related to customer satisfaction and to some of the measures of branch productivity. Longitudinal analysis suggested that customer satisfaction was a cause of employee well-being rather than the other way around. Causal relationships between employee well-being and productivity could not be found.

Koys (2001) also used a longitudinal design to examine the causal relationships between job satisfaction and customer satisfaction and profitability (and other performance indicators) in 28 branches of a regional restaurant chain with a total of around 700 employees. It was found that job satisfaction was a cause of subsequent customer

satisfaction but that this relationship didn't hold the other way around. Job satisfaction was not causally related to profitability.

In a very large study of 7,939 business units in 36 companies, Harter, Schmit & Hayes (2002) examined associations between a range of attitude measures (including job satisfaction) and business unit performance indicators including customer satisfaction, productivity, profit, and employee turnover. Significant relationships were found between unit level job satisfaction and all the performance indicators with the strongest relationships found between job satisfaction and the two performance indicators customer satisfaction and employee turnover. It was not possible to infer causality from this study.

In a study explicitly designed to test the direction of the causal links between job satisfaction and organizational performance 35 companies were assessed each year for 8 years (Schneider, Hanges, Smith & Salvaggio, 2003). Organizational performance was measured by return on assets and earnings per share. It was found that overall job satisfaction and satisfaction with job security were predicted more strongly by organizational performance than the other way around. In other words, the performance of the organization was found to be a stronger cause of satisfaction vice versa.

From these published studies, it appears to be the case that well-being, as assessed by job satisfaction, has significant causal relationships at the unit or organizational level with some indicators of performance. These causal relationships can operate in both directions with job satisfaction both apparently causing and being caused by performance. While the general magnitude of these relationships is small most researchers are keen to emphasize that they may have strong practical utility in that even quite small increases in performance caused by changes in satisfaction may be highly significant to the organization.

1.A Selection of Well-being Scales

The OSRM items were examined, and three sets of items were extracted as being potentially useful measures of various aspects of well-being. These are as follows:

Scale 1: Feeling Valued and Cared For

- 1.1 There is a real interest in the welfare and well-being of the people who work here
- 1.6 Managers support and value staff
- 1.7 Staff support and value one another
- 4.2 We all help to create a friendly, caring atmosphere
- 7.8 I feel my contribution is valued

Scale 2: Feeling Overloaded

- 2.1 I rarely feel overloaded by my work
- 8.4 How often do you feel under pressure?
- 8.5 To what extent do you feel able to cope with the pressures you experience?

Scale 3: Job Satisfaction/enjoyment

- 2.9 I rarely think my job is dull or boring
- 8.3 To what extent do you enjoy your job?

The correlation between all items is shown in Table 1.

Table 1

Correlation Matrix Between Selected OSRM Items

	Q1.1	Q1.6	Q1.7	Q4.2	Q7.8	Q2.1	Q8.4	Q8.5	Q2.9	Q8.3
Q1.1	1.000	.687	.421	.492	.507	.208	.138	.202	.284	.318
Q1.6	.687	1.000	.459	.480	.544	.216	.141	.201	.292	.322
Q1.7	.421	.459	1.000	.518	.329	.085	.041	.141	.290	.230
Q4.2	.492	.480	.518	1.000	.465	.180	.147	.227	.300	.336
Q7.8	.507	.544	.329	.465	1.000	.241	.233	.301	.298	.444
Q2.1	.208	.216	.085	.180	.241	1.000	.533	.250	.065	.254
Q8.4	.138	.141	.041	.147	.233	.533	1.000	.271	.013	.284
Q8.5	.202	.201	.141	.227	.301	.250	.271	1.000	.209	.403
Q2.9	.284	.292	.290	.300	.298	.065	.013	.209	1.000	.406
Q8.3	.318	.322	.230	.336	.444	.254	.284	.403	.406	1.000

To examine the factor structure of these items, an exploratory principal components analysis with orthogonal (varimax) rotation was undertaken.

The rotated component matrix is shown below.

Table 2

Rotated Component Matrix^a

	Component		
	1	2	3
Q1.1	.804	.132	.136
Q1.6	.817	.139	.146
Q1.7	.727	-.099	.112
Q4.2	.752	.052	.161
Q7.8	.652	.232	.305
Q2.1	.127	.833	.099
Q8.4	.063	.853	.075
Q8.5	.074	.373	.607
Q2.9	.250	-.223	.760
Q8.3	.255	.225	.751

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

The results of the principal component analysis suggests that as expected there are three common components, and an examination of the items loading on each component

confirmed that they are concerned with feeling valued/cared for, job overload, and job satisfaction/enjoyment. However, the one of the items, Q8.5 (To what extent do you feel able to cope with the pressures you experience?) was found to load on both the job satisfaction./enjoyment dimension and the job overload dimension. As a result it was decided to remove Q8.5 from the analysis.

The internal reliability of the new dimensions were examined. The reliability of the five item “Feeling Valued and Cared For” dimension was examined with the Cronbach alpha statistic, and the other two dimensions, consisting of only two items each, were examined with Person correlation coefficients. The results were as follows:

Scale 1: Feeling valued and cared for: Cronbach alpha = .83

Scale 2: Feeling overloaded: $r = .57$

Scale 3: Job stimulation and enjoyment $r = .41$

These figures indicate that Scale 1 has very good internal consistency, and Scales 2 and 3, consisting of only two items each, have acceptable levels of consistency.

In the light of this analysis an overall score was computed for each respondent by obtaining the mean score for all items in each scale.

1.B Approach to Data Analysis

Before further analysis of the data the following issues were discussed and agreed.

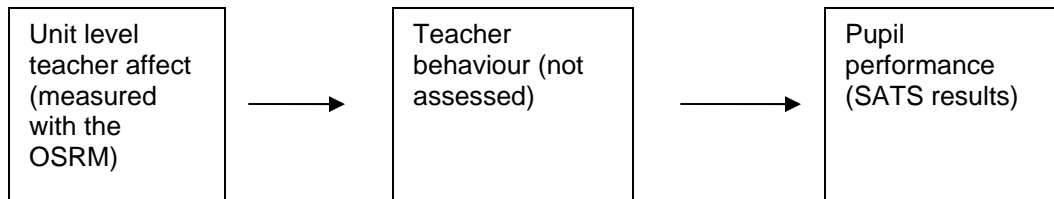
- Before proceeding with the detailed analysis it is necessary to establish the relative extent of within and between school variation in scores on each of the chosen well-being dimensions. This is standard practice in research involving the aggregation of scores at one level (here the responses of teachers within schools to the OSRM) to a higher level (here differences in the mean well-being across different schools).
- Conceptually, it would be a mistake to assume that the point in time at which the OSRM is measured is also the point that well-being is "fixed", and that it having been fixed the appropriate approach should be to wait for 2-9 months to examine the results of this on school performance. The reason for this is that the OSRM measure is taken at an arbitrary point during which the well-being of teachers in any school will be in some sort of linear or non-linear trajectory (e.g. going up, coming down, being stable, cycling slowly or rapidly up and down, going up or down in discrete steps etc.). The approach to data analysis should be based on an awareness of this.
- In this context it should be noted that the only (very crude) way to ascertain the well-being trajectory in a given school is by comparing the well-being scores across the two points of time it is measured. However this can only reveal whether well-being tends to decrease, remain stable, or increase over the measured time period.

In the light of our discussion of these issues we decided on the following approach to data analysis:

1. Examine and compare the variation in well-being scores within and between schools.
2. If appropriate in the light of 1, collapse the OSRM scores for each of the three derived well-being scales across schools.
3. Create a new working file by merging the collapsed OSRM data with the data file containing information about the performance of each school.
4. Examine the mean direction of changes in well-being across the two measuring points to establish whether well-being tends to increase, decrease, or remain stable over time.
5. Examine the extent to which mean school well-being, across the two measurement points, measured on all chosen dimensions, predicts SATS scores in each year (2002-2005) and the mean SATS scores across years.

6. Examine whether positive or negative changes in OSRM scores between T1 and T2 explain any variance in SATS scores. To do this we will compute the difference between Time 1 and Time 2 well-being scores for each school. Then the strength of association between these difference scores and SATS scores will be examined. We will limit this analysis to those schools where the first OSRM measure was at least three months before the SATS assessment so as to be reasonably confident that the measured "well-being trajectory" is appropriate to that SATS score.

To further guide the analysis, we considered the following model of the processes leading to pupil performance:



However, we are aware that it is important to recognise that in all schools many variables are likely to influence the way that teachers and pupils behave and perform (e.g. the facilities available in the school, the extent to which the children come from close and supportive families, how many disruptive children there are at the school, the characteristics of the Head teacher, the decisions of the school governors, the extent to which pupils' parents help them with schoolwork, the quality of teaching staff, how well the teaching staff get on with each other, the history of the school, the proportion of children in the school with special educational needs etc.). We are therefore mindful that all of these variables, and many more, may influence, directly, and indirectly, the cognitions, affect, and behaviour of teachers and/or pupils.

We are also mindful that the data to which we have access enables to will only allow us to establish a simplified understanding of the processes leading to good pupil performance.

1.C The Variation in Scale Scores Within and Between Schools

In order to examine the variation in scale scores within and between schools, two forms of intraclass correlations were computed for Time 1 data only: ICC(1) and ICC(2). ICC(1) shows the proportion of variance in teacher ratings accounted for by differences in schools. ICC(2) is a measure of the proportional consistency of variance: if another sample of teachers were randomly sampled from the same schools, the correlation of their scores with those obtained here would be approximately equal to this.

As an indication of type of ICC(1) value that might be obtained here, James, (1982) reviewed several studies using this measure and found a median value of .12. The figures shown in Table 3 indicate that about one fifth of the variance in “Feeling valued and cared for” is accounted for by differences in schools, and that the figures obtained here are very reliable.

