The role of school level protective factors in overcoming cumulative risk for behaviour difficulties in children with special educational needs and disabilities

Abstract

The study investigated whether school level protective factors could moderate the effects cumulative risk has upon behaviour difficulties in children with Special Educational Needs and Disabilities (SEND). The sample comprised 4288 children identified with SEND: 2660 pupils within 248 primary schools, and 1628 pupils within 57 secondary schools. Risk factors associated with increases in behaviour difficulties over an 18-month period were summed to a cumulative risk score. Various school level factors were added to multi-level models, with interaction terms computed between cumulative risk and these variables to assess their potential protective effects. The primary school model revealed a significant interaction between cumulative risk and school academic achievement in predicting behaviour difficulties. Higher levels of achievement in primary schools help reduce behaviour difficulties for children most at risk. The secondary school model evidenced a significant interaction between cumulative risk and school percentage of students eligible for free school meals (FSM). Lower proportions within a school of children eligible for FSM were associated with reductions in behaviour difficulties for children at high levels of risk. Interventions aimed at improving school level academic achievement and targeting high-risk students attending schools with large proportions of children eligible for FSM would be beneficial.

Keywords

Behaviour difficulties, Special educational needs and disabilities, Resilience

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Behaviour difficulties in children with special educational needs and disabilities

Behaviour difficulties among child and adolescent school populations include low-level disruption - such as avoiding and preventing others from working, and challenging the authority of teachers - as well as more serious behaviours such as physical and verbal aggression, violence, stealing and vandalism (Department for Education, 2012, Goodman, 2001).

These behaviours not only have immediate influences on the school environment, particularly on learning, achievement and social development (Calkins, Blandon, Williford & Keane, 2007), but often lead to deleterious longer term outcomes such as unemployment (Healey, Knapp & Farrington, 2004), mental health problems (Darke, Ross & Lynskey, 2003) and crime (Fergusson, Horwood & Ridder, 2005).

Children identified as having special educational needs and disabilities (SEND) are considered one of the groups most at risk of displaying behaviour difficulties (Murray & Greenberg, 2006). The current definition of SEND states: *"A child or young person has special educational needs if he or she has a learning difficulty or disability which calls for special educational provision to be made for him or her"* (Department for Education, 2015, pp15). Green, McGinnity, Meltzer, Ford and Goodman, (2005) demonstrated in their wide-scale UK study that the majority (52%) of adolescents rated as meeting the clinical criteria for conduct problems had also been identified as having SEND by their schools.

Approximately a fifth of all school pupils in 2014 had been recorded as having SEND, which equates to around 1.50 million children in England (Department for Education, 2014a). Despite comprising a substantial group of learners within the school population, who are considered particularly at risk for displaying behaviour difficulties, little research has addressed the possible protective factors which could mitigate the difficulties often experienced by this group of students.

Protective factors

Research investigating protective factors in a child's background that could potentially overcome or mitigate risk - and therefore lead to reductions in behaviour difficulties - is warranted, particularly in vulnerable groups such as those identified as having SEND. The term *protective factor* is defined for the purpose of this study as a "*quality of a person or context or their interaction that predicts better outcomes, particularly in situations of risk or adversity*" (Wright & Masten, 2005, pp. 19).

Protective factors have been acknowledged to originate from a number of broad domains; individual, i.e. positive temperament or intellectual skills (Tiet, Bird, Hoven, Wu, Moore & Davies, 2001); family, i.e. parental involvement or positive family relationships (Domina, 2005); school, i.e. participation in extracurricular activities (Mahoney, 2000); the wider community, i.e. community resources, and high socio-economic status (Masten, 2006).

There are at least two different processes which can explain how protective factors work: first, *promotive processes* where the protective factor is beneficial to all individuals regardless of their risk status – these variables are established through direct main effects of protective factor on outcome (Fergusson & Horwood, 2003). Secondly, *protective processes,* where protective factors assist those in high-risk

situations to develop positive adaption but offer limited help to those considered at low risk (Fergusson & Horwood, 2003). Protective processes are established through interaction effects between protective factors and risks in influencing outcomes. The focus of the present study is upon protective factors defined by the interaction process of modifying risk situations to influence the outcome in a positive direction (Stouthamer-Loeber, Loeber, Wei, Farrington & Wilstrom, 2002). Criss, Pettit, Bates, Dodge and Lapp (2002) have provided evidence for this protective process by demonstrating that when high levels of peer acceptance are present (protective factor), this can moderate the relationship between family adversity (risk factor) and externalising problems (outcome). Statistical models are used to investigate protective factors by examining such interaction effects (as opposed to main effects).

Children who are exposed to protective factors in their background and achieve positive developmental outcomes despite being at risk, have been termed 'resilient'. Resilience is defined as "*a dynamic process encompassing positive adaption within the context of significant adversity*" (Luthar, Cicchetti & Becker, 2000, pp. 543). It cannot be directly measured but is inferred on the basis of how protective factors interact with risk to influence positive adaption (Naglieri & LeBuffe, 2005). Acknowledging the interaction of risks (promoting vulnerability) and protective factors (that moderate risk and promote competence) is key to resilience research (Werner, 2000), and underpins the present study.

