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Risk Factors in the Development of Behaviour Difficulties Among Students with Special Educational Needs and Disabilities: A Multi-Level Analysis

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Abstract

Background: Students with special educational needs and disabilities (SEND) are more likely to exhibit behaviour difficulties than their typically developing peers. **Aim**: Little is known about specific factors that influence variability among individuals in this group. **Sample**: The study sample comprised 4228 students with SEND, aged 5 to 15, drawn from 305 primary and secondary schools across England. **Method**: Explanatory variables were measured at the individual and school levels at baseline, along with a teacher reported measure of behaviour difficulties (assessed at baseline and at 18-month follow-up). **Results**: Hierarchical linear modelling of data revealed that differences between schools accounted for between 13% (secondary) and 15.4% (primary) of the total variance in the development of students' behaviour difficulties, with the remainder attributable to individual differences. Statistically significant risk markers for these problems across both phases of education were: being male, eligibility for free school meals, being identified as a bully, and lower academic achievement. Additional risk markers specific to each phase of education at the individual and school levels are also acknowledged. **Conclusion**: Behaviour difficulties are affected by risks across multiple ecological levels. Addressing any one of these potential influences is therefore likely to contribute to the reduction of the problems displayed.

Keywords**:** Behaviour difficulties, special educational needs and disabilities, risk factors

Risk Factors in the Development of Behaviour Difficulties Among Students with Special Educational Needs and Disabilities: A Multi-Level Analysis

Introduction

Special Educational Needs and Disabilities

The definition of Special Educational Needs and Disabilities (SEND) in England states that: *"A child or young person has special educational needs if they have a learning difficulty or disability which calls for special educational provision to be made for him or her"* (Department for Education, 2015). Pupils with SEND are offered graduated support at one of three levels: School Action, School Action Plus or Statement of Special Educational Needs (Department for Education and Skills, 2001)[1]. The nature of need among young people with SEND is broadly categorised in England according to: (a) cognition and learning, (b) behavioural, emotional and social development, (c) communication and interaction, (d) sensory and/or physical needs, or combination of them (ibid).

Prevalence estimates of the number of students with SEND vary according to country and the different approaches in identification and assessment. In England 1.49 million children and young people (17.9%) are considered to have SEND (Department for Education, 2014). Despite the size of this group and their increased likelihood of having behaviour difficulties (Department for Education, 2012b), to our knowledge no study has specifically utilised a SEND population to investigate risk factors for behaviour difficulties.

Murray and Greenberg (2006) have demonstrated that having SEND is increasingly recognised as a major risk factor for behaviour difficulties. Furthermore, in Green, McGinnity, Meltzer, Ford, and Goodman's (2005) national study, over half of children and adolescents who met the clinical criteria for conduct problems were considered to have SEND by their teachers.

More recently Charman, Ricketts, Dockrell, Lindsay, and Palikara (2014) found that certain groups of children with SEND (i.e., those with language impairments and autistic spectrum disorders) had elevated levels of behaviour difficulties. In hypothesising about the risk of developing behaviour problems, the concept of equifinality (multiple routes to the same outcome; Dodge & Pettit, 2003) is important here.

The current study is the first of its kind to focus specifically on students with SEND, and in doing so furthers our understanding of factors that influence an important developmental outcome in a group of learners known to be vulnerable (Humphrey et al., 2013). Furthermore, risk factors for behaviour difficulties vary as a function of other factors such as gender (Storvoll & Wichstrøm, 2002) and socio-economic status (Schonberg & Shaw, 2007). It is possible therefore, that distinct risk factors for behaviour difficulties may exist for children with SEND compared to those in the general school population.

Behaviour Difficulties in Childhood and Adolescence

Behaviour difficulties in childhood and adolescence can have immediate effects on the learning environment, academic achievement, and children's social development (Calkins, Blandon, Williford, & Keane, 2007). It has been reported that children with behaviour difficulties have poorer quality relationships and perform less well academically (Humphrey et al., 2011). These behaviours can cause significant stress to teachers (Chaplain, 2003) and increased conflict with parents (Hastings, 2002). Equally, there are longer-term negative outcomes, including unemployment (Healey, Knapp, & Farrington, 2004), mental health problems (Sourander et al., 2005), and increased societal costs (Scott, Knapp, Henderson, & Maughan, 2001). A clear need therefore exists for research to investigate the development of behaviour difficulties, and in particular the factors that increase the likelihood that children and

adolescents with SEND will exhibit them, so that they can be pre-empted or addressed at an early stage (Stormont, 2002).

Individual Level Risk Factors

Studies investigating risk factors for behaviour difficulties at an individual level have an extensive research base. In socio-demographic terms, age may play a role, with some studies suggesting that while aggression, oppositional behaviours and property violations all appear to decline with age, status violations (such as truancy, alcohol and drug use) increase (Bongers, Koot, van der Ende, & Verhulst, 2004). However, other research has found that youth are more likely to display behaviour difficulties than younger children, (Green et al., 2005). Month of birth can also affect behavioural outcomes, with those born later in the school year (i.e., who are younger) more likely to experience conduct problems (Goodman, Gledhill, & Ford 2003).

