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Academic Resilience of Pupils from Low Socioeconomic Backgrounds

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The purpose of the study was, 1) to identify risk and protective factors that predict academic achievement in low socioeconomic status (SES) pupils in Ireland; and 2) to establish if these predicting factors are unique and applicable only in low-SES pupils. Using two waves of the Irish nationally representative longitudinal data, a multi-informant design was applied to analyse data from over 7,000 children along with their caregivers and teachers. A series of multilevel regression analyses were performed to compare data from low-SES and high-SES pupils. After controlling for prior achievement, findings suggested that academic achievement in both low and high-SES pupils are promoted by educational aspirations, attentional skills and being in the rural area. The strength of the association between protective factors and academic achievement, however, varies between the two groups. Nonetheless, close parent-child relationship in low-SES female pupils appears to be a unique factor that promotes academic resilience that does not apply to the rest of the pupils. The study contributes credible evidence and fresh insights into protective factors that exclusively promote academic resilience in low-SES pupils. From the perspective of policy and intervention, the differentiated knowledge gained is useful to inform the provision of targeted efforts aimed at closing the gap in achievement between pupils from different socioeconomic backgrounds.

Keywords: academic resilience, protective factors, risk factors, poverty, secondary data analysis

The development of children around the world is threatened by all sorts of adversities such as natural disasters, political violence, pandemics and poverty that bear life-altering consequences for individuals, families, and the future of all societies. In the face of threats to human development, an integrated and global science of resilience informed by evidence-based research is very much needed to inform government and international policymakers and intervention matters that mitigate risks and build resilience in children. Generally, resilience is defined as a dynamic process whereby individuals show adaptive functioning in the face of significant adversity (Luthar et al., 2000; Masten, 2014). In other words, resilience is an inferential concept conditional upon two major criteria. Firstly, there ought to be exposure of "serious risk" and secondly, there must be evidence of "good adaptation". According to the definition by Masten et al. (1990), low-SES pupils who can develop and maintain successful levels of academic achievement despite the experience of socio-economic adversity are said to be academically resilient.

Poverty is known to be one of the most common indicators of early adversity experienced by children. Poverty is a powerful correlate of multiple risk factors that act in concert to thwart positive development (AAP, 2016). Disadvantaged families are often

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headed by single parents with minimal education and low level of employability. Children raised in deprived circumstances are at increased risk of adverse developmental outcomes across a range of individual functioning (Brooks-Gunn & Duncan, 1997). Cognitive development which includes academic ability and achievement is one domain which is most affected by the consequences of poverty (Duncan & Magnuson, 2013; Sheridan & McLaughlin, 2016). Children from impoverished households often begin school lagging in reading and mathematics (Reardon & Portilla, 2016). These children acquire language skills more slowly, show delayed letter recognition and phonological awareness, and are at risk for reading difficulties (Garcia, 2015). Disadvantaged students are also placed at a disproportionately high risk for special education program and grade retention (The Century Foundation, 2020).

A myriad of explanations is proposed for the persistent disparity in achievement. Much of the observed relationship between economic status and academic outcomes is related to confounding factors such as parental education, family structure, and neighborhood characteristics (Cooper & Stewart, 2013; Evans & Kim, 2010). Pupils from disadvantaged backgrounds are also more prone to developing behaviors of "learned helplessness" (Evans & Fuller-Rowell, 2013). These factors could underpin the educational achievement gaps between the different socioeconomic groups.

However, despite the preponderance of evidence indicating a strong link between poverty and negative behavioral, cognitive, and health outcomes, the developmental courses of impoverished children are variable. Not all individuals experiencing socioeconomic adversity fail to achieve, and it is well documented that some children exposed to adverse conditions appear to avoid developing consequent problems of adjustment (Masten, 2014). Many studies have shown that there are large individual differences in response to chronic adversity (Erberber et al., 2015; Werner & Smith, 2001). A significant proportion of these disadvantaged children was able to beat the odds and thrived despite experiencing adversity (Masten, 2014; Sattler & Gershoff, 2018). They fared unexpectedly well in both academic and socioemotional outcomes. These individuals exemplify resilience in displaying capacity successful adaptation despite their adverse circumstances (Masten, 2014). Given the increasing marginalization of less privileged children and the fact that academic or educational attributes are common proxies for future employability, adult health and well-being (Manstead, 2018), knowledge about the factors and processes involved in child academic resilience can bring new impetus to the development of social policies aiming to promote the well-being of children from low-SES families and their caregivers.

