

Eight year trends in English students attitudes to school

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Abstract

This paper provides an initial overview of the findings from a study of student attitudes to school over a period of eight years within and around one English local education authority. **However, due to the exploratory nature of the analysis the results should be treated cautiously at this stage.** The LEA project was set up in 1992 aims to provide an innovative system of secondary school evaluation and self-evaluation via the feedback of student performance, attitude and other data. The feedback information provided by the project is intended to inform the improvement processes of state funded schools within and around the LEA region and is not intended for external accountability purposes. Student attitude data, collected annually from 1996 to 2003 (excluding 1998), was analysed using multilevel modelling and factor analysis techniques to identify any significant trends over time in four separate student attitude dimensions. The findings indicate that student views have changed in relation to some key aspects of school life over the time period examined.

Key Words: Student attitudes, school Effectiveness, multilevel modelling, value added, trends over time

1. Introduction

The LEA project builds on good practice in Scotland and elsewhere in the UK, Europe and North America by using pupil questionnaires as part of its range of instruments for exploring school effectiveness and improvement (see, for example, Jakobson *et al*, 1998, Coleman & Collinge, 1998). More specifically it builds on research undertaken in Scotland as part of ISEP by using the same pupil attitude instrument (see Thomas *et al* 2000, Thomas, 2001, MacBeath & Mortimore, 2001 for further details of the ISE project).

This paper provides an initial overview of the findings of the LEA Pupil Attitude Questionnaire Survey, which includes seven consecutive pupil cohorts over the period of 1996 to 2003 (excluding 1998). **However, due to the exploratory nature of the analysis the results should be treated cautiously at this stage.** The paper is concerned with one particular aspect of the findings – trends over time - and aims to provide an analysis of patterns and trends in secondary pupil's attitudes over an eight-year period. Given the nationally representative sample of 150+ secondary schools involved in the study the research evidence could be seen as a pilot project for measuring and using pupil attitude data in English schools – an approach that may well enhance the current data provided to schools by OFSTED and DfES via for example the 'Autumn Package'. Similar to the ISEP study this project utilises attitude-scaling techniques to identify four underlying attitude dimensions. The aim is to present evidence that different pupil attitudinal dimensions exist in the English context and that, in addition to individual items results, attitude scale results can provide useful feedback information to schools.

The following sections describe the questionnaire, sample and methods used in the analyses, and discuss relative pupils' perceptions about school, work, behaviour and themselves over the eight-year time period examined.

2. The questionnaire

The Pupil Attitude Questionnaire employed in this study was originally developed and used in the Improving School Effectiveness Project (ISEP) funded by the Scottish Office Education Department (Thomas et al 2000). The questionnaire comprises 47 questions and is divided into five parts, which are 'What I Think about School' (Q1 – Q6), 'Learning in School and at Home' (Q7 – Q24), 'How I See Myself, My Work and My Friends' (Q25 – Q36), 'How I Behave at School and Home' (Q37 – Q42) and 'Changes in the School Over the Last Two Years'¹ (Q43 – Q47).

3. Sample and Preliminary analysis of questionnaire responses

In this section, basic descriptive data is provided including time trends over eight years of the pupil responses to each question and missing response rates. The purpose is to set up an initial picture of how consecutive cohorts of Year 9 and Year 11 pupils responded to the questionnaire from 1996 to 2003 (excluding 1998).

3.1 Sample

In total, 82,137 Year 9 and 59,389 Year 11 pupils from 150+ schools completed the questionnaire, which was administered every year from 1996 to 2003 (excluding 1998) to schools within and around the LEA area. Among these, 0.9% (751) of Year 9 and 0.8% (488) of Year 11 pupils did not indicate their gender on the questionnaire and were therefore excluded from the analysis. Note that the number of pupils and schools in each cohort varied somewhat from year to year, however, due to the very large sample size this did appear to have an impact on the overall results (see Table 20).

3.2 Missing responses rates

Table 1 lists the ranges of minimum and maximum missing response rates across questions by year group and gender, which are all at an acceptable level (under 6 per cent). The missing response rates of individual questions (i.e. where pupils did not give any answer to a question) for the whole Year 9 group ranges from 0.17 per cent for the question 'going to school' (Q1) in 1996 to 5.45 per cent for the question 'teaching in this school' (Q44) in 2000². The equivalent figures for the whole Year 11 cohorts range from 0.35% ('difficulty of work' (Q7), 2001) to 3.67% ('about this school' (Q43), 2003)³.

¹ The five questions in this part were added in 1999.

² The missing response rates of each question for Year 9 Boys and Year 9 Girls range from 0.17% ('going to school' (Q1), 1996) to 5.66% ('about this school' (Q43), 2000) and from 0.08% ('difficulty of work' (Q7), 1996) to 5.35% ('about this school' (Q43), 2000) respectively

³ The missing response rates for Year 11 Boys and Year 11 Girls are from 0.33% ('helping me to understand' (Q8), 2000) to 4.28% ('my interest in school work' (Q45), 2002), and from 0.27% ('going to school' (Q1), 2001) to 3.39% ('about this school' (Q43), 2003) respectively.

Table 1. The Ranges of minimum and maximum missing response rates across questions by year and gender for each year

| | 1996 | 1997 | 1999 | 2000 | 2001 | 2002 | 2003 |
|---------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Year 9 | 0.17 – 1.51 | 0.19 – 2.06 | 0.56 – 3.42 | 0.59 – 5.45 | 0.42 – 4.52 | 0.21 – 2.76 | 0.68 – 4.70 |
| Boy | 0.17 – 1.33 | 0.21 – 2.18 | 0.63 – 3.75 | 0.60 – 5.66 | 0.42 – 4.77 | 0.27 – 3.05 | 0.81 – 5.53 |
| Girl | 0.08 – 1.66 | 0.12 – 1.99 | 0.40 – 3.10 | 0.46 – 5.35 | 0.36 – 4.26 | 0.13 – 2.56 | 0.48 – 3.79 |
| Year 11 | 0.73 – 2.33 | 0.50 – 2.27 | 0.49 – 2.82 | 0.37 – 1.70 | 0.35 – 2.84 | 0.97 – 3.55 | 1.31 – 3.67 |
| Boy | 0.85 – 2.48 | 0.48 – 2.19 | 0.50 – 3.22 | 0.33 – 1.57 | 0.39 – 3.15 | 0.96 – 4.28 | 1.59 – 3.96 |
| Girl | 0.58 – 2.43 | 0.52 – 2.38 | 0.34 – 2.42 | 0.42 – 1.80 | 0.27 – 2.47 | 0.81 – 2.86 | 1.01 – 3.39 |

3.3 Trends in pupil responses over eight years

Generally, the distribution of pupil responses (percentages) across the four response categories (e.g. ‘always’, ‘usually’, ‘hardly ever’ and ‘never’) for individual questions remains similar for both Year 9 and Year 11 cohorts across all the years examined. However, for some questions, the spread of responses in each category appears to shift over time. Those questions with at least a 5 per cent change in pupil responses over years are discussed in the following sections.

3.3.1 Year 9 trends

There are 8 questions that had either an increase or a decrease of at least 5% over the eight years in the percentages of Year 9 pupil responding to particular response categories. When asked about their feelings about going to school (Q1), the percentage of Year 9 pupils answering ‘I always/usually like school’ gradually decreased from 79% in 1996 to 68% in 2003. In contrast, the percentage of Year 9 pupils answering ‘I hardly ever/never like school’ increased from 21% in 1996 to 31% in 2003. In other words, three out of ten Year 9 pupils in 2003 hardly ever or never liked school in comparison to two out of ten Year 9 pupils in 1996 (see Table 2). As to the school work that pupils have to do (Q6), 58% of the Year 9 cohort in 1996 felt ‘School work is usually/always interesting’. However this percentage decreased yearly and only 36% of the Year 9 cohort in 2003 chose the same response categories (see Table 3). Thus it was found in 2003 that almost three in five Year 9 pupils did not think school work usually or always interesting which echoes the finding mentioned earlier about ‘not liking school’ expressed by three in ten of the same cohort pupils.

Table 2. The percentages of individual response categories for ‘going to school’ (Q1) reported by Year 9 pupils over years

| Q1 | I always like school. | I usually like school. | I hardly ever like school. | I never like school. |
|------|-----------------------|------------------------|----------------------------|----------------------|
| 1996 | 6.88% | 72.34% | 17.12% | 3.48% |
| 1997 | 5.15% | 71.30% | 18.81% | 4.53% |
| 1999 | 4.62% | 70.56% | 19.15% | 5.11% |
| 2000 | 4.47% | 69.27% | 20.28% | 5.31% |
| 2001 | 4.40% | 67.71% | 21.71% | 5.75% |
| 2002 | 4.14% | 66.04% | 23.08% | 6.49% |
| 2003 | 3.74% | 64.13% | 24.45% | 6.99% |

Table 3. The percentages of individual response categories for ‘the work I have to do’ (Q6) reported by Year 9 pupils over years

| Q6 | School work is always boring. | School work is usually boring. | School work is usually interesting. | School work is always interesting. |
|------|-------------------------------|--------------------------------|-------------------------------------|------------------------------------|
| 1996 | 4.34% | 37.30% | 55.26% | 2.82% |
| 1997 | 5.90% | 41.66% | 50.16% | 2.06% |
| 1999 | 6.22% | 45.53% | 46.01% | 1.62% |
| 2000 | 7.50% | 47.80% | 42.57% | 1.49% |
| 2001 | 7.99% | 50.32% | 39.80% | 1.45% |
| 2002 | 9.31% | 51.19% | 37.80% | 1.41% |
| 2003 | 10.34% | 52.72% | 34.94% | 1.20% |

In terms of answering questions in class (Q9), over two fifth of Year 9 pupils in 1996 responded ‘I never/hardly ever like to answer questions in class’. However there was a gradual growth of the percentages for these response categories to the extent that half the Year 9 cohort in 2003 stated similar feelings (see Table 4).