Boys consistently appear at increased risk of displaying problem behaviours compared with girls (Brown & Schoon, 2008), with differences being evident as young as 18 months of age (Baillargeon et al., 2007). This could relate to biological and hormonal differences, (Book, Starzyk, & Quinsey 2001), as well as variations in parenting practices that may reflect gender stereotypes (Crick & Zahn-Waxler, 2003). Children from lower socio-economic status (SES) backgrounds are also more likely to be exposed to negative environmental influences such as familial stress or unstable households, and it is the accumulation of these risks that may result in behaviour difficulties (Evans, 2004). Furthermore, the Millennium Cohort Study in the United Kingdom found ethnic background risk markers, with increased prevalence among Pakistani, Bangladeshi and Black Caribbean children, and lowered risk among their White British and Black African peers compared to the mean level nationally (Brown & Schoon, 2008).

In terms of academic and psychosocial influences, research suggests that children who have a reading difficulty (Morgan, Farkas, Tufis, & Sperling, 2008), receive poorer teacher-assessed grades (Zimmerman Schütte, Taskinen, & Köller, 2013), or have lower academic performance (McIntosh et al., 2008), are more likely to display behavioural difficulties than those who experience academic success. Low attendance (Miller & Plant, 1999) and poor relationships with teachers (Baker, Grant, & Morlock, 2008) and/or peers (Silver, Measelle, Armstrong, & Essex, 2005) are also known risks. In addition, research has suggested that involvement in bullying (as victims or perpetrators) is associated with an increased likelihood of exhibiting behavioural problems more broadly (Gini, 2008; Kim, Leventhal, Koh, Hubbard, & Boyce, 2006). Less researched is the relationship between being the victim of bullying and behaviour difficulties, although this association has been found (e.g., Humphrey et al., 2011).

School Level Risk Factors

The school environment has long been thought to have an influence on the behaviour of students (e.g., Rutter, Maughan, Mortimore, Ouston, & Smith, 1979). However, it is only recently that the effects of the school context on childhood behaviour difficulties have gained greater attention (Sellström & Bremberg, 2006). As a consequence relatively little is known about how the school environment impacts on childhood developmental outcomes (Maes & Lievens, 2003).

Research has indicated that attending urban schools and larger schools are associated with increased risk for behaviour difficulties (Larsson & Frisk, 1999; Stewart, 2003). Furthermore, low average (SES) within schools is generally associated with more negative outcomes for students (Sellström & Bremberg, 2006). Conversely, higher-performing schools (in terms of average academic achievement) often experience lower levels of problem behaviour

(Barnes, Belsky, Broomfield, & Melhuish, 2006; Rutter et al., 1979). However, it has also been suggested that some students are more likely to engage in behaviour difficulties when in schools with a culture of high academic achievement. This may be because those who struggle academically experience more damage to self-esteem when comparing their achievements to those of peers (Felson Liska, South, & McNulty, 1994).

Proxy indicators of the disciplinary climate of the school are important predictors of behaviour difficulties. An above average exclusion rate is related to student behaviour at the individual level (Theriot, Craun, & Dupper, 2010), as well as aggregated aggression levels in classrooms and schools (Barth, Dunlap, Dane, Lochman, & Wells, 2004). Average truancy/unauthorised absence rates have also been found to be related to behaviour difficulties (Maes & Lievens, 2003). Finally, the proportion of children learning English as an additional language (EAL) in school has been found to account for some of the individual level variability in aggression in children starting school (Kohen, Oliver, & Pierre, 2009).

School and Individual Level Influences on Behaviour Difficulties

The relative strength of school influences compared with individual level factors in predicting behaviour difficulties has not been extensively investigated. However, the advancement over the last twenty years of statistical techniques such as hierarchical linear modelling (Twisk, 2006) has allowed the impact of contextual factors to be identified. This has enabled researchers to understand the relative influence of different ecological levels (e.g., individual and school), the factors within them, and then assess the importance of each in accounting for behaviour difficulties. Studies that have used these techniques have been fairly consistent in their findings, suggesting that differences between schools account for a significant proportion of variance in behavioural difficulties, although the majority remains attributable to

individual level differences (Aveyard, Markham, & Cheng, 2004; Gottfredson & DiPietro, 2011; Reis, Trockel, & Mulhall, 2007). For example, Gottfredson (2001) reported that school level variance in behaviour difficulties was between 8-15%, and a similar estimate of 5-10% was provided by Felson et al. (1994).

Estimates however will depend on how behaviour difficulties are operationalised, as other researchers have argued for less variance: around 2% in the case of aggressive behaviour (Reis et al., 2007), and 6.3% for delinquency (Payne, 2008). These variance estimates might also be influenced by population characteristics, for example the prevalence of behaviour difficulties is different for children who are typically developing compared with their SEN peers, and the risk factors associated with these difficulties might also be distinct. These influences will affect any estimate of school level variance. Nonetheless, Sellström & Bremberg's (2006) review of multilevel studies investigating the school effects on a variety of outcomes and populations found that the 'school effect' on problem behaviour did not exceed 8% across four studies.

The Current Study

This study examined the role of school and individual level differences in predicting the development of behaviour difficulties in students with SEND attending mainstream schools in England over an 18-month period. The aims were a) to determine whether the established individual and school level risk factors within the general population also apply to those with SEND, b) to examine potential markers for this sub-group including type of need and the level of provision received from the school, and c) to assess the amount of variance in behaviour difficulties that is attributable to individual and school levels. To date, studies assessing the relative influence between different ecological levels have only utilised universal populations, with none considering school effects on behaviour difficulties specifically among students with

SEND. These students receive additional support and this may exacerbate the influence of school differences on the individual presentation of behaviour difficulties.