The focus of this study is to uncover factors and processes that promote academic achievement of pupils from low-SES families. Academic resilience is the inferred concept in this context. Factors or processes that promote favorable adaptation or outcomes for those experiencing adversity are generally termed as protective factors (Luthar et al., 2000). Protective factors can include attributes such as gender, maternal education as well as processes such as parenting practices that promote development and growth behaviors. Academic achievement is considered as a form of adaptation and is viewed as important in most modern societies (Ang, 2019). Success or failure in school can have serious long-term individual and social consequences. Unfortunately, despite strong scholarly interest in the study of child resilience, there is still a general lack of integrative understanding on the

processes leading to academic resilience in development among low-SES children. Numerous studies have suggested that factors and processes that enable low-SES children to beat the odds may be quite different from their more advantaged peers (Gutman et al., 2003; Sattler & Gershoff, 2018). This is an important point to note if policy makers and educators hope to design targeted efforts based on differentiated needs of the population. Secondly, empirical work on issues specific to pupils from low-SES backgrounds are mainly from the United States, which has a vastly different child support and welfare system from the rest of the world (Watson et al., 2014). It remains to be established if similar findings replicate in other parts of the world. Furthermore, most of the past studies were typically based on cross-sectional data involving single informants. The current study adopts a longitudinal multi-informant design using secondary data from Growing Up in Ireland (GUI) Longitudinal Study. GUI is government-funded longitudinal study of children and youth in Ireland. The study is nationally representative with over 20,000 cohort members. The purpose of GUI is to study the factors that contribute to or undermine the wellbeing of children in contemporary Irish families; and through this, contribute to the setting of effective and responsive policies relating to children and the design of services for children and families (GUI, 2020).

Literature Review

Past literature has indicated that protective factors which promote resilience in children operate across three broad levels of influence from the child, family and the wider community, in what is known as the triarchic framework of resilience (Luthar et al., 2000; Luthar & Zelazo, 2003).

Basically, the first level of influence reflects dispositional attributes of the child that elicit predominantly positive responses from the environment. Child intelligence is a variable that has often been found to be predictive of resilience in children across a range of studies (Masten et al., 2011). Children's language skills are thought to account for much of the association between intelligence and academic skills (Scarborough, 2001). Intelligence is also associated with aspects of behavioural adjustment in school such as compliance because children with higher intelligence may better understand, and therefore be able to follow rules and procedures. However, childhood intelligence has not been consistently found to be associated with positive adjustment (Cicchetti et al., 1993). There is some recent evidence to suggest that self-regulation skills may be an important inner resource for low-SES children (Palacios-Barrios & Hanson, 2019). Self-regulation enables individuals to maintain emotional and behavioural self-control necessary for goal directed behaviours. The broad range of skills also include being able to develop positive relations with peers and teachers. In addition, attention skills which include the ability to maintain or sustain attention on a particular subject as well as the ability to shift attention from one subject to another have consistently been found to be important for academic achievement (Rabiner et al., 2016). In addition to self-regulation skills, numerous studies have established that educational aspiration in children is also a significant predictor of academic achievement as is self-concept (Jung & Zhang, 2016; Otani, 2019). Using large longitudinal samples, Susperreguy and colleagues (2018) provided solid evidence of the role that self-concept has on the math and reading skills in adolescence.

Gender of the child may be another factor that influences or modifies responses to adversity. Socioeconomic disadvantage differentially inhibits the behavioral and academic development of boys relative to girls (Bertrand & Pan, 2013). The causal effect of disadvantage on the gender gap could be due differences in skill development between boys and girls when responding to the same stimuli. Another explanation is that parental investment in girls relative to boys varies inversely with household socioeconomic status (Autor et al., 2016). Other studies on effects of marital conflict or divorce have shown that female children may be less reactive to family stress than males (Hetherington & Elmore, 2003). Girls are also said to be less affected by family socioeconomic hardship than boys. While males are more likely to "fight or flight" in the face of stress, females are likely to "tend-and-befriend" (Taylor et al., 2000). The act of reaching out for help from others between girls offers more help and support in the preadolescent years (Gurian, 2010). Such relationships play a critical role in fostering growth in that individual. These may constitute the key to resilience in female pupils where they get to source academic or emotional assistance from when faced with school-related challenges that their parents are not be able to help. However, the studies are so far inconclusive about the processes that enable the development of resilience in the different genders. Hence, it is imperative that social identity issues such as gender are attended to when we seek to study resilience.

The second level of influence reflects socialization practices within the family that encourage trust, autonomy, initiative, and connections to others. Family factors associated with resilience include nurturing relationships, vigilant parenting, parental involvement and maternal education (Masten, 2001). In a study involving young homeless children, parenting characterized by warmth, structure, and responsiveness was predictive of higher academic achievement when these children entered primary school (Herbers et al., 2014). Studies on at-risk youth provide the argument that firm, consistent discipline is necessary in the context of supportive parent-child relationships in low-SES families (Trieu & Jayakody, 2018). Gutman et al. (2002) who examined parenting and achievement in African American pupils found that harsher, no-nonsense parenting was more predictive of achievement among at-risk youth. Gutman et al. (2002) is of the view that parenting practices that emphasize democratic decision-making and foster a sense of autonomy may be inappropriate for, or even detrimental to, youth living in more risky environments. More research is needed to investigate if these same parenting practices confer protective effects on children from different populations outside of the United States.

