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The effect of support staff on pupil engagement and individual attention

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Despite an unprecedented increase in classroom-based support staff, there are confusing messages about their appropriate deployment and a lack of systematic evidence on their impact. This article addresses the deployment and impact on pupil engagement and individual attention of support staff, commonly known as teaching assistants (TAs), in terms of: (1) a comparison between TAs and teachers; (2) differences between pupils with and without special educational needs (SEN); and (3) differences between primary and secondary schools. Systematic observations of pupil behaviour in 49 primary and secondary schools showed that support staff presence resulted in increased individualisation of attention and overall teaching, easier classroom control, and that pupils showed more engagement and a more active role in interaction with adults. This supports teachers' positive view of support staff, but their presence also meant pupils' contact with teachers declined and at secondary level there was less individual and active interactions between teachers and pupils.

Background

A number of developments have affected the range and number of support staff in schools in England and Wales. A major context for policy and resourcing involving support staff in schools was the introduction in January 2003 of the National Agreement (NA), *Raising Standards and Tackling Workload* (Department for Education and Skills, 2003), which set out a number of measures designed to raise pupil standards, tackle teacher workload, including a concerted attack on unnecessary paperwork and bureaucracy, and create new support staff roles (see Blatchford, Bassett, *et al.*, 2006; Burgess, 2008).

Information from the Department for Children, Schools and Families (DCSF), the Deployment and Impact of Support Staff (DISS) project (Blatchford, Bassett, *et al.*,

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2007) and UNISON (2002, 2004) shows that these developments have been accompanied by a huge increase in numbers of support staff in schools. Numbers increased from 60,600 in 1997 to 176,900 in 2008 (DCSF, 2008) and the DISS survey showed a particular increase in TA equivalent staff. This article is concerned with the deployment and impact of classroom-based support (in the DISS project these are called 'TA equivalent' and include teaching assistants, learning support assistants, classroom assistants, nursery nurses, and higher level teaching assistants).

Despite evidence pointing to the ubiquitous presence of support staff in schools, there is little systematic data on how they are deployed and how much impact they have on teachers and pupils. The DISS project was set up to address this lack of data and provides a comprehensive assessment of TA deployment and impact in the wake of the NA. Although the DISS project overall is concerned with impact across a range of outcomes, in this article we concentrate on the deployment of TAs and effects of their presence on pupil engagement and interactions with teachers. Information on the characteristics, deployment and impact of other categories of support staff in schools is given in Blatchford, Bassett, *et al.* (2007).

This article is organised into an examination of, first, the deployment and, second, the impact of TAs. Within each of these two areas, the examination takes three forms: (1) a comparison between TAs and teachers; (2) differences between pupils with and without special educational needs (SEN); and (3) differences between primary and secondary schools. More details on these three features are given below.

Deployment of support staff in schools

A number of studies have identified uncertainties about just how TAs are deployed in classrooms. Studies have drawn attention to difficulties concerning the boundaries between teaching and non-teaching roles, and the grey areas where uncertainty exists (Farrell *et al.*, 1999; Moran & Abbott, 2002; Beeson *et al.*, 2003; Mistry *et al.*, 2004). This uncertainty lies at the heart of controversy over the expansion of support staff in schools and is why some teacher organisations are concerned that TAs may take over roles and responsibilities that should be carried out by teachers. Mortimore *et al.* (1992) addressed a specific version of this issue in terms of when it is appropriate to consider TAs 'substituting' or 'augmenting' the teacher's role. A Scottish study found that boundaries between the teacher's role and the TA's role were sometimes unclear and some TAs were judged to overstep a boundary into teaching (Schlapp *et al.*, 2003).

There have been different messages from the Government and other bodies about the appropriate deployment of support in classrooms. The recruitment and retention crisis in the teaching profession, fuelled by concerns about workload pressures (School Teachers' Review Body, 2001), was one reason for Government proposals that support staff could play a significant role in releasing teachers so they could focus on core teaching tasks (Department for Education and Skills [DfES], 2001). In this sense, support staff were seen to have an *indirect* effect on pupil standards. Yet the DfES *Time for Standards* consultation described support staff as an intrinsic part of 'achieve[ing] ever higher standards', via 'more opportunities to take on wider and

deeper roles in support of teaching and learning' (DfES, 2002). The documentation makes it clear that support staff have a *direct* impact on pupil attainment, through overtly pedagogical input. But with the advent of the NA the emphasis was back on an *indirect* effect by taking on routine and clerical tasks.

This lack of clarity suggests the value in having current and clear data on just *how* TAs are employed in classrooms and the extent and type of their interactions with pupils. A main aim of the DISS study, therefore, was to provide such a systematic description of support staff activities and interactions. The aim was to get precise estimates of the time spent supporting pupils in classrooms as opposed to not working directly with them, and on the balance of interactions with individuals, groups or the whole class; and how much time was spent moving around the classroom.

Beyond a general picture of deployment, and in line with the three areas mentioned above, we addressed the following:

- (i) Teachers versus support staff. One aim was to compare the teacher and the TA on key observation measures, e.g. the extent of individual attention, pupil active and sustained interactions, and different types of behaviour, e.g. the extent to which they were related to the task or controlling pupils' behaviour.
- (ii) Differences by level of SEN. Given what has been said so far about the deployment of TAs, it seemed important to obtain systematic information on the deployment of support staff with regard to different types of pupils. In the Class Size and Pupil Adult Ratio (CSPAR) project, results pointed to TAs being used to interact directly with pupils, supporting certain children, in particular, those with SEN, low ability or difficult behaviour (Blatchford, Russell, *et al.*, 2007). Only rarely did support staff seem to work with higher attaining pupils. In England and Wales there are three levels of need: (1) 'School Action' (pupils who required provision different from, and additional to, other pupils); (2) 'School Action Plus' (pupils who receive help or help is sought from sources external to the school); and (3) 'Statemented' (pupils with more severe or complex needs that require exceptional provision). Difficulties arising when children with SEN are taught by TAs have been identified (Giangreco *et al.*, 1997; Office for Standards in Education [Ofsted], 2006). Interest was therefore in obtaining a systematic description of how TAs and teachers varied in their interactions with pupils with different levels of need (including the majority of pupils without extra support), in terms of the amount of individual attention and active interactions involving initiations, responses and sustained interactions versus passive interactions within which pupils listen. We need to know more precisely if TAs spend most of their time with pupils with SEN or whether they interact with other pupils as well. How do TAs' interactions with different kinds of pupils differ from teachers'?
- (iii) Primary versus secondary. The DISS study aimed to provide more detailed information across both primary and secondary stages. There are many important changes to children over these years, and to the curriculum and assessment arrangements, which will have implications for pupils' learning and teaching, but

little is known about the possibly changing role and impact of support staff over these stages. This suggests the value in obtaining a detailed comparison of the deployment of TAs in primary and secondary schools.