Table 3

The Variation in Scale Scores Within and Between Schools

	ICC(1)	ICC(2)
Feeling valued and cared for	0.22	0.88
Not feeling overloaded	0.07	0.58
Job satisfaction	0.08	0.63

However, the proportion of variance accounted for by schools in feeling overloaded and job satisfaction is only around 7-8%, and the reliability of the figures obtained here is noticeably lower. The difference between the “feeling valued and cared for” scale and the other two in this regard is probably at least partly due to the number of items making up the scales: “job satisfaction” and “feeling overloaded” and based on only two items, whereas “feeling valued and cared for” is based on five items. The larger number of items “feeling valued and cared for” scales is likely to make this more reliable than the other two scales.

It is concluded that it is entirely appropriate to aggregated the “Feeling valued and cared for” scale to the school level of analysis. This can also be done with “Feeling overloaded” and “Job Satisfaction” but the results should be treated with more caution in these two cases.

1.D Changes in OSRM Scores Across Time

Having established that the relationship between within and between school variation is acceptable for the three scales, they were collapsed across schools.

Table 4 presents the year in which the OSRM data was collected in relation to whether it was the first such collection of data (“Time 1”) or the second (“Time 2”). It shows that most Time 1 data was collected in 2004 and that most time 2 data was collected in 2005.

Table 4

The Academic Year in Which the OSRM was Completed

Academic Year	Time 1	Time 2
2003	30%	0%
2004	70%	23%
2005	0%	77%

Table 5 shows the mean scores obtained for the three OSRM well-being scales at Times 1 and 2. It shows that well-being tended to be greater at Time 2.

Table 5

Mean OSRM Scores across Schools at the First and Second Time of Measurement

Scales	Time 1		Time 2	
	Mean	Std Deviation	Mean	Std Deviation
Feeling valued and cared for	3.81	0.36	3.88	0.34
Not feeling overloaded	2.96	0.29	3.05	0.32
Job satisfaction	3.98	0.23	4.03	0.23

Three paired samples t-tests were carried out to examine whether the well-being scores for the three scales were significantly greater at the second time of measurement than at the first time of measurement. The results are summarized in Table 6.

For all three scales, “feeling valued and cared for” “feeling overloaded”, and “job stimulation and satisfaction” the scores at the second time of measurement were significantly greater than at first time of measurement. However, the effect sizes were small (an effect size is considered small if d is about 0.2 and medium if it is 0.5) for all three scales.

Table 6

Statistical Significance and Effect Sizes of Well-being Measures on the Three Scales at the First and Second Times of Measurement

Dimension	t	Degrees of Freedom	Significance	Effect Size (d)
Feeling valued and cared for	4.23	248	<.000	0.20
Not feeling overloaded	4.97	248	<.000	0.30
Job stimulation and satisfaction	3.48	248	.001	0.22

N=246

1.E The Association Between Measures of Well-Being and School Performance

Table 6 shows the associations between scores on the three OSRM well-being scales, measures of the proportion of school pupils with special educational needs (SENs), the percentage of authorized and unauthorized absences in schools, and school performance measured in relation to raw SATS scores in each year from 2004 to 2005 and Value Added scores for 2004 only. Pupils with SEN are divided into those with and without Statements, and a brief explanation of what this means is provided below.

According to the law a child has special educational needs if he or she has learning difficulties, which call for special educational provision to be made for them. Children have a learning difficulty if they have a significantly greater difficulty in learning than the majority of children of the same age, have a disability which prevents or hinders the child from making use of educational facilities of a kind generally provided for children of the same age, are under compulsory school age and fall within the above groups or would do so if special educational provision was not made for them. As many as 20% of children may have special educational needs at some point during their education. Around 3% of children have learning difficulties at a level that requires a Statement of Special Educational needs to be issued.

Table 7 indicates that the OSRM well-being scales are positively correlated with all measures of performance. In all cases correlations of .14 or greater are statistically significant at the .05 level and .17 or greater are significant at the .01 level.

Regression analysis was carried out to examine whether Time 1 and Time 2 scores on the three OSRM well being scales predict measures of School Performance. The results are shown in Table 8.

Table 7

Correlations Between School Variables, Non-Factor Analysis Derived OSRM Variables, and School Performance Measures

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Time 1: Feeling valued															
2. Time 1: Feeling overloaded	.50														
3. Time 1: Job satisfaction	.70	.51													
4. Time 2: Feeling valued	.73	.42	.47												
5. Time 2: Feeling overloaded	.32	.55	.22	.52											
6. Time 2: Job satisfaction	.52	.46	.50	.70	.45										
7. Total number of pupils (including part-time pupils)	-.34	-.27	-.29	-.34	-.24	-.21									
8. Pupils with statements of SEN	-.06	.08	.02	-.11	.00	-.04	.28								
9. Pupils with SEN, without statements	-.26	-.24	-.22	-.25	-.20	-.18	.68	.27							
10. Percentage of sessions missed through authorized absence	.02	.11	-.02	.01	.01	-.02	.10	.13	.32						
11. Percentage of sessions missed through unauthorized absence	-.23	-.14	-.24	-.15	-.15	-.11	.27	.04	.50	.13					
12. Aggregate across the three core subjects: 2002	.18	.13	.21	.13	.11	.11	-.10	-.13	-.13	-.30	-.50				
13. Aggregate across the three core subjects: 2003	.17	.09	.14	.16	.12	.12	-.15	-.22	-.43	-.37	-.42	.73			
14. Aggregate across the three core subjects: 2004	.20	.16	.20	.24	.19	.22	-.19	-.24	-.47	-.37	-.49	.69	.69		
15. Aggregate across the three core subjects: 2005	.16	.13	.13	.18	.16	.18	-.10	-.29	-.43	-.32	-.46	.55	.61	.64	
16. School valued added measure	.10	.08	.06	.16	.13	.20	.03	-.20	-.12	-.02	-.16	.27	.36	.36	.63

N=231

All correlations greater than .12 are significant at .05, and all greater than .17 are significant at .01.

Table 8

**Regression Analysis Using Time 1 and Time 2 OSRM Well-being Scales
to Predict School Performance**

School Performance Measure	R²	Significance
SATS 2002	.05	NS
SATS 2003	.04	NS
SATS 2004	.08	.005
SATS 2005	.05	NS
Value Added	.04	NS

The R² shows the percentage of variance in each measure of school performance which is accounted for by the combined effect of the OSRM Time 1 and Time 2 well-being scales. Between 4% and 8% of the variance in school performance is accounted for by well-being, though the regression model is only statistically significant in 2004. It should be noted that 2004 is the year in which the largest amount of OSRM data was collected (70% of Time 1 and 23% of Time 2).

1.G The Association Between Changes in Well-Being Between Time 1 and Time 2, and School Performance

In order to examine whether the extent to which changes in schools' scores on the three variables between Times 1 and 2 is associated with school performance, the scores obtained at Time 1 for each scale were subtracted from the scores at Time 2.

Table 9 shows that although the degree of positive change in well-being across time is generally associated with higher school performance (the association is positive in 11 out of 15 cases), the correlation is only statistically significant in one case: increases in job enjoyment are significantly associated with greater school value added scores.

Table 9

The Relation Between The Differences in Well-being at Time 1 and Time 2, and School Performance

	1	2	3	4	5	6	7
1. Difference between Time 1 and Time 2 feeling valued							
2. Difference between Time 1 and Time 2 not feeling overloaded	.41**						
3. Difference between Time 1 and Time 2 job stimulation and enjoyment	.55**	.30**					
4. Aggregate across the three core subjects: 2002	-.07	-.01	-.10				
5. Aggregate across the three core subjects: 2003	-.03	.04	.02	.73**			
6. Aggregate across the three core subjects: 2004	.04	.04	.01	.69**	.69**		
7. Aggregate across the three core subjects: 2005	.01	.03	.06	.55**	.61**	.64**	
8. School valued added measure	.07	.06	.14*	.27**	.36**	.36**	.63**

* p<.05 **p<.01

Table 9 shows that although the degree of positive change in well-being across time is generally associated with higher school performance (the association is positive in 11 out of 15 cases), the correlation is only statistically significant in one case: increases in job enjoyment are significantly associated with greater school value added scores.

1.H The Relation Between the OSRM Well-Being Scores and Pupil Performance for Teachers Not Involved in Senior Management

Before examining the association between the well-being of teachers and the performance of children in the school in which they were working, information was sought about the proportion of teachers completing the OSRM in each school. As precise information about this was unavailable, the proportion was estimated using (a) the number of teachers responding from a particular school, (b) the number of pupils in that school, and (c) the current pupil to teacher ratio in England which, according to the Department of Education and Skills, is approximately 23.

Specifically, the following formula was used to estimate the proportion of teachers responding from each school:

$$T = (N / (P / 23)) 100$$

Where

T = Estimated proportion of teachers responding from a school

N = Number of teachers from the school completing the OSRM (at Time 1 or Time 2)

P = Number of pupils in the school

Based on this formula, the median proportion of teachers responding to the OSRM across all 246 schools was 64% at time 1 and 58% at Time 2.

The first analyses were carried out on all schools in which teachers responded to the survey at Time 1 and Time 2. Table 10 shows the mean scores obtained by teachers for the three OSRM well-being scales at the first and second time of measurement. This table shows that there was a tendency for teachers to feel more valued and cared for, and less overloaded, but also to have lower job satisfaction at Time 2.

Table 10

Means and Standard Deviations of OSRM Scores for the Three Well-being Scales For Teachers Not Involved in Senior Management at the First and Second Time of Measurement

Scales	Time 1		Time 2	
	Mean	Std Deviation	Mean	Std Deviation
Feeling valued and cared for	3.84	0.57	3.92	0.50
Not feeling overloaded	2.42	0.49	2.59	0.56
Job satisfaction	4.04	0.39	4.01	0.42

N=103

Three paired samples t-tests were carried out to examine whether the well-being scores for the three scales were significantly different at the second time of measurement than at the first time of measurement. The results are summarized in Table 11.