The critical importance of strong family relationships in child resilience is noteworthy. Based on Bowlby's (1969) attachment theory, scholars argue that individuals' adaptation is always a product of both their developmental histories and current life circumstances. At-risk children with at least one good relationship are able to take more from nurturant others subsequently encountered in development (Shonkoff & Phillips, 2000; Suizzo et al., 2017). Parental involvement in schools and parental expectation influences the development of academic achievement (Loughlin-Presnal & Bierman, 2017). Disadvantaged children whose parents took active interest in their education and career planning had better academic outcomes (Sommerfeld, 2016). Literature on achievement has also consistently shown that parent education especially maternal education is important in predicting children's

achievement (Magnuson, 2007; Reardon & Portilla, 2016). Mothers with higher education had higher expectations for their children's academic achievement (Harding et al., 2015).

The third level of influence reflects the external support systems in the school and neighborhood that reinforce self-esteem and self-efficacy. Past research has documented how schools can bring substantial salutary effects to youth in at-risk circumstances (London et al., 2015). The quality of social and emotional interactions in the classroom between and among pupils and teachers (e.g., teacher and peer support, student autonomy) create the classroom emotional climate (Jia et al., 2009). Teachers who create classrooms high in classroom emotional climate regard student perspectives, encourage positive interactions, and provide pupils with the mental space and confidence for learning to occur (Maxwell et al., 2017). Children's sense of "school connectedness," which includes the dimensions of social belonging and relationships with teachers, has been identified as a particularly important influence on middle-schoolers' emotional and academic adjustment (Longobardi et al., 2016). Positive classrooms are particularly beneficial when parent-child relationships are compromised as well as vice versa, indicating unique, significant contributions from both contexts in which children and adolescents spend appreciable amounts of time (Thapa et al., 2013).

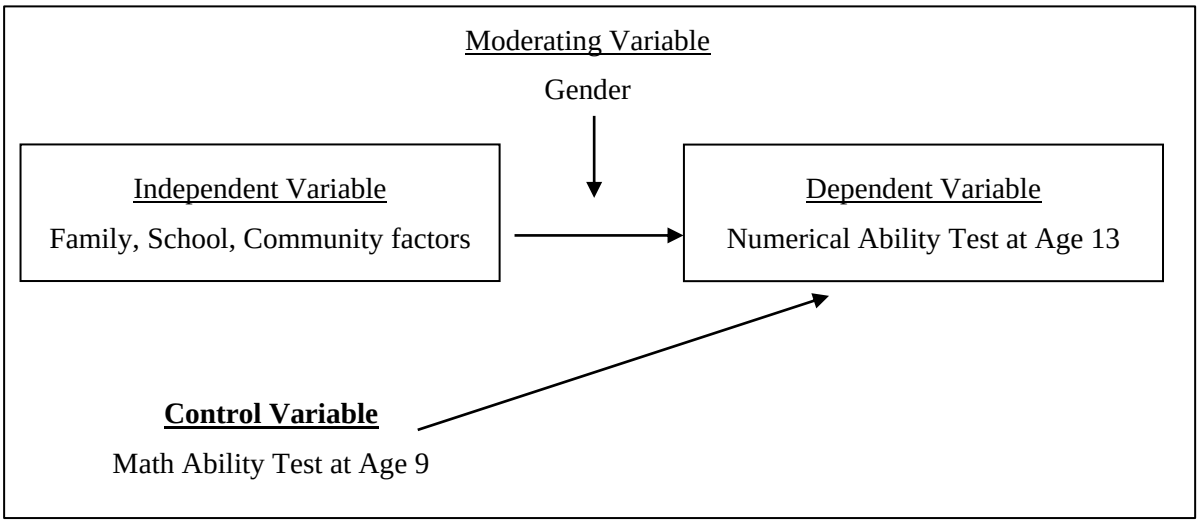
At the community level, research has indicated that neighborhood characteristics influence the academic outcomes of children and adolescents (Chetty & Hendren, 2018; Wodtke et al., 2011). Good neighborhoods are indicated by safe surroundings, low level of community violence and affordable housing are found to promote positive adjustment especially among high-risk adolescents (Chetty & Hendren, 2018). Differences in resources across urbanicity may also alter the way poverty shapes academic development in children (Miller et al., 2019). Parks, libraries, schools, and other institutions that are often available in urban cities, than in rural areas, provide more enriching opportunities to at-risk children (Lichter, 2012). Meanwhile, a strong sense of community in rural places may enhance access to limited resources for those in need (Tieken, 2014). Community stressors may also differ across urbanicity. Disadvantaged children in large cities often experience chronic environmental risks that may be less prevalent in rural areas (Evans, 2004). Past studies indicate that socioeconomic effects have stronger relations with achievement in urban cities and weaker links in rural areas (Miller et al., 2019; Weir et al., 2015). Weir and her colleagues (2015) posited that the way rural pupils structure their leisure time may partly explain the urban-rural difference. Rural students were found to spend more time at home and less time on electronic screens or hanging out with friends after school. However, explicating the exact mechanism by which urban or rural social environment exerts its influence on child development remains challenging (Miller et al., 2013).