Impact of support staff on teachers and pupils

At the beginning of the century the Government claimed that support staff had 'been central to what has been achieved so far in raising standards' (DfES, 2001a), and planned to push ahead with reform, though there was limited evidence of their impact on teaching and learning. Obtaining good information on impact is one of the most important yet problematic aspects of research in this area. Giangreco and Doyle (2007, 432) state that studies to date offer 'limited guidance to policymakers and practitioners', as they provide 'only the most basic descriptive findings ... virtually devoid of efficacy data'. Some studies have painted a largely positive picture (e.g. Mortimore *et al.*, 1992; Her Majesty's Inspectorate of Education, 2002). In DISS Strand 1, Waves 1 and 2, teachers were mostly positive about the impact of support staff on teaching (Blatchford, Bassett, *et al.*, 2007). But evidence on the impact of support staff on pupil academic outcomes has so far been inconclusive (Finn *et al.*, 2000; Howes *et al.*, 2003). Findings covering effects on academic outcomes are taken up in later reports; here we concentrate on effects on pupil and adult behaviour in class.

Much existing information on impact rests on teachers' experiences and judgments, rather than on an objective description of practice. In this article, the impact of TAs was addressed again in terms of the three main themes described earlier.

- (i) Teachers versus support staff. Interest was in whether TA presence had effects on adult interactions with pupils and whether this was different for teachers and TAs. On the basis of the CSPAR study one would predict that effects on teachers' interactions with pupils would be positive in the sense that the presence of support staff would lead to more teacher to pupil interactions.
- (ii) Differences by level of SEN. We wanted systematic information on the effect of TA presence on pupil engagement and the extent and type of adult and teacher interactions with all pupils but also whether these varied for pupils with and without SEN.
- (iii) Differences between primary and secondary. There is evidence from interventions in schools, such as class size reductions, that the youngest pupils benefit most in terms of academic outcomes (Finn & Achilles, 1999; Blatchford *et al.*, 2003). There is also evidence of age effects in terms of the effect of class size on pupil engagement (Blatchford *et al.*, 2005) but there is a dearth of information available about whether there are age differences in the effect of TAs on teacher and pupil interactions and pupil classroom engagement.

We now describe in more detail two main sets of behaviours examined in relation to the impact of TAs.

1. Teacher–pupil and adult–pupil interactions

- (a) Overall amount of teaching. In the CSPAR study it was found that TAs allowed more overall teaching from adults. In this study we wanted to see, as might be expected, whether pupils with SEN, or who are seen by schools to be in need of extra provision, experience more teaching overall with TAs present, in order to help them catch up.
- (b) Individual attention to pupils. One of the main benefits of TAs as seen by teachers is that they allow more individual attention to pupils (Blatchford, Russell, *et al.*, 2007). Moreover, it was found in the CSPAR project that when a TA was present, pupils were more likely to be the focus of the teacher's attention; that is, there was more individualised teacher attention. It might also be predicted that TA presence will lead to more individual attention to pupils with SEN and on School Action and School Action Plus.
- (c) Easier classroom control and management. Teachers argue that the presence of TAs can help with classroom management (Blatchford *et al.*, 2008). TAs can take on responsibility for pupils who contribute most to classroom disruption, therefore reducing the overall amount of talk dealing with negative behaviour. It was therefore predicted that the presence of TAs in a classroom would reduce the amount of teacher talk dealing with negative behaviour.

2. Pupil classroom engagement and off-task behaviour

- (a) On- and off-task behaviour. One main element of children's successful adjustment to school is likely to involve their productive engagement in classes, as reflected in the extent of their work-related interactions with teachers, other pupils and when working on their own. Some studies, e.g. Werts *et al.* (2001) and Loos *et al.* (1977), have found that classroom engagement and on-task behaviour increased when support staff were close to pupils (with disabilities). It was therefore predicted that the presence of TAs would have most effect on pupils with SEN and School Action.
- (b) Pupil active involvement with teacher. In the CSPAR, when there was a TA present in the classroom pupils had a more active form of interaction with the teacher, in the form of initiating contact, responding, or being involved in sustained interaction (Blatchford, Russell, *et al.*, 2007). It was therefore predicted that this result would be replicated; however, in the present study we separated TA and teacher interactions and interest was in whether this would be similar for TAs and teachers, whether it varied for pupils who differed in terms of need, and between primary and secondary schools.

Summary of predictions

It was predicted that with TAs present in classrooms there would be more teaching overall, more individual attention from TAs and teachers; and better classroom control as seen in less adult and teacher talk about negative behaviour. Predictions

regarding pupils with SEN, School Action Plus and School Action, and primary versus secondary, were not clear cut but generally it was anticipated that effects would be most obvious for primary-aged pupils and pupils in most need.

It was predicted that with TAs present there would be more pupil on-task and less off-task behaviour and more pupil active involvement with teachers. It was predicted that effects would be most marked for pupils with SEN, School Action Plus and School Action. Predictions regarding differences between primary and secondary were less clear cut but generally it was anticipated that effects would be most obvious for primary-aged pupils.

Method

Comment on research methods

There are a number of limitations to previous studies, with claims often based on anecdotal and informal comments. Finn *et al.* (2003) point to the need for studies that make use of systematic observations, in order to provide reliable evidence on classroom processes. This article builds on this suggestion by collecting systematic observation data of moment-by-moment classroom engagement and behaviour.