Table 4. The percentages of individual response categories for ‘answering questions in class’ (Q9) reported by Year 9 pupils over years

| Q9 | I never like to answer questions in class. | I hardly ever like to answer questions in class. | I usually like to answer questions in class. | I always like to answer questions in class. |
|------|--------------------------------------------|--------------------------------------------------|----------------------------------------------|---------------------------------------------|
| 1996 | 10.02% | 32.06% | 44.65% | 13.06% |
| 1997 | 9.97% | 33.00% | 43.76% | 13.07% |
| 1999 | 10.56% | 33.58% | 43.20% | 12.07% |
| 2000 | 10.90% | 34.83% | 41.88% | 11.80% |
| 2001 | 10.87% | 35.59% | 42.17% | 10.85% |
| 2002 | 12.38% | 36.38% | 40.68% | 10.30% |
| 2003 | 13.57% | 36.96% | 39.10% | 9.59% |

Considering the extent of teachers help when pupils are ‘stuck’ (Q15), more Year 9 pupils (17%) in 2003 thought ‘Teachers never/hardly ever help me when I’m stuck’ than Year 9 pupils (11%) in 1996 (see Table 5). In contrast, regarding the question ‘asking for help’ (Q17), the percentage of Year 9 pupils who answered ‘I never/hardly ever ask teachers for help, even if I’m stuck’ rose from 25% in 1996 to 32% in 2003 (see Table 6). These findings indicate that a substantial minority of Year 9 pupils (nearly one third of Year 9 cohort in 2003) would not ask teachers for help if there were a need.

Table 5. The percentages of individual response categories for ‘teachers helping’ (Q15) reported by Year 9 pupils over years

| Q15 | Teachers never help me when I’m stuck. | Teachers hardly ever help me when I’m stuck. | Teachers usually help me when I’m stuck. | Teachers always help me when I’m stuck. |
|------|----------------------------------------|----------------------------------------------|------------------------------------------|-----------------------------------------|
| 1996 | 1.53% | 9.15% | 57.98% | 31.04% |
| 1997 | 1.97% | 10.12% | 58.34% | 29.23% |
| 1999 | 2.13% | 10.73% | 58.67% | 27.49% |
| 2000 | 1.96% | 12.26% | 59.50% | 25.55% |
| 2001 | 2.18% | 13.01% | 58.92% | 25.19% |
| 2002 | 2.24% | 13.32% | 60.38% | 23.65% |
| 2003 | 2.40% | 15.04% | 59.78% | 21.74% |

Table 6. The percentages of individual response categories for ‘asking for help’ (Q17) reported by Year 9 pupils over years

| Q17 | I never ask teachers for help, even if I’m stuck. | I hardly ever ask teachers for help, even if I’m stuck. | I usually ask teachers for help if I’m stuck. | I always ask teachers for help if I’m stuck. |
|------|---------------------------------------------------|---------------------------------------------------------|-----------------------------------------------|----------------------------------------------|
| 1996 | 3.05% | 22.27% | 52.93% | 21.49% |
| 1997 | 3.38% | 23.82% | 52.37% | 20.10% |
| 1999 | 3.59% | 24.36% | 51.31% | 19.96% |
| 2000 | 3.67% | 25.59% | 50.67% | 19.32% |
| 2001 | 3.63% | 25.43% | 50.95% | 19.40% |
| 2002 | 4.49% | 25.83% | 51.17% | 18.14% |
| 2003 | 4.78% | 27.51% | 50.20% | 16.55% |

In response to ‘getting homework’ (Q21), over time there were 17% fewer Year 9 pupils who reported ‘I get homework nearly every night’ over time – the percentage decreased from 51% in 1996 to 34% in 2003 (see Table 7). However, there was also an increase in the percentage of Year 9 pupils who reported ‘I usually get homework’ – from 41% in 1996 to 47% in 2003. These findings indicate that there is a tendency for teachers not to give out homework assignments to pupils as frequently as before. Interestingly regarding the question ‘doing homework’ (Q 22), over one fifth of Year 9 cohorts in 2003 (and twice as many in 1996) would ‘hardly ever/never remember to do my homework’ (see Table 8).

Table 7. The percentages of individual response categories for ‘getting homework’ (Q21) reported by Year 9 pupils over years

| Q21 | I never get homework. | I hardly every get homework. | I usually get homework. | I get homework nearly every night. |
|------|-----------------------|------------------------------|-------------------------|------------------------------------|
| 1996 | 0.69% | 7.01% | 40.82% | 51.08% |
| 1997 | 0.91% | 6.97% | 38.82% | 52.81% |
| 1999 | 1.15% | 8.81% | 41.45% | 47.37% |
| 2000 | 1.35% | 9.16% | 41.22% | 47.09% |
| 2001 | 1.50% | 11.00% | 42.35% | 44.12% |
| 2002 | 1.70% | 13.14% | 46.13% | 38.32% |
| 2003 | 2.53% | 15.33% | 46.67% | 34.05% |

Table 8. The percentages of individual response categories for ‘doing homework’ (Q22) reported by Year 9 pupils over years

| Q22 | I always remember to do my homework. | I usually remember to do my homework. | I hardly ever remember to do my homework. | I never remember to do my homework. |
|------|--------------------------------------|---------------------------------------|-------------------------------------------|-------------------------------------|
| 1996 | 28.20% | 59.79% | 9.21% | 1.78% |
| 1997 | 27.13% | 59.94% | 9.45% | 2.09% |
| 1999 | 25.91% | 58.07% | 10.69% | 3.28% |
| 2000 | 26.21% | 56.18% | 12.29% | 3.40% |
| 2001 | 24.00% | 56.66% | 13.54% | 3.60% |
| 2002 | 22.32% | 57.43% | 14.26% | 4.06% |
| 2003 | 21.86% | 54.63% | 15.49% | 5.10% |

Regarding the question ‘my skills in general’ (Q27), 66% of the Year 9 cohort in 2003 reported ‘I can do most things well’, which is lower than the equivalent 73% of the Year 9 cohort in 1996. At the same time 27% of the Year 9 cohort in 2003 believed ‘I can do a few things well’, which is more than the equivalent 22% of the Year 9 cohort in 1996. These findings suggest that Year 9 pupils in 2003 may not have been as confident in their general skills as their counterparts in 1996(see Table 9).

Table 9. The percentages of individual response categories for ‘my skills in general’ (Q27) reported by Year 9 pupils over years

| Q27 | I can’t do anything well. | I can do a few things well. | I can do most things well. | I can do everything well. |
|------|---------------------------|-----------------------------|----------------------------|---------------------------|
| 1996 | 1.64% | 21.61% | 73.28% | 3.14% |
| 1997 | 2.31% | 22.21% | 71.60% | 3.27% |
| 1999 | 1.87% | 21.41% | 72.24% | 3.58% |
| 2000 | 2.10% | 21.79% | 71.67% | 3.72% |
| 2001 | 2.01% | 22.23% | 71.46% | 3.51% |
| 2002 | 2.37% | 24.84% | 69.02% | 3.30% |
| 2003 | 2.30% | 26.79% | 66.20% | 3.53% |

3.3.2 Year 11 trends

Interestingly, to some degree the responses to each question reported by Year 11 cohorts are more consistent over time than those reported by Year 9 cohorts. For Year 11 cohorts, only 5 questions had either an increase or a decrease of at least 5% in the percentages of individual response categories over time. First of all, the percentages of the Year 11 cohorts who gave positive answers to the question ‘getting on with other pupils at school’ (Q2) remained stable over years (on average around 97%). However, there was a rise of 3% in the response category ‘I always...’ from 29% in 1996 to 32% in 2003 in contrast to a 5% decline in the response category ‘I usually...’ from 69% in 1996 to 64% in 2003 (see Table 10).

Table 10. The percentages of individual response categories for ‘getting on with other pupils at school’ (Q2) reported by Year 11 pupils over years

| Q2 | I always get on well with others in my year. | I usually get on well with others in my years. | I hardly ever get on with others in my year. | I never get on well with others in my year. |
|------|----------------------------------------------|------------------------------------------------|----------------------------------------------|---------------------------------------------|
| 1996 | 28.67% | 68.72% | 1.74% | 0.11% |
| 1997 | 30.49% | 66.88% | 1.75% | 0.34% |
| 1999 | 33.49% | 63.85% | 1.85% | 0.31% |
| 2000 | 32.75% | 63.93% | 2.42% | 0.39% |
| 2001 | 34.32% | 62.60% | 2.28% | 0.37% |
| 2002 | 33.17% | 63.27% | 2.11% | 0.44% |
| 2003 | 32.30% | 64.14% | 1.93% | 0.22% |

As found from Year 9 cohorts’ responses to ‘school work that I have to do’ (Q6), there was also a steady decrease over years in Year 11 cohorts’ feeling ‘School work is usually/always interesting’ from 53% in 1996 to 37% in 2003 (see Table 11). There was an equivalent rise of the percentages of Year 11 cohorts’ feeling ‘School work is always/usually boring’ from 46% in 1996 to 60% in 2003. It seems that from 1999, regardless of age, well over half of Year 9 and Year 11 pupils thought school work usually or always boring on average.