Theoretical Framework

The theoretical underpinning for this study stems from the Ecological System Theory by Bronfenbrenner (1995). According to this theory, the ecological environment in which human development occurs is seen as a set of "nested structures". Developmental outcomes are a result of interactions within microsystems, or the immediate settings where a developing child is embedded in. The structures of the ecological environment serve as a framework to explicate the relationship between socioeconomic deprivation and child's academic resilience. The conceptual framework of the study is as presented in Figure 1.

Figure 1

Conceptual Framework



The current study adopts a developmental-contextual approach which focuses on the protective factors and processes that enable young adolescents to develop their academic potential, despite the experience of socioeconomic disadvantage. The model specifies multiple levels of influence shaping individual variations in response to adversity, reflecting the dynamic interactions between a developing individual and his/her environment. The basic proposition underlying this approach is that a thorough understanding of the processes leading to positive adaptation despite adversity necessitates identification of interplay between the individual and the environment over time.

Purpose of the Study

This study primarily seeks to identify risk and protective factors that predict academic achievement in low-SES pupils. To achieve this, it firstly identifies factors and processes across the triarchic level of influences (child, family, community) that predict academic resilience in low-SES pupils. The findings were then compared against those from the high-SES group for similarity. Factors that uniquely predicted positive academic achievement in low-SES pupils, but not high-SES pupils are identified as protective factors. Factors that are associated with higher likelihood of negative academic achievement are considered as risk factors. The findings of this study hold the potential to inform policy and intervention efforts that target low-SES pupils who are at-risk for academic failures.

The following three research questions are addressed through this study:

1. What child, family and wider contextual factors and processes predict academic achievement of low-SES pupils?
2. Do factors and processes that apply to low-SES pupils apply similarly to high-SES pupils?
3. How does gender moderate these factors and processes in low-SES pupils?

Method

Participants

The data for this study was drawn from a larger study called Growing Up in Ireland (GUI) Longitudinal Study. This study is an Irish national-funded study started in 2006 and follows the progress of two groups of children: 8,000 9-year-olds (Child Cohort/Cohort '98) and 10,000 9-month-olds (Infant Cohort/Cohort '08) (GUI, 2020). The members of the Child Cohort are now aged about 21 years and those of the Infant Cohort are around 11 years old. The current study obtained data from the Child Cohort. Data from 8568 children and their families were first collected in 2008 when the children were 9 years old (termed as Wave 1). The same cohort was followed up after 4 years in 2011 when the children were 13 years old (termed as Wave 2). At each wave, Latent Class Analysis (LCA) (Lazarsfeld & Henry, 1968), a statistical procedure was employed to classify the children into two economically homogenous subgroups. The main purpose in choosing LCA over traditional poverty indicators was to capture the multi-dimensional nature of poverty (Moisio, 2005). Income quartile, welfare dependence and economic stress were indicator items selected to estimate a 2-class LCA model. Income level was based on the total household income quartile reported by the family. Economic stress was measured by a single item that is commonly used to capture difficulties in making ends meet (Watson et al., 2014). Welfare dependence refers to the family's dependence on government welfare benefits for 75% or more of its household expenses. Based on the transition in economic disadvantage status across two waves, four mutually exclusive groups were created. For the purpose of this study, two highly contrasting groups (high-SES and low-SES) among the four were chosen to assess how different predicting factors work on each SES group.

Instruments

Before the start of the study, approval was obtained from the Institutional Ethics Board prior to the author being given access to the GUI data through the Irish Central Statistics Office (CSO).

A comprehensive battery of multi-method, multi-informant data from child, parents and teachers was collected on the cohort at the outset of this longitudinal study. Selected predicting variables measured at age 9 were included in the model. The outcome variable was academic outcome at age 13 measured by Drumcondra Numerical Ability Test (Educational Research Centre [ERC], 2020). The Numerical Ability Test contains 20 questions that require the student to reason with numbers and to manipulate numerical relationships. Prior achievement at age 9 was assessed based on the pupils' standardized Drumcondra Math and Reading Tests. The Reading Test contains 40 questions that focus on knowledge-based aspects of reading, such as knowledge of letters, sounds, and words. The Math Test contains 25 questions that focus on content and process skills such as problem- solving, reasoning, understanding and recalling. All these tests were developed by the Irish Educational Research Centre (ERC, 2020), a statutory body tasked with the development of standardized tests of achievement and ability, normed for the Irish population. The scores from each of these tests were standardized into z-scores with a mean of 0 and standard deviation of 1.

