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Childhood adversity and academic attainment: Examining risk, promotive, and protective factors

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A Thesis Submitted to
the School of Education, University College Dublin
In Partial Fulfilment of the Requirements
For the Degree of Doctor of Educational Psychology

Research Supervisor: Dr Seaneen Sloan
Head of School: Professor William Kinsella
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Abstract

Research has established the negative association between experiencing adversity in childhood and academic attainment in school. However, less is known about the factors which moderate this relationship. This thesis, comprising of a systematic literature review and an empirical journal article, explores this topic. The systematic literature review identified promotive and protective factors for children who have experienced adversity and their academic outcomes. Findings suggested that factors relating to a child’s cognitive ability and parenting are the most commonly identified, and in some cases, moderate the relationship between adversity and academic attainment. Using data from the Growing Up in Ireland (GUI) study, the empirical journal article narrowed this focus by examining factors within the school context. Moderation analysis indicated that factors relating to a young person’s attitudes and beliefs towards learning and school were protective for academic attainment outcomes but no effect was found for relational or school environmental factors. Given the importance of academic attainment for one’s life trajectory, findings from this thesis will guide the understanding of how best to support students to reach their potential in school, in particular those who have experienced adversity.

Keywords

Academic attainment; Childhood adversity; Promotive; Protective; Growing Up in Ireland.
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Chapter 1: Introduction

“If we want to understand the oak, it’s back to the acorn we must go” (Perry & Winfrey, 2021, p. 22).

Few topics provoke as strong a response as the unfortunate and negative experiences that can happen to a child. In the literature, the terms ‘childhood adversity’, ‘adverse childhood experience’, and ‘early life stress’ have been used to refer to a wide range of negative exposures during childhood that may pose a severe threat to a child’s physical and/or psychological well-being (McLaughlin et al., 2014). Examples include, but are not limited to, the experience of child abuse and neglect, substance abuse, divorce, domestic violence, and maternal depression, which are often rooted in environments characterised by extreme poverty, discrimination, and community violence (Ellis & Dietz, 2017). While the immediate impact of adversity has been linked with poorer health and behavioural outcomes, the longer-term consequences also place children at a greater risk for developing health-harming and anti-social behaviours during adolescence, in addition to mental illness, disease, and disability during adulthood (Bellis et al., 2014). Childhood adversity is common (Zhang et al., 2020), with estimates from national and international research reporting that two-thirds of children experience significant adverse events (Carlson et al., 2019; Healy et al., 2021).

Consequently, the experience of adversity in childhood has been receiving increased attention in the literature and society (Lang et al., 2015), and has been identified by the World Health Organisation (WHO, 2011) as a health priority (as cited in PEIN, 2019).

The impact of childhood adversity was not fully understood until data were published from the original Adverse Childhood Experiences (ACE) study (Felitti et al., 1998). Here, the authors created a simple ten-item questionnaire of adversities that may have taken place during the first eighteen years of life, including experiences of physical, emotional, and sexual abuse; physical and emotional neglect; parental separation; domestic violence; or a
household member who was mentally ill, in prison, or a substance abuser. The study found a correlation between the ACE score and the major causes of death in adult life such as heart disease and cancer. Subsequent studies demonstrated similar correlations between the adult ACE score and risk for suicide, mental health problems, and substance abuse (Perry & Winfrey, 2021). Within the school context, a recent systematic review established the negative impact of adversity on a range of cognitive, academic, and social-emotional outcomes. Findings indicated that youth who experienced adversity are at risk for significant impairments across a range of cognitive functions, including IQ, memory, attention, and language ability. These students are also at risk for poorer academic performance and school-related behaviours such as poor attendance, school dropout, and behavioural problems (Perfect et al., 2016).

The findings from the landmark ACE study and subsequent replications have led to the development of theories that explain the negative association between childhood adversity and future outcomes. Within the literature, it is widely accepted that childhood adversity has an impact on neurobiological development and health risks, which in turn, lead to social and health problems (Kahn & Vezzuto, 2015). Using findings from the ACE study, the original ACE pyramid demonstrates this theory by identifying the mechanisms by which childhood adversity influences development, health, and well-being throughout the lifespan (Felitti et al., 1998). More recently, researchers in the field have taken a broader ecological perspective by including experiences of historical trauma, implicit bias, and the impact of social conditions leading to a modification of the original pyramid. The modified pyramid outlines how one’s context, history, and experience of adversity impact neurodevelopment, and in turn influence social, emotional, and cognitive impairment (Figure 1; CDC, 2016). These impairments increase the risk of the adoption of health-risk behaviours, which leads to disease, disability, social problems, and ultimately death.
The mechanism by which ACEs influence health and well-being throughout the lifespan is further explained by research examining brain development. Unlike our body which grows in a linear way from birth to adolescence, brain growth follows a different pattern. The most rapid rate of growth takes place in utero, and from birth to age four the brain grows explosively. During this time, the brain develops sequentially, with the most primal, central areas developing first. As the child develops, each successive brain region undergoes important changes and growth, moving from the brainstem to the limbic and cortical regions. Scientific research in areas such as epigenetics now show that environmental influences affect whether and how genes are expressed, particularly during childhood (CDC, 2022a). Therefore, this is a time of great opportunity for the developing child where safe and nurturing experiences help develop key neural networks. Unfortunately, it is also when the organising brain is most vulnerable to the impact of threat, neglect, and adversity (Perry &
Szalavitz, 2017). In line with the ACE pyramid, this helps explain how the experience of childhood adversity directly impacts one’s brain development, and in turn, leads to social, emotional, and cognitive impairments. These theories explain why those who have experienced childhood adversity perform poorly in school, as indicated by Perfect et al. (2016).

However, it is important to note that the ACE study and subsequent replications are correlational in nature. Not all individuals who experience adversity will develop long-term health problems or impairments in functioning; findings simply indicate that these individuals are at a higher risk than others (Perry & Winfrey, 2021). In addition, although the early years are the most active period for establishing key neural connections, new connections can form throughout life and unused connections can continue to be pruned (CDC, 2022b). Therefore, we must begin to explore the mechanisms through which some succeed despite adversity. Over the last few years, researchers have begun to examine the impact of positive childhood experiences on children and adults. In the resilience literature, these experiences have been divided into two categories: promotive factors (which are related to positive outcomes for all), and protective factors (which reduce the negative impact of adversity) (Gutman et al., 2003). The impact of these factors on a range of health (e.g., Crandall et al., 2019) and psychological outcomes (e.g., Bethell et al., 2019). However, less is known about the factors which reduce the negative impact on school-related outcomes, including academic attainment (Jones et al., 2013). This is a source of concern, particularly as performance in school supports individuals to acquire better and more stable employment, increase earning power, and develop a greater sense of control over their lives (Hummer & Lariscy, 2011).