This study focuses on searching for protective factors that promote resilience, as according to Masten, (2001) this is a common phenomenon and "*does not come from rare and specific qualities, but from everyday magic of ordinary, normative human resources in the minds, brains, and bodies of children, in their families and relationships, and in their communities*" (pp. 235). Therefore variables at different

ecological levels are worthy of investigation as potential protective factors for behaviour difficulties. This type of research is particularly appealing as it focuses upon healthy development and the investigation of strengths rather than deficits in individuals and their social contexts (Fergus & Zimmerman, 2005; Evans & Pinnock, 2007). Within the present study there is a particular focus on protective factors at the school level, which are present for young people with SEND at high risk in moderating their behaviour difficulties. Investigating school effects may be especially important for children with SEND (rather than their typically developing peers), as they receive additional, more intensive support in the form of interventions designed to meet their needs.

School level protective factors

The majority of the evidence specifically investigating protective factors for behaviour difficulties has focused upon individual and family levels, with factors such as intelligence (Tiet et al., 2001), socio-economic status (Eriksson, Carter, Andershed, & Andershed, 2011) and effective parenting (Domina, 2005) found to be important. However, there has been less focus on school level characteristics and how they might be related to problem behaviour. The effects of how school level variables can potentially exacerbate or protect against risk have often been overlooked within the literature (Reinke & Herman, 2002).

A few studies have noted the importance of school level variables, such as school location, where children in rural compared to urban schools may be less exposed to anti-social and aggressive role models, resulting in fewer behaviour difficulties displayed at school (Hope & Bierman, 1998). School size appears to be an important variable, with reductions in behaviour difficulties found in smaller schools (Stewart, 2003). This may reflect an increased likelihood of smaller schools building

positive relationships between teachers and students (Gottfredson & DiPietro, 2011). Schools with higher levels of academic performance have also been shown to have lower levels of behaviour difficulties (Barnes, Belsky, Broomfield, & Melhuish, 2006). There is a possibility that in higher achieving schools, pupils with SEND may benefit by having peers around them who are more able to assist with academic work, thereby reducing frustration and lessening the likelihood of behaviour difficulties.

A number of school based demographic characteristics, such as lower percentages of children eligible for free school meals (FSM; often used as a proxy indicator for socio-economic status - Hobbs & Vignoles, 2007), and fewer students identified as having SEND, have been linked to reductions in aggressive behaviour displayed by pupils (Barnes et al., 2006). With other school level variables, such as the proportion of their pupils learning English as an additional language (EAL), evidence suggests no relationship with behaviour difficulties displayed (Barnes et al., 2006).

Lower attendance as a result of truancy/unauthorized absence has also been shown to have an effect on behavioural outcomes (Maes & Lievens, 2003). It has been suggested that there is more classroom disruption when these pupils are present following unauthorised absence, and that they are negative role models for their peers (Wilson, Malcolm, Edward & Davidson, 2008). In addition, there is compelling evidence that more aggressive classrooms and schools influence aggression at the individual level. Barth, Dunlap, Dane, Lochman and Wells, (2004) found evidence aggregated classroom level behaviour problems having a significant impact on students within them over time. Specifically, classrooms rated as poorer environments with more behaviour problems were associated with increased individual level problem behaviours. The authors suggest that young people displaying disruptive

behaviour in these contexts may become negative role models, thereby reinforcing problem behaviour in the peer group.

Although these studies have measured variables at the school level and assessed their influence on problem behaviour, a limitation of this body of research is its focus on main effects, thereby not exploring the (potential) differential effects these characteristics have for children at high (rather than low) risk. Such studies have often looked for main effects within a group of at risk children rather than interaction effects between risk and protective factors. There is scope to develop this field further and explore protective effects that reduce behaviour difficulties at the school level, and to determine the extent to which they are particularly salient for children with SEND experiencing high levels of risk.

Measuring risk in protective factor research

Before protective factors can be identified - and a child considered resilient - an assessment needs to be made of risk. Risk factors are defined as *"a measureable characteristic in a group of individuals or their situation that predicts negative outcome on a specific outcome criteria"* (Wright & Masten, 2005, pp. 9). Furthermore, in order for the term *risk factor* to be applied to any variable it is required not only to be significantly related to the outcome but also to precede it temporally (Offord & Kraemer, 2000).

Assessing risk based on a cumulative metric has been a common stance adopted in previous literature (e.g. Oldfield, Humphrey & Hebron, 2015). Risk factors do not occur in isolation and frequently cluster together around or within the same individual (Flouri & Kallis, 2007). It is often the presence of multiple risk factors occurring together which leads to a negative trajectory, although individuals

experience a unique combination of risks leading to the negative behaviour. This is the principle of equifinality - a negative behavioural outcome does not occur via a specific route but rather occurs via several distinct pathways (Dodge & Pettit, 2003). No single factor is therefore sufficient on its own to truly account for any behaviour displayed. Cumulative metrics of risk have the advantage in acknowledging that the total *number* of risks experienced is more salient to the outcome than the *nature* of any specific risk factor, and the greater the number of risks experienced is directly related to an increased probability of experiencing negative behavioural outcomes (Trentacosta, Hyde, Shaw, Dishion, Gardner & Wilson, 2008). This is because as risks increase, any coping mechanisms a child has in place may be overwhelmed, resulting in disorder and behaviour problems (Flouri & Kallis, 2007).