At the child's level, attributes include gender, socio-emotional behaviors and educational aspiration. Family attributes include parenting processes, parental expectation and maternal education. Wider context variables consist of geographical location of home, perceived neighborhood risk and climate of the class in school. The children's socio-emotional difficulties at age 9 were measured by four subscales from the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997). These subscales include conduct difficulties, attentional problems, socioemotional problems and peer relation difficulties. These 5-item sub-scales tap into conduct problems (e.g. does child often fight with other children); hyperactivity/inattention (e.g. is child restless, cannot stay still for long); emotional symptoms (e.g. is child often unhappy) and peer relationship problems (e.g. does child get picked on by other children). Each item is scored on a 3-point scale from 'Not true' (0), 'Somewhat true' (1) to 'Certainly true' (2). Scores on each sub-scale range from 0 to 10, where 10 indicates a high degree of difficulty in the relevant domain. The SDQ was completed for each study child by primary caregivers and teachers. Reliability of the instrument was found to be generally satisfactory, with adequate internal consistencies for both reports. For this study, analysis was run separately using parent report and teacher report so that the results could be compared. As the results were similar for both set of reports, only the caregivers' SDQ reports were included in the final analyses.

Self-concept was measured using the Piers Harris Children's Self -Concept Scale 2nd Edition (Piers & Herzberg, 2002). For this study, only data from the individual subscale of intellectual and school status was used. This 16-item subscale reflects abilities with respect to intellectual and academic tasks, as well as general satisfaction with school and perceptions of future achievements (Murray et al., 2010). These subscale items reflect the child's assessment on his/her abilities with respect to intellectual and academic tasks, general satisfaction with school and perceptions of future achievements. Questions included were, "I am smart', 'I am well-behaved in school', etc. Responses were coded as a choice of 'yes' or 'no' response. Higher scores are indicative of more positive self-evaluation in the domain of intellectual and school status.

Parenting processes were examined using three different measures. The reason for using multiple measures for parenting processes is to allow a more inductive approach that identifies important dimensions, patterns, and styles of parenting in low-income families. Two subscales from Parenting Style Inventory-II (Darling & Toyokawa, 1997) were used which include parental responsiveness and parental demandingness. Each subscale consisted of five items asking the child about the mother's parenting style. Parental responsiveness (also referred to as parental warmth or supportiveness) refers to "the extent to which parents intentionally foster individuality, self-regulation, and self-assertion by being attuned, supportive, and acquiescent to children's special needs and demands". Questions included, 'I tell mum when worried', 'I can count on mum to help me out'. Parental demandingness (also referred to as behavioral control) refers to "the claims parents make on children to become integrated into the family whole, by their maturity demands, supervision, disciplinary efforts and willingness to confront the child who disobeys". Questions included, 'My mother really expects me to follow family rules', 'If I don't behave myself, my mother will punish me'. Responses for both subscales were coded on 3-point ordinal scale from 'never' (1), 'sometimes' (2), 'always' (3). Higher total scores would imply higher level of parental responsiveness or higher level of parental demandingness.

The third measure, Pianta Parent-Child Relationship Subscale (Pianta, 1992) takes account of the level of closeness between parent and child. Pianta Parent-Child Relationship Subscale (10 items) was administered to parents which addressed statements such as, "I share an affectionate, warm relationship with my child," "If upset, my child will seek comfort from me," "My child spontaneously shares information about herself". Responses were coded on a scale of 1 to 5, from 'definitely does not apply' (1), 'not really' (2) 'not sure' (3), 'applies somewhat' (4), 'definitely applies' (5). Higher total scores would imply higher level of closeness between the parent and child.

Neighborhood risk at age 9 was calculated based on a composite index derived from 6 items associated with perceived safety and desirability of the neighborhood. A simple unweighted summary score was created to assess the overall level of neighborhood risk. The resultant scores were then added to obtain the neighborhood risk index. High scores indicate a less safe and less desirable neighborhood. Class climate is used to assess a pupil's perceived affirmation and support from the class teacher. A class climate index is created based on a composite of 5-items. High scores indicate more positive class environment.

Data Analysis

Prior to analyzing the data statistically, the distribution of scores was examined to consider issues that might pose threats to the assumptions of multiple regression. Correlations between the predictor variables and Collinearity Statistics *p* levels were inspected for multicollinearity. An investigation of the Normal Probability Plots and the residuals scatterplots revealed no violations of the assumptions of Normality, Linearity, or Homoscedasticity. In addition, reliability tests were performed on each of the data collecting instruments to ensure that adequate internal consistencies were achieved before any other analyses were run.