Table 11

Statistical Significance and Effect Sizes of Well-being Measures on the Three Scales for Teachers Not Involved in Senior Management at the First and Second Times of Measurement

Dimension	t	Degrees of Freedom	Significance	Effect Size (d)
Feeling valued and cared for	1.07	103	NS	0.15
Not feeling overloaded	3.29	103	.001	0.32
Job stimulation and satisfaction	0.92	103	NS	0.09

N=246

Table 9 shows that only the tendency of teachers to feel less overloaded at Time 2 was statistically significant. The effect size of the tendency to feel less overloaded at Time 2 (d=.3) is small.

A series of multiple regression analyses were then undertaken to examine the extent to which the Time 1 and Time 2 OSRM well-being scales are able to predict school performance in the form of SATS results (2002-2005) and the value added index. The results of the analysis are shown in Table 12.

Table 12

Regression Analysis Using Time 1 and Time 2 OSRM Well-being Scales to Predict School Performance for Teachers Not Involved in Senior Management (all schools included)

School Performance Measure	R²	Significance
SATS 2002	.03	NS
SATS 2003	.04	NS
SATS 2004	.07	.015
SATS 2005	.05	NS
Value Added	.07	.021

N=246

The R² values in Table 12 shows the percentage of variance in each measure of school performance which is accounted for by the combined effect of the OSRM Time 1 and Time 2 well-being scales for teachers only. The table shows that between 3% and 7% of the variance in school performance is accounted for by well-being, though the regression model is only statistically significant for SATS results in 2004 and for the value added measure. Once again, it should be noted that 2004 is the year in which the largest amount of OSRM data was collected (70% of Time 1 and 23% of Time 2).

In some schools the proportion of teachers responding to the survey is relatively low. To examine the consequences of this, a second analysis was carried out in which only those schools estimated to have at least a 30% response rate from teachers (see formula above) was undertaken. The results are shown in table 13.

Table 13

Regression Analysis Using Time 1 and Time 2 OSRM Well-being Scales for Teachers Not Involved in Senior Management to Predict School Performance (only schools in which an estimated 30% or more of teachers responded included)

School Performance Measure	R²	Significance
SATS 2002	.03	NS
SATS 2003	.05	NS
SATS 2004	.07	.030
SATS 2005	.04	NS
Value Added	.05	NS

N=201

Table 13 shows that selecting only those schools in which over 30% of the teachers responded did not result in stronger associations between well-being and the examination performance of pupils than selecting all schools for the analysis.

1.I The Relation Between the OSRM Well-Being Scores and Pupil Performance for Teachers Involved in Senior Management

Analyses were carried out on all schools in which teachers involved in senior management responded to the OSRM survey at Time 1 and Time 2. There were 241 schools in which teachers involved in senior management responded to the OSRM survey at Time 1, and 246 at Time 2.

Table 14 shows the mean scores obtained by teachers involved in senior management for the three OSRM well-being scales at the first and second time of measurement. This table shows that there was a tendency for teachers involved in senior management to feel more valued and cared for, and less overloaded, but also to have lower job satisfaction at Time 2.

Table 14

Means and Standard Deviations of OSRM Scores for the Three Well-being Scales For Teachers Involved in Senior Management at the First and Second Time of Measurement

Scales	Time 1		Time 2	
	Mean	Std Deviation	Mean	Std Deviation
Feeling valued and cared for	4.03	0.52	4.19	0.52
Not feeling overloaded	2.34	0.48	2.46	0.55
Job satisfaction	4.01	0.41	4.22	0.38

N=246

Three paired samples t-tests were carried out to examine whether the well-being scores for the three scales were significantly different at the second time of measurement than at the first time of measurement. The results are summarized in Table 15.

Table 15

Statistical Significance and Effect Sizes of Well-being Measures on the Three Scales For Teachers Involved in Senior Management at the First and Second Times of Measurement

Dimension	t	Degrees of Freedom	Significance	Effect Size (d)
Feeling valued and cared for	4.68	238	<.001	0.31
Not feeling overloaded	6.01	238	<.001	0.24
Job stimulation and satisfaction	4.94	238	<.001	0.52

N=246

Table 15 shows that the tendency of teachers to experience greater well-being at Time 2 than Time 1 is highly significant on all three scales. The effect sized for feeling valued and cared for, and not feeling overloaded, was small, and the effect size for job stimulation and satisfaction was medium (d=.52).

A series of multiple regression analyses were then undertaken to examine the extent to which the Time 1 and Time 2 OSRM well-being scales are able to predict school performance in the form of SATS results (2002-2005) and the value added index. The results of the analysis are shown in Table 16.

Table 16

**Regression Analysis Using Time 1 and Time 2 OSRM Well-being Scales
For Teachers Involved in Senior Management to Predict School Performance**

(all schools included)

School Performance Measure	R²	Significance
SATS 2002	.03	NS
SATS 2003	.05	NS
SATS 2004	.07	.024
SATS 2005	.05	NS
Value Added	.07	.025

N=246

The R² values in Table 16 shows the percentage of variance in each measure of school performance which is accounted for by the combined effect of the OSRM Time 1 and Time 2 well-being scales for teachers with senior management roles only. The table shows that between 3% and 7% of the variance in school performance is accounted for by well-being, though the regression model is only statistically significant for SATS results in 2004 and for the value added measure. Again, it should be noted that 2004 is the year in which the largest amount of OSRM data was collected (70% of Time 1 and 23% of Time 2).

1.J The Relation Between the OSRM Well-Being Scores and Pupil Performance for Senior Management Not Involved in Teaching

Analyses were carried out on all schools in which senior management not involved in teaching responded to the OSRM survey at Time 1 and Time 2. There were 116 schools in which teachers involved in senior management responded to the OSRM survey at Time 1, and 98 at Time 2.

Table 17 shows the mean scores obtained by senior management not involved in teaching for the three OSRM well-being scales at the first and second time of measurement. This table shows that there was a tendency for teachers involved in senior management to feel more valued and cared for, and less overloaded, but also to have lower job satisfaction at Time 2.

Table 17

Means and Standard Deviations of OSRM Scores for the Three Well-being Scales For Senior Management Not Involved in Teaching at the First and Second Time of Measurement

Scales	Time 1		Time 2	
	Mean	Std Deviation	Mean	Std Deviation
Feeling valued and cared for	4.21	0.69	4.11	0.66
Not feeling overloaded	2.89	0.89	2.51	0.81
Job satisfaction	4.29	0.62	4.24	0.59

N=41 (listwise)

Three paired samples t-tests were carried out to examine whether the well-being scores for the three scales were significantly different at the second time of measurement than at the first time of measurement. The results are summarized in Table 18.

Table 18

Statistical Significance and Effect Sizes of Well-being Measures on the Three Scales For Senior Management Not Involved in Teaching at the First and Second Times of Measurement

Dimension	t	Degrees of Freedom	Significance	Effect Size (d)
Feeling valued and cared for	2.36	43	.02	0.15
Not feeling overloaded	2.59	43	.01	0.45
Job stimulation and satisfaction	1.54	43	NS	0.08

N=246

Table 18 shows that only the tendency of senior managers not involved in teaching to experience greater well-being at Time 2 than Time 1 statistically significant for the feeling valued and cared for, and not feeling overloaded scales, but not for job stimulation and satisfaction. The effect sizes are small for feeling valued and cared for and medium for not feeling overloaded.

Multiple regression analyses were undertaken to examine the extent to which the Time 1 and Time 2 OSRM well-being scales are able to predict school performance in the form of SATS results (2002-2005) and the value added index. The results of the analysis are shown in Table 19.

Table 19

**Regression Analysis Using Time 1 and Time 2 OSRM Well-being Scales
For Senior Mangers Not Involved in Teaching to Predict School Performance (all
schools included)**

School Performance Measure	R²	Significance
SATS 2002	.22	NS
SATS 2003	.09	NS
SATS 2004	.16	NS
SATS 2005	.11	NS
Value Added	.28	NS

N=40

The R² values in Table 19 shows the percentage of variance in each measure of school performance which is accounted for by the combined effect of the OSRM Time 1 and Time 2 well-being scales for senior management without teaching roles only. The table shows that between 11% and 28% of the variance in school performance is accounted for by well-being, though none of the regression analyses are statistically significant.

As the number of schools in which senior managers not involved in teaching completed the OSRM is relatively small, further regression analyses were undertaken using Time 1 only and Time 2 only responses. This increased the sample sizes substantially as a considerable number of schools contained senior managers not involved in teaching who completed the OSRM at Time 1 but not Time 2 (and vice versa). The results of these analyses provided no evidence of significant multivariate associations between the three well-being scales derived from the OSRM and pupil performance.

1.K The Relation Between the OSRM Well-Being Scores and Pupil Performance for Support Staff

Analyses were carried out on all schools in support staff responded to the OSRM survey at Time 1 and Time 2. There were 241 schools in which teachers involved in senior management responded to the OSRM survey at Time 1, and 246 at Time 2.

Table 20 shows the mean scores obtained by teachers involved in senior management for the three OSRM well-being scales at the first and second time of measurement. This table shows that there was a tendency for teachers involved in senior management to feel more valued and cared for, and less overloaded, but also to have lower job satisfaction at Time 2.

Table 20

Means and Standard Deviations of OSRM Scores for the Three Well-being Scales For Support Staff at the First and Second Time of Measurement

Scales	Time 1		Time 2	
	Mean	Std Deviation	Mean	Std Deviation
Feeling valued and cared for	3.80	0.37	4.21	0.64
Not feeling overloaded	3.41	0.36	2.83	0.82
Job satisfaction	3.98	0.28	4.28	0.61

N=93 (listwise)

Three paired samples t-tests were carried out to examine whether the well-being scores for the three scales were significantly different at the second time of measurement than at the first time of measurement. The results are summarized in Table 19.