There are huge challenges for research seeking to measure effects of TAs on pupil outcomes in the context of normal school conditions. The overall strategy was to employ a naturalistic research design, random selection of participating schools, and sophisticated statistical analyses that examined effects of TAs on moment-by-moment behaviours while controlling for factors likely to interact with or confound any TA effect. It recorded TA presence as found on an everyday basis in schools rather than in specific curriculum interventions. Although it is commonly recognised that hierarchical, or multilevel, models are necessary because observations are not always independent of each other (pupils within schools and classes are more similar to each other than pupils in different classes and schools), a feature of this article is that it allowed for the clustered nature of observation data *within pupils*. More details are given below.

Sample

Schools. Systematic observations were carried out over 2005/06 in 49 mainstream schools. These schools were originally chosen at random from a national survey as part of the DISS project and they then agreed to fieldwork by researchers. There were 27 primary schools and 22 secondary schools. Two year groups were generally observed in each school, either Year 1 and Year 3 (5–6 and 7–8 years) or Year 7 and Year 10 (11–12 and 14–15 years). Observations were conducted in 88 year groups.

Characteristics of pupils. The observations were on a sub-sample of eight pupils per class, two in each of two categories: (1) pupils with SEN (statemented or registered as School Action or School Action Plus) and (2) pupils with some support (i.e. get extra help but who are not in the SEN group, e.g. children with English as an additional

language), and four in a third group of pupils selected at random from the class list. In the event, numbers of pupils in the second group was low, because pupils given extra support tended to fall into the first group. Information on the level of pupils' special needs status (taken from the forms completed by school staff during observation visits) was therefore used to classify the sample into three groups for the purposes of analysis: (1) no special needs, (2) School Action and (3) School Action Plus/Statement. The last two categories were combined to help balance numbers of pupils in groups and also because by definition they were the highest level of special need. This classification into three groups was used because of the obvious way in which it affected the amount of support received, as well as its likely effect on learning and attainment. For convenience, the three groups will be called 'no SEN', 'School Action' and 'SEN'. Pupils were also classified into three attainment groups—low, medium or high—based on a classification made by the teacher.

There were 686 pupils observed in total. Details of the sample are given in Table 1. The variables listed in the table were also included in the analyses.

Observation system

The observations provided a moment-by-moment description of each pupil's behaviour. The basic principle was to observe when classroom-based activities took place, and to provide a representative and systematic account of pupils' behaviour. Observations were conducted on each child in turn in blocks of 10 10-second time intervals, with gaps of 20 seconds between observations to allow recording of what took place in the previous 10 seconds. There were 34,420 10-second observations in total. Visits lasted four days except when observations were only possible in one year group (such as infant or junior schools)—they then lasted two days—and observations were made in maths, English, science and Welsh lessons.

Table 1. Systematic observation component: characteristics of pupils

Characteristic	Category	Number	Percentage
Year	1	200	29
	3	183	27
	7	152	22
	10	151	22
Gender	Female	335	49
	Male	351	51
SEN status	None	319	55
	School Action	141	24
	School Action + Statement	57	10
		68	12
Attainment group	Low	123	21
	Medium	241	41
	High	221	40

The observation categories were devised on the basis of well-established systems, as used in the CSPAR and SPRinG studies (Blatchford *et al.*, 2005; Blatchford, Baines, *et al.*, 2006). Not all categories feature in this article and brief definitions of categories used in this article are as follows:

Adult to child talk:

Adult teach: adult behaviour directly concerned with the substantive content of subject knowledge, i.e. communicating concepts, facts or ideas by explaining, informing, demonstrating, questioning, suggesting.

Adult on-task: as adult teach plus *task preparation*.

Other categories: *procedure/routine*, *monitor/observe*, *dealing with negative behaviour*, *social matters* and *other*.

Pupil role:

Pupil 'focus': target child is the focus of the teacher's or TA's attention, and this could be in the context of one-to-one, group or whole-class sessions. These were coded separately as 'short', i.e. not for the whole 10-second interval, and 'long', i.e. contact continued through the whole 10-second period.

Pupil is audience: another child is the focus of the adult's attention in the group or class involving target child, or adult interacts to same extent with all children.

Pupil to adult interaction:

Pupil to adult—attend/listen: the child simply listens to the adult during the interval and does not interact by responding or initiating.

Other categories: *pupil to adult—initiate* (begins an interaction), *respond* (responds to an adult initiation), and *sustain* (i.e. interaction extends over a 10-second time interval). Also *eavesdropping*, and *not attending*.

Pupil on-task to adult: all child behaviours in contact with adult that are concerned with work.

Pupil off-task to adult: child behaviour when in contact with the adult obviously inappropriate or unrelated to situation either passively (e.g. not attending) or actively (e.g. wandering around room, talking to others).

Other categories: *pupil to adult procedure/routine*, *social matters*.

Pupil to pupil interaction:

Target and pupil on-task: all contacts with other pupils that are concerned with work and allocated tasks.

Target to pupil off-task: behaviour with other children that is deliberately off-task, e.g. mucking about or aggressive towards others.

Individual behaviour/not interacting:

Individual on-task: target child is involved in own work activity.

Individual off-task (active): target child focuses on something other than task in hand.

Individual off-task (passive): target child is disengaged during task activity, for example, day-dreaming.

Computed categories:

Pupil on-task: total on-task behaviours, i.e. behaviours related to the substantive nature of allocated work or preparation for the work across the three social modes, i.e. child to teacher on-task, target and child on-task, and individual on-task.

Pupil off-task: total off-task behaviours, i.e. all off-task behaviours in the three social modes, i.e. child to teacher off-task (active or passive), target to child off-task, and individual off-task (active and passive).

Active interaction with adult: the sum of the three child to teacher categories where the child's role was an active and not a passive one, i.e. the child initiates, responds or sustains interactions with the adult.

Activities of support staff:

In addition, one section of the systematic observation forms required observers to code the general activity of support staff in the same classroom as the observed pupils. This was done at the end of each block of 10 observations. The data provide a systematic account of support staff activities when working and not working with pupils.