Theoretical framework

The current study uses Bronfenbrenner's (2005) ecological systems theory as its theoretical frame. This offers a compelling approach to understanding development, and can be utilised to account for the multiple contextual influences on the development of behaviour difficulties. Bronfenbrenner's theory (2005) is therefore a useful organising idea by which to frame the numerous potential protective factors for behaviour difficulties in students with SEND, and how various risk factors across different ecological levels interact with them.

The theory acknowledges the combination and interaction of these factors and is a prominent model of child development which has been adopted by numerous researchers investigating behaviour difficulties (e.g. Trentacosta et al., 2008; Gerard & Buelher, 2004). Ecological systems theory recognises potential risk and protective variables both within the individual and occurring in the wider social, cultural and

historical contexts. The present study investigates potential protective factors in the schools attended by pupils with SEND. This emphasis on the school microsystem is justified on the premise that there has been considerably less research on school influences in comparison to family influences on child development (Bronfenbrenner, 1994). Given the significant amount of time young people spend in the school environment, it is hypothesised to have an important influence on behavioural outcomes.

Study aims

The aim of this study is to develop our understanding of whether school level protective factors moderate the relationship between cumulative risk and behaviour difficulties for young people with SEND - to our knowledge this is the first study of its kind. There is evidence to suggest that protective factors may have differing influences within specific contexts (Fergus & Zimmerman, 2005; Vanderbilt-Adriance & Shaw, 2008; Sameroff, Gutman & Peck, 2003), within certain populations (Tiet et al., 2001), for specific outcomes (Rutter, 2000) as well as across distinct developmental periods (Vanderbilt-Adriance & Shaw, 2008). A study investigating protective factors specifically for children with SEND and looking at the outcome on behaviour difficulties across different developmental periods therefore offers a distinct contribution to the extant knowledge base. The research question driving this study thus explored whether there are any school level predictor variables that have a statistically significant interaction effect with a measure of cumulative contextual risk in predicting behaviour difficulties displayed among young people with SEND.

Method

Design

A secondary analysis of longitudinal data taken from a government-sponsored evaluation of SEND provision in schools in England was used in this study (Humphrey et al., 2011). At Time 1 (T1) a teacher reported measure of behaviour difficulties was taken along with various potential predictor variables at individual and school levels[1]. Eighteen months later at Time 2 (T2) the same measure of behaviour difficulties was repeated. Data were analysed in two stages: first, significant contextual risk factors[2] for behaviour difficulties at the individual level within this population were summed to form a cumulative risk score (Oldfield, Humphrey & Hebron, 2015); secondly, interaction terms were created between the cumulative risk measure and the school level variables to test for potential school level protective factors.

Participants

The sample comprised 4288 pupils with SEND attending mainstream schools. Children with SEND have greater difficulty in learning compared to their peers or have a disability that impedes them from using educational facilities provided to children of the same age (Department for Education, 2015). The nature of need

[1] Individual level variables included year group, gender, season of birth, FSM status, ethnicity, SEND group, SEND support, attendance level, academic achievement, positive relationships, bullying, and bullying role.

[2] Only variable risk factors (those which can change or be changed) were used in the composition of cumulative risk scores as previous literature suggests, demographic fixed variables should be added to statistical model as covariates (Flouri & Kallis, 2007).

amongst children identified with SEND is therefore heterogeneous, and can include difficulties in (a) communication and interaction, (b) cognition and learning, (c) social, emotional and mental health difficulties and/or (d) sensory and/or physical needs, (Department for Education, 2015). Pupils are identified as having SEND if their schools recognise they are experiencing difficulties that require additional provision to be made in order to meet their needs (Department for Education, 2012). A graduated response of support is adopted by schools, requiring a range of strategies which are supplementary to those available to other children without SEND. These strategies may be school based or from external agencies where appropriate (Department for Education, 2015).

Sampling was purposive and multi-stage in nature. For the aforementioned government-sponsored evaluation from which our data is drawn, 10 Local Authorities (LAs – akin to 'school districts') were selected by the Department for Education to broadly represent the diversity inherent in LAs across the country (e.g. population density, socio-economic factors, geographical location) (Department for Children, Schools and Families, 2009). Schools were then chosen in each LA by senior staff on the basis of them representing the diversity of schools inherent within the area (e.g. attainment, ethnicity). Within each school, students with SEND in Years 1 and 5 (primary schools – aged 5/6 and 9/10 respectively) and 7 and 10 (secondary schools – aged 11/12 and 14/15 respectively) at T1 were selected to participate. There were 2660 participants were nested within 248 primary schools, and 1628 participants were nested within 57 secondary schools. Analysis of school and pupil characteristics in the sample demonstrated a very similar profile to the national picture (e.g. any differences between the sample and national average for a given characteristic were

all small according to Cohen's (1992) effect size designations) (Humphrey et al, 2013),

'Key teachers' – members of staff who knew an individual student well (e.g. class teacher in primary school; form tutor in secondary school) – were tasked with completing the surveys outlined below.