In this context, the present study is framed using Bronfenbrenner's (2005) bio-ecological systems theory, which offers a persuasive understanding of child development and has been adopted by a number of other researchers within the field (e.g., Gerard & Buelher, 2004). This theory is able to account for multiple influences found across various ecological levels that can impinge upon child development. Bio-ecological systems theory can acknowledge potential risk variables for behaviour difficulties both within the individual (including biological predispositions that may remain static) as well as influences occurring in the wider social, cultural and historical contexts. In this study potential risk factors for behaviour difficulties in children and adolescents with SEND are organised either within individuals or their schools.

Method

Design

Secondary analysis of a larger dataset (Humphrey et al., 2011) was employed, using a longitudinal design to permit identification of risk factors (Offord & Kraemer, 2000). A behaviour difficulties score (dependent variable) and all explanatory variables were collected at baseline (T1), with a second behaviour difficulties score collected 18 months later (T2). Data matching across time and sources was achieved using unique identifiers at school and individual levels.

Sample

Sampling was purposive and multi-stage. In the original study (Humphrey et al., 2011), 10 Local Authorities (LAs - local councils in England responsible for state school provision) were selected by the Department for Education to broadly represent the country (e.g., population

density, socio-economic factors, geographical location). Schools were chosen by senior LA staff to reflect the diversity of local schools (e.g., attainment, ethnicity). Within each school, at T1 students with SEND (identified by each school's Special Educational Needs Coordinator and on the SEN regiser at either School Action, School Action Plus or a Statement for SEN), were sampled. Specifically, pupils in Years 1 and 5 at primary school (aged 5/6 and 9/10 respectively) and Years 7 and 10 at secondary school (aged 11/12 and 14/15 respectively), were selected to participate. The final sample comprised 4288 students with SEND attending 305 mainstream schools (2660 from 248 primary schools, 1628 from 57 secondary schools). The number of participants in the present study was lower than in the original AfA study, as pupils were only included if they attended a mainstream school and had a valid Wider Outcome Survey for Teachers (WOST) at T1 and T2. An 18 month time period was used as this was the length of the AfA evalaution project.

Measures

The response variable was teacher-reported behaviour difficulties at T1 and T2 using the WOST. Individual level explanatory variable data were collected from teacher-report surveys and, for socio-demographic information, the National Pupil Database (NPD). School level explanatory variable data were collected from LAs and Edubase performance tables. The NPD contains census data for all school-age children in England and includes socio-demographic and school outcome data. Edubase is a national database containing information on all educational establishments in England and Wales. There were 11 explanatory variables at the individual level (Table 1) and 9 at the school level (Table 2). A pairwise deletion method was adopted in the case of missing data.

The Wider Outcomes Survey for Teachers (WOST)

The WOST was developed specifically for a SEND population, a large and diverse group of students that makes up approximately a fifth of all school pupils in the UK (Department for Education, 2014). Experts in the field of SEN utilising previous literature and published scales developed items for the survey, before psychometric analyses were conducted on the scale (Wiglesworth et al 2013). This bespoke measure was required, as existing research in scale development has often ignored a child's SEND status when developing measures and forming normative values. Where scales have utilised SEND populations these have been primarily for screening purposes for diagnosis rather than monitoring behaviour.

The WOST (Wigelsworth, Oldfield, & Humphrey, 2013) was used to assess the dependent variable of behaviour difficulties and three explanatory variables: positive relationships (i.e. with peers and adults), bullying (victimisation), and role in bullying incidents. It requires teachers to read statements about a student and respond using a four-point scale (never, rarely, sometimes, often). The behaviour difficulties subscale includes six items (The pupil cheats and tells lies; The pupil takes things that do not belong to him/her; The pupil breaks or spoils things on purpose; The pupil gets angry and has tantrums; The pupil gets in fights with other children; and The pupil says nasty things to other children). The final version of the WOST contains 20 items (six behaviour difficulties $\alpha = .902$, seven bullying, $\alpha = .920$ and seven positive relationships $\alpha = .917$). Item responses are averaged for each domain, with a range of 0-3. The WOST has been assessed against the key criteria set out by Terwee et al., (2007) and is considered to be psychometrically robust. It has good content validity (Wigelsworth et al., 2013), high internal consistency (Cronbach's Alpha for all domains > 0.9), and acceptable fit indices derived from confirmatory factor analysis (comparative fit index = 0.922). Two subscales (behaviour and bullying) exhibit floor effects > 15%, but this is frequently found in

surveys of this nature (e.g., 64.2% in the teacher-rated version of the Strengths and Difficulties Questionnaire, with a sample size of 8,208, Youthinmind, n.d.). For normative information regarding the outcomes of the survey for students with SEND, see Humphrey et al. (2011).