Table 21

Statistical Significance and Effect Sizes of Well-being Measures on the Three Scales For Support Staff at the First and Second Times of Measurement

Dimension	t	Degrees of Freedom	Significance	Effect Size (d)
Feeling valued and cared for	6.86	92	<.001	0.62
Not feeling overloaded	5.84	92	<.001	0.80
Job stimulation and satisfaction	5.16	92	<.001	0.67

N=246

Table 21 shows that the tendency for support staff to experience different levels of well-being at Time 2 than Time 1 is highly significant on all three scales. However, whilst unlike the comparisons made in other sub-populations (e.g. teachers) the direction of difference here was not consistent. Whilst support staff felt more valued and cared for, and more job stimulation and enjoyment at Time 2 than Time 1, they felt less overloaded at Time 1 than Time 2. The effect sizes for the differences between Time 1 and Time 2 well-being was large for all three scales.

A series of multiple regression analyses were then undertaken to examine the extent to which the Time 1 and Time 2 OSRM well-being scales are able to predict school performance in the form of SATS results (2002-2005) and the value added index. The results of the analysis are shown in Table 22.

Table 22

**Regression Analysis Using Time 1 and Time 2 OSRM Well-being Scales
For Support Staff to Predict School Performance (all schools included)**

School Performance Measure	R²	Significance
SATS 2002	.07	NS
SATS 2003	.01	NS
SATS 2004	.08	.NS
SATS 2005	.06	NS
Value Added	.08	NS

N=80

The R² values in Table 22 shows the percentage of variance in each measure of school performance which is accounted for by the combined effect of the OSRM Time 1 and Time 2 well-being scales for teachers with senior management roles only. The table shows that between 3% and 7% of the variance in school performance is accounted for by well-being, though none of the regression models are statistically significant.

Section 2

Analysis Controlling for Suppressor Variables and Moderating Variables

The analyses carried out in the previous section showed that where consistent relations were found between respondent well-being and pupil performance, these relations were for teachers with or without management roles rather than support staff or managers in schools without teaching roles. This is as we might expect, as it is presumably teachers who have the greatest impact on the performance of school pupils. As a consequence, for the analyses conducted in this section we decided to focus on data derived by combining, for each school, the responses of teachers and senior management with a teaching qualification (see OSRM question 10.3). For both of these groups the previous section demonstrates consistent associations between well-being and pupil performance.

The purpose of the following analyses is to whether well-being predicts pupil performance over and above other variables which we might expect to be associated with school performance. An example of such a variable would be the number of children at the schools with SEN. In addition, we also examined the effect of moderating variables. An example of moderation would be the finding that the extent to which well-being is associated with performance depends on the proportion of children with SEN in the school. For example, where there are children with few special educational needs there may be relatively little association between well-being and pupil performance, but perhaps when the proportion of children with special educational needs is higher, well-being is more strongly associated with pupil performance.

The first step was to identify suitable controlling and moderating variables. The available variables here occurred at both the level of the individual respondent, and also at the level of the school. An example of an individual level variable is how long a teacher has been at a school, an example of a school level variable is the number of unauthorized absences.

After an examination of all potential individual and school level controlling and moderating variables had been undertaken, the following were identified as being worthwhile examining.

Individual Level Moderators

- Average time that school respondents have worked in education
- Average time that school respondents have spent in the school
- Average time that school respondents have spent in current post
- Tendency for school respondents to be part-time versus full-time teachers
- Tendency of school respondents to be male versus female
- Average age of school respondents (across six categories)

School Level Moderators

- Total number of pupils (including part-time pupils)
- Pupils with statements of SEN: number
- Pupils with SEN, without statements: number
- Percentage of sessions missed through authorized absence
- Percentage of sessions missed through unauthorized absence
- Tendency of school respondents to be white versus from an ethnic minority

In preparing the data for analysis, all responses to the OSRM from teachers, and senior managers with teaching qualifications, were aggregated by computing the mean response to each OSRM question, and the well-being question clusters, for all of the respondents from each school. Also aggregated in this way were the individual level control and moderating variables specified above. So, for example, the part-time and full-time teachers were coded 2 and 1 respectively, the mean of these codes was found for each school, with a relatively high mean indicating that teachers tended to be part-time, and a relatively low mean indicating that they tended to be full-time. The aggregated individual level responses were then combined with the school level control/moderator variables and information about the performance of the pupils at each school.

To examine whether well-being had an effect on performance over and above the control variables, a series of sequential regression analyses were carried out. The results of these analyses are shown in the following tables. The first model shown in each case includes the control variables only, and the second model combines the control variables with the well-being variables. If the well-being variables account for variation in school performance over and above the effect of the control variables, the R square change value should be significant. The significance of the R square change is shown in the column on the far left headed "Sig. F change". It is figure on the second row here that is important, and this needs to be less than .05 for a statistically significant result. Also of interest are the figures in the "R square change" column which show the proportion of variance accounted for by all the control variables combined (the figure in the first row of this column) and for the well-being variables over an above this (the figure in the second row of this column). The results of the analyses are shown in tables 23 to 27.

Table 23

Dependent Variable: SATS Results in 2002

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.650(a)	.422	.380	27.43523	.422	10.160	12	167	.000
2	.673(b)	.453	.392	27.18273	.031	1.519	6	161	.175

Table 24

Dependent Variable: SATS Results in 2003

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.622(a)	.387	.343	25.96075	.387	8.796	12	167	.000
2	.656(b)	.430	.366	25.50673	.042	2.000	6	161	.069

Table 25

Dependent Variable: SATS Results in 2004

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.678(a)	.459	.420	28.11908	.459	11.822	12	167	.000
2	.707(b)	.500	.444	27.54199	.041	2.179	6	161	.048

Table 26

Dependent Variable: SATS Results in 2005

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.657(a)	.432	.391	26.60461	.432	10.753	12	170	.000
2	.685(b)	.469	.410	26.18538	.037	1.915	6	164	.081

Table 27

Dependent Variable: Value Added

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.382(a)	.146	.086	1.02006	.146	2.427	12	170	.006
2	.463(b)	.215	.128	.99612	.068	2.378	6	164	.031

An examination of the standardized beta values, which show the unique contribution made by each control variable in explaining variance in the SATS results indicated that only a limited number of these are associated with SATS results. The associated variables are as follows:

- Tendency for school respondents to be part-time versus full-time teachers
- Average time that school respondents have spent in current post
- Average age of school respondents (across six categories)
- Percentage of sessions missed through authorised absence
- Percentage of sessions missed through unauthorised absence
- Pupils with SEN, without statements: number
- Pupils with statements of SEN: number

By incorporating just those moderator variables shown above into further analyses, it is possible to reduce the overall degrees of freedom and thereby increase the probability of detecting relationships between all of the predictor variables, and the various dependent variables if such relationships exist. For this reason the multiple regression analyses were repeated this time with just the seven control variables above. The results are shown in tables 28 to 32. Tables 33 to 37 show the beta coefficients for each predictor variable in these analyses. The “Sig.” column shows variables which have a unique association with the dependent variable (the value here needs to be less than .05 for statistical significance).

Table 28

Dependent Variable: SATS Results in 2002

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.636(a)	.405	.382	28.67518	.405	17.707	7	182	.000
2	.660(b)	.435	.393	28.41881	.030	1.550	6	176	.165

Table 29

Dependent Variable: SATS Results in 2003

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.624(a)	.390	.366	26.13144	.390	16.614	7	182	.000
2	.657(b)	.431	.389	25.65942	.041	2.126	6	176	.053

Table 30**Dependent Variable: SATS Results in 2004****Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.662(a)	.438	.416	28.51137	.438	20.235	7	182	.000
2	.691(b)	.478	.439	27.93430	.040	2.266	6	176	.039

Table 31**Dependent Variable: SATS Results in 2005****Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.624(a)	.389	.366	27.16877	.389	16.816	7	185	.000
2	.658(b)	.433	.392	26.59324	.045	2.349	6	179	.033

Table 32

Dependent Variable: Value Added

Model Summary(c)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.335(a)	.112	.079	1.03704	.112	3.348	7	185	.002
2	.429(b)	.184	.124	1.01101	.071	2.608	6	179	.019

Table 33

Beta Values for 2002 SATS Results

Model		Unstandardized Coefficients (B)	Std. Error	Standardized coefficients (Beta)	t	Sig.	Zero-order correlations	Partial correlations
1	(Constant)	269.93	24.23		11.14	0.00		
	Average time that school respondents have spent in current post	20.84	4.67	0.32	4.46	0.00	0.21	0.31
	Tendency for school respondents to be part-time versus full-time teachers	28.33	18.04	0.09	1.57	0.12	0.13	0.12
	Average age of school respondents (across six categories)	-18.07	5.42	-0.25	-3.33	0.00	0.03	-0.24
	Pupils with statements of SEN: number	-0.61	0.38	-0.10	-1.61	0.11	-0.13	-0.12
	Pupils with SEN, without statements: number	-0.17	0.08	-0.15	-2.08	0.04	-0.43	-0.15
	Percentage of sessions missed through authorised absence	-687.84	182.50	-0.23	-3.77	0.00	-0.28	-0.27
	Percentage of sessions missed through unauthorised absence	-1874.45	325.61	-0.39	-5.76	0.00	-0.50	-0.39
2	(Constant)	318.20	45.96		6.92	0.00		
	Average time that school respondents have spent in current post	22.85	4.73	0.35	4.83	0.00	0.21	0.34
	Tendency for school respondents to be part-time versus full-time teachers	22.33	18.29	0.07	1.22	0.22	0.13	0.09
	Average age of school respondents (across six categories)	-18.72	5.50	-0.26	-3.40	0.00	0.03	-0.25
	Pupils with statements of SEN: number	-0.64	0.38	-0.10	-1.69	0.09	-0.13	-0.13
	Pupils with SEN, without statements: number	-0.17	0.08	-0.15	-2.08	0.04	-0.43	-0.16
	Percentage of sessions missed through authorised absence	-749.97	192.44	-0.25	-3.90	0.00	-0.28	-0.28
	Percentage of sessions missed through unauthorised absence	-1947.02	327.73	-0.40	-5.94	0.00	-0.50	-0.41
	Feeling valued at Time 1	1.51	7.13	0.02	0.21	0.83	0.16	0.02
	Not feeling overloaded at Time 1	11.74	6.83	0.12	1.72	0.09	0.08	0.13
	Job stimulation and enjoyment at Time 1	-4.24	9.26	-0.03	-0.46	0.65	0.11	-0.03
	Feeling valued at Time 2	-0.17	7.85	0.00	-0.02	0.98	0.10	0.00
	Not feeling overloaded at Time 2	7.82	6.60	0.08	1.18	0.24	0.14	0.09
	Job stimulation and enjoyment at Time 2	-18.59	10.78	-0.14	-1.72	0.09	0.08	-0.13

