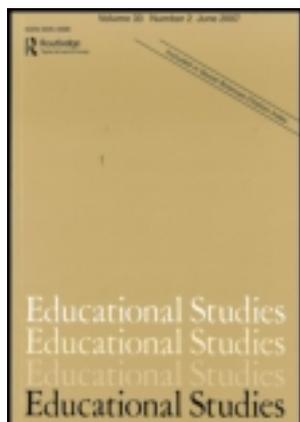


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Comparison of teacher talk directed to boys and girls and its relationship to their behaviour in secondary and primary schools

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There have been a number of earlier investigations, using differing methodologies, into the extent to which teachers in the secondary school interact with boys and girls and the results have suggested an imbalance in the teachers' verbal behaviour towards the genders that is quite similar to the imbalance found in teachers' behaviour in the primary school. The main aim of this study was to devise an investigation using the same methodology as that used in a recent primary school investigation in order to be able to make a fair comparison between the two levels. The results showed considerable differences in the teachers' verbal behaviour towards the genders in the secondary school from that of teachers in the primary school. Where the primary school data showed teachers interacting more with the boys than the girls and the boys being less on-task than the girls, the secondary school data showed no such differences.

Keywords: teacher talk; gender; pupil behaviour; secondary; primary school

Introduction

In an article reviewing research on “gender equity”, Bailey (1993), noted that since the 1970s there had been reports of teachers giving more attention to boys than girls at all levels, ranging from elementary through secondary classrooms to university lecture halls. Later, Kelly (1988) completed a meta-analysis of more than 80 studies with similar findings. More recently, Howe, in a report on gender differences in classroom interaction, commissioned by the Scottish Office, Education and Industry Department, discussed the results of a number of studies, noting, amongst other findings, that the most striking aspect was “that contributions from boys predominate during classroom interaction” (1997, 42). Moreover, she noted that boys received a greater percentage of negative feedback than did girls. Again, Jones and Dinda (2004), in the USA, completed a meta-analysis from 32 studies across the age range and found teachers interacting more with the male pupils than with the female pupils and having more negative interactions with the males than the females, but not more positive interactions.

In the primary school, there have been two large-scale investigations in Britain and these have produced conflicting results. Mortimore et al. (1988) noted more communication between teachers and boys than between teachers and girls, the main difference being that the boys received more criticism and neutral comments about their behaviour. The boys were given more supervision, particularly as feedback,

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whereas the girls received more praise. The differences found were not related to the gender of the teachers, a feature that Howe (1997), had also noted. Different results, however, were reported by Galton et al. (1999) writing about the follow-up to the Oracle study, which ran for three years beginning in the mid-1970s. When referring to that original study, Galton et al. noted that there was little difference between boys and girls in terms of teacher attention but that 20 years later there had been a shift towards:

girls receiving greater proportions of the teacher's attention overall, as a result of an increase in whole class based interactions, but with this exception, the data show that, just as boys and girls received almost identical proportions of the teacher's time in the ORACLE 1976 classroom, so too did they in the ORACLE 1996 study. (1999, 97)

Interestingly, Croll (1985), who had been involved in the earlier Oracle study, found that boys received slightly more teacher attention than girls and noted that this differential was accounted for by a few boys receiving very high levels of individual attention.

Merrett and Wheldall (1992) from observations of the teaching of 22 female teachers and 10 male teachers found, like Galton, Simon, and Croll (1980), reporting on the Oracle study, little difference between the teachers' comments to boys and girls. Unlike other studies, they included a measure of pupil on-task behaviour and found little difference between the genders.

Apart from these large-scale studies, there have been a number of small-scale investigations in British primary school, most of which show boys receiving more attention than girls from teachers (e.g. French and French 1984; Swann and Graddoll 1988). In a recent study, Davies (2008), involving four male and four female primary school teachers, found the teachers, both male and female, giving the boys more approval and more disapproval than the girls.