Missing data

The number of participants with a valid WOST at T1 was 8375, after T2 this number reduced to 4288. A detailed missing data analysis was therefore conducted on the data set. Mean scores on all continuous predictor variables, and the difference between the observed and expected values across the different levels of categorical variables were compared between the sample who only had a T1 WOST completed and those who had a T1 and T2 WOST completed. Effect size calculations using Cohen's d (for continuous variables) and Phi or Cramer' V (for categorical variables) demonstrated that differences between the two samples equated to small or less than small effects (Cohen, 1992), therefore samples are considered comparable. The only notable exception was a medium effect for school size in the secondary school model, with pupils attending larger schools less likely to have a survey completed at T1 and T2.

A pattern analysis was then conducted in order to assess whether there were any meaningful patterns in missing data across specific variables. Little's (1988) missing completely at random (MCAR) test revealed that for both primary and secondary school models data were not MCAR. It is likely that missing data was a product of a whole schools not completing and returning the school level data rather than being related to a specific individual pupil. Therefore is unlikely that missing data has had an excessive influence on the results. Multiple imputation of missing data is one way to deal with missing data – however, it was not used within the current study as these techniques assume that data are normally distributed and not MCAR. As this was

not the case in the present study multiple imputation was not used as it would have led to bias and misleading results.

Procedure

The study was approved by the host university's ethics committee. Consent for participation was gained from parents of students and their teachers prior to the study. Key teachers of participating students completed the WOST at T1 and again at T2 18 months later. In the interim period all of additional explanatory variables at school and student levels were retrieved from the sources outlined in Tables 1 and 2.

Results

A multi-level analysis was chosen due to the clustered hierarchical nature of the dataset. Data were analysed using hierarchical linear modelling in SPSS 20. Due to differences in school structure and curriculum, separate models were produced to reflect the primary and secondary school data sets. The average number of pupils nested in each primary school was 10.73 and the araverge number of pupils nested in each seconday school was 28.56.

As is typical when analysing data with multi-level models, empty (or 'unconditional') models were produced in the first instance (Twisk, 2006). From such models the approximate total amount of unexplained variance in the outcome that is attributable to each of the levels within the study can be calculated (Heck, Thomas, & Tabata, 2010). This statistic is known as the intra-class correlation (ICC) and shows the proportion of variance in behaviour difficulties at

T2 (after controlling for T1 levels) that is attributable to differences between schools, prior to the inclusion of any explanatory variables. The ICC was 15.4% in the primary model and 13% in the secondary model, with the remaining variance attributable to individual differences (see Tables 3 and 4). In both unconditional models, variance attributable to the school level was statistically significant.

The second step involved the production of full (i.e., 'conditional') models, the outcome remained the same behaviour difficulties at T2 (after controlling for T1 levels) with the explanatory variables included at school and individual levels for primary and secondary models (Tables 1 and 2).. Comparative model fit was assessed by comparing the -2*log likelihood value from the empty and full models (Heck et al. 2010). Chi-square analyses revealed significant improvements in model fit from empty to full for the primary and secondary models (both $p < .001$). The multi level models were modelled using fixed intercepts with random slopes (Heck et al. 2010). The empty and full models are presented in Tables 3 and 4.

Risk factors within the primary school model

Individual and school level predictors of behaviour difficulties are reported using unstandardized raw coefficients. At the school level only aggregated achievement in the primary model reached statistical significance. Thus, as primary school level achievement increased by 1% there was a subsequent 0.006 decrease in the development of behaviour difficulties at the individual level from T1 to T2. At the individual level significant risk markers were: being male, eligibility for free school meals (FSM), nominated as a bully, lower academic achievement, poorer quality relationships, autumn born, older within the school, and categorized as BESD.

Risk factors within the secondary school model

At the school level, only school size reached statistical significance. Thus, as school size increases by 100 pupils, there was a resulting 0.027 increase in behaviour difficulties. At the individual level statistically significant risk markers were: being male, eligibility for FSM, nominated as a bully or bystander to bullying, lower academic achievement, lower attendance, and younger within the school.

The coefficients presented in table 3 and 4 are raw (i.e., unstandardized) effects, and it should be noted that most are fairly small. This means that large changes in the explanatory variables may only relate to relatively small changes in behaviour difficulties. Each coefficient however, needs to be interpreted independently on the scale on which it was measured (see Tables 1 and 2). Table 3 and 4 only includes the significant predictors, non-significant predictors were included in the final analyses although removed from these tables for the sake of clarity and brevity.

In the final step a comparison was made between the empty and full models to assess the amount of variance that was to be explained within the empty model that could be explained by the full model. Subtracting the variance accounted for in the full model from the total variance to be explained in the empty model, allowed for a percentage of total variance to be calculated, and which can be used as an overall model fit estimate. The total model fit was 16.4% for the primary model and 16.8% for the secondary model. From the possible variance at the school level, the present study could account for 25.6% (primary) and 40% (secondary), and at the individual level 14.8% (primary) and 13.4% (secondary).

Discussion

This study sought to determine the amount of variance in behaviour difficulties of young people with SEND that could be attributed to school and individual effects, and also identify risk

markers for the development of behaviour difficulties at school and individual levels. Hierarchical linear modelling revealed that differences between schools accounted for between 13% (secondary) and 15.4% (primary) of the total variance in behaviour difficulties, with the remainder attributable to individual differences. Statistically significant risk markers for these problems across both phases of education were being male, FSM-eligibility, nominated as a bully, and lower academic achievement. Risk factors specific to the primary school model were autumn born, older within the school, poor relationships with teachers and peers, in the BESD group, and attending a lower achieving school. Risk markers specific to the secondary school model were poor attendance, younger within the school, nominated as a bystander to bullying, and attending a larger school. The percentage of variance in behaviour difficulties that could be explained when all predictors were added was 16.4% in primary and 16.8% in secondary schools.