Materials

Study data were collected via the Wider Outcomes Survey for Teachers (WOST) (Wigelsworth, Oldfield & Humphrey, 2013). This measurement tool assessed the response variable *behaviour difficulties,* as well as three explanatory variables*: positive relationships, bullying* (specifically victimisation rather than perpetration) and *bullying role*. Items for each sub-domain were rated on a four point Likert scale. A further additional question required teachers to report a student's typical role in bullying incidents. Responses to items were scored from 0-3 and averaged across each scale. The WOST is a psychometrically robust measure, demonstrating good content validity, incorporating clear measurement aims and concepts, and also applying suitable item selection and reduction techniques (Wigelsworth et al. 2013). A confirmatory factor analysis indicated that the WOST has acceptable fit indices of 0.922, greater than the ideal comparative fit index of >0.9. Cronbach's Alpha values for the subscales are 0.903 for behaviour difficulties, 0.920 for positive relationships and 0.903 bullying. The remaining individual level and school level explanatory variables were collected from the National Pupil Database (NPD), LAs, and Edubase performance tables[3] (see Oldfield, 2012). Table 1 displays the variables measured in

[3] The NPD contains census data for all school-aged children in England and includes socio-demographic and school outcome (e.g. attendance, attainment) data. Edubase is a national school

the study that were significant predictors of behaviour difficulties and contributed to the cumulative risk score. Table 2 shows the school level variables.

<< Insert Tables 1 and 2 here >>

Missing data

A detailed missing data analysis was conducted on the data set to establish any difference between participants who had a valid Wider Outcome Survey for Teachers (WOST) (Wigelsworth, Oldfield & Humphrey, 2013) at T1 and those who had a valid WOST at TI & T2. 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. 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 & T2. 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 could have led to biased and misleading results.

Procedure

Data generation

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database containing information about all educational establishments in England and Wales (e.g. school size and urban/rural setting).

The authors' University Research Ethics Committee gave approval for this study, and informed consent from parents and teachers was obtained before data were collected. At T1 key teachers completed the WOST for their pupils. Individual and school level explanatory variables were also collected during this period. 18 months later at T2, key teachers again completed the WOST for their pupils.

Data Analysis

Separate models were conducted for primary and secondary schools due to the fundamental differences between these types of schools. Compared with secondary schools, primary schools are generally smaller in size, both in terms of physical space and numbers of pupils on roll (Department for Education, 2014b). Students in primary schools often have one class teacher for a whole academic year, whereas in secondary schools students move to different classrooms in the day and are taught by a number of specialist teachers. An advantage of splitting data between primary and secondary schools, allows the effect of different developmental stages which influence behaviour difficulties in distinct ways to be acknowledged.

Once significant predictors of increasing behaviour difficulties within these two models had been established (Oldfield, 2012), those individual level variables of a contextual nature were summed together to form a cumulative risk score for each participant (Oldfield, Humphrey & Hebron, 2015). Risk variables that comprised the cumulative risk score in the primary school model were FSM eligibility; identification as a bully; having poor relationships with teachers and peers, and lower academic achievement (specifically in English). In the secondary school model the cumulative score comprised FSM eligibility; identification as a bully; identification as a bystander to bullying; poor attendance, poor academic achievement (specifically in

English). The significant non-contextual predictors of behaviour difficulties were added as covariates (Flouri & Kallis, 2007). Within the present study these variables were gender, school year group, season of birth and SEND type in the primary model and gender and school year group in the secondary model.

Risk factors were calculated into a cumulative risk score by using the formula discussed by Ribeaud & Eisner, (2010). For binary and categorical variables, the group which denoted risk was coded as 1 and all other categories as 0. For continuous variables the top (or bottom) 25% of cases that were related to increased behaviour difficulties were coded as 1 and other scores as 0. Risks were added together to generate a cumulative score for each participant, with a higher score indicating increased risk (see Oldfield, Humphrey & Hebron, 2015).

Interaction terms were then computed between the cumulative risk score and the various school level variables to test for protective factors. All variables within these analyses were mean centred, as is the procedure when looking for interaction effects (Aiken & West, 1991). Data were analysed within SPSS (v.20) using multi-level modelling due to the hierarchical structure of the data set, with pupils nested within schools.

Results

The analysis was conducted in various stages; first multi-level models were computed, separately for primary and secondary schools, to assess the main effects of the school level variables and the cumulative risk score along with the other non-contextual risk factors as covariates. These models were termed the risk models. Secondly, the protective model was established by creating interaction terms between the cumulative risk score and the potential school level protective variables. These

terms were then added to the risk model. The protective model was subsequently compared against the risk model to assess whether it explained more variance and thus was a better fitting model.

In the primary school risk model one significant main effect was found; this was school achievement *(β0ij* = -0.006*, p <.001)*. As school level achievement increases, behaviour difficulties decrease for all pupils regardless of risk status. Comparing between the risk model and protective model, there was a significant reduction in the -2*log likelihood value indicating that adding in the interactive terms led to a better fitting model (Risk model = *3203.123* – Protective model *3177.135 = 25.988; χ^2 (8, n = 2660) = 25.988, p <.01*). One significant interaction effect was found; this was school achievement*risk *(β0ij* = -0.003*, p =.008)*, which suggests that this predictor variable (high levels of school achievement) moderated the effects of risk on behaviour difficulties and can be considered a protective factor.

<< Insert Table 3 here>>

In the secondary school risk model, one significant main effect was found; this was school size *(β0ij = 0.0002, p =.040)*. As school size increases behaviour difficulties increase for all pupils regardless of risk status. Comparing between the risk model and protective model, there was a reduction in the -2*log likelihood value indicating that the protective model including the interactive terms was a better fitting model, (Risk model = *2823.252* – Protective model *2813.463 = 9.789, χ^2 (8, n = 1628) = 9.789, p >.05*). However, the reduction was not statistically significant, indicating that the protective model should not be favoured over the risk model. Nonetheless, one significant interaction effect was found; this was School FSM

eligibility * Risk *(β0ij* = 0.009*, p =.015)*, which suggests this predictor variable (low levels of school FSM-eligibility) moderated the effects of risk on behaviour difficulties and can be considered a protective factor.