Research Focus

This thesis delves into the question of how some children do well in school despite experiencing childhood adversity by identifying and exploring the factors which reduce the
negative impact of adversity on academic attainment. Research has established the profound negative impact of experiencing adversity or trauma early in life on school-related outcomes such as academic attainment (Perfect et al., 2016). However, not all children who experience adversity perform poorly in school. These individuals have been considered as demonstrating academic resilience, which has been defined as the capacity to overcome acute and/or chronic adversity that would otherwise predict poor academic attainment amongst students (Morales, 2014). Despite this awareness, there has been a lack of robust research which examines the association between childhood adversity, protective factors, and academic attainment in school (Jones et al., 2013).

Given the influence of academic attainment on a child’s life course trajectory (Robles et al., 2019), it is important that policy-makers and those who work with children and families can support those who are at increased risk of worse outcomes. The identification of factors that promote academic attainment and reduce the negative impact of childhood adversity is one way of supporting these children. Thus, this thesis aims to explore this topic by focusing on identifying factors that promote academic attainment for all, while also moderating the relationship between childhood adversity and academic attainment. The systematic literature review aims to identify which factors at the level of the individual, family, and school or neighbourhood have been explored in the literature, and determine which of these factors offer a promotive and/or protective effect on academic attainment. The empirical journal article concentrates on factors related to the school context.

**Significance of the Research**

Furthering our knowledge of the relationship between childhood adversity and academic attainment and the factors which moderate this relationship is a useful activity, not just because this will help us identify protective factors, but because ultimately it should facilitate the development of better-informed policy and practice. In recent years, educational
policymakers in Ireland have begun to focus on ensuring that all children reach their potential in school, particularly those who are at risk of educational disadvantage. This is reflected in the identification of ensuring “that all students are supported to fulfil their potential” as a recent goal in the Department of Education’s strategy, alongside supporting “students at risk of educational disadvantage to access appropriate educational resources which reflect their diverse needs and support improved outcomes” as a recent strategic action to achieve this goal (Department of Education, 2021, p. 20). The systematic literature review and empirical journal article inform this goal by identifying the factors at the level of the individual, family, school, and neighbourhood which have been explored in the literature to date and which reduce the achievement gap between students who have experienced adversity and their peers. This will likely provide useful insights for those involved in developing policies and guidelines in the field.

This research will also be of interest to teachers, educational psychologists, and other professionals who develop and deliver support in educational and child settings. It acknowledges the impact of childhood adversity early in life on later academic attainment, which may encourage those working with children to be more cognisant of the impact of adversity and highlight the importance of early intervention. The research reported in the empirical journal article focuses on factors within the school context which may guide the understanding of how best to ensure that all students reach their potential, especially those who have experienced adversity. It is also one of the first nationally representative longitudinal studies in Ireland which explores the association between childhood adversity, positive factors within the school context, and academic attainment outcomes. In addition, the research reported in the systematic review highlights the need for further research on this topic outside ethnic minority groups within the North American context.
**Researcher Motivation**

Introductions to topics relating to trauma-informed assessment and intervention as part of my professional doctorate training initially sparked my interest in childhood adversity. I was guided to reflect on my own experience of working with children and within educational systems during my teaching career and in my current role as an educational psychologist in training. To date, I have worked with and observed many children who presented with emotional and behavioural needs which impacted their ability to access the curriculum and participate in everyday learning activities. I often heard these children described in negative terms, such as “uncontrollable”, “manipulative” or “disruptive”, who have been referred to “experts” who would formally or informally diagnose these children. However, in many cases, these children had experienced adversity that was rooted in environments characterised by poverty and disadvantage. It became apparent to me that, despite the growing research interest regarding the impact of trauma and adversity on child development, schools and society at large still situated behavioural and emotional needs within and as the fault of the child. In my experience, this often led to medicalised approaches, aiming to “treat” the problem behaviours, with little acknowledgement of the adversity the child had experienced.

It also led me to engage in extended reading in the area of trauma-informed practices, including understanding the impact of trauma or adversity on a child’s development. I became particularly interested in the research and theories on brain development, and was surprised to learn the lasting impact that positive or negative experiences can have on the structure and organisation of a child’s brain, and consequently their ability to learn and succeed in school. In light of this, I was motivated to delve into research on how best to support these children, including identifying evidence-based approaches and interventions.

Much of my practice as an educational psychologist has been guided by the identification of
risk and protective factors as outlined by Carr (2016). Throughout the development of my research, it became evident to me that some risk factors had already occurred in a child’s life, and thus were out of our control to change. Therefore, my ambition was to determine ways that amplify the strongest positive factors in order to ensure that children who have experienced adversity, and thus may be at risk of educational disadvantage, achieve their potential in school.

**Background to the Systematic Literature Review**

The systematic literature review explored the existing literature on promotive and protective factors relating to academic attainment for children who have experienced adversity. Thirteen psychology, education, and social science databases, as well as additional grey literature sources, were systematically searched. From this search, thirteen published studies were selected for detailed analysis based on inclusion and exclusion criteria. Quantitative data relating to sample characteristics, as well as how childhood adversity, academic attainment, and promotive or protective factors were measured and reported, were extracted and synthesised. The findings of this review indicated that a range of child, family, and school or neighbourhood factors have been identified in the literature regarding childhood adversity and academic attainment, and some of these factors offer a promotive or protective effect for children who have experienced adversity. Factors relating to parenting or a child’s cognitive ability received the most empirical attention, with findings suggesting that these factors have a promotive effect on academic attainment, and in some cases, a protective effect. However, most other factors identified were only explored in one or two studies, making it difficult to draw conclusions for these factors. The review concluded that future research should continue to explore factors that moderate the impact of childhood adversity on academic attainment.
**Research Journey**

My work on the systematic literature review began in the first year of my doctoral programme when I identified my research topic and drafted my literature review protocol. As this was my first time completing a systematic literature review, understanding the steps involved was a daunting task. Guidance received from staff within the School of Education, the James Joyce Library, and my research supervisor, were indispensable in supporting me through the process. At first, I was interested in exploring a range of school-related outcomes, such as academic attainment, attitudes towards school, school engagement, and behavioural and emotional needs. However, with the support of my supervisor, it became evident that I would need to narrow my research focus. As an educational psychologist in training, with an awareness of the importance of school success for one’s life trajectory, I decided to focus on academic attainment.

I submitted my literature review protocol in September 2020. This involved the development of a search methodology; namely identifying inclusion and exclusion criteria and a search strategy, which was tested and retested several times across many databases to ensure that all relevant articles were included for data extraction and analysis. Once finalised, the screening and selection process of 1,351 articles was a tedious task but led to the identification of 13 journal articles that met inclusion criteria. On analysis of these articles, I was surprised to learn that a lot of the research relating to childhood adversity, positive factors, and academic attainment, was carried out in North America, with many studies focusing on children from ethnic-minority backgrounds. This highlighted to me the lack of research in the Irish context but also the research interest in the attainment gap for children of minority backgrounds within the American context. Once the analysis was completed, my next task was to present the findings in a journal article format, which was submitted in December 2020.
As a researcher, undertaking this systematic review helped me to develop an in-depth understanding of the existing literature on the topic of childhood adversity, academic attainment, and positive factors. It helped me to identify gaps in the current evidence base and informed the design of my empirical journal article. I feel that I developed my research skills significantly during the process, where I learned how to identify relevant research questions, develop a search methodology to answer these research questions, and draw conclusions based on findings. It also provided me with the skill set to be systematic and methodical in my approach which will be critical when undertaking future reviews.