In order to assess which attributes of the child, the family and wider social contexts are associated with academic achievement of low-SES pupils, regression analyses were run to compare the relative influence of these different factors. Factors and processes measured at age 9 were examined to see if they predict academic achievement at age 13. As the GUI samples were obtained through schools, consideration was made to address the issue of data clustering. A two-level model was used to analyze the nested data in order to ensure that results were not biased as a result of clustering. In this model the pupils represent the level-1 units, and the schools represent the level-2 units.

For the purpose of determining the specificity of the protective processes, regression analyses were run separately for pupils in the low-SES and high-SES group. Separate analyses per group are considered preferable to using interaction terms in regression as interaction effects tend to be small in magnitude and highly unstable (Luthar, 1993; Owens & Shaw, 2003). Past studies have shown that statistical tests of interactions tend to be typically low powered (Smith & Sechrest, 1991). Interactions are also often difficult to detect when independent variables are normally distributed (McClelland & Judd, 1993). Moreover, multiplicative interaction terms may not be the best to represent all interaction effects (Rutter, 1983). All analyses were run on Mplus (version 7). Full Information Maximum Likelihood (FIML) was employed to address the issue of missing data.

Results

Table 1 provides basic descriptive statistics of the high-SES group and the low-SES group. Results from statistical data analyses are summarized to address the research questions.

Table 1

Descriptive statistics of the low-SES and high-SES groups

Predicting Variables	Low-SES (*N*= 299)		High-SES (*N* = 6116)		Effect Size (Cohen's d)
	M	*SD*	*M*	*SD*	
Numerical ability at age 13	-.60	0.90	0.00	0.99	0.80
Academic self-concept	2.10	2.80	12.60	2.80	0.20
SDQ hyperactivity	3.90	2.64	2.80	2.40	0.40
SDQ conduct problems	1.90	1.90	1.20	1.30	0.40
SDQ emotional difficulties	2.90	2.30	1.90	1.90	0.50
SDQ peer problems	1.70	1.70	1.00	1.30	0.50
Maternal education	16.50	2.40	18.70	2.40	0.90
Parent-child closeness	44.80*	4.60	44.80*	3.70	0.00
Parental responsiveness	13.10*	1.50	13.00*	1.40	0.10
Parental demandingness	12.00*	1.60	12.00*	1.60	0.00
Class climate	13.90	2.70	14.30	2.50	0.20
Neighborhood risk	13.10	3.90	10.90	2.90	0.70

Note. *Independent sample t-tests indicated no difference between the groups at $p < 0.05$; Cohen's d states that effect size of below 0.2 is small, 0.2 - 0.5 is medium, above 0.8 is strong

Table 2 shows the results of multiple regression analysis which provides standardized estimates predicting academic achievement at age 13, as well as 95 per cent confidence interval for the estimates for both the low-SES and the high-SES groups. In the low-SES group, significant predictors of academic achievement at age 13 are geographical location, educational aspiration, attentional and hyperactivity problems, and close relationship between the primary caregiver and the child.

Inspection of beta coefficients (measured in standard deviation units) indicates that the strongest predictor is the location of a pupil's home. Being in the rural area significantly predicted academic achievement, $\beta = .47$, $t(299) = 6.53$, $p < .001$) when other variables were held constant. All other community variables were not significant. At the individual level, a pupil's educational aspiration is a relatively strong predictor of achievement at age 13. On the other hand, hyperactivity and attentional problems experienced at age 9 appeared to pose a serious threat to the academic outcome of low-SES pupils. At the family level, parent-child closeness in relationship is associated with increase in achievement in early adolescence.

Table 2

Comparison of multiple regression analysis predicting academic achievement at age 13 between low-SES and high-SES group

Predictors	Low-SES (*N*=299)			High-SES (*N*=6116)		
	Standardized Estimate	95% CI	Change in R^2	Standardized Estimate	95% CI	Change in R^2
Prior achievement			0.28			0.33
Child factors			.06			0.05
Girls	-.23	-.67, -.26		-.29	-.35, -.24	
Educational aspiration	.37**	12, .34		.23**	.18, .29	
Academic self-concept	.04	-.20, .19		.08**	.01, .12	
Attentional problems	-.14**	-.28, .00		-.11**	-.14, -.08	
Conduct problems	-.03	-.16, .14		-.02	-.04, .01	
Emotional difficulty	-.08	-.19, .09		-.02	-.05, .01	
Peer problems	.09	-.11, .20		.01	-.04, .02	
Family factors			.04			.02
Maternal education	.03	-.20, .17		.06**	.03, .09	
Parental expectation	.05	-.19, .37		.15**	.08, .22	
Parent-child closeness	.14**	-.12, .43		-.06	-.13, -.00	
Parent responsiveness	-.04	-.21, .03		-.05	-.08, -.02	
Parent demandingness	-.03	-.11, .37		.00	-.07, .06	
School & Community factors			.05			.00
Class climate	.11	.01, .25		.05**	.02, 08	
Neighborhood risk	.09	-.10, .23		-.04**	-.07, -.01	
Located in rural area	.47**	.17, .74		.10**	.04, .16	