Table 11. The percentages of individual response categories for ‘the work I have to do’ (Q6) reported by Year 11 pupils over years

| Q6 | School work is always boring. | School work is usually boring. | School work is usually interesting. | School work is always interesting. |
|------|-------------------------------|--------------------------------|-------------------------------------|------------------------------------|
| 1996 | 4.40% | 42.02% | 51.41% | 1.39% |
| 1997 | 5.52% | 43.51% | 48.74% | 1.63% |
| 1999 | 6.48% | 46.01% | 45.73% | 1.08% |
| 2000 | 6.66% | 47.88% | 44.10% | 0.84% |
| 2001 | 7.69% | 47.98% | 42.99% | 0.94% |
| 2002 | 7.95% | 49.20% | 40.62% | 1.23% |
| 2003 | 7.88% | 51.84% | 37.87% | 1.03% |

Similar to Year 9 cohorts’ responses to ‘getting homework’ (Q21), Year 11 pupils reporting ‘I get homework nearly every night over years’ decreased from 47% in 1996 to 28% in 2003 (see Table 12), whilst more Year 11 pupils answered ‘I usually get homework’, of which the percentages were lower than the equivalent percentages for Year 9 cohorts. As for doing homework (Q22), more Year 11 pupils (22%) in 2003 reported ‘hardly ever/never remember to do my homework’ than the Year 11 pupils (15%) in 1996 (see Table 13). These figures are similar to the equivalent Year 9 pupils’ responses. When asked about the teaching in their school (Q44), the percentage of Year 11 pupils’ responses to ‘Teaching in this school is much/a bit better than it was’ fluctuated between 39% at lowest in 2001 to 45% at highest in 2003 (see Table 14).

Table 12. The percentages of individual response categories for ‘getting homework’ (Q21) reported by Year 11 pupils over years

| Q21 | I never get homework. | I hardly ever get homework. | I usually get homework. | I get homework nearly every night. |
|------|-----------------------|-----------------------------|-------------------------|------------------------------------|
| 1996 | 1.41% | 11.49% | 39.55% | 46.62% |
| 1997 | 1.90% | 11.60% | 40.79% | 44.87% |
| 1999 | 2.55% | 14.79% | 42.33% | 39.46% |
| 2000 | 2.86% | 15.05% | 41.54% | 39.67% |
| 2001 | 3.67% | 16.36% | 44.00% | 34.87% |
| 2002 | 3.97% | 17.65% | 44.92% | 31.76% |
| 2003 | 4.19% | 21.39% | 44.16% | 28.38% |

Table 13. The percentages of individual response categories for ‘doing homework’ (Q22) reported by Year 11 pupils over years

| Q22 | I always remember to do my homework. | I usually remember to do my homework. | I hardly ever remember to do my homework. | I never remember to do my homework. |
|------|--------------------------------------|---------------------------------------|-------------------------------------------|-------------------------------------|
| 1996 | 21.81% | 60.97% | 12.30% | 3.04% |
| 1997 | 21.19% | 60.81% | 12.96% | 3.08% |
| 1999 | 19.40% | 59.02% | 15.05% | 4.17% |
| 2000 | 18.91% | 59.28% | 14.90% | 4.48% |
| 2001 | 18.37% | 58.30% | 15.39% | 4.77% |
| 2002 | 19.45% | 56.75% | 14.86% | 4.65% |
| 2003 | 18.06% | 55.63% | 17.05% | 4.96% |

Table 14. The percentages of individual response categories for ‘teaching in this school’ (Q44) reported by Year 11 pupils over years

| Q44 | Teaching in this school is much better than it was. | Teaching in this school is a bit better than it was. | Teaching in this school is exactly the same as it was. | Teaching in this school is a bit worse than it was. | Teaching in this school is much worse than it was. |
|------|-----------------------------------------------------|------------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------|
| 1996 | NA | NA | NA | NA | NA |
| 1997 | NA | NA | NA | NA | NA |
| 1999 | 12.75% | 28.21% | 40.64% | 11.49% | 4.35% |
| 2000 | 12.35% | 29.72% | 41.10% | 11.07% | 4.20% |
| 2001 | 11.09% | 28.35% | 40.14% | 13.00% | 4.63% |
| 2002 | 13.55% | 27.76% | 38.18% | 12.45% | 4.68% |
| 2003 | 14.01% | 30.79% | 37.27% | 10.48% | 3.90% |

Note: This question is a new item added to the questionnaire from 1999.

3.4 Which questions did pupils respond to most positively and negatively

In order to examine which questionnaire items pupils responded to most positively (or negatively) it was necessary to treat the four response categories as a numerical score (1 = most negative, 2 = negative, 3 = positive and 4 = most positive). Interestingly the average scores for all questions for both Year 9 and 11 cohorts indicate that over the eight-year period pupil responses are generally more positive than negative (i.e. above 2) except for the Question ‘the way others behave’ (Q35). However, some variability was also found in both the typical (mean) response scores and the spread (standard deviation) of response scores across questionnaire items and these findings are discussed below.

Table 15 shows the questions that Year 9 and Year 11 pupils responded to most positively and most negatively and reports the three highest and the three lowest ranked questions for each year. Over time Year 9 cohorts responded most positively to the following questionnaire items: ‘people at home’ (Q19), ‘not bullying others’ (Q34) and ‘safety in the playground’ (Q4)⁴. On the other hand the same pupils responded least positively to ‘answering questions in class’ (Q9), ‘the work I have to do’ (Q6) and ‘the way others behave’ (Q35)⁵ across years. A similar picture was found in the responses of Year 11 pupils across years with the same questions ranked as the three highest⁶ and three lowest⁷ ones regardless of the order. These findings indicate that most Year 9 and Year 11 pupils reported receiving good family support in terms of being encouraged to do well at school. The majority of pupils also felt safe in the playground and did not report bullying others. On the other hand, it is important to recognise that increasingly substantial

⁴ The descending orders of the frequencies for the three highest ranked questions for Year 9 pupils slightly different across years. For 2002 and 2003, Question 34 came first and then Question 19 followed by Question 4, whilst for the rest of the years, the descending order of the frequencies for the three questions is Question 19 subsequently followed by Question 34 and Question 4.

⁵ The ascending orders of the frequencies for the three lowest ranked questions reported by Year 9 pupils over years are all the same, which is Question 35, then Question 6 and then Question 9.

⁶ In Year 11 cohorts the descending orders of the frequencies for the three highest ranked questions were Questions 34 – 4 – 9 for the first three years and Questions 34 – 19 – 4 for the last four years.

⁷ The ascending orders of the frequencies for the three lowest ranked questions reported by Year 11 pupils over years are all the same, which is Question 35, then Question 6 and then Question 9.

numbers of pupils were not willing to answer questions in class, felt school work boring and experienced their peers in class behaving badly from 1996 to 2003.

Table 15. The questions Year 9 and Year 11 pupils responding most positively and negatively over years

| | 1996 | | 1997 | | 1999 | | 2000 | | 2001 | | 2002 | | 2003 | |
|-----------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| Year 9: The three highest ranked questions: | | | | | | | | | | | | | | |
| People at home (Q19) | 3.62 | 0.68 | 3.63 | 0.69 | 3.64 | 0.68 | 3.66 | 0.67 | 3.63 | 0.69 | 3.60 | 0.72 | 3.57 | 0.73 |
| Bullying others (Q34) | 3.60 | 0.60 | 3.59 | 0.63 | 3.60 | 0.60 | 3.62 | 0.60 | 3.62 | 0.60 | 3.61 | 0.62 | 3.60 | 0.64 |
| Safety In the playground (Q4) | 3.47 | 0.67 | 3.50 | 0.67 | 3.52 | 0.65 | 3.48 | 0.67 | 3.45 | 0.68 | 3.43 | 0.70 | 3.41 | 0.70 |
| Year 9: The three lowest ranked questions: | | | | | | | | | | | | | | |
| Answering questions in class (Q9) | 2.61 | 0.84 | 2.60 | 0.84 | 2.57 | 0.84 | 2.55 | 0.84 | 2.53 | 0.83 | 2.49 | 0.84 | 2.45 | 0.84 |
| The work I have to do (Q6) | 2.57 | 0.62 | 2.49 | 0.64 | 2.43 | 0.63 | 2.39 | 0.65 | 2.35 | 0.64 | 2.31 | 0.66 | 2.27 | 0.66 |
| The way others behave (Q35) | 2.05 | 0.73 | 2.07 | 0.74 | 2.07 | 0.75 | 2.03 | 0.76 | 1.98 | 0.74 | 1.99 | 0.73 | 2.01 | 0.75 |
| Year 11: The three highest ranked questions: | | | | | | | | | | | | | | |
| Bullying others (Q34) | 3.70 | 0.57 | 3.69 | 0.59 | 3.67 | 0.61 | 3.67 | 0.63 | 3.69 | 0.62 | 3.70 | 0.62 | 3.69 | 0.63 |
| In the playground (Q4) | 3.61 | 0.63 | 3.64 | 0.64 | 3.63 | 0.64 | 3.59 | 0.66 | 3.56 | 0.69 | 3.56 | 0.69 | 3.56 | 0.67 |
| People at home (Q19) | 3.59 | 0.71 | 3.59 | 0.70 | 3.61 | 0.70 | 3.61 | 0.70 | 3.61 | 0.71 | 3.61 | 0.71 | 3.57 | 0.74 |
| Year 11: The three lowest ranked questions: | | | | | | | | | | | | | | |
| Answering questions in class (Q9) | 2.56 | 0.81 | 2.54 | 0.81 | 2.55 | 0.82 | 2.53 | 0.84 | 2.51 | 0.83 | 2.50 | 0.82 | 2.49 | 0.80 |
| The work I have to do (Q6) | 2.50 | 0.61 | 2.47 | 0.63 | 2.42 | 0.63 | 2.39 | 0.62 | 2.37 | 0.64 | 2.36 | 0.64 | 2.33 | 0.63 |
| The way others behave (Q35) | 2.23 | 0.72 | 2.25 | 0.73 | 2.18 | 0.75 | 2.21 | 0.76 | 2.18 | 0.75 | 2.21 | 0.75 | 2.17 | 0.75 |