In the primary and secondary models, both individual and school differences contributed to variance in behaviour difficulties, with the individual level accounting for more variance than the school level. This is consistent with the majority of studies in this area (e.g., Aveyard et al., 2004; Gottfredson & DiPietro, 2011; Reis et al., 2007). However, the ICCs from the models in this study are higher than those in Sellström & Bremberg's (2006) review of multi-level studies, which reported school effects of < 8% for behaviour difficulties. This suggests that their behaviour may be more sensitive to school-level influences than those without SEND.

The total amount of variance in behaviour problems explained by both models was relatively small (16.4% for primary, 16.8% for secondary), leaving a large proportion of variance unexplained. This is perhaps not surprising, as the scope of the present study only permitted certain variables to be included. A fairly recent and innovative approach that could mitigate

against this criticism is to adopt cumulative risk modelling (Oldfield, Humphrey, & Hebron, 2015) that acknowledges number rather than specific risks in accounting for behaviour difficulties.

The most salient risk factors across both primary and secondary schools were being male, FSM-eligibility, nominated as a bully, and lower academic achievement. These findings support findings among the general school population (e.g., Brown & Schoon, 2008; McIntosh et al., 2008; Morgan et al., 2008), suggesting that these risk factors have a powerful impact upon behaviour difficulties across developmental stages and populations.

Age was also important in the display of behaviour difficulties in this study, with older children more likely to develop difficulties in primary, and the reverse true in secondary schools. Problem behaviours could be particularly acute around the beginning of adolescence, and this also coincides with the primary-secondary school transition in England, which can be challenging for children with SEND (Maras & Aveling, 2006). Relative age within the year group (autumn born, therefore oldest in the school year) was similarly important, although only in the primary model**.** This finding contrasts with some previous studies that have suggested that younger children in any year group display the most severe behaviour difficulties (e.g., Goodman et al., 2003). Relative age differences within year groups become less pronounced as children get older (Menet, Eakin, Stuart, & Rafferty, 2000), and this may account for the null findings in the secondary model.

Poor relationships with teachers and peers, lower attendance, and being a bystander to bullying were significant risk factors in either the primary or secondary model. These variables are related inasmuch as they reflect a student's adjustment to school. Children with poor relationships with teachers and peers are often more reluctant to attend school (Bryant,

Shdaimah, Sander, & Cornelius, 2013), potentially leading to lower attendance and achievement. Poorer relationships with others was a significant risk factor for behaviour difficulties in the primary school model, with a marginal non-significant trend in the secondary model. This evidence aligns with samples of children with and without SEND that point to the importance of positive peer and teacher relationships in reducing behaviour difficulties (Baker et al., 2008; Silver et al., 2005). Children with positive relationships tend to have higher self-esteem and experience less victimisation, providing protection against behaviour difficulties (Wiener, 2004).

Being rated by teachers as a bystander to bullying was a significant risk factor for behaviour difficulties in the secondary model. Bystanders are conceptualised as being present in bullying incidents although usually not as direct perpetrators (Lodge & Frydenberg, 2005). Nevertheless, a significant amount of negative behaviour is likely to be witnessed by bystanders and some may choose to imitate bullying behaviour in other contexts.

In the secondary model, lower attendance was significant. This evidence is consistent with others who have found negative effects on behaviour from higher levels of unauthorised school absence (Miller & Plant, 1999). Furthermore, when secondary age children fail to attend school, they are less likely to be under adult supervision and may have more opportunity to engage in negative behaviours (McAra, 2004).

A particularly strong risk factor for behaviour difficulties in primary schools was children categorised as having Behaviour, Emotional and Social Difficulties (BESD), and yet this narrowly failed to rearch statistical significance in secondary schools. A possible explanation for this lies in the heterogeneity of the BESD group, which incorporates a broad range of internalising and externalising difficulties. As higher levels of internalising problems (e.g.,

anxiety and depression) are found in secondary age students (Green et al., 2005), this may have masked behaviour difficulties in this older group.

Only two school level variables emerged as significant risk factors**.** The present study is consistent with previous research in demonstrating an association between higher achievement at primary and fewer problem behaviours (Barnes et al., 2006; Rutter et al., 1979). Within primary schools, pupils (in the same year) are usually taught in the same class and less frequently split into groups. Being in a mixed ability class where the overall standard is relatively high could result in lower achieving pupils (i.e., some with SEND) benefiting by having peers of higher ability providing aspirational standards. At secondary school, where setting by ability is common, peer support may be less pronounced for adolescents with SEND, potentially explaining the non-significant finding in secondary schools.

Within the secondary model, larger school size was a significant predictor of behaviour difficulties, and this is consistent with previous literature (George & Thomas, 2000; Stewart, 2003). Larger schools may facilitate a degree of anonymity, but where individuals feel less valued and supported (Lee, Smerdon, Alfred- Liro, & Brown, 2000), and such feelings manifested in behaviour difficulties. This was not however, observed in primary schools which tend to have considerably lower student numbers. Furthermore, within smaller schools there may be greater opportunities for students, particularly those with SEND, to develop better relationships with peers and teachers, have more trust in the adults who work at the school and more easily share common expectations about behaviour, all of which may help reduce behaviour difficulites (Gottfredson & DiPietro, 2011).