**Background to the Empirical Journal Article**

The focus on the empirical journal article was guided by the conclusions of the systematic literature review. Findings from the review suggested that factors relating to parenting or a child’s cognitive ability were among the most identified and often offer promotive and/or protective effects. Most other factors were only examined in one or two studies, making it difficult to draw conclusions about these factors. However, for educators working with young people who experience adversity, individual and family level factors such as these are often outside their capacity to change. As a result, the empirical journal article aimed to explore factors relating to the school context which have a positive impact on academic attainment, and in some cases, reduce the negative impact of the experience of adversity.

The empirical journal article used longitudinal data from the Growing Up in Ireland (GUI) study, an Irish nationally representative cohort, to examine the impact of childhood adversity on children’s later academic outcomes and the school factors which moderate this relationship. Using Bronfenbrenner’s bioecological model (1989) as a framework, three broad types of factors were identified within the dataset relating to the school context. These were individual level factors, such as attitudes and dispositions towards learning and school;
relational factors, including relationships with teachers and peers; and broader ecological factors such as school facilities, resources, and climate. The findings from this study indicated that an inequality in young people’s academic attainment exists, as those who experienced adversity early in life obtained lower academic attainment outcomes at age 15/16 when compared to their peers. Moderation analysis indicated that individual factors moderated the relationship between childhood adversity and academic attainment; however, protective effects were not found for relational or broader ecological factors.

**Research Journey**

Once I had found my research topic of interest, two key pieces of research supported me in identifying research questions and aims. The first was a systematic literature review conducted by Perfect et al. (2016) which examined the cognitive, academic, and social-emotional-behavioural outcomes associated with traumatic event exposure and traumatic stress symptoms. Implications for future research influenced my research plan, which included the need to use clear operational definitions of trauma, to conduct longitudinal studies within the school context, and for school-based trauma interventions to incorporate school-related outcomes. The second key piece of research which influenced my research plan was an article by Gutman et al. (2020). Here, the author provided definitions of risk and protective factors and also described a range of theoretical models which have been used in the resilience literature. This informed my methodology and operationalisation of variables.

My research supervisor suggested that using data from an existing dataset may offer a readily available, nationally representative sample with which I could productively apply statistical analyses. Given the workload of undertaking a full-time professional doctorate and the uncertainty of public health restrictions due to the Covid-19 pandemic which may limit opportunities to gather new data, this suggestion was particularly appealing and pragmatic. I gained access to the data dictionaries for the Growing Up in Ireland (GUI) and the Children’s
School Lives (CSL) studies. As the GUI study had variables relating to stressful life events experienced by the child to date, I decided to use this database for my research. I applied for access to the dataset, and once approved, I explored and identified variables that were related to childhood adversity, positive school factors, and school-related outcomes.

My initial proposal for this piece of research focused more broadly on factors that moderated the relationship between childhood adversity and school-related outcomes. Recognising that this focus was too broad, and guided by gaps in the literature identified in my systematic literature review and implications from previous reviews (e.g., Perfect et al., 2016), I narrowed my research by focusing on academic attainment and positive school factors. The research design of the study continuously altered and evolved throughout the research process. With the support of my research supervisor, I explored a range of methods to analyse the data, such as structural equation modelling and hierarchical multiple regression, before deciding that moderation analysis using Process macro within SPSS (Hayes, 2017) was the best fit to answer our research questions.

**Theoretical perspectives**

*Resilience theory in the context of adversity*

Despite the psychological and physiological threats presented by experiencing adversity in childhood, not all individuals who are exposed to these experiences are at an equal risk for maladaptive developmental trajectories (Masten, 2001). Rather they exhibit resilience, which is defined as a process in which the individual is able to thrive, or at least function with relative success, despite being exposed to adverse experiences or environments (Luthar et al., 2000). Over the last number of decades, researchers in the resiliency field have made significant progress in conceptualising the construct (Oshri et al., 2020), moving away from the study of the ‘invulnerable child’ (Anthony, 1987) to a focus on the social-ecological factors that facilitate positive development under stress (Ungar, 2011b). This view of
resilience is consistent with Bronfenbrenner’s bioecological model of child development (Bronfenbrenner & Morris, 2006), which hypothesises that outcomes are shaped by the interaction of genetic, biological, psychological, and sociological factors in the context of their environment.

Researchers have since reached a consensus on some assumptions regarding the conceptualisation of resilience: 1) resilience is defined in the context of adversity; 2) resilience is a process and not a predetermined construct or trait that one can acquire; 3) empirical examination of resilience requires individual development to be tested over the course of time; and 4) testing resilience among individuals who experienced adversity should examine functioning across a range of domains (Oshri et al., 2020). In light of these assumptions, theoretical models of resilience often consider the dynamic processes that engage multiple risk and protective factors leading to positive developmental outcomes in the long-term (Gutman et al., 2020). Therefore, resilience theory was deemed appropriate to consider the promotive and/or protective factors which may support a child to achieve academically despite experiencing adversity.

Despite these agreed assumptions, one problem that has arisen in the literature is that some researchers have used the term to refer to both a personality trait and a dynamic process (Luthar & Cicchetti, 2000). In addition, how adversity or risk and positive outcomes or protective factors are defined and operationalised in the literature differ from study to study. For example, some define adversity in terms of constellations of experiences, such as poor socio-economic circumstances and poorly resourced neighbourhoods (Sameroff et al., 2003); whereas others focus on a particular adversity, such as parental depression (Hammen, 2003). These variations make studies hard to compare, and has led some researchers questioning the scientific value of resilience itself (Bodin & Winman, 2004). Although more recent definitions emphasise the importance of considering the dynamic person-environment
interactions when conceptualising resilience, few resilience studies examine the complex interaction across systems but instead focus on the interaction between discreet variables and the outcome of interest (Luthar, 2006).

**Bronfenbrenner’s bioecological theory of human development**

The bioecological theory of human development (Bronfenbrenner, 1979; Bronfenbrenner & Evans, 2000; Bronfenbrenner & Morris, 2006), initially termed an ecological model or approach, was originally proposed by Bronfenbrenner to explain how human development occurs. The *bio* aspect of the model recognises that individuals bring their biological selves to the developmental process, while the ecological part recognises that the social contexts in which we develop are ecosystems; they are constantly interacting with and exerting influence on each other. The development of Bronfenbrenner’s work can be characterised in three phases, moving from his initial emphasis on the role of context in development to recognising the active role of the child to the final phase where he captured the dynamic nature of development in his Process-Person-Context-Time (PPCT) model of development. In this final phase, Bronfenbrenner emphasised the synergistic interconnections among the individual, the impact of time, and proximal processes and how they are influenced by the context in which they occur (Navarro et al., 2022). These four elements simultaneously influence development; the effects are not merely additive as they are part of an interactive system (Tudge et al., 2016). Given the emphasis on individual-context interrelatedness of the theory, my doctoral research draws on Bronfenbrenner’s theory of human development to consider the range of risk, promotive, and protective factors which impact on a child’s performance in school.