Measure of support staff presence:

At the time of each observation (i.e. each 10-second time interval) a note was made of the presence of support staff in the classroom at the time.

Reliability checks:

Reliability coefficients for the main sets of mutually exclusive categories were high, with kappa coefficients ranging from 0.80 to 0.77.

Statistical methods and analysis of systematic observation data

Analysis of observation data was conducted with the 10-second observation interval as the unit of analysis. This allowed the basis for powerful analyses of the co-occurrence of behaviours—e.g. whether certain behaviours occurred more when a TA was present or not. This kind of analysis is not possible when simple totals for each pupil are used. The observation variables therefore took the form of binary variables, in the sense of each either being performed, or not being performed, during one time interval.

Deployment. The analyses of deployment were conducted by use of simple cross-tabulations. This allowed an initial descriptive account of basic frequencies of behaviours and whether certain behaviours differed between teachers and support staff, between different types of pupils and between primary and secondary schools. Because of the problem of lack of independence of observations within pupils, statistical tests of cross-tabulations based on frequencies are not really appropriate.

Impact. The analysis of the impact of support staff was much more sophisticated. There were two main features. Firstly, the effect of TA presence and other explanatory

factors thought likely to influence the observation outcomes were examined jointly. The aim was to estimate the effect of TA presence, controlling for the effects of the other possible explanatory factors. As all outcome variables were binary in nature, logistic regression models were used to examine the effects of the various explanatory variables upon the outcomes.

In addition to support staff presence, the following variables were included in the analyses:

- SEN status of pupils (none, School Action, School Action Plus/SEN)
- Gender
- Number of teachers
- Subject
- Pupil start of year attainment

This therefore tells us whether the presence of support staff has an independent effect. In addition, the interaction between TA presence and pupil SEN status was assessed. This examined if the effect of TA presence varied for pupils of different SEN status. Where significant interactions were found, the results are reported separately for each subgroup.

The second feature, in contrast to much previous research, was the use of multi-level statistical models. These were required as it is likely that observations from pupils in the same class will be more similar than two observations from pupils in different classes. Similarly, two observations from the same pupil are more likely to be similar than two observations from different pupils. Therefore, the observations cannot be regarded as independent of each other, and so multilevel regression models (Goldstein, 1995) are required. Three-level models were used, with individual observations contained within pupils, contained within classes.

Results

Deployment of classroom-based support staff: observations of support staff

The general activity of support staff in the same classroom as the observed pupils is shown in Table 2. At a general level, support staff were twice as likely to be working with pupils as not working with them (64% versus 36% of observations). The most common individual activities were working with one pupil (29% of all observations) and listening to the teacher teach (20%), Support staff, at least during these observations, very rarely took the whole class or even part of the class.

There were some differences between primary and secondary schools. There was not much difference in the overall amount of time spent working with pupils (62% versus 67%) but support staff at secondary schools worked more with individuals (36% versus 25%) while at primary schools they were much more likely to work with groups (22% versus 5%); secondary staff were more likely to work with different pupils in a roving role (25% versus 9%).

Table 2. Deployment of class-based support staff: systematic observations (frequencies and percentages)

	Primary	Secondary	Total
<i>Not working with pupils</i>			
Listening to the teacher teach	406 17.2%	352 23.7%	758 19.7%
Talking to the teacher	109 4.6%	55 3.7%	164 4.3%
Materials	304 12.9%	62 4.2%	366 9.5%
Marking	16 0.7%	6 0.4%	22 0.6%
Other non-pupil based activity	65 2.8%	13 0.9%	78 2%
<i>Total not working with pupils</i>	38.2%	32.9%	36.1%
<i>Working with pupils</i>			
Working with one pupil alone	589 25%	532 35.8%	1121 29.2%
Working with a group	509 21.6%	71 4.8%	580 15.1%
Walking ('roving') whole class	220 9.3%	375 25.2%	595 15.5%
Teaching part class	4 0.2%	0 0%	4 0.1%
Teaching whole class	52 2.2%	1 0.1%	53 1.4%
Other pupil-based activity	81 3.4%	20 1.3%	101 2.6%
<i>Total working with pupils</i>	61.8%	67.1%	63.9%
<i>Overall total</i>	100%	100%	100%

The deployment of support staff in classrooms: data from pupil-based observations

In this section we examine basic frequencies of the main observation categories, coded every 10 seconds.

Adult-pupil interaction: differences between teachers and support staff and the three pupil groups. Teachers were present in almost all observations (95%; 32,644 observations) and support staff in 52% of observations (17,922). We combined all the other adults involved in interactions with pupils into an 'other' category. These occurred in 12% of all observations. There were overall differences between the three pupil groups in the number of interactions with different adults in the classroom (see Table 3). The no SEN group interacted more with teachers (91% of interactions with adults), compared with School Action and SEN pupils (80% and 76%), while the pupils with higher levels of SEN spent more time interacting with support staff

Table 3. Interactions with adults: pupil level of need \times type of adult: number and percentage of observations

	No SEN	School Action	SEN	Total
Teacher	8663 90.7%	3794 80%	3388 76.2%	15845 84.5%
Support staff	628 6.6%	756 15.9%	979 22%	2363 12.6%
Other	264 2.8%	195 4.1%	82 1.8%	541 2.9%
Total	9555	4745	4449	18749

(22%, 16% and 7% of all pupil adult interactions for SEN, School Action and no SEN groups respectively).

Adult attention: 'audience' versus 'focus' modes. As seen in Table 4, pupils were much more likely to be in 'audience' mode, usually as a member of the whole class (78%) or a group (4%), rather than the focus of attention (16%). When they were the focus of attention this was more likely to be 'long' (9%) than 'short' (7%), i.e. sustained for the length of the 10-second time interval, as opposed to a brief occurrence no longer than 10 seconds.

Differences between teachers and support staff, and the three pupil groups. There were marked differences in pupil interactions with teachers and support staff (also shown in Table 4). Pupils were six times more likely to be the focus of attention of support staff (63%) compared with teachers (11%). The biggest contrast was for extended one-to-one contact ('focus long'): 44% versus 5%. Conversely, in the vast majority (87%) of pupil interactions with teachers, pupils were in 'audience' mode (i.e.