The majority of the school level variables were however, non-significant predictors of behaviour difficulties displayed. These effects could have emerged for a number of reasons;

firstly, due to the measurement tools used i.e. using FSM as a proxy for socio-economic status (SES). Despite this method being utilized in previous literature (Hobbs & Vignoles, 2007) this might not accurately reflect true SES. There was also lack of variability in some predictor variables i.e. exclusion rates, with most school not reporting a single exclusion. Finally, a variable related to increases in behaviour difficulties for the typical population i.e. number of children with SEN at the school (Barnes et al. 2006) might actually have a positive effect for children with SEN - giving them more access to resource and potential protection against the display of behaviour difficulties.

The overall findings reported above demonstrate a degree of consistency between risk factors for behaviour difficulties in the general population and those with SEND. Nevertheless, the ways in which these variables manifest may be different, with school level variables being more salient for a SEND population. This was evidenced in the current study by the ICC being significantly higher compared with more general populations in earlier studies.

Limitations and Future Directions

Despite the strengths of having a nationally representative sample in this study, it is important to address some of its limitations and highlight areas for future research. Teacher report was used to measure behaviour difficulties in place of parental or student self-report. This method could be criticised for being less accurate; however, teachers are arguably in the best position to reflect on behaviour difficulties, which occur in their classroom and around the school and therefore more accurate than parent report. Furthermore, utilising a self-report measure would have led to exclusions from younger pupils i.e. those in year 1 and those with the most complex SEND, as these pupils would not be in a position to reliably self-report.

In England, children with SEND are defined as such if they experience difficulties that require additional provision to be made in order to meet their needs (Department for Education, 2012a). While, there is no single approach to identification and assessment, the sample within the study is consistent in that all students were recognised by their teachers as having additional needs and were in receipt of additional support, making them a distinct population.

A further limitation concerns the collection of data from the WOST surveys. As T2 was 18 months after T1, children had moved year groups and were therefore likely to have a different teacher completing the WOST. It could be argued that change was due to a difference in rater, rather than real change in behaviour. This argument is mitigated by information on the psychometric properties of the WOST which have shown good inter-rater reliability between teachers and parents (Humphrey et al., 2011. Using Pearson Product Moment Correlations we set the criteria benchmark of 0.27 as this was the average correlation between teacher and parent ratings that were reported in Achenbach, McConaughy & Howell, (1987) meta-analysis of cross informant ratings of behaviour problems. Our inter-rater coefficient compared favourable to this benchmark being 0.483. It is likely that inter-rater reliability between teachers would be even higher as they observe behaviour within a similar context (i.e., the classroom).

Conclusions and Implications

This study utilised a longitudinal multi-level design involving a nationally representative sample of children with SEND to establish key risk factors at the school and individual level that are involved in accounting for behaviour difficulties. The amount of variance in accounting for behaviour difficulties at the individual level was considerably greater than that found at the school level. This has implications for interventions that are aimed at preventing behaviour problems. Targeting specific individuals may be the most effective way to reduce behaviour

difficulties (Losel & Beelman, 2003) as they could be hypothesised as having more to gain than their peers (see Humphrey et al., 2008). This was demonstrated in a study assessing the impact of the small group aspects of primary Social and Emotional Aspects of Learning (SEAL) (Department for Education and Skills, 2005). Furthermore, the findings of this study provide evidence for risk factors which can be considered static (e.g., being male) and changeable (e.g., being a bully). These are both likely to occur to varying degrees in an individual's risk profile and need to be carefully assessed for suitability before being able to select the optimal intervention(s).

School level variables also have a significant impact upon the behaviour of their pupils, and this may be particularly important for children with SEND. Increasing school level academic attainment (in primary schools) would be beneficial and is something towards which all schools are encourage to strive. While it may be impractical to reduce the size of secondary schools, restructuring the school internally to make a more personal experience for students (e.g., through the pastoral system) may be a more realistic and achievable strategy. Interventions directly related to the variables in this study may be enhanced by implementing integrated prevention models (Domitrovich et al., 2010) and other school level interventions such as those discussed and evaluated in reviews of the literature (e.g., Greenberg et al., 2000; Maag & Katsiyannis, 2010).

This study demonstrates that behaviour difficulties among young people with SEND are affected by multiple risks at different ecological levels. It is therefore reasonable to suggest that addressing any one of these influences is likely to be beneficial in reducing behaviouoral problems. It is important however, that studies in this area utilise a longitudinal design whereby true risk factors (i.e., those that are not only significantly related to outcome but also precede it)

can be recognized (Offord & Kraemer, 2000). It is only when risk factors are reliably identified that effective interventions can be sought. The resulting implications are relevant not only to large numbers of young people with SEND, but also to the professionals who work with them.

[1] Since 1st September 2014 Statements have been replaced with Education, Health and Care (EHC) Plans, while School Action and School Action Plus have been incorporated into 'SEN Support' (Department for Education, 2015).