The first ‘version’ of the ecological model considered the development of the individual within the environment characterised as four systems: microsystem, mesosystem, exosystem, and macrosystem. The microsystem is “a pattern of activities, roles, and
interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics” (Bronfenbrenner, 1979, p. 22). Relationships in the microsystem are reciprocal; both the microsystem and the individual directly influence each other. Examples of microsystems include the family, neighbourhood, and school settings. The mesosystem is the set of reciprocal interactions and relationships among the members of the microsystem and acknowledges their impact on the child. Bronfenbrenner (1979) theorised that if these relationships are absent or play a disruptive role in one’s life, the individual’s developmental process may be interrupted. These are embedded within an exosystem, which consists of settings that influence the child but in which the child does not directly participate, such as a parent’s workplace. The macrosystem refers to a larger context where the other systems exist and are influenced such as culture, subculture, and beliefs (Bronfenbrenner, 1979). Bronfenbrenner (1986) later introduced the chronosystem, reflecting change or continuity across time and influencing each of the other systems (Neal & Neal, 2013).

Bronfenbrenner’s theory is widely used to guide developmental research, and studies that employ the bioecological model necessarily investigate the structures that impact development in their naturally occurring context, rather than a particular environment, in order to maintain the ecological integrity of the study (Bronfenbrenner, 1994). As a result, Bronfenbrenner’s theory, particularly at the microsystem and mesosystem levels, is of particular interest to this thesis. Both the systematic literature review and empirical journal article explore the impact of adversity within the home and community environments, examples of microsystems, on a child’s academic performance in school. Using “The Pair of ACEs Tree” as a framework acknowledges that both home and wider community microsystems impact a child’s development. The interactions between members of the microsystem, the mesosystem, are also explored by examining the relationships between protective factors at the level of the individual, family, and school or neighbourhood, and
how they interact with adversities experienced by the child and school outcomes. In addition, as “The Pair of ACEs Tree” incorporates attitudes of the community (e.g., discrimination), and systemic factors (e.g., poverty), elements of the macrosystem are also explored.

In the third phase, Bronfenbrenner added the role of proximal processes, which he described as “the engines of development” (Bronfenbrenner, 2001, p. 6967), and outlined the Process-Person-Context-Time (PPCT) model. Proximal processes are progressively complex, reciprocal interactions between a developing individual and other people and/or objects and symbols in their immediate environment (Bronfenbrenner & Morris, 2006). Proximal processes must occur frequently for an extended length of time and can involve positive or negative interactions (Mercon-Vargas et al., 2020). Examples of proximal processes within this thesis include factors relating to parenting and relationships (e.g., positive interactions with teachers, teacher support). Bronfenbrenner divided person characteristics into three types: demand, resource, and force characteristics. Demand characteristics refer to those that act as an immediate stimulus to another person. For example, the age, gender, or physical appearance of another person may influence you to act in a certain way. Contrastingly, resource characteristics are not immediately apparent but refer to mental and emotional resources such as past experiences, skills, intelligence, and access to material resources. Force characteristics refer to one’s temperament, motivation, and persistence (Tudge, 2008).

In the PPCT model, context and micro-, meso-, exo-, and macrosystemic influences continue to be a central tenet of Bronfenbrenner’s theory. Time is the fourth component of the PPCT model and is comprised of three types: micro-, meso-, and macro-time, which examine the duration and frequency of proximal processes while also considering the historical time in which they were gathered.

However, as Bronfenbrenner’s theory does not endeavour to identify a direction or final stage of development, it can be difficult to examine proximal processes and their impact
on child development. In addition, large-scale studies cited by Bronfenbrenner to exemplify proximal processes do not allow for the in-depth analysis that would be required. Furthermore, recent advances regarding the interaction between genetic development and environmental influences in areas such as epigenetics and neuroplasticity, are not adequately addressed in the theory (Tudge, 2008). Nevertheless, Bronfenbrenner’s theory allows for a broader conceptualisation of a child’s development by simultaneously considering the interrelatedness of the individual person, their interactions with the world around them, and the broader context (Fleer, 2018).

**Reflections**

In undertaking this doctoral thesis, the personal and professional learning which I have gained has been invaluable for me as a person, researcher, and practitioner. It has taken me on a cyclical journey, where I was required to refine, reformulate, and improve my thinking and ideas at every stage of the process. Having used predominantly quantitative methodology for this thesis, I have advanced my skills in using a range of statistical analyses and in managing and screening large datasets. However, in the future, I would like to further advance my research skills by using qualitative methods. Although using quantitative methods is beneficial in many ways, it does not capture the more subtle impact of experiencing childhood adversity and the perspectives of those working with these children. From my own experience of working in schools, many do not understand its impact on child development and continue to use a within-child deficit model to explain a child’s difficulties. Therefore, it would be interesting to further investigate teachers’ and parents’ perspectives on the impact of experiencing adversity on a child’s presentation at home and school. I look forward to applying the knowledge I have learned on this topic to my practice as an educational psychologist and the research skills I have gained to future research projects.
Summary

Within the educational psychology field, there is a growing movement toward trauma-informed approaches and how best to support children who have experienced adversity to reach their potential across all areas of life. This thesis investigates the relationship between childhood adversity and academic attainment, and the factors which moderate this relationship. The systematic literature review, described in Chapter 2, identifies the factors which have been previously explored in the literature, and whether these factors offer a promotive and/or protective effect on academic attainment. The empirical journal article uses a nationally representative sample to explore positive factors specifically related to the school context. The methodological considerations for this piece of research are outlined in Chapter 3 and the journal article is reported in Chapter 4. The implications for research and practice of both pieces of research are outlined and discussed in Chapter 5.

Definitions of Key Terms

*Academic resilience.* Academic resilience has been defined as the capacity to overcome acute and/or chronic adversity that would otherwise predict poorer academic attainment amongst students (Morales, 2014).

*Adverse Childhood Experiences (ACEs).* Adverse childhood experiences are potentially traumatic events that occur in childhood. A landmark longitudinal study by Felitti et al. (1998) developed the ACE scale, which allows individuals to create an ACE score which is a tally of the following 10 experiences: physical abuse, emotional abuse, sexual abuse, physical neglect, emotional neglect, mother treated violently, substance abuse in the household, mental illness in the household, parental separation or divorce, and an incarcerated family member.

*Childhood adversity.* Childhood adversity encompasses experiences involving threat (e.g., abuse, domestic violence) and deprivation (e.g., neglect, parental separation) occurring
before adulthood that are likely to require significant adaptation by a child (McLaughlin et al., 2014).

*Protective factor.* Protective factors reduce the negative impact of adversity (Gutman et al., 2003; Jones et al., 2013).