Noting the variations in the results of earlier studies, which ranged from reports of teachers giving considerably more attention to boys than to girls, through teachers giving equal amounts of attention to both groups of pupils to one report of teachers giving more attention to girls, and mindful of some of the criticisms of the investigations raised by Hammersley (1990), Swinson and Harrop (2009), conducted an investigation in which observations were made of 18 primary school teachers and their classes. The teacher behaviours that were observed were: questioning, instructing and redirecting, approval for academic behaviour, approval for social behaviour, disapproval for academic behaviour, and disapproval for social behaviour. The pupil behaviour observed was on-task behaviour.

The behaviour observed was carefully defined and presented in an appendix. Observer training took place and measures of observer agreement were calculated during training. Training continued until levels of observer agreement obtained by independent recording were considerably above chance. Teacher talk was recorded by frequency counting and pupil on-task behaviour was recorded by momentary time sampling at 10-second intervals. The results showed teachers talking to the boys more than to the girls in each of the six categories with the category "instruction and redirection" the most statistically significant, followed by, in order of statistical significance, "approval for academic behaviour" and "disapproval for social behaviour". The other three categories did not yield statistical significance, the least statistically significant category being questioning. So far as "on-task" behaviour was concerned,

the results showed a statistically significant difference, the boys having a mean on-task score of 86% and the girls 93%. It was also noted that more than half of the boys were off-task more than once in a lesson whereas less than one-third of the girls were off-task more than once, which strongly suggests that the boys' lower on-task score was not a function of a few boys behaving badly. As a consequence, it was suggested that the data indicated boys represented more of a management challenge than girls to their teachers.

There have been a number of investigations in the secondary school that have approached the issue of gender imbalance in a variety of ways. In one study, for example, Younger and Warrington (1996), who were investigating the differential achievements of boys and girls at GCSE, conducted interviews with some members of teaching staff and administered questionnaires and conducted interviews with 200 pupils in a British comprehensive school. The results are complex, but in particular, they found the teachers seeing girls as offering less management challenges than the boys and responding more rapidly to discipline. The boys, on the other hand, were seen as more likely to resist the requirements of the lessons. Yet, most of the teachers reported little difference in their treatment of the two genders. A large proportion of the pupils, both boys and girls, however, saw the teachers as being harsher with the boys than with the girls.

Myhill (2002), concerned about the underachievement of boys, conducted an investigation with observations made on lessons in first and middle schools and in one high school in Britain. Her focus was on high- and low-achieving pupils of both genders. She found that underachievers were off-task more than overachievers. This feature was unrelated to gender in the first year but in the middle school (Years 5 and 8), the high-achieving boys were increasingly off-task whereas the high-achieving girls remained consistently low on off-task behaviour. By Years 9 and 10 off-task behaviour was again seen to be unrelated to gender.

Dart and Clark (1988), noting the equivocal nature of the results of some of the earlier investigations into teacher–pupil interactions, questioned some of the methodology used. In a small-scale study in an Australian secondary school, they observed four year eight science lessons with pupils aged 10–14 years. The classroom talk was audiotaped and transcribed for analysis, thus rendering the data more objective than the more common method of *in situ* classroom observation. Amongst other findings, they noted that boys had more interactions with their teachers than did girls.

Altermatt, Jovanovic, and Perry (1998), in the USA observed six teachers conducting science lessons during an academic year with each teacher being observed once or twice a month during the year. They were concerned with the role of questioning. The results showed that in three of the six classrooms, the boys were asked questions statistically significantly more than were the girls and the same pattern, though not statistically significant, was evident in the other three classrooms. As regards question type, no differences were found.

In Britain, Merrett and Wheldall (1992), conducted an investigation in secondary schools with 21 male and 17 female teachers with mean class sizes of 22. Teachers' positive and negative responses to boys' and girls' academic and social behaviours were observed. Moreover, unlike most other studies, the on-task behaviour of the two genders was observed during each lesson. They found that overall the teachers talked significantly more to the boys than to the girls but that there was little difference in the mean on-task behaviour of the genders, the girls being marginally more on-task than the boys.