3.5. Which questions do pupils respond to with the most/least amount of consensus (variability)

Although in general Year 9 and Year 11 pupils responded more positively than negatively to most questions over time, it is important to also note that there was variation from the mean question response scores with standard deviations ranging from 0.9 to 0.4 for Year 9 cohorts and from 1.0 to 0.4 for Year 11 cohorts. This means that there is much less agreement (consensus) amongst pupils for particular questions across years in comparison to others. Table 16 lists the three questions with the least consensus (highest standard deviation) and the three questions with the most consensus (lowest standard deviation) for Year 9 and Year 11 cohorts for each year. The findings show that there was least concurrence in pupil responses to the question ‘not getting bullied’ (Q33), ‘playing truant’ (Q32) and ‘answering questions in class’ (Q9) for Year 9 cohorts across years (except the question ‘teachers and pupils’ (Q31) had higher standard deviation than Question 9 in 2001). These findings imply that there were considerable differences in whether pupils reported being bullied, playing truant or liking to answer questions in class. In contrast, there was more Year 9 pupil consensus in their responses to the questions ‘difficulty of work’ (Q7), ‘easiness of work’ (Q12) and ‘getting on with other pupils at school’ (Q2).

Table 16. The questions Year 9 and Year 11 pupils responding with most and least variability over years

| | 1996 | | 1997 | | 1999 | | 2000 | | 2001 | | 2002 | | 2003 | |
|------------------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| Year 9: Three questions with highest standard deviation: | | | | | | | | | | | | | | |
| Playing truant (Q32) | 3.43 | 0.90 | 3.41 | 0.93 | 3.38 | 0.93 | 3.39 | 0.91 | 3.37 | 0.92 | 3.33 | 0.94 | 3.35 | 0.93 |
| Being bullied (Q33) | 3.23 | 0.91 | 3.27 | 0.90 | 3.34 | 0.88 | 3.31 | 0.89 | 3.33 | 0.88 | 3.30 | 0.90 | 3.31 | 0.89 |
| Answering questions in class (Q9) | 2.61 | 0.84 | 2.60 | 0.84 | 2.57 | 0.84 | 2.55 | 0.84 | | | 2.49 | 0.84 | 2.45 | 0.84 |
| Teachers and pupils (Q31) | | | | | | | | | 2.72 | 0.83 | | | | |
| Year 9: Three questions with lowest standard deviation: | | | | | | | | | | | | | | |
| Getting on with other pupils at school (Q2) | 3.20 | 0.48 | 3.21 | 0.49 | 3.21 | 0.49 | 3.21 | 0.50 | 3.21 | 0.50 | 3.19 | 0.50 | 3.19 | 0.50 |
| Easiness of work (Q12) | 2.98 | 0.46 | 2.97 | 0.45 | 2.96 | 0.48 | 2.96 | 0.48 | 2.96 | 0.48 | 2.96 | 0.49 | 3.02 | 0.48 |
| Difficulty of work (Q7) | 3.07 | 0.44 | 3.05 | 0.44 | 3.07 | 0.45 | 3.06 | 0.45 | 3.06 | 0.46 | 3.04 | 0.47 | 2.96 | 0.48 |
| Year 11: Three questions with highest standard deviation: | | | | | | | | | | | | | | |
| Playing truant (Q32) | 3.28 | 0.93 | 3.25 | 0.94 | 3.18 | 0.96 | 3.22 | 0.94 | 3.22 | 0.93 | 3.21 | 0.94 | 3.23 | 0.95 |
| Answering questions in class (Q9) | 2.56 | 0.81 | 2.54 | 0.81 | 2.55 | 0.82 | 2.53 | 0.84 | 2.51 | 0.83 | 2.50 | 0.82 | 2.49 | 0.80 |
| Being bullied (Q33) | 3.51 | 0.79 | | | | | 3.51 | 0.82 | | | | | | |
| Teachers friendly to pupils (Q31) | | | 2.84 | 0.79 | 2.84 | 0.81 | | | 2.82 | 0.81 | 2.85 | 0.82 | | |
| Getting homework (Q21) | | | | | | | | | | | | | 2.99 | 0.82 |
| Year 11: Three questions with lowest standard deviation: | | | | | | | | | | | | | | |
| Getting on with other pupils at school (Q2) | 3.27 | 0.49 | 3.28 | 0.51 | 3.31 | 0.52 | 3.30 | 0.53 | 3.31 | 0.53 | 3.30 | 0.53 | 3.30 | 0.51 |
| Difficulty of work (Q7) | 3.03 | 0.40 | 3.04 | 0.42 | 3.06 | 0.43 | 3.04 | 0.44 | 3.03 | 0.44 | 3.02 | 0.45 | 3.02 | 0.43 |
| Easiness of work (Q12) | 3.02 | 0.38 | 3.01 | 0.40 | 3.00 | 0.43 | 3.00 | 0.42 | 3.00 | 0.43 | 3.00 | 0.43 | 3.00 | 0.42 |

A slightly different picture of the variation in the responses of Year 11 cohorts was found. Table 16 lists the three questions with highest standard deviation and the three questions with lowest standard deviation for Year 11 cohorts for each year. In line with the Year 9 findings the three questions that Year 11 pupils had little agreement (consensus) on were ‘playing truant’ (Q32), ‘answering questions in class’ (Q9) and ‘not getting bullied’ (Q33) across time. Two other questions were also identified in some years as demonstrating little pupil consensus ‘teachers being friendly to pupils’ (Q31) in 1997, 1999, 2001 and 2002, and ‘getting homework’ (Q21) in 2003. The three questions, which Year 11 pupils agreed on most, were the same as the ones identified for Year 9 pupils (with a slightly different rank order) where the question ‘easiness of work’ (Q12) came first, then the question ‘difficulty of work’ (Q7) followed by the question ‘getting on with other pupils at school’ (Q2).

3.6. Differences in Year 9 and Year 11 responses

Three questions were identified as having the biggest mean item score differences between Year 9 and Year 11 cohorts for each year and these are not exactly the same over years as can be seen in Table 17. However, Year group differences regarding the question ‘not being bullied’ (Q33) consistently appeared in every year, with the average mean item score difference between Year 9 and 11 pupils ranging from 0.2 to 0.3 with Year 9 pupils reporting a greater degree of bullying.

Year group differences also emerged for the question ‘the way others behave’ (Q35) in 1996, 1997 and 2000 to 2002, with Year 9 pupils responding more negatively than Year 11 pupils. Year 9 cohorts and corresponding Year 11 cohorts in 2000, 2002 and 2003 also indicated different responses to the question ‘how would you describe your behaviour at home’ (Q39) with mean scores ranging from 3.1 to 3.3 (*mostly good/good*) and Year 11 cohorts responding more positively than equivalent Year 9 cohorts. Furthermore, Year 9 pupils in 1996, 1997 and 1999 had higher mean scores than corresponding Year 11 pupils for the question regarding

‘playing truant’ (Q32) with mean scores varying from 3.18 to 3.43. This means that on average more Year 9 pupils had never or only missed a class or two than corresponding Year 11 pupils.