Table 4. Pupil role in interaction with adult \times type of adult

	Teacher	Support staff	Other	Total
Focus short	106 5.6%	37 19.4%	4 11.8%	147 6.9%
Focus long	95 5%	83 43.5%	6 17.6%	184 8.7%
Group audience	37 1.9%	32 16.8%	19 55.9%	88 4.1%
Class audience	1610 84.8%	37 19.4%	5 14.7%	1652 77.8%
Other	50 2.6%	2 1%	0 0%	52 2.4%
Total	1898	191	34	2123

listening to the teacher talk); this compared with only 36% of support staff interactions with pupils.

The three pupil groups differed in the extent to which they were the focus of attention of different adults. The amount of extended one-to-one contact with support staff increased with level of pupil need, so that the SEN group had by far the most contact of this sort, as a proportion of support staff interactions with pupils, and the no SEN group the least (56% and 20% respectively).

Conversely, the no SEN group spent more time in audience mode with teachers (90%) but also, interestingly, more time in audience mode with support staff (59%, compared with the School Action and SEN groups: 47% and 27% respectively). This suggests that the no SEN pupils are more likely to be in groups within which support staff are focusing primarily on children designated as SEN or School Action.

Adult to pupil interactions: type of talk. There was little difference between teachers and support staff in the general type of adult to pupil task; both were as likely to be engaged in task interactions with pupils (88% and 83% respectively). The three groups of pupils engaged in about the same amount of on-task, task preparation, procedure and other behaviours with teachers and support staff.

Pupil talk to teachers and support staff. With regard to pupils' talk to adults (see Table 5), most time was spent in attending (70%), followed by not attending (13%). Active interaction with an adult (the total of 'begins', 'responds' and 'sustains')

Table 5. Pupil to adult interactions \times type of adult

	Teacher	Support staff	Other	Total
Begins	47 2.5%	20 10.1%	1 3%	68 3.2%
Responds	88 4.6%	30 15.2%	3 9.1%	121 5.7%
Sustains	66 3.5%	74 37.4%	6 18.2%	146 6.8%
Attend/listen audience	1294 67.9%	51 25.8%	9 27.3%	1354 63.4%
Attend/working	131 6.9%	10 5.1%	0 0%	141 6.6%
Not attending	244 12.8%	11 5.6%	14 42.4%	269 12.6%
Eavesdropping	26 1.4%	2 1%	0 0%	28 1.3%
Other	9 0.5%	0 0%	0 0%	9 0.4%
Total	1905	198	33	2136

Table 6. Pupil to adult type of interaction \times type of adult

	Teacher	Support staff	Other	Total
On task	1610 84.3%	175 88.4%	22 64.7%	1807 84.4%
Procedure/routine	17 0.9%	1 0.5%	0 0%	18 0.8%
Social	1 0.1%	2 1%	0 0%	3 0.1%
Off-task active	114 6%	11 5.6%	7 20.6%	132 6.2%
Off-task passive	144 7.5%	8 4%	5 14.7%	157 7.3%
Other	23 1.2%	1 0.5%	0 0%	24 1.1%
Total	1909	198	34	2141

occurred in only 16% of interactions with adults. Overall, then, pupils tend to be in a passive mode when interacting with adults.

As with adult interactions with pupils, pupil talk to adults (Table 6) was predominantly task related (84%), with 14% off-task, either actively (6%) or passively (7%).

Differences between adults. Pupils' talk to teachers and support staff was very different (see Table 5). In terms of the pupil role in the interaction, they tended to 'attend' far more to teachers (75% versus 31% with support staff). Conversely, they engaged in far more active interaction with support staff, i.e. the total of 'begins', 'responds' and 'sustains' (63% compared with 11% for teachers). Sustained interaction was more common with support staff compared to teachers (37% versus 4%). Pupil interactions with support staff are therefore more active and longer. Pupils were twice as likely to not attend to teachers as support staff (13% versus 6%).

As for the kinds of behaviours in which pupils engaged when with teachers and support staff, there were again few differences (see Table 6), although pupils were slightly more likely to be off-task with teachers (14% versus 10%), especially off-task 'passive' (8% versus 4%), probably reflecting disengagement from whole-class teacher-led sessions.

Type of adult and pupil group. There were signs that off-task behaviour was more prevalent with teachers in comparison to support staff, especially in the case of SEN pupils (17% with teachers versus 7% with support staff). Given that most of the off-task behaviour of SEN pupils with teachers is off-task passive (66%), this suggests that such pupils are more likely to be disengaged from teacher talk to them in comparison to support staff talk to them.

Impact of support staff on adult–pupil interactions in the classroom

In this section we analyse the impact of support staff presence on adult–pupil interaction and classroom engagement. In the case of adult–pupil interaction, the analyses were done twice, once with adults overall and then separately for teachers alone.

Where there was a significant interaction between SEN status and support staff, the effect of support staff is given for each SEN group. Results are expressed in terms of odds ratios. The figures are the odds of a given behaviour when a member of support staff was present compared to when support staff were not present. An odds ratio greater than one means that the behaviour was more likely with support staff present, whilst an odds ratio less than one means that the behaviour was less likely with support staff present. This can offer a reliable estimate of the degree of difference between the groups; for example, an odds ratio of 2.0 means that the odds of this occurring were doubled. Also given are 95% confidence intervals and *p*-values indicating the significance of each result.

Overall amount of pupil interaction with teachers. First, we examined whether the presence of support staff affected the overall amount of interaction between pupils and teachers. Results are shown in Table 7.

For primary and secondary pupils separately, there was a significant interaction between support staff presence and SEN status, suggesting that the relationship between support staff and the amount of interaction with a teacher varied by SEN group. However, despite this, in almost all analyses there was a significant effect of support staff on the interaction with a teacher; that is, it was almost always less likely with support staff present. In general, the effect of support staff was strongest in pupils with a higher level of SEN status, and, though present, was less strong for pupils with lower levels of, or no, SEN.