It can be seen from the various investigations quoted that there do seem to be differences in the ways in which the two genders are treated in schools. In the primary school, the vast majority of the research shows teachers interacting more with boys than with girls. Any variation in the results of investigations is likely to be a function of the methodology used, which in many cases did not include such features as careful definition of the behaviours observed, the use of two independent observers, calculations of observer agreement and evidence that observer agreement obtained exceeded chance levels (see Harrop and Swinson 2007, for further discussion of these methodological features).

For secondary school pupils, the various investigations previously noted indicate an imbalance in the perceptions of teachers and pupils (Younger and Warrington 1996), with some conflicting evidence about whether boys were more off-task than girls (Merrett and Wheldall 1992; Myhill 2002). Teachers were seen to have more interactions with the boys (Dart and Clark 1988; Merrett and Wheldall 1992) and specifically, teachers were seen to direct more questions at the boys (Altermatt, Jovanovic, and Perry 1998).

As a consequence of the above indications, it was decided to design an investigation using the same rigorous methodology as that employed when investigating the primary school (Swinson and Harrop 2009), in order to be able to draw fair comparisons between the verbal behaviours of the teachers and the on-task behaviour of the pupils exhibited in the two settings. Using the same methodology was thought to be essential in making a fair comparison.

The main aim, therefore, was to compare the behaviours exhibited in the secondary school with those exhibited in the primary school.

As part of those comparisons, other aims included:

- (1) to find whether boys received more verbal communication than girls in general;
- (2) to find whether boys received more verbal communication in specific categories of teacher behaviour than girls;
- (3) to investigate whether there was a difference in the quantity of on-task behaviour exhibited by boys and girls; and
- (4) to see whether there were any differences in the pattern of off-task behaviour exhibited by boys and girls.

Method

Sample

Teachers from two secondary schools in the Merseyside area were approached via their head teachers and volunteered to allow observations to be made of their classroom teaching. In total, 20 different teachers and their classes were observed engaged in a variety of classroom lesson.

Procedure

It was explained to the teachers that observations would include aspects of the pupils' behaviour, whether they were attending or not, as well as teacher/pupil interactions. Each lesson observation lasted approximately 45 minutes and was carried out by trained undergraduate students.

Observer training and scoring

Pupil on-task behaviour

The on-task behaviour of pupils, as defined in the Appendix, was assessed using an observation system that required individual pupils to be observed in turn in a pre-determined order. The gender of each pupil was noted and observations were taken as a momentary time sample at 10-second intervals. Each observer was individually trained to use the schedule and practiced in the classroom with the first author until observer agreement, obtained by independent recording, was well above chance, that is, a minimum of 95%. N.B. this high level of agreement was necessary because it was predicted, from previous investigations, that the rate of on-task behaviour would be very high, of the order of 90%, so that chance agreement would be in the region of 82%. Pupil on-task behaviour was observed twice at the beginning, twice in the middle and twice towards the end of the lesson and this process took, on average, 20 minutes in total, each pupil being observed six times.

Teacher verbal behaviour

Teacher verbal behaviour was recorded as it occurred using the following categories: approval for academic behaviour, disapproval for academic behaviour, approval for social behaviour, disapproval for social behaviour, questioning, instructions and redirections. These are defined in the Appendix. In addition, a record was also made of whether each aspect of verbal behaviour was directed to a boy or a girl. Each observer was individually trained to record teacher verbal behaviour until observer agreement, obtained by independent recording, was above 85%. N.B. the lesser value of 85% was used since observer agreement by chance for this task was very small.

Results

For ease of comparison, the results are presented together with those obtained in the primary school using the same methodology. The data for the primary school are presented in Tables 1a, 2a, 3a and 4a.

Means and standard deviations of the teachers' utterances in the six categories observed are presented in Table 1 and these have been analysed by one-tailed *t*-tests since previous research indicates that any difference obtained would be a function of boys receiving more attention than girls.

Table 1. Mean teacher utterances by gender per pupil per lesson in each of the six categories of teacher verbal behaviour observed.