<< Insert Table 4 here>>

Significant interaction effects can be taken as evidence of the variables acting in a protective manner, moderating the influence of cumulative risk exposure on outcome. Interaction graphs for the significant interaction terms were created to show the direction of the effect. These graphs allow for an easy visualisation of the interaction effects, and show how behaviour difficulties are affected by different levels of the protective variable for pupils at high and low risk. The graphs display the direction of the effect and whether high or low levels of the protective (moderator) variable confer the extra advantage to those at high risk.

The graphs show the protective effects for school related variables on behaviour difficulties at different degrees of risk. The 'Y' axis represents the dependent variable mean score (i.e. behaviour difficulties), with higher scores equating to more severe behaviour difficulties. The 'X' axis represents the cumulative risk variable. Two points were created which represent high and low levels of the risk score that are +/-1 standard deviations above/below the mean for the cumulative risk score. The two lines on the graph represent the protective/moderator variable 'Z'. This variable was also mean centred with the two lines representing high levels of the variable, i.e. +1 standard deviation above the mean, and low levels of the variable i.e. -1 standard deviation below the mean.

Figure 1 displays an interaction graph between cumulative risk and the achievement within the primary model. For pupils at low risk there is relatively little difference in their behaviour difficulties scores as a function of attending high or low achieving schools. For those at high risk, there are larger differences in behaviour difficulty scores as a functioning of attending low or high achieving schools. Attending a high achieving school appears to be acting as a protective effect, stabilising behaviour difficulties despite increasing risk. Pupils at high risk therefore appear to be more disadvantaged when attending a low achieving school.

<< Insert Figure 1 here>>

Figure 2 displays an interaction graph between cumulative risk and FSM-eligibility within the secondary model. For pupils at low risk there is relatively little difference in their behaviour difficulties scores as a function of attending schools with high or low numbers of students eligible for FSM. For those at high risk, there are larger differences in behaviour difficulty scores as a function of attending schools with low or high numbers of children eligible for FSM. Attending a school with low numbers of students eligible for FSM appears to be acting as a protective effect, stabilising behaviour difficulties despite increasing risk. Pupils at high risk are therefore more disadvantaged when attending a school with high numbers of children eligible for FSM.

<< Insert Figure 2 here>>

Both models in Figures 1 and 2 are described using the term *protective stabilising* (Luthar et al., 2000), which shows that increasing levels of risk are linked with increases in behaviour difficulties, although only when the protective factor is absent. When the protective factors are present (within the present study, high levels of

school achievement and low levels of school FSM eligibility) the relationship between risk and behaviour difficulties is rendered neutral (Fergus & Zimmerman 2005).

Finally, a number of marginal non-significant trends were also noted within the study (i.e. $p < 0.10$). These included interactions between school size and risk, and school level of SEND and risk (primary model), and school EAL and risk (secondary model). Although these predictors were non-significant they do show marginal trends and variables which could be explored as potential protective factors within further studies.

Discussion

Results from the risk models demonstrated that for primary schools there was a significant main effect of school level achievement (i.e. attending schools with higher academic achievement was related to lower levels of behaviour difficulties). For secondary schools there was a significant main effect of school size (i.e. attending smaller schools was related to lower behaviour difficulties). For the primary (although not the secondary) school model, adding in interaction effects specifically between a measure of cumulative risk and various school level variables resulted in a better fitting model and more variance in behaviour difficulties explained.

Within the primary model a significant interaction emerged between cumulative risk and school level achievement, suggesting that school achievement operates as a protective factor. It has a limited effect on behaviour difficulties for those children considered at low risk, however, for those children considered at high risk, they have better outcomes (a reduction in behaviour difficulties) when attending schools with higher levels of academic achievement. This provides evidence that

school level variables such as academic achievement can promote resilience in pupils with SEND.

One significant interaction effect within the secondary model emerged between cumulative risk and school FSM-eligibility. School FSM-eligibility operates as a protective factor, having a limited effect on behaviour difficulties for those children considered at low risk. However, for those children considered at high risk, they have improved outcomes (a reduction in behaviour difficulties) when attending schools with lower proportional levels of FSM-eligibility. Resilience in children with SEND is therefore promoted by school level FSM-eligibility.

There is clear evidence to suggest that attending primary schools with higher academic achievement is important for all children in reducing behaviour difficulties, i.e. clear main effects findings have been established in the present study and previous literature (Barnes et al. 2006). However, what has been noted in the present study is evidence of a protective effect, and so attending schools with higher levels of academic achievement is even more advantageous for those children considered to be at high risk. Higher achieving schools are likely to be seen as *better* schools, not solely in terms of academic outcomes but in terms of resources available and how they support their pupils with social and behavioural difficulties. In such schools more effective interventions may be provided which could reduce the occurrence of behaviour difficulties.

Within the secondary model, the interaction between school FSM-eligibility and risk emerged as a significant predictor of behaviour difficulties. Schools with higher overall levels of students eligible for FSM tend to contain more individuals of lower socio-economic status (SES), which has been acknowledged as a key predictor of behaviour difficulties in children (Propper & Rigg, 2007). Children from these

backgrounds are often exposed to more negative influences in their immediate environment than their more affluent peers, including more familial stress, chaotic/unstable households, poorer parenting behaviours, and lack of cognitive stimulation. The build-up of these risks could result in behaviour difficulties for these individuals (Evans, 2003).