Note. **p < .001

Factors that predicted academic achievement (Table 2) in low-SES pupils generally also apply to the high-SES pupils. However, the strength of the association between predictors and achievement varies greatly between the two groups. Being in a rural area benefited both low-SES and high-SES pupils significantly; however, the association is a lot stronger in the low-SES compared to the high-SES group. Similarly, the association between educational aspiration and academic achievement was also a lot stronger in low-SES pupils. In terms of self-regulation, attentional problems in low-SES pupils posed a bigger risk to their achievement compared to the high-SES pupils. In terms of family influence, parent-child closeness was the only protective factor that accorded unique protection exclusively for low-SES children. This factor was not significant for the high-SES group.

Table 3 provided findings on how gender moderates the relationship between child, family and community factors and academic achievement in low-SES pupils.

Table 3

Comparison of multiple regression analysis predicting academic achievement at age 13 between low-SES boys and girls

Predictors	Low-SES, PP Boys (*N* = 134)			Low-SES, PP Girls (*N* = 165)		
	Standardized estimate	95% CI	Change in R^2	Standardized estimate	95% CI	Change in R^2
Prior achievement			.16			.25
Child factor			.07			.04
Educational aspiration	.31**	-.03, .64		.19	-.14, .52	
Academic self-concept	.10	-.09, .28		.05	-.10, .21	
Attentional problems	-.13	-.32, .06		-.08	-.23, .08	
Conduct problems	-.22**	-.47, .04		-.08	-.26, .09	
Emotional difficulties	.11	-.10, .32		-.11	-.29, .07	
Peer problems	.27**	.09, .45		-.15**	-.31, .02	
Family factors			.12			.09
Maternal education	.02	-.22, .25		.07	-.10, .23	
Parental expectation	-.07	-.43, .30		-.05	-.41, .32	
Parent-child closeness	-.00	-.19, .18		.19**	-.02, .37	
Parent responsiveness	.05	-.11, .20		-.09	-.25, .07	
Parent demandingness	.09	-.11, .29		.07	-.09, .22	
School & Community factors			.13			.06
Class climate	.24**	.03, .45		- .01	-.15, .13	
Neighborhood risk	-.04	-0.24, .16		- .20**	-.00, .39	
Located in rural area	.94**	.48, 1.32		.49**	.20, .78	

*Note. **p < .001*

In terms of child factors, Table 3 shows that high educational aspiration is a very strong predictor in boys, but this factor does not apply to girls. On the aspect of socio-emotional functioning, problem behaviors affect boys and girls differently. Conduct problems was a risk factor only for boys' achievement just as peer problems appeared to only threaten girls' achievement. In girls, peer problems affected their achievement negatively. In contrast, boys who experienced peer problems appeared to get a boost in their academic achievement. Parent-child closeness, on the other hand, predicted achievement only in girls. Being in the rural area appeared to benefit boys in far greater magnitude than girls. In contrast, an increase in neighborhood problems posed a risk to girls' achievement. While being in the rural area benefited both gender, rural boys still came out very much ahead of their female counterparts even after accounting for the other factors.

Discussion

This study provides compelling evidence to show that predictors of academic achievement in low-SES pupils are not very different from high-SES pupils. However, the same factors appeared to exert their influence in different magnitudes between the two socioeconomic groups. Another key finding is that the factors and processes that promote academic achievement in low-SES pupils operate very differently in boys and girls.

Irrespective of a child's socioeconomic background, the findings seem to suggest that educational aspiration is a promotive factor while behavioral difficulties are risk factors to academic achievement in children. These findings were consistent with studies in the past which have also identified child's aspirations (Otani, 2019) and child's inattention (Rabiner et al., 2016, Blair, 2010) as predictors for children's academic achievement. Children with better attention skills are more likely to be able to attend to academic tasks and therefore more likely to benefit from these learning opportunities, thus increasing their overall academic success (Rabiner et al., 2016).

However, what is interesting to highlight here is that the strength of the association between educational aspiration and achievement is a lot stronger in the low-SES group. This finding has significant implications on the enormous role that schools can potentially play to help raise the educational aspirations of low-SES pupils. In contrast to their more advantaged peers, low-SES pupils are generally said to have less school-related self-efficacy when it comes to aspirations (Ali et al., 2005). This may be due poor access to resources such as guidance counsellors, better schools, high level "social actors", and familial experience with higher education (Diemer & Ali, 2009). While it is important to motivate and raise the aspirations of young low-SES pupils, stakeholders must also be cognizant of the fact that low-SES pupils who are raised in cultures with goals and values dissimilar to those espoused by schools might also need explicit guidance with respect to the goals they are expected to achieve (Ogbu, 1985). For example, it is not difficult to imagine why a low-SES pupil would have low educational aspirations due to family pressure to complete minimum schooling and start working. It becomes imperative that the voices of those afflicted need to be heard if we are to understand their experiences of poverty and to identify solutions that fit their constructions of reality (Ungar, 2004).