Table 34

Beta Values for 2003 SATS Results

Model		Unstandardized Coefficients (B)	Std. Error	Standardized coefficients (Beta)	t	Sig.	Zero-order correlations	Partial correlations
1	(Constant)	279.37	22.06		12.66	0.00		
	Average time that school respondents have spent in current post	19.01	4.23	0.33	4.49	0.00	0.18	0.32
	Tendency for school respondents to be part-time versus full-time teachers	23.90	16.40	0.09	1.46	0.15	0.11	0.11
	Average age of school respondents (across six categories)	-17.13	4.94	-0.26	-3.47	0.00	-0.01	-0.25
	Pupils with statements of SEN: number	-1.03	0.35	-0.18	-2.99	0.00	-0.23	-0.22
	Pupils with SEN, without statements: number	-0.17	0.07	-0.17	-2.36	0.02	-0.43	-0.17
	Percentage of sessions missed through authorised absence	-697.00	166.04	-0.26	-4.20	0.00	-0.32	-0.30
	Percentage of sessions missed through unauthorised absence	-1273.14	295.24	-0.29	-4.31	0.00	-0.42	-0.30
2	(Constant)	296.88	41.22		7.20	0.00		
	Average time that school respondents have spent in current post	20.49	4.24	0.35	4.83	0.00	0.18	0.34
	Tendency for school respondents to be part-time versus full-time teachers	14.55	16.46	0.05	0.88	0.38	0.11	0.07
	Average age of school respondents (across six categories)	-16.54	4.96	-0.25	-3.33	0.00	-0.01	-0.24
	Pupils with statements of SEN: number	-1.03	0.34	-0.18	-3.04	0.00	-0.23	-0.22
	Pupils with SEN, without statements: number	-0.18	0.07	-0.18	-2.42	0.02	-0.43	-0.18
	Percentage of sessions missed through authorised absence	-744.90	173.24	-0.28	-4.30	0.00	-0.32	-0.31
	Percentage of sessions missed through unauthorised absence	-1277.39	295.00	-0.29	-4.33	0.00	-0.42	-0.31
	Feeling valued at Time 1	3.57	6.44	0.05	0.55	0.58	0.17	0.04
	Not feeling overloaded at Time 1	10.56	6.18	0.12	1.71	0.09	0.11	0.13
	Job stimulation and enjoyment at Time 1	-12.81	8.30	-0.12	-1.54	0.12	0.06	-0.12
	Feeling valued at Time 2	-1.27	7.10	-0.02	-0.18	0.86	0.14	-0.01
	Not feeling overloaded at Time 2	10.56	5.98	0.12	1.77	0.08	0.20	0.13
	Job stimulation and enjoyment at Time 2	-4.49	9.71	-0.04	-0.46	0.64	0.14	-0.03

Table 35

Beta Values for 2004 SATS Results

Model		Unstandardized Coefficients (B)	Std. Error	Standardized coefficients (Beta)	t	Sig.	Zero-order correlations	Partial correlations
1	(Constant)	271.68	24.23		11.21	0.00		
	Average time that school respondents have spent in current post	15.62	4.65	0.24	3.36	0.00	0.16	0.24
	Tendency for school respondents to be part-time versus full-time teachers	37.37	18.02	0.12	2.07	0.04	0.15	0.15
	Average age of school respondents (across six categories)	-14.91	5.40	-0.20	-2.76	0.01	0.02	-0.20
	Pupils with statements of SEN: number	-1.10	0.37	-0.18	-3.01	0.00	-0.24	-0.22
	Pupils with SEN, without statements: number	-0.19	0.08	-0.17	-2.46	0.01	-0.48	-0.18
	Percentage of sessions missed through authorised absence	-789.62	180.65	-0.26	-4.37	0.00	-0.34	-0.31
	Percentage of sessions missed through unauthorised absence	-1763.61	322.13	-0.35	-5.47	0.00	-0.49	-0.38
2	(Constant)	247.81	45.34		5.47	0.00		
	Average time that school respondents have spent in current post	15.73	4.69	0.24	3.36	0.00	0.16	0.25
	Tendency for school respondents to be part-time versus full-time teachers	27.24	18.04	0.09	1.51	0.13	0.15	0.11
	Average age of school respondents (across six categories)	-13.68	5.42	-0.18	-2.53	0.01	0.02	-0.19
	Pupils with statements of SEN: number	-1.10	0.36	-0.18	-3.04	0.00	-0.24	-0.22
	Pupils with SEN, without statements: number	-0.21	0.08	-0.18	-2.61	0.01	-0.48	-0.19
	Percentage of sessions missed through authorised absence	-719.13	187.84	-0.24	-3.83	0.00	-0.34	-0.28
	Percentage of sessions missed through unauthorised absence	-1661.15	321.35	-0.33	-5.17	0.00	-0.49	-0.36
	Feeling valued at Time 1	11.25	7.02	0.13	1.60	0.11	0.24	0.12
	Not feeling overloaded at Time 1	-0.98	7.01	-0.01	-0.14	0.89	0.07	-0.01
	Job stimulation and enjoyment at Time 1	-8.23	9.07	-0.07	-0.91	0.37	0.14	-0.07
	Feeling valued at Time 2	-10.78	7.67	-0.12	-1.41	0.16	0.15	-0.11
	Not feeling overloaded at Time 2	19.39	6.53	0.20	2.97	0.00	0.24	0.22
	Job stimulation and enjoyment at Time 2	3.27	10.72	0.02	0.31	0.76	0.20	0.02

Table 36

Beta Values for 2005 SATS Results

Model		Unstandardized Coefficients (B)	Std. Error	Standardized coefficients (Beta)	t	Sig.	Zero-order correlations	Partial correlations
1	(Constant)	298.01	22.89		13.02	0.00		
	Average time that school respondents have spent in current post	8.86	4.38	0.15	2.02	0.04	0.02	0.15
	Tendency for school respondents to be part-time versus full-time teachers	30.42	17.01	0.11	1.79	0.08	0.11	0.13
	Average age of school respondents (across six categories)	-17.42	5.13	-0.25	-3.40	0.00	-0.10	-0.24
	Pupils with statements of SEN: number	-1.21	0.35	-0.21	-3.47	0.00	-0.29	-0.25
	Pupils with SEN, without statements: number	-0.12	0.07	-0.12	-1.65	0.10	-0.42	-0.12
	Percentage of sessions missed through authorised absence	-622.13	171.48	-0.22	-3.63	0.00	-0.29	-0.26
	Percentage of sessions missed through unauthorised absence	-1697.79	306.68	-0.37	-5.54	0.00	-0.46	-0.38
2	(Constant)	314.37	42.45		7.41	0.00		
	Average time that school respondents have spent in current post	10.35	4.38	0.17	2.36	0.02	0.02	0.17
	Tendency for school respondents to be part-time versus full-time teachers	21.29	17.02	0.08	1.25	0.21	0.11	0.09
	Average age of school respondents (across six categories)	-16.49	5.13	-0.24	-3.21	0.00	-0.10	-0.23
	Pupils with statements of SEN: number	-1.18	0.34	-0.21	-3.46	0.00	-0.29	-0.25
	Pupils with SEN, without statements: number	-0.13	0.08	-0.13	-1.70	0.09	-0.42	-0.13
	Percentage of sessions missed through authorised absence	-707.03	177.52	-0.25	-3.98	0.00	-0.29	-0.29
	Percentage of sessions missed through unauthorised absence	-1695.87	305.60	-0.37	-5.55	0.00	-0.46	-0.38
	Feeling valued at Time 1	2.79	6.65	0.04	0.42	0.67	0.16	0.03
	Not feeling overloaded at Time 1	14.12	6.39	0.15	2.21	0.03	0.16	0.16
	Job stimulation and enjoyment at Time 1	-19.26	8.59	-0.17	-2.24	0.03	0.05	-0.17
	Feeling valued at Time 2	-0.51	7.24	-0.01	-0.07	0.94	0.17	-0.01
	Not feeling overloaded at Time 2	5.29	6.16	0.06	0.86	0.39	0.20	0.06
	Job stimulation and enjoyment at Time 2	3.41	10.01	0.03	0.34	0.73	0.20	0.03

Table 37

Beta Values for Value Added Scores

Model		Unstandardized Coefficients (B)	Std. Error	Standardized coefficients (Beta)	t	Sig.	Zero-order correlations	Partial correlations
1	(Constant)	101.55	0.87		116.25	0.00		
	Average time that school respondents have spent in current post	-0.01	0.17	-0.01	-0.08	0.93	-0.13	-0.01
	Tendency for school respondents to be part-time versus full-time teachers	0.48	0.65	0.05	0.74	0.46	0.01	0.05
	Average age of school respondents (across six categories)	-0.45	0.20	-0.21	-2.28	0.02	-0.21	-0.17
	Pupils with statements of SEN: number	-0.03	0.01	-0.18	-2.39	0.02	-0.22	-0.17
	Pupils with SEN, without statements: number	0.00	0.00	0.00	0.02	0.99	-0.10	0.00
	Percentage of sessions missed through authorised absence	3.26	6.55	0.04	0.50	0.62	0.02	0.04
	Percentage of sessions missed through unauthorised absence	-25.89	11.71	-0.18	-2.21	0.03	-0.16	-0.16
2	(Constant)	99.45	1.61		61.63	0.00		
	Average time that school respondents have spent in current post	0.00	0.17	0.00	-0.02	0.98	-0.13	0.00
	Tendency for school respondents to be part-time versus full-time teachers	0.06	0.65	0.01	0.09	0.93	0.01	0.01
	Average age of school respondents (across six categories)	-0.35	0.20	-0.16	-1.81	0.07	-0.21	-0.13
	Pupils with statements of SEN: number	-0.03	0.01	-0.17	-2.34	0.02	-0.22	-0.17
	Pupils with SEN, without statements: number	0.00	0.00	-0.01	-0.17	0.87	-0.10	-0.01
	Percentage of sessions missed through authorised absence	3.89	6.75	0.04	0.58	0.57	0.02	0.04
	Percentage of sessions missed through unauthorised absence	-20.67	11.62	-0.14	-1.78	0.08	-0.16	-0.13
	Feeling valued at Time 1	0.27	0.25	0.11	1.06	0.29	0.11	0.08
	Not feeling overloaded at Time 1	0.23	0.24	0.08	0.96	0.34	0.21	0.07
	Job stimulation and enjoyment at Time 1	-0.54	0.33	-0.15	-1.64	0.10	0.02	-0.12
	Feeling valued at Time 2	-0.35	0.28	-0.13	-1.26	0.21	0.13	-0.09
	Not feeling overloaded at Time 2	0.39	0.23	0.14	1.68	0.10	0.24	0.12
	Job stimulation and enjoyment at Time 2	0.77	0.38	0.20	2.03	0.04	0.24	0.15