*Promotive factor.* Promotive factors are associated with, or predictive of, better outcomes on a given measure for all children (Gutman et al., 2003; Jones et al., 2013).

*Risk factor.* Risk factors are associated with, or predictive of, worse outcomes on a given measure (Gutman et al., 2003; Jones et al., 2013).
References


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Chapter 2: Systematic Literature Review

Childhood Adversity, Academic Attainment, and Promotive or Protective Factors: A Systematic Literature Review

Abstract

Previous reviews have established the association between childhood adversity or trauma and academic attainment in school (Perfect et al., 2016). However, little is known about protective factors. This systematic literature review identified and analysed the existing literature on protective factors for children who have experienced adversity and their academic attainment outcomes. Thirteen empirical studies met inclusion criteria and were quality rated. Child, family, and school or neighbourhood protective factors associated with adversity and academic attainment outcomes were examined. The main finding from this review suggests that factors related to parenting and a child’s cognitive ability have a promotive effect on academic attainment, and in some cases reduce the negative impact of childhood adversity. Most other factors were only explored in one or two studies, making it difficult to draw conclusions for these factors. Implications for future research include the need to further explore these factors in relation to childhood adversity and academic attainment.

Keywords

Childhood adversity; Academic attainment; Promotive factors; Protective factors.
Introduction

Childhood adversity is a broad term that refers to a wide range of circumstances or events that may pose a serious threat to a child’s physical or psychological well-being. Examples include, but are not limited to, physical, sexual, and emotional abuse, bullying, parental death, neglect, extreme poverty, and community violence (Bartlett & Sacks, 2019). Research has shown that they can have a profound impact on a child’s developing brain (CYW, 2014) and can lower cognitive abilities and academic outcomes in school (Perfect et al., 2016).

The link between exposure to adversity in life and aspects of development is thought to be moderated through several protective factors (Nelson et al., 2020). However, to date, current research syntheses have not addressed the moderating effects of these protective factors on academic attainment outcomes for children who have experienced adversity. This systematic review fulfils an important function by providing the first summary on this topic. Schools and professionals will be able to use this knowledge to support students who have experienced adversity and choose interventions and practices which promote these protective factors (Robles et al., 2019).

Childhood Adversity

Felitti et al. (1998) measured negative early life experiences in their landmark longitudinal study which coined the term Adverse Childhood Experiences (ACEs). Their study identified a high prevalence of ACEs and that having a greater number of ACEs increased the risk of negative occupational, social, physical, and mental health outcomes (CDC, 2020). However, identifying definitive rates of adversity in school-aged populations has proved challenging, and varies greatly depending on the sample studied, the setting, the participant providing the information (e.g., parent or child), and the assessment tool used (Saunders & Adams, 2014). In addition, traumatic events, stress, adversity, and risk have been used
interchangeably in the literature and clear methods of identifying these events have not been defined (Parkinson, 2012). Nevertheless, current evidence suggests that approximately two out of every three children are likely to have experienced at least one or more traumatic event by the age of 17 (Perfect et al., 2016).

**Academic Attainment and Childhood Adversity**

Many theories have been developed which help explain why traumatic events or adversity in childhood can have an impact on brain development, cognition, and learning, which in turn may influence school-related outcomes such as academic attainment (O’Neill et al., 2010). Early environmental and life stressors often occur in a developmentally vulnerable period, which can lead to numerous differences in the structures and physiology of the brain, potentially resulting in neurocognitive impairments (Arincorayan et al., 2006; van der Kolk, 2005). Although results have been inconclusive regarding the origin of these deficits, there is growing evidence that children who experience adversity present with impairments in memory, attention, executive functioning, and language (Perfect et al., 2016).

Given that these skills are critical to school success, it is not surprising that children who have experienced adversity are at risk of school failure (Overstreet & Matthews, 2011). For instance, Burke et al. (2011) found that more than half of individuals who have experienced repeated adversity have learning and behavioural problems in school. In addition, students who experienced multiple ACEs were less likely to care about doing well in school or to complete homework in comparison with children who did not experience adversity (McDowell, 2017). These findings are consistent with international longitudinal studies. For example, Hurt et al. (2001) explored the relationship between violence exposure and school attainment and found that higher rates of exposure were associated with lower grade point averages in school. Taken together, the wide range of problems associated with childhood adversity puts individuals at risk for negative developmental outcomes and may be
susceptible to declines in their cognitive functioning, putting them at risk for poor academic attainment (Overstreet & Matthews, 2011).

**Promotive and Protective Factors**

Despite extensive research establishing the negative impact of early life experiences on development (e.g., Felitti et al., 1998), research in the area of epigenetics also indicates that supportive environments and rich learning experiences can generate positive epigenetic changes that establish a foundation for more effective learning capacities in the future (Sweatt, 2009). In addition, research suggests that there are ways to alter the epigenome that can reverse negative changes and restore functioning (McGowen et al., 2009). This has led to a flurry of research activity for developing interventions to support those who have experienced adversity. In the literature, two types of factors associated with success or resilience have been identified. Promotive factors are those that are related to more positive outcomes for all children, regardless of their level of exposure to adversity. On the other hand, protective factors are those which are related to positive outcomes only for children who have experienced risk or adversity and reduce the negative impact of these risks. However, it should be noted that many studies do not distinguish between promotive and protective factors (Jones et al., 2013).

Promotive or protective factors which have been explored with regard to children’s attainment, engagement, well-being, and behaviour in school include factors at the level of the child, family, and school or neighbourhood (Jones et al., 2013). At the individual level, factors which have been explored in the literature include adaptive coping strategies, self-esteem, empathy (Davis et al., 2019), self-efficacy, intellect, life satisfaction, personality traits, and appraisal of maltreatment (Larkin et al., 2018). At the family level, factors include a supportive, close relationship with primary caregivers (McLafferty et al., 2018), parental monitoring of friends and activities (Moore & Ramirez, 2015), low parenting stress (Liu et
al., 2019), and finding the time to read for pleasure (Larkin et al., 2018). Some studies have also explored the relationship between promotive or protective factors and adversity within the school context, including having a safe school (Moore & Ramirez, 2015), the presence of at least one adult mentor in school (Liu et al., 2019), and peer relationships (Larkin et al., 2018). Despite the negative impact of adversity on academic attainment and research on protective factors and school-related outcomes, the impact of adversity and protective factors on academic attainment has not been explored fully (Jones et al., 2013).

**Objectives**

The present review offers a significant contribution to existing knowledge as there is no existing synthesis of research on the role of protective factors in reducing the negative impact of childhood adversity on academic attainment in school. The purpose of this systematic review is to:

a) summarise the empirical literature to locate and identify research which explores the associations of childhood adversity, academic attainment, and promotive or protective factors;

b) to identify which promotive or protective factors have been explored in this literature;

c) to determine which of these factors offer a promotive or protective effect on academic attainment outcomes.

The review approaches this task by addressing two important research questions.