The evidence suggests that greater numbers of students eligible for FSM within a school (and therefore likely to be from lower SES backgrounds) would indicate a possible main effect of school FSM-eligibility on behaviour difficulties. However, this was not found in the present study, where only an interaction effect was established. The relationship between risk and behaviour difficulties was moderated when students attended schools with lower levels of school FSM-eligibility. High risk students may be particularly susceptible to the negative influence of their peers, and may be lacking appropriate protective mechanisms that would prevent or mitigate a negative trajectory. These students may particularly benefit within schools with lower FSM rates as they may experience more positive peer influences.

These types of interactions, where different levels of the protective factor have a relatively similar effect in low risk situations, although large differences in high risk situations, have been termed protective-stabilising effects (Luthar et al., 2000). For low risk children, whether the protective factor was present (i.e. higher levels of school academic achievement at primary schools or lower levels of FSM at secondary schools) was related to improvements to their behaviour, but less so compared with when it was present amongst the high-risk children.

Finally, a number of other interaction terms approached statistical significance, however, no other term resulted in $p < .05$. This suggests that the

demographic school level variables offer very limited protection for SEND children at high risk experiencing behaviour difficulties. Although evidence has suggested school level variables can be important in accounting for behaviour difficulties in children with SEND, they are considerably weaker than individual level variables (Oldfield, 2012).

Implications

Given the present study utilised a nationally representative sample of children with SEND; the resulting implications are extensive and wide reaching for risk and resilience research. Attending primary schools with high overall levels of academic achievement are beneficial for all students, although particularly so for high-risk children with SEND, and could potentially help to reduce the display of behaviour difficulties. Within primary schools, global school level interventions such that aim to improve academic levels for all pupils within the school leading to enhanced school level academic outcomes could be effective in reducing behaviour difficulties for SEND pupils. In addition, increasing resources and support more generally for the lowest achieving schools might aid the behaviour for high-risk children with SEND attending these schools. Therefore primary schools with more significant behaviour problems may be able to use interventions that aim to improve academic attainment as an effective means of reducing behaviour difficulties of their pupils.

Within secondary schools with relatively high numbers of children eligible for FSM, interventions to support children with their behaviour difficulties could be tailored particularly at those children considered at the highest degree of risk. These schools may benefit particularly from interventions discussed and evaluated in the review by Maag & Katsiyannis, (2010). As school level variables can act as protective

factors and promote resilience to behaviour difficulties, further investigation of the characteristics of the most effective schools is warranted. Implementing some of these policies and procedures into the less effective schools, could be particularly beneficial for the highest risk children in reducing their behaviour difficulties displayed. Interventions directly related to the protective variables established with this study alone could be enhanced by implementing integrated prevention models that aim to address multiple risk factors and promote resilience across a number of outcomes. (Domitrovich, Bradshaw, Greenberg, Embry, Poduska, & Ialongo, 2010)

Limitations

There are a number of limitations with the present study which should be addressed before the implications are realised. There are potential problems in measuring risk within protective factor research. Across various studies risk situations have been variously defined as exposure to a single significant adverse situation, i.e. poverty or aggregating a score of multiple risks (from a check list of negative life events), or a cumulative risk score drawn from various socio-demographic risks (Masten, 2001; Luthar & Cushing, 2002). These differences in risk measurement pose a challenge for research, as without consistency across studies interpretation and generalisation of findings are problematic, (Olsson, Bond, Burns, Vella-Brodrick & Sawyer, 2003). Nonetheless it has been argued that studies using a diverse range of risk measurement, and which acknowledge similar protective factors, actually highlights their stability (Luthar et al., 2000).

The present study relied on the cumulative risk score as a measure of an individual's degree of contextual risk experienced. There is concern that as risk factors are not certainties but probabilities (Schoon, 2006), there may be considerable

variability in what actual risk an individual experienced as a result of having a certain factor present. However, by using a cumulative risk score, variables are aggregated into one unified score. This has the effect of diminishing the unique importance of any single factor, and therefore by adding multiple risks together, allows a more accurate picture of the amount of risk an individual is experiencing to be acknowledged (Luthar, 1993).

Criticism has also been levelled against the measurement of cumulative risk, as measurement techniques taking the top 25% to represent risk is a relatively arbitrary decision (Sullivan & Farrell, 1999), and dichotimising variables in this way results in oversimplifying the data set, resulting in information loss (Pollard, Hawkins & Arthur, 1999). In response to some of the criticisms however, Farrington & Loeber, (2000) argue that splitting data by means of dichotomisation results in a minimal effect on the data and does not affect the conclusions drawn from these studies.

Finally interaction effects can be problematic as they are not only difficult to detect (Rutter, 2000), but are often unstable associated with small effect sizes and can conceal main effects findings (Luthar, 2006). It is noted that the significant effect sizes within the current study are small and large changes in predictor variables will only bring about relatively small changes in behaviour difficulties displayed. Nonetheless, the findings remain important and show how there are differences in the effects school based variables have upon behaviour difficulties in children with SEND considered at high and low risk. In adopting a two-stage model within the analyses, main effects were observed before interactions were noted. In this way the importance of both types of variables has been acknowledged within the current study.