Category	Boys		Girls		<i>t</i>	df	<i>p</i>
	Mean	SD	Mean	SD			
Questioning	0.94	0.84	0.76	0.69	1.24	19	0.12
Instructions and redirection	0.43	0.48	0.53	0.63	0.86	19	0.22
Approval for academic behaviour	0.63	0.77	0.62	0.68	0.11	19	0.46
Disapproval for academic behaviour	0.17	0.33	0.08	0.17	1.48	19	0.11
Approval for social behaviour	0.07	0.15	0.09	0.23	0.32	19	0.38
Disapproval for social behaviour	0.65	1.03	0.49	1.30	1.05	19	0.15

Table 1a. Primary school data.

Category	Boys		Girls		<i>t</i>	df	<i>p</i>
	Mean	SD	Mean	SD			
Questioning	0.90	0.45	0.81	0.46	1.01	17	0.17
Instructions and redirection	0.97	0.87	0.61	0.43	2.68	17	0.01
Approval for academic behaviour	1.18	0.57	0.84	0.76	2.37	17	0.02
Disapproval for academic behaviour	0.30	0.34	0.20	0.24	1.58	17	0.07
Approval for social behaviour	0.20	0.25	0.14	0.13	1.41	17	0.09
Disapproval for social behaviour	0.60	0.70	0.34	0.29	1.86	17	0.04

Source: From Swinson and Harrop (2009).

Independent recording was undertaken by two observers twice during the investigation, once near the beginning and once near the end. Mean observer agreement was 93%. (Observer agreement by chance negligible for these data using this method of recording.)

The results for the secondary school generally show some similarities and some differences from those previously obtained for the primary school, specifically:

- (1) *Questioning*: There is little difference in this category of teacher talk. In each case, the boys received proportionally more questions than the girls.
- (2) *Instructions and redirections*: In the secondary school, the girls received more than the boys, whereas in the primary school the opposite was evident.
- (3) *Approval for academic behaviour*: In the secondary school, the genders received virtually identical proportions whereas in the primary school the boys received significantly more.
- (4) *Disapproval for academic behaviour*: In both school settings, the boys received more than the girls.
- (5) *Approval for social behaviour*: In the secondary school, the girls received marginally more than the boys whereas in the primary school the boys received significantly more than the boys.
- (6) *Disapproval for social behaviour*: In both school settings, the boys received more than the girls.

Means, standard deviations and ranges for pupil on-task behaviour are presented in Table 2 and these have been analysed by a two-tailed *t*-test since previous research has been somewhat equivocal about the nature of any differences.

Independent recording was undertaken by two observers twice, once near the start of recording and once near the end. Mean observer agreement was 99%.

(For these data: Observer agreement by chance = 75%.)

Table 2. Percentage on-task behaviour by gender.

Boys				Girls				<i>t</i>	df	<i>p</i>
Mean	SD	Min	Max	Mean	SD	Min	Max			
84.69	13.12	47	100	86.82	10.96	63	100	0.70	19	0.25

Table 2a. Primary school data.

Boys				Girls				<i>t</i>	df	<i>p</i>
Mean	SD	Min	Max	Mean	SD	Min	Max			
85.53	13.18	42	98	93.41	3.62	88	100	3.62	17	0.002

Source: From Swinson and Harrop (2009).

The results for the secondary school show the girls to have been somewhat more on-task than the boys, but the difference does not approach statistical significance. That is, unlike the results obtained using the same methodology in primary schools where the girls were considerably more on-task than the boys (mean 93.4% compared with mean 85.5%). In both school settings, the measures of diversion show a wider spread of scores for the boys than for the girls although that is considerably less marked in the secondary school than in the primary school.

Because pupils were observed individually, six times per lesson, it was possible to calculate the number of pupils of each gender who were never off-task and the number who off-task once or more in each lesson observed. Table 3 shows these data.

It can be seen from Table 3 that in the secondary school more girls were never off-task than were off-task at least once, whereas for boys the reverse is true. To examine these data, a 2×2 χ^2 analysis was carried out to discover whether there was a significant relationship between gender and off-task behaviour. The χ^2 value of 6.75 had an associated probability value of < 0.009 , $df = 1$, showing that such an association is unlikely to have arisen as a result of sampling error.