Amount of teaching. Next we analysed whether the presence of support staff affected the overall amount of adult ‘teaching’, e.g. when adults were engaged in the substantive topic, or preparing pupils for the task (i.e. whether or not the adult was ‘on-task’ when interacting with the child).

Table 7. The effect of support staff presence on interactions with teacher

Pupil group	Subgroup	Odds ratio (95% CI)	<i>p</i> -value
Primary only	No SEN	0.76 (0.68, 0.86)	< .001
	School Action	0.32 (0.27, 0.39)	< .001
	SA+/SEN	0.35 (0.28, 0.45)	< .001
Secondary only	No SEN	1.05 (0.83, 1.32)	.70
	School Action	0.80 (0.65, 0.98)	.03
	SA+/SEN	0.63 (0.52, 0.76)	< .001

Table 8. The effect of support staff presence on teaching from an adult

Pupil group	Odds ratio (95% CI)	<i>p</i> -value
Primary only	0.99 (1.10, 1.08)	.84
Secondary only	1.33 (1.06, 1.66)	.01

As seen in Table 8, for secondary pupils there was significantly more adult teaching when support staff were present in the classroom. The odds of adults teaching were over 30% greater.

Teaching from the teacher. The effect of support staff on the amount of teaching just from teachers was also examined, and the results are shown in Table 9.

For secondary but not primary schools there was a highly significant effect of support staff. Teacher 'teach' was more common when support staff were present, with the odds over 40% higher. The results were therefore similar to those for adults in general and did not vary between pupils of differing attainment.

Adult individual attention to pupils

For primary pupils the presence of support staff led to more individual pupil attention (see Table 10), though this varied by pupil group; the odds of the pupil being the focus of the adult increased by over 30% for pupils with no SEN, whilst the odds of the outcome occurring doubled for the SEN and also the School Action group. For secondary pupils, there was a highly significant effect of support staff only for the

Table 9. The effect of support staff presence on teacher teach

School type	Subgroup	Odds ratio (95% CI)	<i>p</i> -value
Primary	All pupils	1.04 (0.90, 1.21)	.52
Secondary	All pupils	1.44 (1.16, 1.77)	< .001

Table 10. The effect of support staff presence on individualised attention ('focus') from adults

Pupil group	Subgroup	Odds ratio (95% CI)	<i>p</i> -value
Primary only	No SEN	1.33 (1.09, 1.63)	.006
	School Action	2.09 (1.56, 2.70)	< .001
	SA+/SEN	1.98 (1.47, 2.68)	< .001
Secondary only	No SEN	0.85 (0.55, 1.31)	.46
	School Action	1.14 (0.84, 1.54)	.40
	SA+/SEN	2.43 (1.89, 3.14)	< .001

Table 11. The effect of support staff presence on individualised attention ('focus') from the teacher

School type	Subgroup	Odds ratio (95% CI)	p-value
Primary	All pupils	1.00 (0.83, 1.20)	1.00
Secondary	All pupils	0.56 (0.44, 0.71)	< .001

School Action Plus/SEN group; the odds of the pupil being the focus of adult attention were over twice as high as when not present.

Pupil focus of teacher. For secondary schools, there was a large effect, with the odds of being the focus of the teacher almost halved when a member of support staff was present (see Table 11). There was no evidence of an effect at primary level.

These results contrast with those from the analyses of adult only attention, which indicated more pupil focus of adult with support staff present for all pupils in primary schools, and also more pupil focus of adult in secondary schools for School Action Plus and Statemented pupils only.

Dealing with negative behaviour

For primary and secondary pupils there was less dealing with negative behaviour when support staff were present (see Table 12). The effect did not vary by SEN status.

Teacher dealing with negative behaviour. Results for teachers only were similar though this was not quite statistically significant for either primary or secondary schools (see Table 13). For both school types teachers were less likely to deal with negative behaviour when support staff were present and the effect did not vary for pupils with different SEN levels.

Table 12. The effect of support staff on adults dealing with negative behaviour

Pupil group	Odds ratio (95% CI)	p-value
Primary only	0.74 (0.56, 0.98)	.04
Secondary only	0.69 (0.53, 0.92)	.01

Table 13. The effect of support staff on teacher dealing with negative behaviour

School type	Subgroup	Odds ratio (95% CI)	p-value
Primary	All pupils	0.76 (0.55, 1.05)	0.09
Secondary	All pupils	0.75 (0.56, 1.01)	0.06

Impact of support staff on pupil engagement in class and active involvement with adults

Classroom engagement: total on-task behaviour. The total of all on-task behaviours was calculated by adding up on-task behaviours in each of the three social modes (i.e. when not interacting, when interacting with other pupils and when interacting with adults) (see Table 14). The same procedure was followed for off-task behaviour (see Table 15).

For primary schools there was a significant effect for the no SEN group only; they were 30% more likely to be on-task with a member of support staff present. For secondary schools there was a significant increase in on-task behaviour with support staff present for School Action pupils, and especially for the School Action Plus/SEN group. For this last group the odds of being on task were around twice as high.

Total off-task behaviour. As with on-task behaviour, the effect of support staff on off-task behaviour varied for different SEN groups. When only primary school pupils were considered, the group with no SEN was significantly less likely to be off-task when a member of support staff was present.

The analysis for secondary pupils indicated a significant effect of support staff for the School Action Plus/SEN group only. The odds of this group being off-task with support staff present were around half of those when support staff were not present.