Further research

Protective factors for behaviour difficulties that promote resilience are known to operate across numerous ecological levels (Wright & Masten, 2005). Nonetheless there is a gap in the literature surrounding school level protective factors, and specifically in the context of behavioural outcomes. Further research could explore these effects in more detail, by measuring other important school-based variables such as school climate (Kuperminc, Leadbeater, & Blatt, 2001). Furthermore, the present study utilised a sample of children with SEND, which could be expanded to investigate the same effect with a typically developing population.

It is not only important to uncover the protective factors that can moderate risk experience and lead to better behavioural outcomes, but also to understand exactly how these underlying processes or mechanisms of these factors work (Vanderbilt-Adriance & Shaw, 2008). Where appropriate, future studies should look for underlying mechanisms and processes, not solely being focused *if* a factor plays a role but *how* it does. This may however, be especially complex when acknowledging the interactions of many different ecological levels that work together to influence behavioural outcomes.

Conclusion

The study aimed to highlight school level protective factors that may reduce behaviour difficulties for children with SEND who are considered at high risk for behaviour difficulties. One significant protective factor emerged within the primary model, providing evidence that attending schools with higher levels of achievement is particularly important for those children considered at high risk in helping to reduce their behaviour difficulties. A single significant interaction term was also noted within the secondary school model, suggesting that schools with lower numbers of children

eligible for FSM is particularly important for children with SEND who are considered at high risk for behaviour difficulties. The present study offers an important contribution to knowledge in terms of understanding to a greater extent the protective factors that influence behaviour difficulties of children with SEND, and which may contribute to the study of resilience in young people. This is a salient point as very few studies have explicitly acknowledged school level protective factors and no study has done so with a SEND population.

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Table 1. Individual level risk factors used to calculate the cumulative risk score.

Risk Variable	**Description**	**Source**	**Risk present within Primary and/or Secondary model**
Eligible for Free School Meals (FSM)	*Yes* or *No*. FSM eligibility is used as a proxy for socio-economic status and is assessed based on parental income.	NPD	Primary and Secondary model
Academic achievement (English)	Academic outcomes were measured using a point score derived from teacher assessments of national curriculum levels. The point scores were converted to standardized scores within each year group, so that an individual pupil's achievement could be compared to average age-related expectations.	Teacher assessment	Primary and Secondary model
Attendance	Proportion of days' attendance at school as a percentage from 0-100.	Local Authority	Secondary model
Positive relationships	Mean score on positive relationships sub-scale ranging from 0-3, with higher scores indicating more positive relationships with teachers and pupils.	WOST	Primary model
Bully role	Role in bullying incidents as either *Bully*, *Victim*, *Bully-Victim*, *Bystander*, or *Not Involved*.	WOST	*Bully* = Primary and Secondary model *Bystander* = Secondary model

Table 2: School level predictor variables: descriptions and sources of data collection

Predictor Variable	Description	Source
School location	Whether the school is located in a *rural* or *urban* area.	EduBase
School size	Number of pupils on roll at the school (divided by 100 to allow a more meaningful interpretation of results).	EduBase
School Free School Meals (FSM)	Proportion of pupils eligible for FSM, recorded as a percentage from 0-100.	Local Authority
School English as an Additional Language (EAL)	Proportion of pupils speaking EAL, recorded as a percentage from 0-100.	Local Authority
School SEND	Proportion of pupils receiving School Action Plus (SA+) or Statement (ST) level of support for SEND, recorded as a percentage from 0-100.	DfE Performance Tables
School Achievement	In primary schools the proportion of pupils attaining at least National Curriculum Level 4 in English and maths. In secondary schools the proportion of children achieving at least 5 A*-C GCSE grades including English and maths. Recorded as a percentage from 0-100.	DfE Performance Tables
School Absence	The average rate of pupil absence from school, recorded as a percentage from 0-100 with higher rates indicating more instances of absence.	DfE Performance Tables
School Exclusion	Pupils with one or more incidents of fixed period exclusions as a percentage of total school size, ranging from 0-100.	School Census

Table 3: Risk and protective multi-levels models for primary schools

Risk model: Primary (β0ij = 0.258 (0.045)				**Protective model: Primary** (β0ij = 0.246 (0.045)			
	Coefficient	Std Error	P value		Coefficient	Std Error	P value
SCHOOL LEVEL	.034	.006	<.001	SCHOOL LEVEL	.034	.006	<.001
School location (if urban)	.007	.050	.885	School location (if urban)	-.003	.051	.954
School size	.000	.000	.605	School size	.000	.000	.527
School FSM eligibility	-.001	.002	.504	School FSM eligibility	-.001	.002	.800
School EAL	-.000	.001	.828	School EAL	-.001	.001	.467
School SEND	.001	.003	.772	School SEND	.000	.001	.917
School achievement	-.006	.001	<.001	School achievement	-.006	.001	<.001
School attendance	-.032	.017	.067	School attendance	-.030	.018	.093
School exclusion	.012	.020	.536	School exclusion	.013	.020	.519
INDIVIDUAL LEVEL	.220	.007	<.001	INDIVIDUAL LEVEL	.217	.007	<.001
Behaviour mean T1	.485	.018	<.001	Behaviour mean T1	.488	.018	<.001
Cumulative Risk	.081	.013	<.001	Cumulative Risk	.082	.015	<.001
Year group: (if Year 5)	.076	.024	.001	Year group: (if Year 5)	.074	.023	.002
Season of birth: (if Autumn)	.047	.029	.106	Season of birth: (if Autumn)	.047	.029	.109
Gender: (if Male)	-.073	.022	.001	Gender: (if Male)	-.072	.022	.001
SEND Category: (if BESD)	.259	.033	<.001	SEND Category: (if BESD)	.262	.033	<.001
				School location *Risk	-.031	.041	.444
				School size*Risk	.000	.000	.084
				School FSM eligibility *Risk	.000	.001	.996
				School EAL*Risk	.001	.001	.175
				School SEND*Risk	.004	.002	.051
				School achievement*Risk	-.003	.001	.008
				School attendance*Risk	-.010	.012	.385
				School exclusion*Risk	-.005	.013	.688
2*log likelihood = 3203.123				-2*log likelihood = 3177.135			
χ^2 (8, n = 2660) = 25.988, p <.01							