The result is similar to that obtained for the primary school, although the association, whilst statistically significant for the secondary school, is not as strong as that obtained for the primary school.

Table 3. Number of pupils never off-task and off-task at least once.

	Never off-task	Off-task at least once
Girls	100	85
Boys	94	134

Table 3a. Primary school data.

	Never off-task	Off-task at least once
Girls	121	57
Boys	77	89

Note: $\chi^2 = 0.001$.

Source: From Swinson and Harrop (2009).

Table 4. Number of pupils never off-task (0), off-task once (1), off-task twice (2) or off-task at least three times (3).

Off-task	0	1	2	3	<i>N</i>
Girls	100	43	23	19	185
Boys	94	77	32	25	228

Table 4a. Primary school data.

Off-task	0	1	2	3	<i>N</i>
Girls	121	44	12	1	176
Boys	77	56	26	7	166

Source: From Swinson and Harrop (2009).

Table 4 shows the data contained in Table 3 in more detail.

Table 4 further illustrates that the spread of off-task behaviour for the two genders is of a lesser value than that obtained in the primary school.

Discussion

A comparison of the secondary school results with those previously obtained in the primary school shows overall a marked difference in the proportion of teacher talk directed to each of the genders. In the secondary school, there are no statistically significant differences in teacher talk to the genders whereas three of the six categories show such differences in the primary school data. Particularly noteworthy is the category of “instructions and redirection”, which in the secondary school shows girls receiving more than boys, whereas in the primary school boys were receiving statistically more than the girls. There is also an interesting contrast between the two approval categories and the two disapproval categories. In the secondary school, there is little difference between approval (to academic and social behaviour) directed to the two genders, whereas in the primary school boys received considerably more. For disapproval (to academic and social behaviour), on the other hand, in the secondary school boys received more than girls and in the primary school the boys received significantly more than the girls. The primary school pattern of boys receiving both more approval and disapproval than the girls has not been repeated in the secondary school.

Equally, the difference in the percentage of pupil on-task behaviour observed for the boys and the girls differs markedly between the secondary school and the primary school. In the secondary school, there is little difference between the on-task behaviour of the boys and the girls whereas in the primary school the girls were considerably more on-task than the boys. When the mean scores are examined (Table 2), it is difficult to avoid the conclusion that the near parity of the genders in the secondary school compared with the difference in the primary school is more a function of the girls’ on-task behaviour falling than of the boys’ on-task behaviour rising.

Because the methodology included six observations on each pupil, it was possible to look at the pattern of off-task behaviour exhibited by the individual pupils. When those data are examined (Table 3) it is seen that the boys showed a different pattern of off-task behaviour from that of the girls, which is an interesting finding since there was little difference in the mean on-task behaviour of the genders (Table 2). The primary school data showed the same pattern but more markedly, with a stronger association being found. When these data are examined (Table 4), it is seen that the difference of spread of off-task behaviour between the genders is not as marked in the secondary school as in the primary school.

When we compare the results obtained with those of other secondary school studies, the finding that there was no statistically significant difference in the teachers

talk with the boys and the girls, either in general or in specific categories, differs from the findings of both Dart and Clark (1988) and Altermatt, Jovanovic, and Perry (1998), although it should be noted that the teachers in both cases were teaching science, and not a range of types of lesson. The results also differed from those of Merrett and Wheldall's (1992) larger-scale investigation, who found boys receiving more responses than girls from teachers.

Why the results for teacher talk should differ from those obtained in the three studies quoted is an open question, but some clues may be found in the following observations. The first two quoted were concerned with a single classroom subject, science. The report of Dart and Clark (1988), conducted in Australia, contained no evidence of independent observations of categories recorded, so that reliance must have been placed on a single observer. That of Altermatt, Jovanovic, and Perry (1998), conducted in the USA, involved videotaping of lessons, which seems to be a more intrusive procedure than situating an observer at the back of the classroom. The research of Merrett and Wheldall (1992) in Britain had a rigorous methodological base, but it did take place nearly two decades ago, which was before girls had begun to overtake boys in academic performance. As a consequence, it may well be that cultural, methodological and chronological variables have been responsible for the differing results.