Pupil active interaction with adults. For all primary pupils there was an increased likelihood of pupil active interaction (in the sense of beginning, responding to, or

Table 14. The effect of support staff presence on total on-task behaviour

Pupil group	Subgroup	Odds ratio (95% CI)	<i>p</i> -value
Primary only	No SEN	1.30 (1.10, 1.54)	.002
	School Action	0.84 (0.66, 1.06)	.14
	SA+/SEN	1.00 (0.76, 1.32)	1.00
Secondary only	No SEN	1.24 (0.92, 1.69)	.16
	School Action	1.48 (1.15, 1.90)	.002
	SA+/SEN	2.01 (1.60, 2.53)	< .001

Table 15. The effect of support staff presence on total on-task behaviour

Pupil group	Subgroup	Odds ratio (95% CI)	<i>p</i> -value
Primary only	No SEN	0.64 (0.53, 0.77)	< .001
	School Action	1.09 (0.84, 1.41)	.51
	SA+/SEN	1.00 (0.75, 1.33)	1.00
Secondary only	No SEN	0.87 (0.62, 1.20)	.38
	School Action	0.83 (0.64, 1.08)	.17
	SA+/SEN	0.47 (0.37, 0.60)	< .001

Table 16. The effect of support staff presence on pupil to adult active interaction

Pupil group	Subgroup	Odds ratio (95% CI)	<i>p</i> -value
Primary only	–	1.56 (1.34, 1.81)	< .001
Secondary only	No SEN	0.86 (0.56, 1.32)	.50
	School Action	1.13 (0.84, 1.53)	.42
	SA+/SEN	2.52 (1.95, 3.28)	< .001

Table 17. The effect of support staff presence on pupil to teacher active interaction

School type	Subgroup	Odds ratio (95% CI)	<i>p</i> -value
Primary	All pupils	0.87 (0.73, 1.07)	.21
Secondary	All pupils	0.59 (0.46, 0.75)	< .001

sustaining interaction) with adults, with the odds over 50% higher when support staff were present (see Table 16). For School Action Plus/SEN secondary pupils the presence of support staff was highly associated with an increased occurrence of pupil active interaction.

Pupil active interaction with teacher. The results for pupil active interactions with the teacher showed no significant effect for primary schools (see Table 17). For secondary schools there was a significant effect, with the odds of pupil active interaction with the teacher nearly halved when support staff were present. The results for both primary and secondary schools did not vary for pupils by SEN status.

These results contrast with those for all adults, which indicated that active interaction with an adult was more common with support staff present in primary schools for all pupils. The results for secondary schools indicated that the outcome was more likely with support staff present for School Action Plus/SEN pupils only, and there was no effect for other pupils.

Discussion

Deployment of support staff in classrooms

One form of analysis provided a general description of the activities of classroom-based support staff, stemming from observations of all support staff and divided into categories involving contact (or not) with pupils. We found that classroom-based support staff were twice as likely to be working with pupils in comparison to not working directly with them.

These results can be supplemented by other results from the DISS project, which provided a broader description of the deployment of all categories of support staff, in terms of activities undertaken and based on time logs completed by support staff (see

Blatchford *et al.*, 2008). When all sources of data from the DISS project are taken together, results show conclusively that classroom-based support staff spend much of their time in a direct pedagogical role, supporting and interacting with pupils, and this exceeds time assisting the teacher or the school.

The systematic observation analysis provided more detail on how support staff supported pupils and how this varied between primary and secondary schools. The most common activity overall was working with one pupil (29%). The results showed that at secondary level support staff tended to work with individuals and to rove the classroom, while at primary level they worked with groups of pupils.

A second type of analysis of deployment also came from the systematic observations and stemmed from the 10-second, moment-by-moment, descriptions of individual pupils. This provided a systematic and objective description of support staff behaviour as experienced by pupils. These results showed important differences in the interactions pupils had with teachers and support staff. Pupils were six times more likely to be the focus of attention with support staff compared to teachers. Conversely, with teachers, pupils were more often in 'audience' mode; they are more likely to be one of a crowd, and this applies particularly to the no SEN group. The main group of pupils without SEN interacted more with teachers, while the pupils with SEN and School Action spent more time interacting with support staff. The amount of individualised attention from support staff increased with level of pupil need but all received more from support staff than teachers. Pupil interactions with support staff were also more active and more sustained, and it was the SEN pupils who engaged in most of this kind of behaviour.

Impact of support staff on adult–pupil interactions

Much coverage of the impact of support staff has relied on the reports of teachers (see Howes *et al.*, 2003), but in this article we were able to address their impact on teachers through the systematic observations. These results indicated that the presence of support staff had a seemingly beneficial effect overall on interactions. First, support staff allowed more *individualisation of attention from adults in the classroom*, as seen in the greater amount of individual attention ('focus'). Second, there seemed to be benefits in terms of *classroom control*, with reductions in the amount of talk dealing with negative behaviour. Third, with support staff present there was more teaching from adults overall and from teachers separately. These benefits are similar to those found in studies of the effect of class size reductions on pupil behaviour (Blatchford *et al.*, 2005).

The logistic regression analysis showed several differences between primary and secondary schools and differences between pupils with and without SEN. In primary schools all pupils seemed to benefit from support staff presence in terms of more individualised attention for pupils, and better classroom control. At secondary level all pupils benefited, again in terms of better classroom control and also more overall teaching. For School Action/SEN pupils there was more individualised attention. This last result probably reflects other results from the study which indicated that the

deployment of support staff varies between the two sectors. In secondary school, support staff tended to interact more exclusively with the pupil they were supporting. In such circumstances it is no surprise if the supported pupils showed most effects.

However, the presence of support staff also led to supported pupils having less overall contact with the teacher and less individual attention from them (at secondary level), showing that individualisation of attention was provided by support staff, not teachers. We return to this point below.

Impact of support staff on pupil engagement and active interaction with adults

Further analyses indicated that the presence of support staff had a seemingly beneficial effect on pupils in terms of: (1) increased *classroom engagement*, as seen in the increase in pupil on-task, and the reduction in off-task, behaviour; (2) a more *active role in interactions with adults*, as seen in the extent of beginning interactions, responding to adults and sustaining interactions. However, as with results on individual attention, when we looked separately just at teacher to pupil interactions we found that at secondary level the presence of support staff led to less active interactions with teachers. This means that active interactions are with support staff instead of teachers.

Again, there were several differences between primary and secondary schools and differences between pupils with and without SEN. In primary schools all pupils seem to benefit from support staff presence in terms of a more active pupil role in interaction with adults. Children with no SEN showed more classroom engagement. For secondary schools there was more total on-task behaviour for School Action and SEN groups, and less total off-task behaviour for the SEN group only. There is therefore a strong suggestion that the presence of support staff at both primary and secondary school is of particular benefit in improving the attention of children in most need.