Table 17. The questions with biggest and smallest differences (absolute value) in means between Year 9 and Year 11 pupils

| Biggest differences in mean | Mean Year 9 | Mean Year 11 | Diff. y11-y9 | Smallest differences in mean | Mean Year 9 | Mean Year 11 | Diff. y11-y9 |
|--------------------------------------|-------------|--------------|--------------|-----------------------------------|-------------|--------------|--------------|
| 1996 | | | | | | | |
| Being bullied (Q33) | 3.23 | 3.51 | -0.28 | My ability (Q28) | 2.85 | 2.86 | -0.01 |
| The way others behave (Q35) | 2.05 | 2.23 | -0.17 | My self-confidence (Q25) | 2.96 | 2.97 | -0.01 |
| Playing truant (Q32) | 3.43 | 3.28 | 0.16 | Thinking hard (Q24) | 3.00 | 3.00 | 0.00 |
| 1997 | | | | | | | |
| Being bullied (Q33) | 3.27 | 3.54 | -0.27 | Teachers helping (Q15) | 3.16 | 3.16 | 0.00 |
| The way others behave (Q35) | 2.07 | 2.25 | -0.18 | My ability (Q28) | 2.86 | 2.86 | 0.00 |
| Playing truant (Q32) | 3.41 | 3.25 | 0.16 | My self-confidence (Q25) | 3.01 | 3.00 | 0.01 |
| 1999 | | | | | | | |
| Playing truant (Q32) | 3.38 | 3.18 | 0.20 | Joining in (Q30) | 3.16 | 3.17 | -0.01 |
| Being bullied (Q33) | 3.34 | 3.52 | -0.19 | My ability (Q28) | 2.89 | 2.90 | -0.01 |
| Getting homework (Q21) | 3.37 | 3.20 | 0.17 | Difficulty of work (Q7) | 3.07 | 3.06 | 0.01 |
| 2000 | | | | | | | |
| Being bullied (Q33) | 3.31 | 3.51 | -0.20 | Teachers helping (Q15) | 3.10 | 3.11 | -0.01 |
| How I behave at home (my view) (Q39) | 3.11 | 3.30 | -0.19 | The work I have to do (Q6) | 2.39 | 2.39 | 0.00 |
| The way others behave (Q35) | 2.03 | 2.21 | -0.18 | My ability (Q28) | 2.88 | 2.88 | 0.00 |
| 2001 | | | | | | | |
| Being bullied (Q33) | 3.33 | 3.54 | -0.21 | Joining in (Q30) | 3.15 | 3.15 | 0.00 |
| The way others behave (Q35) | 1.98 | 2.18 | -0.20 | My skills in general (Q27) | 2.77 | 2.77 | 0.00 |
| Getting homework (Q21) | 3.31 | 3.12 | 0.19 | Helping me to understand (Q8) | 3.08 | 3.07 | 0.01 |
| 2002 | | | | | | | |
| Being bullied (Q33) | 3.30 | 3.53 | -0.23 | My ability (Q28) | 2.85 | 2.85 | 0.00 |
| The way others behave (Q35) | 1.99 | 2.21 | -0.22 | Answering questions in class (Q9) | 2.49 | 2.50 | -0.01 |
| How I behave at home (my view) (Q39) | 3.10 | 3.31 | -0.20 | Teachers praising me (Q16) | 2.61 | 2.60 | 0.01 |
| 2003 | | | | | | | |
| Being bullied (Q33) | 3.31 | 3.53 | 0.22 | My ability (Q28) | 2.85 | 2.84 | -0.01 |
| How I behave at home (my view) (Q39) | 3.08 | 3.27 | 0.19 | People at home (Q19) | 3.57 | 3.57 | 0.00 |
| Talking to teachers (Q18) | 2.68 | 2.85 | 0.17 | Difficulty of work (Q7) | 3.02 | 3.02 | 0.00 |

4. Factor Analysis of Pupil Attitudes

Factor analysis, a statistical method for data reduction, was also employed to examine the underlying relationship between the questions in addition to the results of the preliminary item analysis summarised above. The purpose is to generate a smaller number of factors to represent responses to the original questions, which can be further used to measure pupils’ attitudes in terms of one or more dimensions.

4.1. Sample

The sample included in the factor analysis comprises those pupils who had valid gender and school year data, and had less than 6 missing responses to Questions 1 to 40. Totally there are 80,665 Year 9 pupils and 58,206 Year 11 pupils in the factor analytic sample.

4.2. Questions used for factor analysis

Questions 1 to 21 and 24 to 40⁸ from the secondary school pupil attitude questionnaire were used in the factor analysis (38 items). Regarding missing data in pupil responses to these questions, the method of replacing missing values with the mean was adopted in this study.

4.3. The results of factor analysis

In this study, factor analysis with principal component analysis rotation Method and varimax with Kaiser normalization were adopted. The following criteria were employed to retain items and factors emerging from the factor analysis:

- Kaiser-Meyer-Olker (KMO) of sampling adequacy in the 0.60's as mediocre and Bartlett test of sphericity significant at the 0.05 level were adopted to determine the appropriateness of employing factor analytic techniques.
- An eigen value greater than 1.0 and with at least three items was used to detain a factor.
- Items with a factor loading of at least 0.4 were retained to interpret factors.
- Cronbach's alpha was employed to assess the internal consistency reliability for each factor – at least 0.50 as a modest re reliability.

The factor analyses were conducted for Year 9 and Year 11 cohorts separately. After carrying out the factor analysis for each cohort, four factors comprising the same questions were identified for both cohorts [teachers' support (10 items, Factor 1), pupil behaviour (6 items, Factor 2), pupil culture (5 items, Factor 3) and self-efficacy (5 items, Factor 4)]. These factors were found to be reasonable reliable (α values ranged from 0.6 to 0.8) and provide a way to measure pupils' perceptions in the aspects of support offered by school teachers, their behaviours in class, their relationship with other pupils and their own competence. The relative weights (i.e. factor score coefficients) of individual questions to each factor are shown in Table 18 and were rescaled into a total sum equal to 1 on each factor in order to calculate factor scores⁹ for each pupil in each cohort.

The mean factor scores and standard deviation of the four factors from Year 9 and Year 11 across the eight-year period examined are shown in Table 19¹⁰. In comparison to other factors both year groups 9 and 11 responded most positively to the third factor which concerns pupil culture relating to not being bullied, making friends, getting on with others and feeling safe in the playground. The finding suggests that generally on average pupils perceived a comfortable atmosphere in school in terms of friendship and safety. In contrast, both year cohorts reported least positively to the first factor regarding teacher support (e.g. receiving help, praise, attention and encouragement from teachers) as compared to the other three factors. Basically, there is very little difference in mean factor scores between Year 9 and Year 11 pupils over time (ranging from 0.02 to 0.09) with Year 11 responding more positively (i.e. having higher mean factor scores) to all factors except the 'self-efficacy' factor. Also only a slight difference in variability (standard deviation) was found in those mean factor scores reported by year groups 9 and 11.

⁸ There were 42 questions in the questionnaire originally in 1996. Additional 5 questions have been added to the questionnaire since 1999, which are not included in the factor analysis. Questions 22 and 23 are also excluded because the choice of responding to the two questions is based on the answer of Question 21. The two particular questions, Questions 41 and 42, are excluded because the response categories of the two questions are not suitable to be measured on a scale.

⁹ Factor score is a score used to represent a respondent's response on a factor.

¹⁰ The equivalent figures for the schools providing data across all years are shown in brackets. There are 33 and 27 schools that provided all data across years.

Table 18. Factor score coefficients for individual questions in Factor 1 to Factor 4

| | Year 9 | | Year 11 | |
|-------------------------------------------------|-----------------------------|-----------------|-----------------------------|-----------------|
| | Component score coefficient | Rescaled weight | Component score coefficient | Rescaled weight |
| Mean substitution | N = 80665 | | N = 58206 | |
| Factor 1: teachers' support | | | | |
| Teachers listening (Q10) | 0.18 | 0.112 | 0.17 | 0.108 |
| Helping me to understand (Q8) | 0.17 | 0.106 | 0.17 | 0.108 |
| Teachers and pupils (Q31) | 0.17 | 0.106 | 0.17 | 0.108 |
| Teachers helping (Q15) | 0.17 | 0.106 | 0.16 | 0.101 |
| The way teachers treat me (Q5) | 0.17 | 0.106 | 0.16 | 0.101 |
| Teachers praising me (Q16) | 0.16 | 0.099 | 0.16 | 0.101 |
| Teachers encouraging me (Q11) | 0.15 | 0.093 | 0.15 | 0.095 |
| What teachers tell me about my work (Q14) | 0.15 | 0.093 | 0.15 | 0.095 |
| The work I have to do (Q6) | 0.15 | 0.093 | 0.14 | 0.089 |
| Talking to teachers (Q18) | 0.14 | 0.087 | 0.15 | 0.095 |
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | KMO = 0.91 | | KMO = 0.91 | |
| Bartlett's Test of Sphericity | Sig. = 0.00 | | Sig. = 0.00 | |
| Factor 2: pupil behaviour | | | | |
| How I behave in class (teachers' views) (Q38) | 0.30 | 0.205 | 0.30 | 0.205 |
| How I behave in class (my view) (Q37) | 0.29 | 0.199 | 0.29 | 0.199 |
| What teachers think of my work (Q29) | 0.24 | 0.164 | 0.24 | 0.164 |
| Getting on with teachers (Q3) | 0.24 | 0.164 | 0.23 | 0.158 |
| Going to school (Q1) | 0.20 | 0.137 | 0.20 | 0.137 |
| Playing truant (Q32) | 0.19 | 0.130 | 0.20 | 0.137 |
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | KMO = 0.79 | | KMO = 0.78 | |
| Bartlett's Test of Sphericity | Sig. = 0.00 | | Sig. = 0.00 | |
| Factor 3: pupil culture | | | | |
| Joining in (Q30) | 0.33 | 0.219 | 0.34 | 0.221 |
| Making friends (Q36) | 0.33 | 0.219 | 0.34 | 0.221 |
| Being bullied (Q33) | 0.32 | 0.212 | 0.32 | 0.208 |
| Getting on with others at school (Q2) | 0.28 | 0.185 | 0.29 | 0.188 |
| In the playground (Q4) | 0.25 | 0.166 | 0.25 | 0.162 |
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | KMO = 0.76 | | KMO = 0.74 | |
| Bartlett's Test of Sphericity | Sig. = 0.00 | | Sig. = 0.00 | |
| Factor 4: self-efficacy | | | | |
| My ability (Q28) | 0.35 | 0.227 | 0.36 | 0.229 |
| My skills in general (Q27) | 0.34 | 0.221 | 0.35 | 0.223 |
| What I think of my school work (Q26) | 0.31 | 0.201 | 0.30 | 0.191 |
| My self-confidence (Q25) | 0.27 | 0.175 | 0.28 | 0.178 |
| Difficulty of work (Q7) | 0.27 | 0.175 | 0.28 | 0.178 |
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | KMO = 0.75 | | KMO = 0.73 | |
| Bartlett's Test of Sphericity | Sig. = 0.00 | | Sig. = 0.00 | |