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Table 1

Student level explanatory variables: descriptions, descriptive statistics, sources of data and justification for inclusion with the study

Explanatory variable	Description	Sample size Primary School[a]	Sample size Secondary School	Mean (SD)	Source	Justification
Year group	Year 1 or Year 5 (in primary schools), Year 7 or Year 10 (in secondary schools).	Year 1 – 1136 (43%) Year 5 – 1524 (57%)	Year 7 – 894 (55%) Year 10 – 734 (45%)	N/A	NPD	Bongers et al., 2004.
Season of birth	In England the school year begins in September. Pupils' month of birth was converted to a season; autumn (September - November), winter (December - February), spring (March - May), summer (June - August).	Autumn – 538 (20%) Winter – 692 (26%) Spring – 631 (24%) Summer – 799 (30%)	Autumn - 371 (23%) Winter - 345 (21%) Spring - 452 (28%) Summer - 460 (28%)	N/A	NPD	Goodman et al., 2003
Gender	Male or Female	Male – 1744 (66%) Female – 916 (34%)	Male – 939 (58%) Female – 689 (42%)	N/A	NPD	Brown & Shoon, 2008,
Eligibility for FSM	Yes or No. FSM eligibility is used as a proxy for Socio-	Yes – 928 (35%) No - 1731 (65%)	Yes - 479 (29%) No – 1147 (71%)	N/A	NPD	Propper & Rigg, 2007

	Economic Status and is assessed based on parental income.					
Ethnicity[b]	White British or Other Kept as two groups to retain statistical power for analyses.	White British – 2038 (77%) Other – 621(23%)	White British -1372 (84%) Other – 254 (16%)	N/A	NPD	Brown & Schoon, 2008
Academic achievement (English[c])	Average point scores derived from teacher assessments were converted to Z scores within each year group, such that an individual's relative position could be determined and meaningful comparisons could be made across year groups.	2514	1465	Primary - 0 (1.00) Secondary – 0 (1.00)	Teacher assessed	Morgan et al., 2008; McIntosh et al., 2008
Attendance	Proportion of days in attendance at school displayed as a percentage from 0-100.	2598	1617	Primary - 93.35 (5.91) Secondary – 92.25 (7.88)	LA	Miller & Plant, 1999
Positive relationships	Mean score on WOST positive relationships sub-scale ranging from 0-3, with higher scores	2647	1607	Primary – 2.07 (0.56)	WOST	Silver et al., 2005

	indicating better relationships with teachers and pupils.			Secondary – 2.08 (0.59)		
Bullying	Mean score on WOST bullying sub-scale ranging from 0-3, with higher scores indicating greater victimisation to bullying.	2628	1542	Primary – 0.54 (0.59) Secondary – 0.50 (0.66)	WOST	Gini 2008; Kim et al., 2006
Bully role	Role in bullying incidents as either Bully, Victim, Bully-Victim, Bystander, or Not Involved.	Bully: 152 (6%) Victim: 189 (8%) Bully-Victim: 298 (12%) Bystander: 96 (4%) Not Involved; 1770 (71%)	Bully:136 (9%) Victim:177 (12%) Bully-Victim :187 (13%) Bystander: 53 (4%) Not Involved: 923 (63%)	N/A	WOST	Gini 2008; Kim et al., 2006
SEND Category	Within the code of practice (DfES, 2001), it is suggested SEND should fall within at least one of four main domains, these are termed, a) cognition and learning; b) behaviour, emotional and social development; c) communication	Cognition and Learning 1511 (59%) Behaviour Emotional and Social Development 393 (15%)	Cognition and Learning 964 (60%) Behaviour Emotional and Social Development 374 (23%)	N/A	Teacher survey	DfES 2001; DfES 2003

	and interaction; d) sensory and /or physical needs. A fifth group Other was added for those students not classified within the 4 categories.	Communication and Interaction 515 (20%) Sensory and/or Physical 53 (2%) Other 100 (4%)	Communication and Interaction 141 (9%) Sensory and/or Physical 67 (4%) Other 57 (4%)			
SEND provision	School Action (SA), School Action Plus (SAP), Statement (SSEN). SA = a student's needs are met through reasonable adjustments to usual teaching practices. SAP = external professional consultation (e.g. psychologist) sought. A SSEN is a legal document securing additional support.	SA – 1623 (62%) SAP – 861 (33%) SSEN -119 (5%)	SA – 851 (54%) SAP – 539 (34%) SSEN – 179 (11%)	N/A	Teacher survey	First study to use this as a potential risk factor.

Notes. [a] Sample sizes may vary due to missing data. [b] This variable was limited to two categories, as breaking it down into all the categories used in the NPD census would result in insufficient statistical power due to very small numbers of students in particular minority groups. [c] Data were available for English and Mathematics. However, as they were highly correlated and showed evidence of multicollinearity, only the English score was included in the analysis. A pupil's academic attainment on National Curriculum Levels or GCSE grades was converted into a standardised point score (see Humphrey et al. 2011).