1. **What types of promotive or protective factors have been explored in the research regarding childhood adversity and academic attainment?** Here we outline which individual, family, school, and neighbourhood factors have been explored in the research.
2. **Which factors offer a promotive or protective effect on childhood adversity and academic attainment when controlling for other variables?** The negative impact of childhood adversity on academic attainment and learning difficulties in school has been widely researched (e.g., Perfect et al., 2016). However, not all children who experience adversity in childhood have academic difficulties in school. Therefore, we must begin to understand some of the factors which may reduce the negative impact of childhood adversity. Here, we will ensure that we will distinguish between promotive factors (which are associated with, or predictive of, better outcomes for all) and protective factors (which mitigate the negative impact of adversity on outcomes) (Jones et al., 2013).

**Search Methods**

The review methods were informed by Boland et al. (2008), the PRISMA statement and guidelines (Liberati et al., 2009) and the CASP checklists (CASP, 2018), to create a reliable and valid appraisal of the evidence base.

**Selection Criteria**

A set of inclusion and exclusion criteria were developed for the review and are detailed below. The inclusion criteria were determined after setting the research questions and conducting scoping searches to determine appropriate criteria. To be included in the review, studies had to:

- Include a measurement of trauma, stressful life experiences or childhood adversity AND a measure of academic attainment (e.g., standardised attainment tests or grades) AND assess the impact of at least one promotive or protective factor on academic attainment, which may be at the level of the child, family, school, or neighbourhood. Each of these components needed to be included in order to address the research questions.
• Measure the above variables using standardised or non-standardised instruments. They may be self-, parent-, or teacher-reported, or researcher administered measures to maximise the scope of the review.

• Involve children who are attending a school setting, from pre-school to secondary school (or equivalent grade levels in other countries) as the current review focuses on academic attainment.

• Be an empirical quantitative or mixed methods study, but must statistically analyse protective effects on academic attainment. This is line with the post-positivist epistemological stance guiding this thesis. It also allowed for easier comparison across studies and supported the manageability of the review.

• Be published in English, as the current review is limited in its ability to translate studies written in a language other than English.

Search Strategy

In the search engine ProQuest, the following databases were selected: APA PsycInfo, Education Collection, Psychology Database, ERIC, Social Science Database, Education Database, APA PsycArticles, Arts and Humanities Database, Science Database, and Sociology Database. At this stage of screening, dissertations and theses were included in the search. An edited version of this search string was also entered into Scopus as a supplementary search engine. The following keywords were entered into Google Scholar and the first 100 articles were retrieved ("adverse childhood experiences" OR trauma OR stress) AND (protective factors OR resilience) AND school AND (ability OR attainment OR reading OR maths or cognition OR intelligence OR test OR assessment)).

Grey literature sources included using keywords to search websites comprising of longitudinal national publications (e.g., Millennium Cohort Study, Growing Up in Ireland Study). The What Works Clearinghouse website was also searched using keywords ((trauma
OR adverse childhood experiences) AND protective). These databases and grey literature sources were searched simultaneously on the 29th of July, 2020. The search was repeated on the 29th April, 2022 to identify any relevant articles published since the initial search. Before the final search, the search string was tested and refined using scoping searches which resulted in the identification and inclusion of numerous synonyms for childhood adversity, protective factors, and academic attainment. Reference lists of studies that met inclusion criteria and reviews on protective factors which were identified through database searches were also scanned to identify any further relevant studies.

**Search String**

AB,TI,IF("Adverse Childhood Experiences" OR ACEs OR trauma OR ("traumatic experience" OR "traumatic experiences") OR "stressful life events" OR "traumatic-event exposure" OR "negative life event" OR "adverse life events" OR advers* OR "toxic stress" OR "post-traumatic stress disorder" OR PTSD) AND AB,TI,IF(Achievement OR cogniti* OR intelligence OR academic OR "academic attainment" OR reading OR maths OR grade* OR assessment OR test OR "academic resilience" OR "academic persistence" OR attainment OR "academic success" OR ability) AND AB,TI,IF(protective OR mediat* OR buffer* OR resilien* OR promotive OR moderat*) AND AB,TI,IF(School OR pre-school OR kindergarten OR pre-kindergarten OR classroom) NOT (undergraduate OR college OR university).

**Screening and Selection Process**

The search returned 974 records in ProQuest and 273 records in Scopus. Grey literature searching, including a search of Google scholar, identified 104 relevant results which were included for screening. These results were merged in Excel and duplicates were removed. After abstract and title screening, 1,098 records that did not meet the inclusion criteria were excluded. Of the remaining 149 records, 43 records could not be retrieved
through university library holdings or personal communication to the authors and thus were excluded. These records were mostly dissertations and theses, and thus all remaining articles are published and/or peer-reviewed.

The remaining 106 records were retrieved, and their methods and participants sections were reviewed to determine whether they met the inclusion criteria. This resulted in the exclusion of 61 records that did not include an appropriate measure of stress, protective factors or school attainment, 19 records were not empirical studies, two records were in languages other than English, three records were reviews of other studies, one record did not include a relevant sample, and nine studies did not directly analyse the moderating impact of protective factors on school attainment. The remaining 11 articles met all the inclusion criteria and were included in this review. The reference lists of these 11 studies were then scanned and three studies were identified that met inclusion criteria. One of these studies (Dubow & Tisak, 1991) was a follow-up study of one of the included (Dubow & Tisak, 1989) studies. Therefore, the follow-up study was included over the original study. The search process is documented in Figure 1.
Figure 1

**PRISMA Diagram**

Records identified through main database search (n = 974) →
Records identified through other sources (n = 377) →
Records after duplicates removed (n = 1247) →
Records screened (n = 1247) →
Records excluded (n = 1098) →
Full text articles assessed for eligibility (n = 149) →
Full text articles excluded (n = 138) →
Records which met inclusion criteria (n = 11) →
Records identified through reference list scanning (n = 3) →
Records which met inclusion criteria (n = 14) →
Records excluded as a follow-up study is identified (n = 1) →
Records included in the systematic review (n = 13) →
Data Extraction and Analysis

Descriptive data from each study were extracted using a data extraction table designed specifically for this study (see Table 1). This table includes the date of publication, authors, demographic data (i.e., country of origin, sample age range, and size), and an overview of covariates, childhood adversity, protective factors, and academic attainment outcome measures in each study.

To determine which factors offered a promotive or protective effect on academic attainment (Research Question 2), relevant data from each study were extracted and summarised in tables designed specifically for this study. Table 2 summarises child factors, Table 3 summarises family factors and Table 4 summarises school or neighbourhood factors. Promotive factors refer to variables that are positively related to academic attainment outcomes for all children and can be identified by a significant contribution to a positive outcome in a regression equation. Protective factors refer to when a variable is positively related to academic attainment for children who have experienced adversity and can be identified by a significant interaction term reducing the negative outcome in a regression equation (Gutman et al., 2003). The findings for these factors were then summarised using a narrative approach. These tables also provide an overview of the different types of factors explored in relation to childhood adversity and academic attainment (Research Question 1).