The findings also allude to the importance of self-regulation skills associated with hyperactivity or attentional problems. The difference between the two SES groups was not large though it still pointed to the fact that poor attention skills affects low-SES children's academic achievement more compared to their high-SES peers. Hence early identification and intervention of problem behavior especially among low-SES pupils is necessary to prevent further decline in academic achievement in the later years. However, caution must be exercised when interventions are rolled out as the findings from this study suggest that there are gender differences in how problem behaviors affect boys and girls. Conduct problems adversely impact boys' academic outcomes while peer problems uniquely affect the girls.

Surprisingly in this study is how the residential location of a home being in a rural area immensely benefited (four times in magnitude) among low-SES pupils compared with the high-SES ones. Likewise, being in a rural area is also highly protective for low-SES boys compared with low-SES girls. Unfortunately, these findings are limited in that it is beyond the scope of the current study to unpack the mechanisms underlying this association. Past researchers have suggested that the way rural families structure their children's pastime may provide some explanation to this protective effect (Weir et al., 2015). Community stressors may also differ across urbanicity. Poor children in large cities and rural areas often experience chronic environmental risks that may be less prevalent in suburbs. A more recent study found that stressors increase in more urbanized communities and differences in poor children's achievement, operating through cognitive stimulation and parental warmth (Miller, 2019). However, in general, findings on difference in performance between rural and urban pupils are mixed and far from being clear (Evans & Kim, 2013; Ticken-s, 2014). Future studies are

recommended to explicate the specific mechanism by which the rural environment exerts its protective effects on low-SES pupils.

Finally, the only protective factor that was unique in predicting academic resilience for the low-SES pupils (and not high-SES pupils) was close relationships between parent and child. These findings suggest that strong parental bonds can help to mitigate the effects of poverty in low-SES pupils' academic achievement. However, these protective effects seemed to be confined to female pupils only. This phenomenon may be related to the fact that parents in low-SES families usually spend more time mentoring and interacting with girls rather than boys, especially in mother-led single parent families (Baker & Milligan, 2016). Alternatively, this could also be due to the larger parental investments made in daughters than sons among low-SES households (Autor et al., 2017). Though the current data does not allow the relative importance of these causal channels to be evaluated, the evidence in a past study does provide strong support for the differential investment hypothesis. According to Bertrand and Pan (2013), single mothers invest more in their girls and feel emotionally closer to them. The differential parental inputs are attributable to the boys' higher tendency to act out and develop conduct problems in female-headed households. In the meantime, factors that predicted academic achievement in high-SES pupils such as academic self-concept, maternal education, parental expectation, and classroom climate did not seem to matter for the low-SES pupils relative to all the other factors discussed earlier. This finding signals an important message to policymakers and stakeholders about the need to gather data-driven evidence to inform intervention policies.

Limitations of the Study

Although this study has multiple strengths, it also has several limitations. While many protective and co-occurring risk factors associated with poverty were included in the study, it must be acknowledged that there may be other, unmeasured factors associated with academic outcomes of interest. Future studies should also consider including intellectual aptitude and neuroscientific data. Children with a low socioeconomic background have been shown to be more exposed to environmental toxicants. Some neurotoxicants are known to affect both academic achievement and induce structural brain changes (Rauh et al., 2012). Additionally, the design of the current study is characteristically quantitative. Future studies should try to leverage on qualitative designs to better address the academic experiences of children from both the low and high-SES families.

Implications

Despite the limitations, this study contributes fresh insights into the unique factors and processes that promote academic resilience in low-SES pupils in a population in Ireland. The differentiated knowledge of protective processes across multiple levels of influence is critical and useful from the perspective of policy and intervention. Efforts and resources aimed at building academic resilience in low-SES children should focus on families and strengthening of parent-child relationships. Intervention can be directed at alterable gender-specific child factors and family processes that serve as protective factors. Programs could include activities aimed at facilitating and encouraging parent-adolescent conversations and providing new opportunities for parents and adolescents to interact in meaningful ways. Schools can play an important role to boost the academic resilience of low-SES pupils by raising their educational aspirations and intervening when problem behaviors such as attentional difficulties are

detected. Poverty and its related risks cannot be ameliorated easily but an integrative understanding of resilience processes is a first step forward in thwarting the negative life trajectories of low-SES pupils. By examining longitudinal findings from two highly contrasted SES groups, this study advanced our understanding on the science of resilience in children. However, a lot more remains to be done to unpack the underlying mechanisms on how specific protective factors work differently in at-risk boys and girls.

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