Table 19. Mean and standard deviation of factor scores

| | Year 9 | | | Year 11 | | |
|---------------------------|-------------|----------------|---------------|-------------|----------------|---------------|
| | Mean | Std. Deviation | N | Mean | Std. Deviation | N |
| Factor 1: Teacher support | 2.82 (2.84) | 0.46 (0.45) | 80665 (30701) | 2.86 (2.86) | 0.44 (0.44) | 58206 (20092) |
| Factor 2: Behaviour | 3.06 (3.06) | 0.47 (0.47) | 80665 (30701) | 3.09 (3.09) | 0.47 (0.47) | 58206 (20092) |
| Factor 3: Pupil culture | 3.28 (3.28) | 0.48 (0.48) | 80665 (30701) | 3.37 (3.37) | 0.45 (0.45) | 58206 (20092) |
| Factor 4: Self efficacy | 2.93 (2.93) | 0.38 (0.37) | 80665 (30701) | 2.92 (2.92) | 0.37 (0.37) | 58206 (20092) |

Note: The figures for the schools providing data across all years are shown in brackets.

Table 20 shows the mean factor scores and standard deviation of the four factors for each year for Year 9 and Year 11 pupils (the equivalent figures for the schools providing data across all years are shown in brackets). It was found that the positive perception of Year 9 pupils in the dimensions of teacher support (factor 1) and pupil behaviour (factor 2) fell year on year. Year 9 mean factor scores decreased from 2.87 in 1996 to 2.77 in 2003 and from 3.09 in 1996 to 3.02 in 2003 respectively. In contrast, there is only a slight drop off in mean factor scores of these two dimensions from Year 11 pupils' responses in between 1996 and 2003. As can be seen in Table 20, Year 9 pupils also had positive feelings on average regarding the pupil culture (mean factor score = 3.25) and self-efficacy (mean factor score = 2.93) dimensions in 1996. Over time pupils' feelings were reported to be even more positive in these two dimensions until 1999 (mean factor scores = 3.30 and 2.95 respectively). However, subsequently those reported positive feelings decreased: the mean factor scores were 3.25 and 2.90 in 2003 respectively. A similar trend can also be found in Year 11 pupils' responses on the two dimensions.

Table 20. Mean and standard deviation of factor scores for each year

| | Year | Year 9 | | | Year 11 | | |
|------------------------------|------|-------------|----------------|--------------|-------------|----------------|-------------|
| | | Mean | Std. Deviation | N | Mean | Std. Deviation | N |
| Factor 1: Teacher support | 1996 | 2.87 (2.88) | 0.44 (0.44) | 9524 (4175) | 2.87 (2.87) | 0.43 (0.43) | 7790 (2564) |
| | 1997 | 2.86 (2.88) | 0.44 (0.44) | 9607 (4409) | 2.88 (2.88) | 0.43 (0.44) | 7542 (2687) |
| | 1999 | 2.84 (2.86) | 0.45 (0.44) | 11875 (4184) | 2.86 (2.87) | 0.45 (0.46) | 8306 (2829) |
| | 2000 | 2.82 (2.85) | 0.46 (0.46) | 11928 (4203) | 2.86 (2.87) | 0.45 (0.45) | 8722 (2782) |
| | 2001 | 2.81 (2.82) | 0.46 (0.46) | 13260 (4421) | 2.86 (2.85) | 0.45 (0.45) | 9665 (3052) |
| | 2002 | 2.79 (2.80) | 0.46 (0.45) | 12138 (4671) | 2.86 (2.83) | 0.45 (0.46) | 8376 (3145) |
| | 2003 | 2.77 (2.80) | 0.46 (0.47) | 12333 (4638) | 2.85 (2.84) | 0.43 (0.42) | 7805 (3033) |
| Factor 2: Behaviours | 1996 | 3.09 (3.09) | 0.46 (0.45) | 9524 (4175) | 3.10 (3.11) | 0.46 (0.47) | 7790 (2564) |
| | 1997 | 3.08 (3.08) | 0.46 (0.46) | 9607 (4409) | 3.10 (3.10) | 0.46 (0.47) | 7542 (2687) |
| | 1999 | 3.07 (3.07) | 0.47 (0.46) | 11875 (4184) | 3.08 (3.09) | 0.47 (0.47) | 8306 (2829) |
| | 2000 | 3.06 (3.07) | 0.48 (0.47) | 11928 (4203) | 3.09 (3.08) | 0.47 (0.46) | 8722 (2782) |
| | 2001 | 3.05 (3.06) | 0.48 (0.48) | 13260 (4421) | 3.09 (3.10) | 0.46 (0.46) | 9665 (3052) |
| | 2002 | 3.03 (3.03) | 0.48 (0.48) | 12138 (4671) | 3.10 (3.08) | 0.47 (0.48) | 8376 (3145) |
| | 2003 | 3.02 (3.04) | 0.48 (0.48) | 12333 (4638) | 3.08 (3.09) | 0.46 (0.45) | 7805 (3033) |
| Factor 3: Pupil culture | 1996 | 3.25 (3.26) | 0.47 (0.47) | 9524 (4175) | 3.36 (3.36) | 0.43 (0.42) | 7790 (2564) |
| | 1997 | 3.27 (3.28) | 0.47 (0.47) | 9607 (4409) | 3.38 (3.39) | 0.44 (0.43) | 7542 (2687) |
| | 1999 | 3.30 (3.30) | 0.47 (0.47) | 11875 (4184) | 3.39 (3.38) | 0.44 (0.44) | 8306 (2829) |
| | 2000 | 3.29 (3.29) | 0.48 (0.49) | 11928 (4203) | 3.37 (3.36) | 0.46 (0.46) | 8722 (2782) |
| | 2001 | 3.29 (3.30) | 0.48 (0.47) | 13260 (4421) | 3.38 (3.37) | 0.46 (0.46) | 9665 (3052) |
| | 2002 | 3.27 (3.26) | 0.49 (0.49) | 12138 (4671) | 3.38 (3.34) | 0.46 (0.46) | 8376 (3145) |
| | 2003 | 3.25 (3.25) | 0.49 (0.49) | 12333 (4638) | 3.37 (3.38) | 0.45 (0.43) | 7805 (3033) |
| Factor 4: Self-efficacy | 1996 | 2.93 (2.93) | 0.36 (0.35) | 9524 (4175) | 2.92 (2.93) | 0.36 (0.35) | 7790 (2564) |
| | 1997 | 2.93 (2.93) | 0.37 (0.37) | 9607 (4409) | 2.93 (2.93) | 0.36 (0.36) | 7542 (2687) |
| | 1999 | 2.95 (2.96) | 0.37 (0.37) | 11875 (4184) | 2.94 (2.94) | 0.37 (0.37) | 8306 (2829) |
| | 2000 | 2.94 (2.95) | 0.37 (0.37) | 11928 (4203) | 2.93 (2.92) | 0.38 (0.37) | 8722 (2782) |
| | 2001 | 2.93 (2.94) | 0.38 (0.37) | 13260 (4421) | 2.91 (2.92) | 0.37 (0.37) | 9665 (3052) |
| | 2002 | 2.91 (2.92) | 0.39 (0.38) | 12138 (4671) | 2.92 (2.90) | 0.37 (0.38) | 8376 (3145) |
| | 2003 | 2.90 (2.90) | 0.39 (0.40) | 12333 (4638) | 2.90 (2.91) | 0.37 (0.37) | 7805 (3033) |

Note: The equivalent mean, sd and sample n figures for the schools providing data across all years are shown in brackets. Although only a minority of schools provided data for all years/cohorts there is little difference in the descriptive statistics (mean, sd) between two sets of figures therefore suggesting that there is little impact of schools having missing cohort data on the overall results.

5. Multilevel modelling analysis

In the study, two approaches based on multilevel modelling analysis were adopted to measure trends of pupil responses via the four ‘attitude’ factors over the period of eight years (1996 – 2003 excluding 1998)¹¹. In the first approach, it is assumed that pupil (and school) responses to each of the factors has a linear relationship over time. In other words, this approach smoothes out year-to-year variation and estimates only a 1996 baseline (intercept) and time trend (slope) responses across the eight-year period. Essentially, the ‘intercept’ can be interpreted as the 1996 baseline figure and the ‘slope’ can be interpreted as the time trend. The second approach does *not* assume a linear relationship over time and focuses on year-to-year changes in schools’ responses to each of the four factors over time. Using this approach a dummy variable for each year was fitted to estimate the factor score of each factor of each cohort separately. In the case of both approaches the average time trends across all schools are accounted for and examined in the analysis.