Quality Appraisal Method

The CASP (Critical Appraisal Skill Programme) checklist for cohort studies was used to critically appraise the quality of included studies (CASP, 2018). An excel version of this checklist was used to analyse the data (Tomey, 2016). The checklist provides 12 questions which are designed to help researchers assess internal validity, the results, and the relevance to practice. A scoring system developed by Tomey (2016) was adapted for this review. For each question, studies received scores of 1 (yes), 0.5 (unsure), 0 (no). Scores were computed
scores and cut-off scores were adopted for each study (a total score of 0 – 5 = low quality; 5 – 9 = medium quality; 10 – 14 = high quality). Appendix A provides further details.

Systematic Review Results

Table 1 summarises the 13 studies according to their study and sample characteristics, measures of childhood adversity, protective factors and academic attainment, study design and quality rating.
<table>
<thead>
<tr>
<th>Study</th>
<th>Location</th>
<th>N</th>
<th>Study Design</th>
<th>Age Range or Grade</th>
<th>Covariates</th>
<th>Childhood Adversity</th>
<th>Protective Factors</th>
<th>Academic Attainment</th>
<th>Quality Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browne et al. (2018)</td>
<td>Canada</td>
<td>323</td>
<td>Longitudinal</td>
<td>Followed from birth to 4 ½ years/school entry</td>
<td>Childbirth weight, maternal language, gender, age at follow up</td>
<td>Early maternal history, socioeconomic risk, neighbourhood risk and quality</td>
<td>Quality of home environment, maternal investments, maternal responsitivity</td>
<td>Receptive vocabulary (PPVT-IV), academic skills (WJIII)</td>
<td>13 (high)</td>
</tr>
<tr>
<td>Burchinal et al. (2006)</td>
<td>USA</td>
<td>75</td>
<td>Longitudinal</td>
<td>Followed from kindergarten to 3rd grade</td>
<td>Gender, maternal IQ</td>
<td>Poverty, father absent, large household, low maternal education, high maternal depression, high life stress</td>
<td>Quality of home environment, maternal teaching style, parenting, childcare, child characteristics at school entry (language, social skills)</td>
<td>Reading and math (WJ-R)</td>
<td>12.5 (high)</td>
</tr>
<tr>
<td>Burchinal et al. (2008)</td>
<td>USA</td>
<td>74</td>
<td>Longitudinal</td>
<td>Followed from birth to 6th grade</td>
<td>Gender, maternal IQ</td>
<td>Poverty, father absent, large household, low maternal education, high maternal depression, high life stress, low school quality, expected discrimination</td>
<td>Child’s language, child’s IQ, parenting</td>
<td>Reading and math (WJ-R)</td>
<td>10 (high)</td>
</tr>
<tr>
<td>Cunningham et al. (2002)</td>
<td>USA</td>
<td>84</td>
<td>Cross-sectional</td>
<td>9 – 12th grade; (M age = 16, SD = .96)</td>
<td>Gender</td>
<td>Stressful Events Scale revised</td>
<td>Self-esteem, parental monitoring, personal independence monitoring</td>
<td>GPA – maths, science</td>
<td>7 (medium)</td>
</tr>
<tr>
<td>Dubow &amp; Tisak (1991)</td>
<td>USA</td>
<td>193</td>
<td>Longitudinal</td>
<td>Followed from 3rd – 5th grade to 5th – 7th grade</td>
<td>Socioeconomic status, gender</td>
<td>Life Events Scale (Sandler &amp; Block, 1979)</td>
<td>Perceived social support (family, peer and teacher), social problem skills</td>
<td>GPA – English, math, spelling and reading</td>
<td>8 (medium)</td>
</tr>
<tr>
<td>Study</td>
<td>Location</td>
<td>N</td>
<td>Study Design</td>
<td>Age Range or Grade*</td>
<td>Covariates</td>
<td>Childhood Adversity</td>
<td>Protective Factors</td>
<td>Academic Attainment</td>
<td>Quality Rating</td>
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<tr>
<td>Duke (2020)</td>
<td>USA</td>
<td>81,855</td>
<td>Cross-sectional</td>
<td>9th, 11th grade (M age = 15.5)</td>
<td>Age, gender, race, family structure, receiving special education, disability, long-term health problem</td>
<td>10 questions based on child adversity from Minnesota Student Survey: verbal, physical, sexual abuse, alcoholism, drug abuse, domestic violence, incarceration, food insecurity, homelessness</td>
<td>School connection</td>
<td>Self-reported GPA</td>
<td>11 (high)</td>
</tr>
<tr>
<td>Gutman et al. (2002)</td>
<td>USA</td>
<td>837</td>
<td>Cross-sectional</td>
<td>7th grade (M age = 12.29, SD = 0.58)</td>
<td>Age, gender</td>
<td>Maternal depression &amp; occupation, family income, highest occupation in the household, marital status, # chn in household, stressful life events, neighbourhood poverty</td>
<td>GPA – English, math, science, social studies; state math readiness scores</td>
<td>11 (high)</td>
<td></td>
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<tr>
<td>Gutman et al. (2003)</td>
<td>USA</td>
<td>145</td>
<td>Longitudinal</td>
<td>Followed from birth to 18 years</td>
<td>Not specified</td>
<td>Sum of 10 risk factors: disadvantaged minority group status, occupation of head of household, maternal education, family size, father absence, stressful life events, parental perspectives, maternal anxiety, maternal mental health, positive interaction</td>
<td>Child’s preschool verbal intelligence (WPPSI), child’s social-emotional competence</td>
<td>GPA</td>
<td>12 (high)</td>
</tr>
<tr>
<td>Manly et al. (2013)</td>
<td>USA</td>
<td>170</td>
<td>Longitudinal</td>
<td>Followed from Kindergarten to 1st grade</td>
<td>Maternal intelligence, minority status, history of public assistance, and maternal education</td>
<td>Neglect present, severity of physical neglect, neighbourhood poverty</td>
<td>Cognitive attainment at age 4, ego resiliency</td>
<td>Academic attainment 1st grade – language, math</td>
<td>11 (high)</td>
</tr>
<tr>
<td>Study</td>
<td>Location</td>
<td>N</td>
<td>Study Design</td>
<td>Age Range or Grade</td>
<td>Covariates</td>
<td>Childhood Adversity</td>
<td>Protective Factors</td>
<td>Academic Attainment</td>
<td>Quality Rating</td>
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<tr>
<td>Masten et al. (1999)</td>
<td>USA</td>
<td>205</td>
<td>Longitudinal</td>
<td>Followed from late childhood (8-12 years) to late adolescence (17-23 years)</td>
<td>Gender, age, socioeconomic status</td>
<td>Life Events Questionnaire, contextual life events interview and developmental history questionnaire</td>
<td>IQ (WISC-R), parenting</td>
<td>Late childhood: Peabody Individual Attainment Test, GPA, teacher rating, parent interview Late adolescence: parent and adolescent report</td>
<td>13.5 (high)</td>
</tr>
<tr>
<td>Miller &amp; MacIntosh (1997)</td>
<td>USA</td>
<td>131</td>
<td>Cross-sectional</td>
<td>Adolescents ($M$ age = 15.9, $SD$ = 1.2)</td>
<td>Gender</td>
<td>Stress, daily hassles, gender discrimination, racial discrimination, neighbourhood safety, perceived stress, active stress</td>
<td>Collective self-esteem, ethnic identity, racelessness, racial socialisation</td>
<td>Self-reported GPA</td>
<td>7 (medium)</td>
</tr>
<tr>
<td>Pettit et al. (1997)</td>
<td>USA</td>
<td>585</td>
<td>Longitudinal</td>
<td>Followed from pre-entry to kindergarten to 6th grade</td>
<td>Gender, ethnicity</td>
<td>Family adversity – single parenthood, socioeconomic status, family stress</td>
<td>Supportive parenting</td>
<td>Academic attainment (sum of composite attainment test score &amp; GPA)</td>
<td>10 (high)</td>
</tr>
<tr>
<td>Prelow &amp; Loukas (2003)</td>
<td>USA</td>
<td>549</td>
<td>Cross-sectional</td>
<td>10 – 14 years ($M$ age = 11.95, $SD$ = 1.42)</td>
<td>Age, gender</td>
<td>Single-parent household, low maternal education, maternal psychological distress, parent perceived financial strain, neighbourhood disadvantage</td>
<td>Maternal academic involvement, socioemotional competence, parental monitoring, extracurricular activities</td>
<td>Academic attainment – math &amp; language (WJ-R)</td>
<td>10 (high)</td>
</tr>
</tbody>
</table>
Quality Appraisal