In order to examine whether the control variables identified above might moderate the relations between well-being and pupil performance, the product of the three well-being scales at Time 1 and Time 2 with all seven moderator scales was obtained, yielding a total of 42 possible moderators. To test for the potential moderating effects of the variables, sequential multiple regressions were taken for each year of the SATS results and for the Value Added measure. In each such multiple regression, the three well-being scales, and the seven raw moderator scales were entered in the first block. In the second block the 42 well-being/moderator variable products were entered.

The results showed that collectively the potential moderators only made a significant contribution to the regression models in one case: the 2004 SATS results. This is the year in which the majority of the OSRM data was collected. For the 2004 SATS results the following variables were found to significantly moderate the relations between the well-being scales and the performance of the pupils.

- The relation between “feeling valued” at Time 1 and SATS performance was moderated by the percentage of sessions missed through authorised absence.
- The relation between “feeling valued” at Time 2 and SATS performance was moderated by the percentage of sessions missed through authorised absence.
- The relation between “feeling valued” at Time 2 and SATS performance was moderated by the time that school respondents have spent in current post.
- The relation between “feeling valued” at Time 2 and SATS performance was moderated by the average age of school respondents (across six categories).
- The relation between “feeling overloaded” at Time 2 and SATS performance was moderated by the average time that school respondents have spent in current post.
- The relation between “feeling overloaded” at Time 2 and SATS performance was moderated by the average age of school respondents (across six categories).
- The relation between “feeling overloaded” at Time 2 and SATS performance was moderated by the percentage of sessions missed through authorised absence.

2.A Prediction of Pupil Performance by Subject

In order to examine whether the influence of well-being on performance was more marked for some academic subjects than others a series of sequential multiple regression analyses were run. In these analyses the following control variables were entered in the first block:

- Tendency for school respondents to be part-time versus full-time teachers
- Average time that school respondents have spent in current post
- Average age of school respondents (across six categories)
- Percentage of sessions missed through authorised absence
- Percentage of sessions missed through unauthorised absence
- Pupils with SEN, without statements: number
- Pupils with statements of SEN: number

Entered in the second block were the three Time 1 well-being variables and the three Time 2 well-being variables. The dependent variables were as follows:

- Percentage of pupils achieving Level 4 or above in English
- Percentage of pupils achieving Level 5 in English
- Percentage of pupils achieving Level 4 or above in mathematics
- Percentage of pupils achieving Level 5 in mathematics
- Percentage of pupils achieving Level 4 or above in science
- Percentage of pupils achieving Level 5 in science

The results of the analyses are shown in tables 38 to 42.

Table 38

Dependent Variable: Percentage of pupils achieving Level 4 or above in English

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.584(a)	.341	.316	.10347	.341	13.673	7	185	.000
2	.620(b)	.384	.339	.10169	.043	2.086	6	179	.057

Table 39**Dependent Variable: Percentage of Pupils Achieving Level 5 in English**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.480(a)	.230	.201	.13516	.230	7.907	7	185	.000
2	.497(b)	.247	.192	.13592	.017	.655	6	179	.686

Table 40**Dependent Variable: Percentage of Pupils Achieving Level 4 or above in Mathematics**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.558(a)	.312	.286	.11273	.312	11.968	7	185	.000
2	.586(b)	.343	.295	.11198	.031	1.417	6	179	.210

Table 41**Dependent Variable: Percentage of Pupils Achieving Level 5 in Mathematics**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.568(a)	.323	.297	.12120	.323	12.613	7	185	.000
2	.596(b)	.355	.309	.12022	.032	1.501	6	179	.180

Table 42**Dependent Variable: Percentage of pupils achieving Level 4 or above in science**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.512(a)	.262	.234	.10020	.262	9.386	7	185	.000
2	.526(b)	.277	.224	.10083	.015	.612	6	179	.720

Table 43**Dependent Variable: Percentage of pupils achieving Level 5 in science**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.544(a)	.296	.269	.15206	.296	11.098	7	185	.000
2	.554(b)	.307	.257	.15335	.011	.486	6	179	.818

The “Sig F Change” for model number two (the second row in each table) indicates whether the well-being variables have made a statistically significant contribution towards explaining the performance of pupils in English, mathematics, and science, after controlling for extraneous variables known to be associated with performance (e.g. the number of unauthorized absences). The results of the analyses do not indicate that well-being explains variation in performance over and above the control variables in any subject. However, in the case of English the association with well-being is quite close to being significant.

Section 3

Further Analyses Using Climate Measures to Predict SATS Scores

Section 3 reports the results for Task 3 which was as follows:

- Task 3. Further analysis using the climate measures to predict SATs scores**
- 3.1. Identifying climate measures**
 - 3.2. Looking at climate > well-being > performance pathways**

The purpose of the analysis to be completed in this section was to first examine the relationship between climate measures and SATS scores, and then to explore the paths between climate measures, well-being measures, and SATS scores. The rationale for such an analysis is that various aspects of organizational climate may influence staff well-being which in turn might influence the SATS results of the pupils. Climate has a number of definitions but is probably most widely used to refer to “employees’ shared perceptions of organizational events, practices, and procedures” (Patterson et al, 2005, p 380).

To this end we examined the OSRM questionnaire and identified three relevant climate variables and the items of which these variables were comprised. Based on a review of measures and dimensions of organizational climate (e.g., Patterson et al, 2005) the following climate scales were identified:

1. Care and welfare

- 1.1 There is a real interest in the welfare and well-being of the people who work here
- 1.6 Managers support and value staff
- 1.7 Staff support and value one another
- 1.14 We can and do achieve a good work/life balance
- 1.13 Working long hours is not encouraged
- 4.1 We treat one another with dignity and respect
- 4.2 We all help to create a friendly, caring atmosphere

2. Goal clarity

- 1.8 We all have a clear and shared understanding of what we are trying to achieve
- 1.10 Different groups and teams plan together and co-ordinate their activities

3. Communication and involvement

- 1.3 There is good, open communication between managers and other staff
- 1.4 There is good, open communication between staff
- 1.5 All of us get consulted in those decisions that affect us
- 5.1 Where change is needed, it is quickly and clearly communicated to all concerned
- 5.2 The timetable for change and the plan of action are fully explained
- 5.3 We are kept well informed about how the changes might affect us individually

- 5.4 We are asked for our comments, questions and suggestions about the changes that affect us
- 5.7 In times of change we feel part of the process

4. Effort

- 1.9 Everyone gives of their best
- 1.11 We are achieving things we can be proud of
- 7.4 We all help and encourage one another to do a good job
- 7.12 Under pressure, we all pull together

Factor analysis of all of these items was then carried out to confirm the predicted factor structure. Unfortunately the factor structure did not fit that predicted. After discussion it was decided that due to the nature of the OSRM it is not possible to isolate (a) a clear set of relevant climate factors, and (b) a clear set of relevant well-being factors. As a result, this part of the data analysis was not continued.

However, it was decided to conduct a new and additional analysis on the factor structure of the OSRM. This is reported below.

3.A Additional analyses of the OSRM

The factor structure of the OSRM was explored in a more general way using only the secondary school data and to see if the emergent factors were associated with school performance variables. Please note, that this analysis was exploratory and intended to understand more about the way the OSRM performs as a measure.

A principal components analysis with orthogonal rotation was used. As with the factor analyses carried out on primary school data by Chris Dewberry in 2004, this revealed one major factor which accounts, in the case of secondary school data, for one third of the variance in OSRM scores. The variance accounted for by each of the 10 factors with eigenvalues great than one is shown in table 44. A scree plot of this data is shown in figure 1.