Table 4: Risk and protective multi-levels models for secondary schools

Risk model: Secondary (β0ij = 0.440 (0.040)				**Protective model: Secondary** (β0ij = 0.431 (0.039)			
	Coefficient	Std Error	P value		Coefficient	Std Error	P value
SCHOOL LEVEL	.032	.010	.001	SCHOOL LEVEL	.030	.010	.002
School location (if urban)	.019	.128	.440	School location (if urban)	.127	.125	.315
School size	.000	.000	.040	School size	.000	.000	.028
School FSM eligibility	.007	.006	.278	School FSM eligibility	.007	.006	.270
School EAL	-.005	.003	.099	School EAL	-.005	.003	.090
School SEND	-.007	.008	.374	School SEND	-.006	.008	.403
School achievement	.003	.004	.396	School achievement	.003	.004	.383
School attendance	.047	.038	.223	School attendance	.045	.038	.234
School exclusion	-.007	.010	.476	School exclusion	-.005	.010	.594
INDIVIDUAL LEVEL	.325	.012	<.001	INDIVIDUAL LEVEL	.324	.011	<.001
Behaviour mean T1	.481	.022	<.001	Behaviour mean T1	.483	.022	<.001
Cumulative Risk	.125	.018	<.001	Cumulative Risk	.117	.018	<.001
Year group: (if Year 7)	-.060	.030	.043	Year group: (if Year 7)	-.064	.030	.034
Gender: (if Male)	-.095	.032	.003	Gender: (if Male)	-.094	.032	.003
				School location *Risk	.035	.062	.567
				School size*Risk	.000	.000	.141
				School FSM eligibility *Risk	.009	.004	.015
				School EAL*Risk	-.003	.002	.055
				School SEND*Risk	-.003	.004	.429
				School achievement*Risk	.003	.002	.132
				School attendance*Risk	.023	.022	.304
				School exclusion*Risk	.002	.006	.729
2*log likelihood = 2823.252				-2*log likelihood = 2813.463			
χ^2 (8, n = 1628) = 9.789, p >.05							

Figure 1: School achievement as a protective factor within primary schools

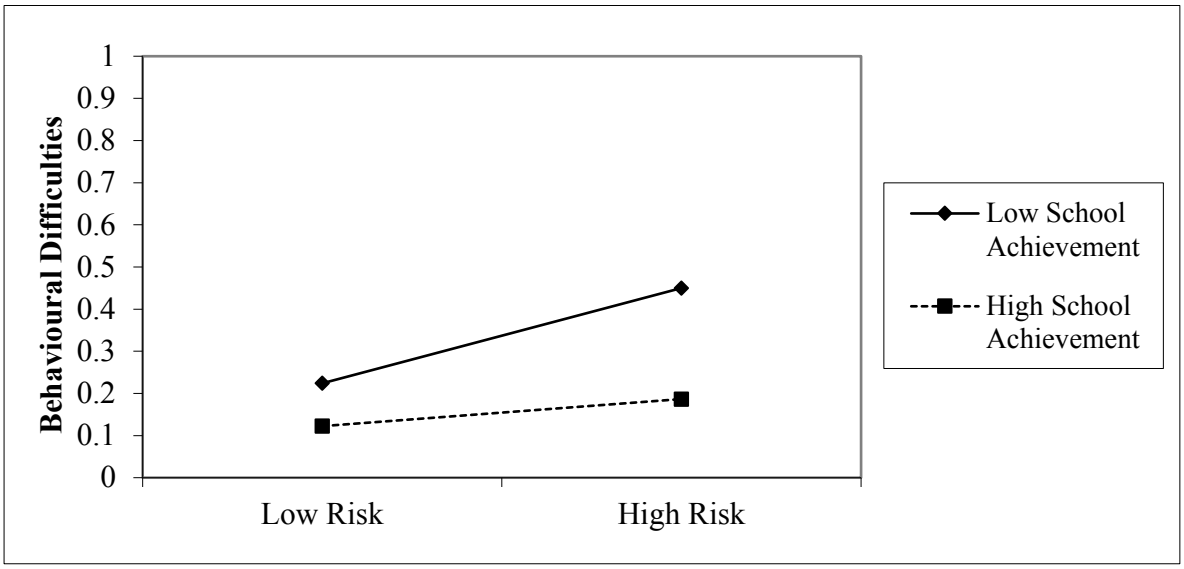

Figure 2: School FSM eligibility as a protective factor within secondary schools