When we turn our attention to the on-task behaviour of the pupils, we see very little difference in the percentage on-task behaviour of the two genders (Table 2). That result is in agreement with the findings of Merrett and Wheldall (1992) who also found little difference between the genders. It is worth noting at this point that both genders show lower levels of on-task behaviour in the secondary school than in the primary school. For the boys, the difference is marginal, for the girls it is substantial.

The finding of little difference in the on-task behaviour of the genders leads to a likely explanation for the differences in teacher talk to the genders between the primary and secondary school. In the primary school, the boys' lower level of on-task behaviour compared with that of the girls indicates that the boys are more of a management challenge to teachers than girls, and that they would therefore require more teacher attention than the girls. In the secondary school, though, the boys' on-task behaviour is only marginally lower than that of the girls, so that the boys are unlikely to present more of a challenge than girls to their teachers and would therefore not require more teacher attention than the girls. In other words, the proportion of teacher talk with the genders appears to be a function of the relative levels of on-task behaviour.

Before concluding the discussion it is important to emphasise that the results of the investigation, like those previously discussed, are a function of the methodology and the precision involved. Unlike the vast majority of studies reported here, however, the methodology of the investigation included detailed definitions of the behaviours observed and the use of independent observers to calculate observer agreement together with the establishment that levels of observer agreement were considerably above chance levels.

In conclusion, it can be said that when the same methodology was used in the two levels of schooling, the behaviours exhibited in the secondary school were seen to be different from those exhibited in the primary school. The first major finding is that there was little overall difference in teacher talk to the genders in the secondary school whereas in the primary school boys received considerably more talk than the girls. The second major finding is that there was little difference in the on-task behaviour of the

genders in the secondary school whereas in the primary school the girls were considerably more on-task than the boys. If minor variations in the data are excluded, it seems that the gender differences that were so apparent in the primary school research do not exist in the secondary school.

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Notes on contributors

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Appendix

On-task: Pupils are on-task when they are engaged with their work and carrying out what the teacher has requested be done.

Approval: Any teacher comment, which indicates praise or satisfaction with the behaviour of a pupil. That includes such positive comments as “Excellent”, “Well done”, “Good girl/boy”, “Yes”. It also includes the less positive statement “That’s right/correct”, and the teacher’s repetition of a pupil’s answer in a positive, neutral but non-querulous tone.

Disapproval: Any teacher response, which is a rebuke or which indicates disapproval. Common examples include “Stop that”, “Be quiet”, “No Pat”, “Now is not the time to be doing that”. This category includes the teacher repeating a pupil’s response in a querulous or questioning manner, together with comments implying negative consequences, for example, “I won’t tell you again”, and saying “No”, in response to an incorrect pupil response. It also includes directions given with intonations implying teachers’ intentions to reduce behaviour, for example, “Now I want you to listen quietly”.

Academic behaviour: The normal curriculum behaviours, reading, writing, listening, answering questions, that is, performing prescribed activities.

Social behaviours: Behaviours indicative of classroom manners, following classroom rules and routines, for example, settling down to work quietly, remaining seated when appropriate, putting hands up in answer to a general question put to the class, lining up in an orderly manner when requested. They also include the converse behaviours of not settling down to work, not remaining seated when appropriate, etc.

Questioning: Teacher asking a pupil a question which requires an answer, rather than a rhetorical question. The teacher may identify the potential responder either after or before the question is posed, for example, 1. “Who can tell me how many beans are left? ... Pat”. 2. Pat, can you tell me how many beans are left?

Instructions and redirection: Teacher instructing pupils about what is required of them, either in the physical sense, for example, “Please line up over there”, “Open your books”, or in the mental sense, for example, “Just think carefully about that before you answer”, “Pay particular attention to the wording of the next sentence”, Redirection was defined as a, teacher following a disapproving comment by describing an approved behaviour, for example, “Don’t do that Viv, I want you to work silently”. For pupil answers to teachers’ questions, redirection could take the form of rephrasing the question, for example, “No, Sam, it isn’t a simple addition, look more carefully at the wording”.