Two models were employed for each of the two approaches: model with/without controlling for pupil gender (Model A/Model B and Model C/Model D, respectively). In other words, the intercept (1996 baseline) and time trend (slope) coefficients obtained from Model A where pupil gender information was controlled for are the estimate of factor scores for boys. The corresponding figures obtained from Model B where pupil gender information was not controlled for are the estimate of factor scores for the whole cohorts. The 1996 baseline (intercept) and year-to-year coefficients obtained from Model C controlling for pupil gender information provide the estimate of factor scores for boys in 1996 and year-to-year changes respectively. The initial findings from the four models are illustrated in figures 1.1-1.4 and 2.1-2.4 but further analyses are needed to complete this aspect of the research.

¹¹ There are 311 Year 9 and 190 Year 11 pupils in the factor analysis sample that did not have their school ID number and were excluded in the multilevel modelling analysis. As a result, the multilevel modelling sample comprised 80,354 Year 9 and 58,016 Year 11 pupils.

Figure 1-1. Year 9 pupil response to factor 1 based on Models A - D

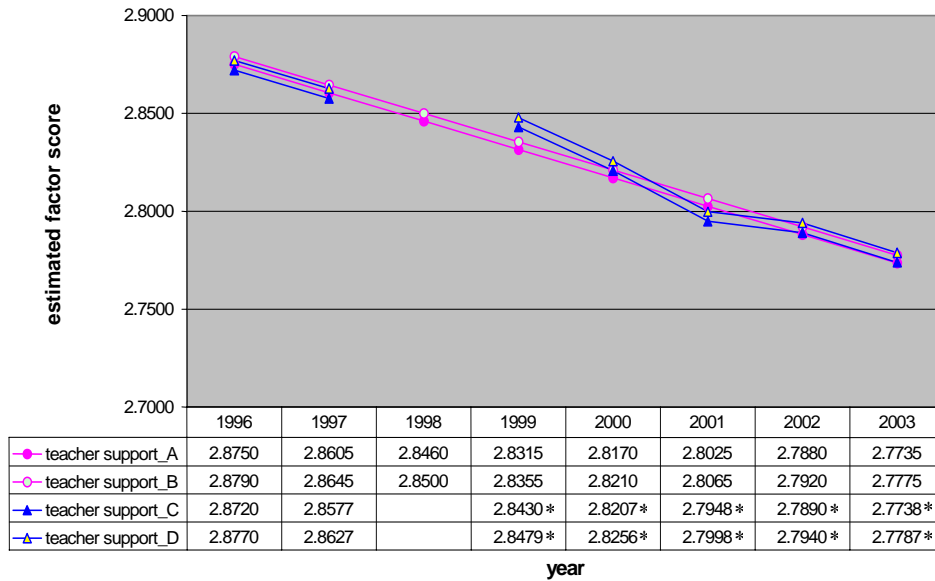


Figure 1-2. Year 9 pupil response to factor 2 based on Models A - D

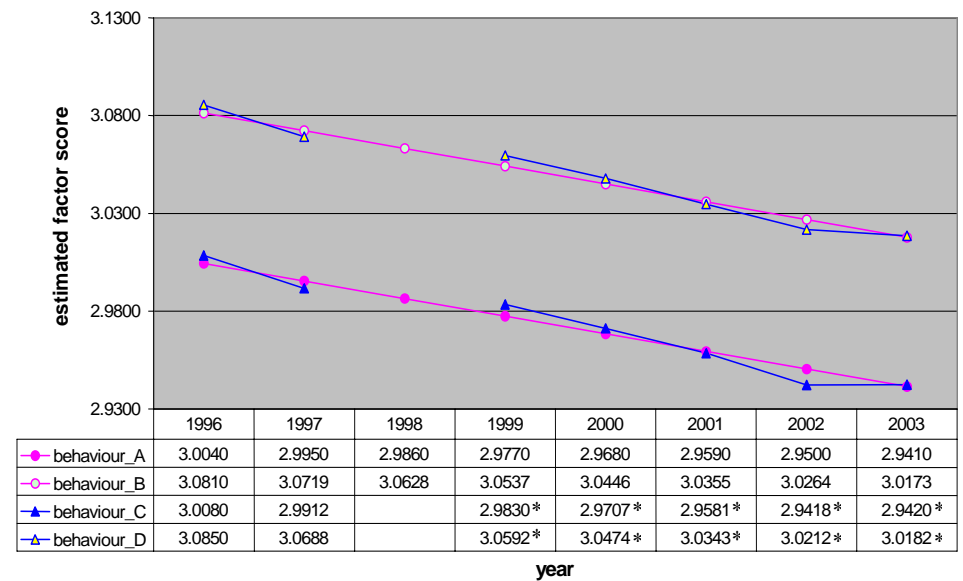


Figure 1-3. Year 9 pupil response to factor 3 based on Models A - D

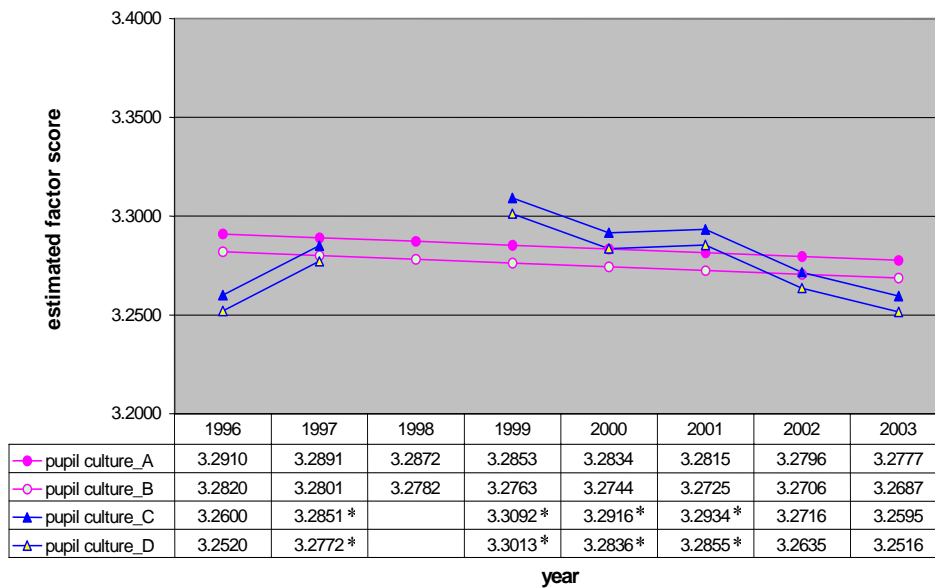
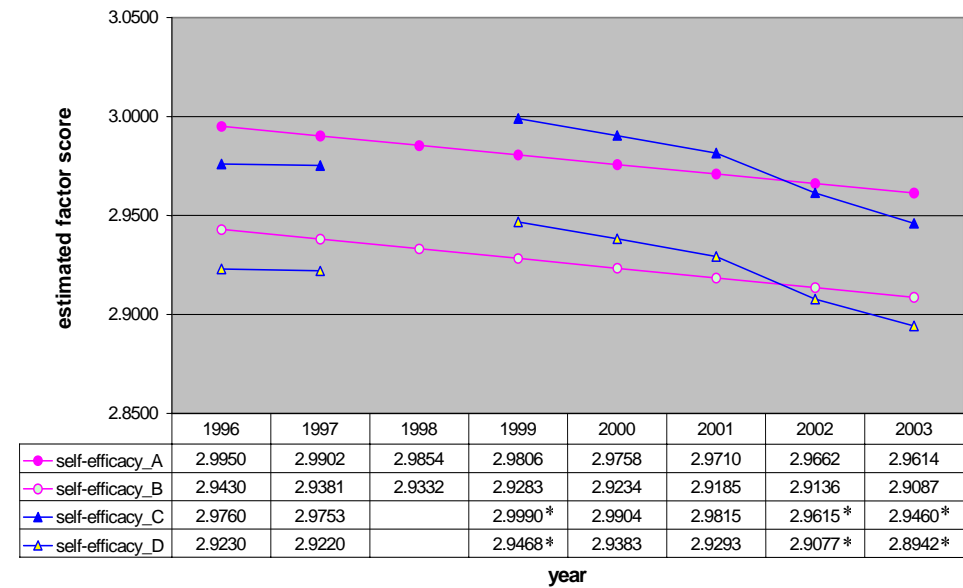


Figure 1-4. Year 9 pupil response to factor 4 based on Models A - D



Note: * indicated that the factor score in that particular year is statistically significantly different from the factor score in 1996.