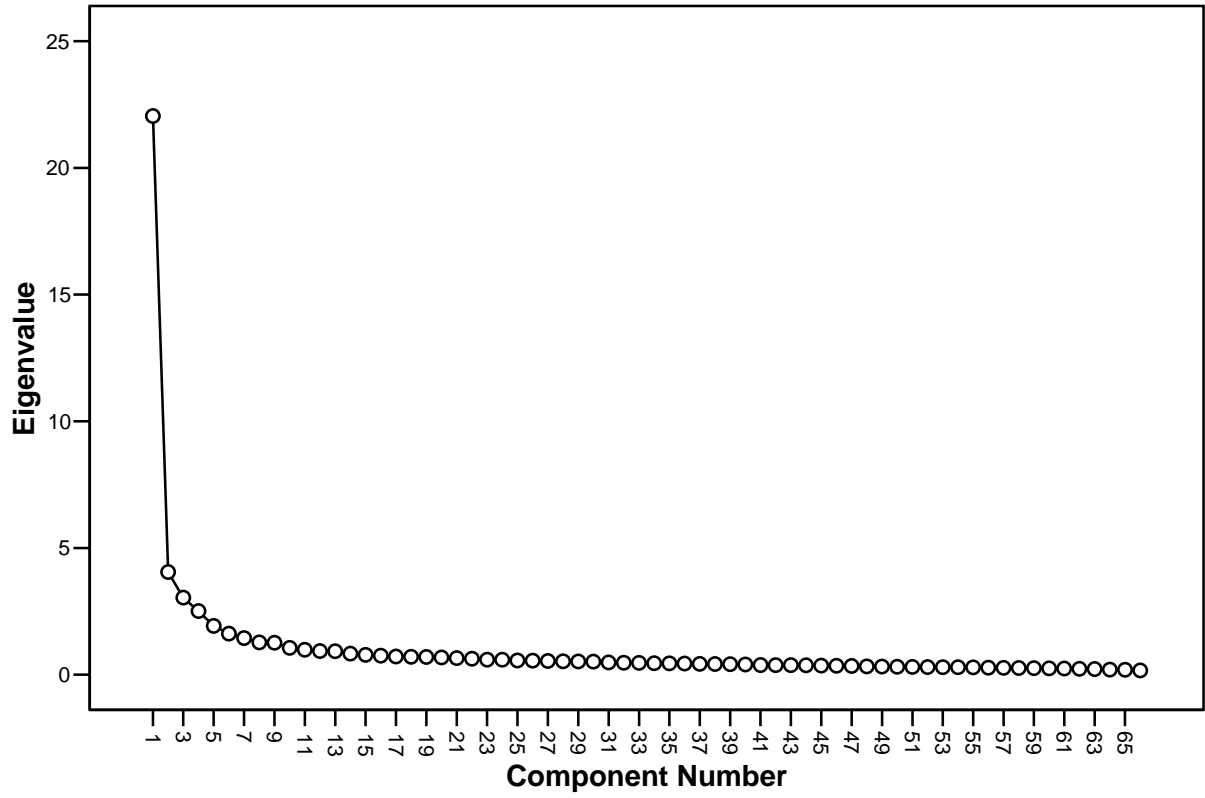
Table 44

Variance Accounted for by Factors Generated from OSRM Data

Factor	Percentage of variance explained
1.	33%
2.	6%
3.	5%
4.	4%
5.	3%
6.	2%
7.	1%
8.	1%
9.	1%
10.	1%

Figure 1

Scree Plot



The factor loadings after orthogonal (varimax) rotation are shown in Table 45.

Table 45
Rotated Component Matrix for OSRM Items

	Component									
	1	2	3	4	5	6	7	8	9	10
Q1_1	.476	.178	.219	.234	.255	.032	.374	.091	-.068	-.281
Q1_2	.513	.213	.195	.176	.242	.012	.363	.023	.023	-.239
Q1_3	.572	.146	.190	.155	.246	.050	.307	.086	-.033	-.318
Q1_4	.234	.022	.085	.068	.620	.091	.099	.088	.082	-.245
Q1_5	.653	.175	.121	.122	.167	.036	.191	.074	.005	-.232
Q1_6	.509	.147	.232	.215	.245	.063	.390	.115	-.079	-.294
Q1_7	.082	-.033	.099	.079	.729	.078	.111	.084	.051	-.105
Q1_8	.392	.150	.104	.044	.393	.136	.355	-.029	.160	-.058
Q1_9	.120	.149	.062	-.020	.543	-.019	.207	-.126	.210	.111
Q1_10	.295	.038	-.001	.055	.330	.038	.261	.057	.191	.025
Q1_11	.248	.005	.102	.062	.335	.137	.580	.051	.120	.085
Q1_12	.312	.158	.159	.099	.340	.082	.564	.017	.078	.042
Q1_13	.191	.609	.077	.078	.035	-.029	.138	.046	-.058	-.030
Q1_14	.182	.713	.090	.071	.092	.011	.214	.038	-.001	.003
Q2_1	.082	.794	.049	.043	.041	.013	.010	.028	.040	-.012
Q2_2	.181	.420	.086	.228	.123	.043	.208	.137	.348	-.066
Q2_3	.061	.052	.032	.240	.084	.334	.121	.127	.626	-.004
Q2_4	.279	.293	.286	.148	.163	.121	.405	.142	.184	-.071
Q2_5	.035	.865	.044	.012	.004	.022	.051	.044	.044	.081
Q2_6	.061	.855	.084	.030	.015	.054	.096	.081	.039	.055
Q2_7	.111	.835	.083	.035	.051	.027	.003	.051	.029	.030
Q2_8	.147	.393	.116	.235	.059	.182	.377	.223	.012	-.006
Q2_9	.045	-.093	.104	.198	.086	.223	.430	.211	-.046	.050
Q2_10	.331	.224	.155	.335	.191	.100	.275	.244	-.159	-.196
Q2_11	.200	.286	.078	.191	.115	-.038	.285	.103	.269	.001
Q2_12	.155	.173	.196	.111	.152	.105	.412	.228	.131	-.005
Q3_1	.213	.040	.174	.117	.119	.172	.126	.770	.123	.010
Q3_2	.154	.220	.193	.088	.097	.159	.130	.728	.151	.065
Q3_3	.405	.163	.215	.244	.152	.108	.170	.535	-.080	-.091
Q3_4	.520	.075	.168	.265	.098	.117	.212	.462	-.039	-.150
Q4_1	.176	.096	.460	.116	.566	.127	.080	.202	.017	.075

	Component									
	1	2	3	4	5	6	7	8	9	10
Q4_2	.203	.134	.407	.122	.582	.105	.112	.168	-.013	.091
Q4_3	.118	.140	.703	.124	.175	.189	.112	.215	-.004	-.046
Q4_4	.220	.175	.766	.076	.103	.054	.101	.038	.038	.027
Q4_5	.098	.038	.719	.168	.159	.199	.086	.167	.014	-.026
Q4_6	.184	.080	.801	.099	.081	.104	.097	.043	.056	.033
Q4_7	.351	.173	.514	.148	.226	.039	.157	.011	.057	.063
Q4_8	.422	.176	.542	.209	.227	.094	.180	.149	-.012	-.063
Q5_1	.738	.130	.132	.106	.165	.102	.079	.053	.076	.066
Q5_2	.777	.099	.107	.095	.133	.139	.029	.057	.096	.075
Q5_3	.795	.147	.118	.140	.119	.119	.033	.065	.059	.050
Q5_4	.721	.026	.113	.156	.097	.113	.034	.188	-.015	.020
Q5_5	.618	.173	.127	.378	.107	.080	.049	.080	.218	.118
Q5_6	.703	.204	.131	.240	.109	.078	.099	.075	.079	.139
Q5_7	.762	.135	.135	.224	.102	.101	.116	.136	.006	.072
Q5_8	.314	.182	.073	.063	.231	.079	.102	-.003	.028	.489
Q5_9	.533	.161	.184	.144	.012	.100	.311	.098	-.040	.279
Q5_10	.506	.184	.228	.198	.074	.137	.401	.098	-.044	.215
Q6_1	.215	.092	.168	.107	.166	.739	.015	.089	.138	-.110
Q6_2	.162	.185	.209	.142	.124	.727	.139	.154	.074	-.036
Q6_3	.270	.081	.138	.148	.262	.625	-.059	.013	.107	-.187
Q6_4	.163	.703	.101	.110	.092	.239	-.104	.018	.022	.044
Q6_5	.241	.483	.173	.177	.174	.233	-.140	-.012	-.001	-.091
Q6_6	.076	-.042	.095	.149	.066	.584	.306	.144	-.014	.248
Q7_1	.081	.020	.082	.323	.076	.519	.037	.105	.508	.080
Q7_2	.286	.155	.114	.629	.114	.176	.055	.077	.314	.052
Q7_3	.263	.118	.085	.487	.131	.114	.038	-.016	.199	.041
Q7_4	.138	.091	.194	.299	.621	.220	.076	.098	-.103	.220
Q7_5	.116	.060	.142	.374	.437	.271	.071	.214	-.191	.124
Q7_6	.313	.202	.272	.392	.271	.190	.139	.195	-.172	.104
Q7_7	-.010	.129	.064	.177	.006	.580	.307	.080	.053	.297
Q7_8	.280	.174	.223	.420	.172	.332	.276	.227	-.207	-.056
Q7_9	.263	.095	.138	.753	.103	.168	.156	.126	.130	-.006
Q7_10	.279	.054	.159	.748	.105	.156	.145	.106	.038	-.038
Q7_11	.326	.115	.181	.714	.139	.150	.186	.102	.072	-.023
Q7_12	.219	.165	.189	.269	.537	.173	.129	.077	-.131	.203

These 10 factors were labeled as follows:

1. Management communication with staff and management support for staff
2. Role and work overload
3. Good relationships between staff
4. Opportunities for development
5. Support between staff
6. Role clarity
7. Positive attitude towards the school
8. Sense of autonomy and control
9. Sense of personal competence
10. Openness to organizational change

A multiple regression was carried out to predict a pupil performance (average total point score per pupil) as a function of (a) percentages of SEN with and without statements, and (b) the three wellbeing variables after controlling for the percentage of students in the school with special educational needs (both with and without statements). A sequential regression analysis was run, with the control (SEN) variables entered in the first block, and the three well-being variables entered in the second block. The results are shown in Table 48.