Table 2

School level explanatory variables: descriptions, descriptive statistics, sources of data and justification for inclusion with the study

Explanatory variable	Description	Sample Size	Mean (SD)	Source	Justification
Urbanicity	Whether the school is located in a rural or urban area.	Primary – 2660 (Rural: 372, 14%; Urban: 2288, 86%) Secondary – 1628 (Rural:169, 10%; Urban: 1459, 90%)	N/A	Edubase	Stewart, 2003; Larsson & Frisk, 1999
Size	Number of pupils on roll at the school (this figure was divided by 100 to allow a more meaningful interpretation of the coefficients in the results section).	Primary - 2649 Secondary - 1628	Primary - 3.32 (2.16) Secondary - 10.67 (3.68)	EduBase	Stewart, 2003; George & Thomas, 2000
FSM eligibility	% students eligible for FSM in the school	Primary - 2609 Secondary - 1628	Primary - 26.04 (16.13) Secondary - 20.70 (10.45)	LA	Sellstrom & Bremberg, 2006
English as an Additional Language (EAL)	% students speaking EAL in the school	Primary - 2609 Secondary - 1628	Primary – 21.00 (28.15) Secondary – 13.81 (19.11)	LA	Kohen et al., 2009

SA	% students with SEND receiving support at School Action	Primary - 2472 Secondary - 1609	Primary – 14.55 (7.10) Secondary – 16.02 (7.00)	EduBase	First study to use this as a potential risk factor
SAP/SSEN	% students with SEND receiving support at School Action Plus/Statement for SEN	Primary - 2472 Secondary -1609	Primary – 10.46 (5.79) Secondary -11.11 (5.67)	EduBase	First study to use this as a potential risk factor.
Attainment	% students meeting government expectations in attainment by the end of school. In primary schools this is defined as achieving Level 4 in the National Curriculum in both English & Maths. In secondary schools it is achieving at least 5 A*-C GCSE grades including English & Maths.	Primary - 2374 Secondary - 1609	Primary – 68.62 (15.23) Secondary – 46.20 (12.91)	EduBase	Rutter et al. 1979; Felson et al., 1994
Absence	The average rate of pupil absence from school, recorded as a percentage from 0-100 with higher rates indicating more instances of absence.	Primary - 2466 Secondary -1609	Primary – 6.09 (1.38) Secondary – 7.97 (1.01)	EduBase	Maes & Lievens, 2003
Exclusion	% students with one or more incidents of fixed period exclusions	Primary – 2660 Secondary -1628	Primary – 0.56 (1.26) Secondary – 4.27 (3.18)	NPD	Theriot et al. 2010

Table 3. Predictor variables for behaviour difficulties within the primary school empty and full multi-level models

Empty model: Primary ([a]β0ij = 0.197 (0.019)				Full model: Primary (β0ij = 1.152 (0.282)			
	Raw coefficient	Standard error	p value		Raw coefficient	Standard error	p value
SCHOOL LEVEL (ICC = 15.4%)	0.043	0.006	<.001	SCHOOL LEVEL	0.032	0.006	<.001
				School achievement	-0.006	0.002	<.001
INDIVIDUAL LEVEL (ICC = 84.6%[b])	0.237	0.007	<.001	INDIVIDUAL LEVEL	0.202	0.007	<.001
Behaviour mean Baseline (T1)	0.587	0.014	<.001	Behaviour mean Baseline (T1)	0.419	0.026	<.001
				Year group (if Year 5)	0.097	0.025	<.001
				Birth season (if autumn[c])	0.071	0.031	.020
				Gender (if Male)	0.081	0.023	<.001
				FSM (if Yes)	0.070	0.024	.004
				SEND type (if BESD[d])	0.269	0.036	<.001
				Academic achievement	-0.028	0.012	.024
				Positive relationships	-0.096	0.025	<.001
				Bully role (if bully[e])	0.221	0.053	<.001
2*log likelihood = 3973.122				-2*log likelihood = 2588.105			
χ^2 (26, n = 2660) = 1385.017, p <.001							

Notes. [a] The intercept of the model. [b] Percentage of variance attributable to individual student differences. [c] The comparison group being 'summer.' [d] The comparison group being 'Cognition and Learning.' [e] The comparison group being 'not involved.'

Table 4. Predictor variables for behaviour difficulties within the secondary school empty and full multi-level models

Empty model: Secondary (β0ij = 0.327 (0.038)				Full model: Secondary (β0ij = 0.299 (0.539)			
	Raw coefficient	Standard Error	p value		Raw coefficient	Standard Error	p value
SCHOOL LEVEL (ICC = 13.0%)	0.050	0.014	<.001	SCHOOL LEVEL	0.030	0.011	.008
				School size	0.027	0.013	.036
INDIVIDUAL LEVEL (ICC = 87.0%[a])	0.336	0.012	<.001	INDIVIDUAL LEVEL	0.291	0.012	<.001
Behaviour mean Baseline (T1)	0.531	0.020	<.001	Behaviour mean Baseline (T1)	0.411	0.040	<.001
				Year group (if Year 10)	-0.087	0.034	.011
				Gender (if Male)	0.091	0.036	.011
				FSM (if Yes)	0.076	0.037	.042
				Attendance	-0.010	0.002	<.001
				Academic achievement	-0.051	0.019	.007
				Bully role (if bully[b])	0.199	0.073	.006
				(if bystander)	0.195	0.086	.023
-2*log likelihood = 2926.001				-2*log likelihood = 2002.602			

χ^2 (26, n = 1628) = 923.399, p <.001

Notes. [a] Percentage of variance attributable to individual student differences. [b] The comparison group being 'not involved.'