These results are at odds with those reported in the CSPAR study where it was found that the presence of support staff increased individual attention from teachers (Blatchford, Russell, *et al.*, 2007). While difficult to be sure, this might be accounted for by different research designs and age groups used in each study.

Reduced teacher–pupil interaction

Perhaps the most significant finding from this study is that the amount of contact with teachers tended to decline when support staff were present. Pupils with more classroom support have less interaction with the teacher and at secondary level the presence of support staff reduced by about half the amount of individual interaction between teachers and pupils and active contributions from pupils to teachers. This means that, as a consequence of being supported by TAs, pupils miss out on everyday mainstream teacher to pupil interactions. This can occur in the context of within-class support and also occasions when support staff take pupils out of the classroom, e.g. for literacy catch-up programmes.

We believe these results are significant because they may help explain the apparent contradiction between the general perception among teachers and head teachers that support staff provide a valuable extra resource in classrooms, while at the same time the research evidence to date has not shown an obvious benefit to academic progress. What the current results show is that support staff have a positive effect in terms of increased individualisation of attention, pupils' active role in interaction with adults, easier classroom control, and increased classroom engagement. We also found at secondary level more teaching occurring when support staff were present, and this might be connected to less time being spent on classroom control. Elsewhere we have found that with more support there was also a beneficial effect for pupils in Year 9 in terms of positive approaches to learning (e.g. in terms of motivation, working independently, completing assigned work and following instructions from adults). Other data from the DISS project reveal that teachers feel that support staff have a positive impact in terms of teacher job satisfaction, stress and workload, and on teaching (Blatchford *et al.*, 2008). It is therefore understandable if teachers and head teachers feel that support staff have a positive effect.

However, we have also found that individualised attention is provided not by teachers but by support staff, and, moreover, it is provided instead of interactions with the teacher. Typically the few pupils in most need are supported in lessons, and at times in pull-out sessions, by support staff, while the teacher is then able to teach the rest of the class. Observations in schools, as part of Strand 2, Wave 2, support those reported in this article in indicating that the tasks support staff and supported pupils work on can often be differentiated either by level or type from the rest of the class. Such pupils therefore miss out on interactions with the teacher and contact with the mainstream curriculum. This is a less positive consequence and one that might hinder pupils' academic progress.

It seems likely that the positioning of support staff close to students they support is the reason for the positive effects just cited. This is in line with studies of support for pupils with SEN, referred to above. However, there are also concerns that proximity may have unintended consequences. That the presence of support staff leads to supported pupils having less contact with the teacher, particularly less individual attention and less active interactions with the teacher (at secondary level), is one such consequence. Some researchers and commentators have been concerned that increased support, though beneficial in some ways, may not translate into better pupil learning (Loos *et al.*, 1977; Giangreco *et al.*, 1997; Ofsted, 2006). Furthermore, Giangreco and Broer (2007, 149) list other 'unintended detrimental effects', including 'interference with ... peer interactions, decision making by underqualified personnel [and] the development of unnecessary dependence'.

This discussion indicates that there are possibly different effects of TAs across different outcomes and that some may be positive and some negative. Research from the final stage of the DISS project will enable a deeper assessment of the impact of support staff on pupils to be made. But on the basis of results reported in this article we feel it is appropriate to query the way in which children in most need can now get

less of the teacher's attention. Before teachers had TAs in the classroom they would have had responsibility for all pupils and quite likely provided further support for these pupils themselves. Respondents in field visits to schools argue that teachers have a higher level of subject and pedagogical knowledge—and this seems appropriate given their level of qualifications and training. It would therefore seem appropriate that those in most need are most likely to benefit from more of a teacher's time, not less.

Differences for pupils with SEN

One of the aims of the study was to establish whether effects of TA presence were different by pupil type; in particular whether effects were more marked for pupils with SEN and School Action. In general this prediction was supported. The amount of individualised attention from support staff increased with level of pupil. There was a strong suggestion that the presence of support staff at both primary and secondary school was of particular benefit in improving the attention of children in most need. While effects on pupil interactions with teachers were similar for all groups of pupils, effects for adults in general interacted with pupil type, with effects more marked for pupils with SEN and School Action.

It seems that the present situation has arisen because of the interconnection in practice of two separate policy developments. There has been a huge increase in the number of pupils with SEN in mainstream schools and at the same time there has been a huge increase in classroom-based support staff. Both are new phenomena and they have in practice come to be connected. This appears to be true in other countries as well, e.g. in the USA, Marks *et al.* (1999) found that support staff had 'assumed the primary burden of success for the inclusion of students'. Thus teachers appeared to act as 'hosts'. Giangreco and Broer (2005, 24) make the point even more strongly: 'Para-professionals have served as an analgesic for the perceived pressures of including more diverse populations of students with disabilities'. In the UK, TAs have become an essential component of practice (if not policy) with regard to the integration of pupils with SEN in mainstream schools. It seems to us that we need to carefully consider pedagogical practice in relation to the deployment of TAs, perhaps especially those pupils with SEN and learning difficulties.

Secondary versus primary

Another main aim of the study was to see whether there were differences between primary and secondary stages. There is no evidence that primary-aged pupils show more marked effects as a result of TA presence in classrooms but the results have shown a number of ways in which primary and secondary schools differed in the deployment of TAs. These results probably reflect differences between the sectors in the deployment of classroom-based support staff, e.g. in secondary schools support staff tended to interact more exclusively with the pupil they were supporting compared with primary.

Future research

Results from the systematic observations reported here provide systematic data on the effects of support staff on pupil behaviour and interactions, but results are at a general level. A study of what might be called the ‘wider pedagogical role’ of support staff is currently under way as part of the DISS project. This would situate the interactions between support staff and pupils and teachers into a wider context, for example, by examining decisions about support staff roles in lessons, and also support staff pedagogical and subject knowledge, and communication and feedback between support staff and teachers. It will also be of value to examine ways in which support staff are supporting pupils using recording techniques, which will allow a detailed analysis of the interactions at the level of (for instance) the nature of adult questioning and explanations. Study of the strategies they are adopting and how these compare with teachers will allow documentation of what works and what does not work well—and also help inform improvements to classroom practice and pupils’ progress.

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