Table 46

Correlations Between School Pupil Performance Variables

		Average total point score per pupil	Percentage of 15 year old pupils achieving 5+A*-C (and equivalent) 2001	Percentage of 15 year old pupils achieving 5+A*-C (and equivalent) 2002	Percentage of 15 year old pupils achieving 5+A*-C (and equivalent) 2003	Percentage of 15 year old pupils achieving 5+A*-C (and equivalent) 2004	Value added measure based on progress between KS2 and KS4
Average total point score per pupil	Pearson Correlation Sig. (2-tailed) N	182					
Percentage of 15 year old pupils achieving 5+A*-C (and equivalent) 2001	Pearson Correlation Sig. (2-tailed) N	.247(**) .008 116	116				
Percentage of 15 year old pupils achieving 5+A*-C (and equivalent) 2002	Pearson Correlation Sig. (2-tailed) N	.327(**) .000 181	.928(**) .000 116	181			
Percentage of 15 year old pupils achieving 5+A*-C (and equivalent) 2003	Pearson Correlation Sig. (2-tailed) N	.314(**) .000 181	.901(**) .000 116	.923(**) .000 181	181		
Percentage of 15 year old pupils achieving 5+A*-C (and equivalent) 2004	Pearson Correlation Sig. (2-tailed) N	.913(**) .000 145	.870(**) .000 80	.903(**) .000 144	.924(**) .000 144	145	
Value added measure based on progress between KS2 and KS4	Pearson Correlation Sig. (2-tailed) N	.776(**) .000 145	.575(**) .000 80	.682(**) .000 144	.715(**) .000 144	.771(**) .000 145	—

** Correlation is significant at the 0.01 level (2-tailed).

Table 47

Correlations Between OSRM Factors and School Pupil Performance Variables

(Significant correlations are in bold)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Factor 1: Management communication with support for staff															
2. Factor 2: Role and work overload	0.23														
3. Factor 3: Good relationships between staff	0.23	0.02													
4. Factor 4: Opportunities for development	0.13	0.25	0.00												
5. Factor 5: Support between staff	0.19	0.02	0.23	0.09											
6. Factor 6: Role clarity	-0.07	-0.03	-0.13	-0.20	-0.07										
7. Factor 7: Positive attitude towards the school	0.41	0.06	0.35	0.04	0.30	-0.09									
8. Factor 8: Sense of autonomy and control	-0.13	0.06	0.02	-0.06	-0.18	0.08	-0.32								
9. Factor 9: Sense of personal competence	0.01	-0.05	0.01	0.33	0.25	-0.09	0.34	-0.40							
10. Factor 10: Openness to organizational change	-0.09	-0.01	-0.01	-0.02	0.00	0.02	0.22	-0.28	0.12						
11. Average total point score per pupil	-0.06	0.13	0.05	0.10	0.09	-0.04	0.13	0.03	0.21	0.15					
12. Percentage of 15 year old pupils achieving 5+A*-C (and equivalent) 2001	-0.01	-0.21	0.34	-0.02	0.12	0.14	0.32	-0.06	0.48	-0.07	0.25				

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
13. Percentage of 15 year old pupils achieving 5+A*-C (and equivalent) 2002	0.00	-0.20	0.33	-0.04	0.17	0.11	0.38	-0.10	0.48	-0.07	0.33	0.93			
14. Percentage of 15 year old pupils achieving 5+A*-C (and equivalent) 2003	0.01	-0.15	0.30	-0.01	0.15	0.14	0.41	-0.12	0.50	-0.04	0.31	0.90	0.92		
15. Percentage of 15 year old pupils achieving 5+A*-C (and equivalent) 2004	-0.03	-0.22	0.31	-0.04	0.20	0.13	0.43	-0.21	0.50	0.03	0.91	0.87	0.90	0.92	
16. Value added measure based on progress between KS2 and KS4	0.08	-0.07	0.17	0.07	0.24	0.14	0.47	-0.35	0.50	0.05	0.78	0.57	0.68	0.71	0.77

The number of schools on which the correlation matrix in Table 47 is based is 182.

The results clearly indicate that there are associations with a number of the factors in the OSRM and school pupil performance in secondary schools. In particular: good relationships between staff, positive attitude towards the school, and sense of personal accomplishment. However it is worth noting that these data are cross sectional so it may be that pupil performance actually drives these attitudes such as having positive attitudes towards the school.

Section 4

Analysis on Secondary Schools

This section discusses the results of Task 4:

Task 4. Same analysis as already conducted for Stage 1 for secondary schools (but without the longitudinal element). But also examining staff groups separately and controlling for variables identified in point 2 above.

Given the lack of relationships between respondent well-being and pupil performance in all other occupational groups except teachers it was decided to focus only on teachers for this analysis.

In order to examine the extent to which the three well-being variables predict pupil performance, the first step was to aggregate the OSRM response across schools for teachers only. Included here were teachers with and without a management role. The aggregated teachers-only results were then combined with performance data for each school.

A series of sequential multiple regression analyses were then carried. Entered in the first block as control variable were the percentage of pupils at the school with special educational needs with statements, the proportion with special educational needs without statements, the tendency for teachers at the school to have been in post for a long time, the average age of the respondents (across the categories specified in item 10.1 of the OSRM), and the percentage of half-days lost in the school due to unauthorized absence. The three well-being variables were entered in the second block. The results for a variety of dependent variables are shown in tables 48 to 57.

Table 48

Dependent Variable: KS4 Results – Percentage Achieving Level 2 (5+ grades A to C)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.729(a)	.532	.516	.12251	.532	32.212	6	170	.000
2	.749(b)	.562	.538	.11963	.030	3.755	3	167	.012

Table 49

Dependent Variable: KS4 Results – Percentage Achieving Level 2 (5+ grades A to G)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.624(a)	.389	.368	.0497619	.389	18.056	6	170	.000
2	.633(b)	.400	.368	.0497510	.011	1.025	3	167	.383

Table 50

Dependent Variable: Percentage of 15 Year Old Pupils Achieving 5+ A* to C Grades in 2000

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.806(a)	.650	.577	.10664	.650	8.960	6	29	.000
2	.840(b)	.705	.603	.10333	.055	1.629	3	26	.207

Table 51

Dependent Variable: Percentage of 15 Year Old Pupils Achieving 5+ A* to C Grades in 2001

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.740(a)	.548	.522	.11803	.548	21.174	6	105	.000
2	.759(b)	.577	.539	.11583	.029	2.341	3	102	.078

Table 52

Dependent Variable: Percentage of 15 Year Old Pupils Achieving 5+ A* to C Grades in 2002

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.703(a)	.494	.476	.1307694	.494	27.467	6	169	.000
2	.712(b)	.507	.480	.1302107	.013	1.484	3	166	.221

Table 53

**Dependent Variable: Percentage of 15 Year Old Pupils Achieving 5+ A* to C
Grades in 2003**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			
						F Change	df1	df2	Sig. F Change
1	.721(a)	.519	.502	.1235908	.519	30.427	6	169	.000
2	.733(b)	.537	.512	.1223717	.018	2.128	3	166	.099

Table 54

**Dependent Variable: Percentage of 15 Year Old Pupils Achieving 5+ A* to C
Grades in 2004**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			
						F Change	df1	df2	Sig. F Change
1	.746(a)	.557	.537	.1193352	.557	27.831	6	133	.000
2	.755(b)	.570	.541	.1188294	.014	1.378	3	130	.252

Table 55

**Dependent Variable: Percentage of 15 Year Old Pupils Achieving 5+ A* to C
Grades in 2005**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			
						F Change	df1	df2	Sig. F Change
1	.762(a)	.581	.536	.1261777	.581	13.151	6	57	.000
2	.766(b)	.587	.518	.1287130	.006	.259	3	54	.855

Table 56**Dependent Variable: Value Added Measure Based on Progress Between KS2 and KS4**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.522(a)	.272	.240	20.21910	.272	8.301	6	133	.000
2	.561(b)	.315	.267	19.84542	.042	2.685	3	130	.049

Table 57**Dependent Variable: Value Added Measure Based on Progress Between KS3 and KS4**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.281(a)	.079	.046	356.18170	.079	2.430	6	170	.028
2	.326(b)	.106	.058	354.03590	.027	1.689	3	167	.171

Tables 48 to 57 show that the well-being variables do not make a statistically significant contribution in explaining the variance in the each of the measures of pupil performance.

Of the 10 regressions carried out, the well-being variables (i.e. “model 2”) made a significant contribution in two cases: KS4 Results – Percentage Achieving Level 2 (5+ grades A to C, and Value Added Measure Based on Progress Between KS2 and KS4. Scrutiny of the standardized beta values showed that in the case of KS4 results none of the three well-being variables made a significant unique contribution in explaining variance. For the Value added measure only, not feeling overloaded made a significant unique contribution.

Section 5

Some Conclusions

Teacher well-being and pupil performance

- When scores on the OSRM indices of well-being in primary schools are aggregated, and the average well-being of staff in schools is then examined in relation to SATS results, a statistically significant association between is apparent in 2004 (the year in which most primary school OSRM data was collected). In 2004, the average well-being of school staff accounted for 8% of the variance in SATS results.
- The increase in job stimulation and enjoyment between the two administrations of the OSRM has a small but statistically significant positive association with the measure of “value added”.
- After controlling for the effects of relevant variables (e.g. percentage of pupils absent or with SEN) there is a significant relation between the indices of well-being of teachers (in or not in management roles) and SATS in 2004 and 2005, and a significant relation with the “value added” measure.
- There is no evidence for a relationship between well-being and SATS results in support staff or teachers not involved in teaching.
- There is no evidence that the relation between well-being and SATS results is stronger for some subject areas (e.g. English) than for others.
- For *secondary schools*, after controlling for the effects of relevant variables (e.g. percentage of pupils absent or with SEN), there is a significant relationship between the well-being variables and the following measures of school performance: KS4 Results – Percentage Achieving Level 2 (5+ grades A to C), and Value Added Measure Based on Progress Between KS2 and KS4.
- There is some suggestion of the possibility of a virtuous circle (using the factor-analytically derived scales) in which teacher perceptions and pupil performance may be reciprocally related. In other words, pupil performance may cause more positive teacher perceptions of themselves and the school and vice versa.

School climate and pupil performance

- Because of the difficulties of identifying adequate climate scales within the OSRM, the data do not allow us to examine climate > well-being > pupil performance pathways (see also OSRM conclusions below)

General changes in well-being over time

- In the primary schools all three indices of well-being increased following between the first and second administration of the OSRM. This finding is consistent with the hypothesis that the actions taken by schools following the first administration of the OSRM have a positive effect on staff well-being. However, whether or not this is causally related to the OSRM administration is unclear and requires confirmation with a properly controlled research study. For teachers in non-management roles this effect occurs for job overload only whereas for teacher in management roles it occurs for all three indices of well-being.

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