Figure 1. Year 9 pupil responses to the four factors based on Models A – D

Figure 2-1. Year 11 pupil response to factor 1 based on Models A - D

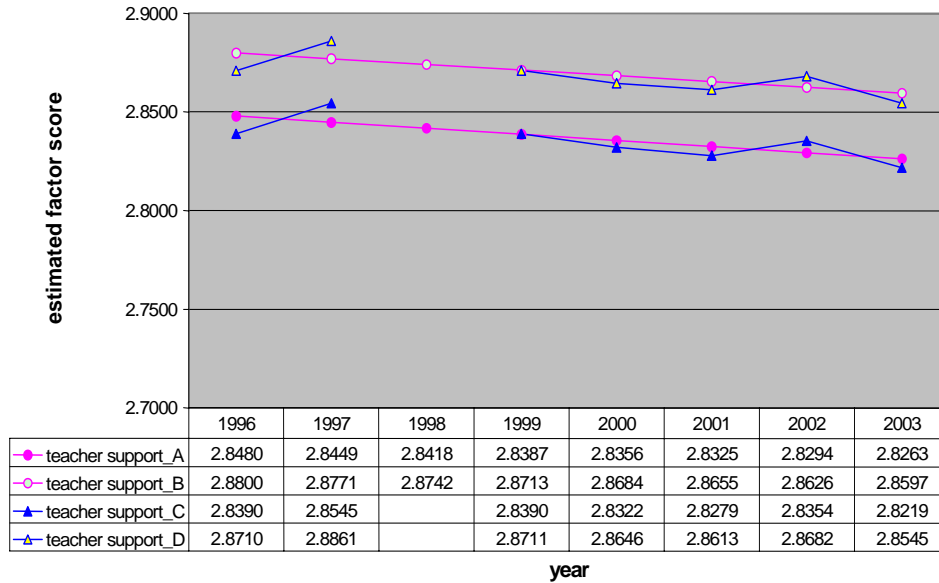


Figure 2-2. Year 11 pupil response to factor 2 based on Models A - D

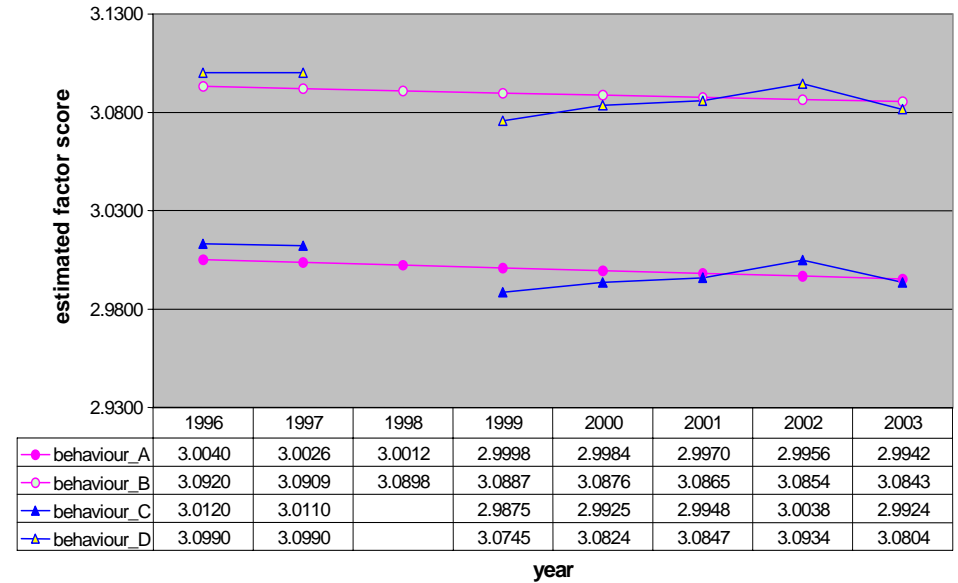


Figure 2-3. Year 11 pupil response to factor 3 based on Models A - D

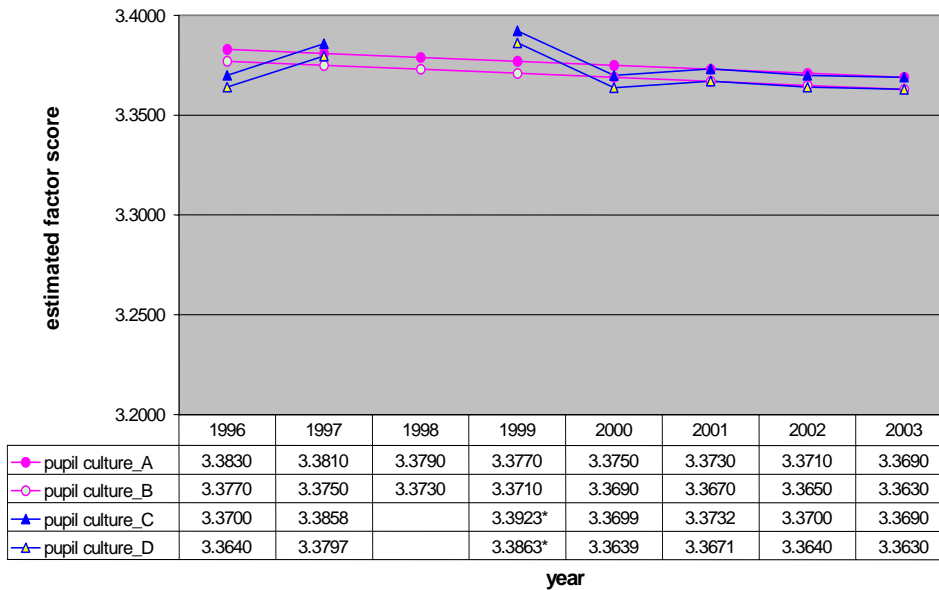
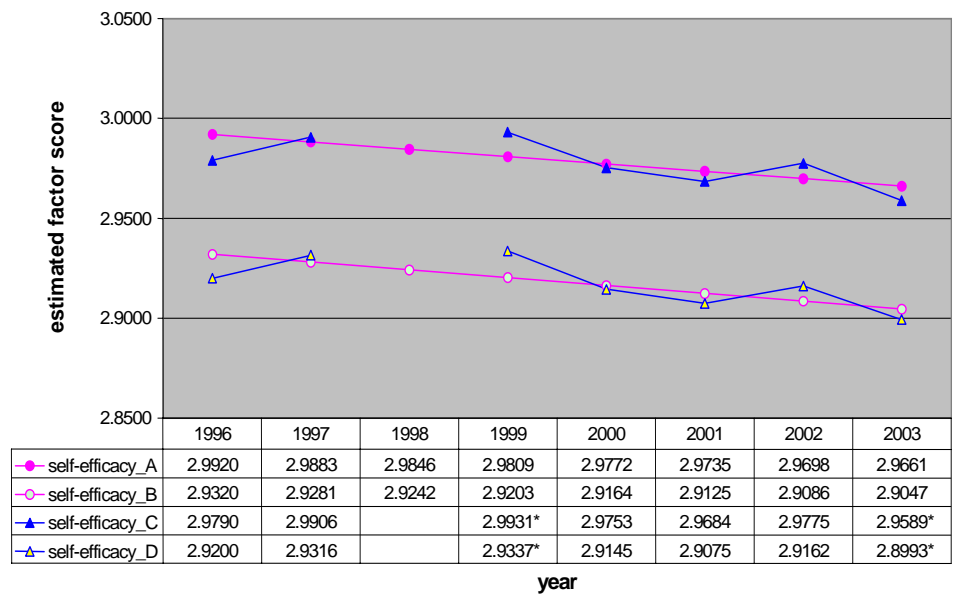


Figure 2-4. Year 11 pupil response to factor 4 based on Models A - D



Note: * indicated that the factor score in that particular year is statistically significantly different from the factor score in 1996.

Figure 2. Year 11 pupil responses to the four factors based on Models A – D

Summary of findings

Overall, Year 9 and Year 11 pupils gave fairly similar responses to the secondary pupil questionnaire over the eight-year time period examined. However, changes over time were identified for a small number of questions in terms of at least 5 per cent change in pupil responses. The following results were found.

- There was an increase over time from 1996 to 2003 in Year 9 pupil responses to ‘I *hardly ever/never* like school’ (21% to 31%), ‘school work is *always/usually* boring’ (42% to 63%), ‘I *never/hardly ever* like to answer questions in class’ (42% to 51%), ‘teachers *never/hardly ever* help me when I’m stuck’ (11% to 17%), ‘I *never/hardly ever* ask teachers for help, even if I’m stuck’ (25% to 32%), ‘I *never/hardly ever* get homework’ (8% to 18%) and ‘teachers *hardly ever/never* notice if I don’t do my homework’ (11% to 21%).
- Similarly, there was an increase over time from 1996 to 2003 in Year 11 pupil responses to ‘school work was *always/usually* boring’ (46% to 60%), ‘I *never/hardly ever* get homework’ (13% to 26%) and ‘teachers *hardly ever/never* notice if I don’t do my homework’ (15% to 22%).

On average, however, Year 9 and Year 11 pupils generally had a positive response (a score above 2) to all questions except for one (Q35: the way others behave) over the time period examined. Both Year 9 and Year 11 cohorts had the most positive views about ‘people at home’ (Q19), ‘not bullying others’ (Q34) and ‘safety in the playground’ (Q4) over time. Also both year groups had the most negative perceptions about ‘answering questions in class’ (Q9), ‘the work I have to do’ (Q6) and ‘the way others behave’ (Q35).

Four pupil attitude factors were identified from the factor analysis, which was used to create a smaller number of dimensions to represent the original questions. The four factors concern pupils’ perceptions in aspects of teacher support, behaviour, pupil culture and self-efficacy. Over time Year 11 pupils’ reports were more positive than Year 9 pupils as measured by factor scores. It was also found that the positive views of Year 9 pupils in the dimensions of teacher support and behaviours decreased year on year.

This study reports on an initial analysis of pupil attitude data over an eight-year period. **However, due to the exploratory nature of the analysis the results should be treated cautiously at this stage.** Further research is needed to clarify and to contextualise the findings and to investigate statistically significant pupil attitude differences between schools.

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