None of the studies were judged as being of low methodological quality. Three studies were judged as medium while 10 were judged as high methodological quality. It is important to note that some studies focused on a minority population in North America (e.g., African-American/Latino), which means that their findings may not be generalisable to the wider population. Studies that used a self-report measure for academic outcomes were deemed of lower methodological quality than others. In general, studies that were longitudinal in design were judged as being of higher methodological quality than those with a cross-sectional design.

Overview of the Studies

The 13 studies that met inclusion criteria were published between 1991 and 2020, with four studies published in the 1990s, six in the 2000s, two in the 2010s, and one in 2020. Study samples ranged in size from 74 children (Burchinal et al., 2008) to 81,855 children (Duke, 2020). The average age across the four studies that reported a mean age was 14 years, ranging from 10 to 17 years old. The remaining nine studies reported school grades which ranged from kindergarten to 12th grade. The majority of studies were conducted in North America (12 studies). Of these studies, five studies focused on participants who were African-American (Burchinal et al., 2006; Burchinal et al., 2008; Cunningham et al., 2002; Gutman et al., 2002; Miller & McIntosh, 1999) and one study focused on Latino participants (Prelow, 2003). One study was conducted in Canada (Browne et al., 2018). Studies included consisted of either longitudinal or cross-sectional study designs.

A range of methods was used to measure childhood adversity. The majority of studies used parent reports or parent interviews to record stress, risk, or adversity measures (ten studies). Three studies asked adolescents to self-report stressful or adverse experiences they had experienced to date (Duke, 2020; Cunningham et al. 2002; Miller & McIntosh, 1999).
Seven studies used a cumulative risk approach, where risks were computed. Five studies used a standardised scale that examined stressful events which had occurred in the child’s life (e.g., Life Events Scale; Sandler & Block, 1979). With regard to academic attainment outcome measures, four of the studies used standardised attainment assessment measures such as the Woodcock-Johnson Tests of Attainment-Revised (WJ-R; Woodcock & Johnson, 1990) and the Woodcock-Johnson Third Edition-Tests of Academic Attainment (WJ-III; Woodcock, McGrew, & Maher, 2001). Eight studies used grade point average (GPA) or grades across a range of subjects, including English, spelling, reading, math, science and social studies. Two of these studies combined GPA with other measures (Masten et al., 1999; Pettit et al., 1997), and two studies asked participants to self-report GPA (Duke, 2020; Miller & MacIntosh, 1999).

Which Promotive or Protective Factors were Explored?

Child Factors. Table 2 presents a summary of the eight child factors explored in the current review. Promotive effects for intelligence or cognitive ability were found in four studies (Burchinal et al., 2008; Gutman et al., 2003; Manly et al., 2013; Masten et al., 1999), while only two of these studies also reported protective effects (Manly et al., 2013; Masten et al., 1999). In these two studies, children’s intelligence or cognitive attainment moderated the relationship between childhood adversity and academic attainment. Two studies reported both a promotive and protective effect on a child’s language skills, where children’s language skills appeared to moderate the association between risk and maths skills in both studies (Burchinal et al., 2006; Burchinal et al., 2008).

No protective effects were found for social skills (Burchinal et al., 2006; Dubow & Tisak, 1991), self-esteem (Cunningham et al., 2002; Miller & McIntosh, 1999) or social-emotional competence (Gutman et al., 2003; Prelow & Loukas, 2003). However, results for promotive effects of these factors were mixed. In one study, racial identity acted as both a
promotive and protective factor, suggesting that a strong identity mitigates the negative impact of adversity on GPA (Miller & McIntosh, 1999). Promotive effects were found for expected discrimination, in that low expectations of discrimination was a significant promotive factor for reading ability (Burchinal et al., 2008). No protective or promotive effects were found for ego resiliency (Manly et al., 2013).

Table 2

Summary of Principal Findings for Child Factors

<table>
<thead>
<tr>
<th>Child Factor</th>
<th>Study</th>
<th>Promotive (✓ or x)</th>
<th>Protective (✓ or x)</th>
<th>Main Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intelligence</td>
<td>Burchinal et al. (2008)</td>
<td>✓</td>
<td>×</td>
<td>IQ was a promotive factor for both reading and math, but it was not a significant moderator in these analyses that included language.</td>
</tr>
<tr>
<td></td>
<td>Gutman et al. (2003)</td>
<td>✓</td>
<td>×</td>
<td>Preschool intelligence had significant effects on students’ average GPA. No protective effects were found.</td>
</tr>
<tr>
<td></td>
<td>Manly et al. (2013)</td>
<td>✓</td>
<td>✓</td>
<td>Children’s cognitive attainment at age 4 moderated the relation between severity of neglect and children’s behaviour in kindergarten as well as their academic attainment in first grade. Significant positive correlations between cognitive attainment and academic attainment were also found.</td>
</tr>
<tr>
<td></td>
<td>Masten et al. (1999)</td>
<td>✓</td>
<td>✓</td>
<td>Childhood and adolescent IQ had a significant positive correlation with academic functioning. Resilient adolescents had average or better IQ in common with their low-adversity competent peers.</td>
</tr>
<tr>
<td>Language</td>
<td>Burchinal et al. (2006)</td>
<td>✓</td>
<td>✓</td>
<td>Children with better language skills demonstrated better reading and math skills at all ages. Language skills at school entry appeared to mediate the association between risk and mathematic skills.</td>
</tr>
<tr>
<td></td>
<td>Burchinal et al. (2008)</td>
<td>✓</td>
<td>✓</td>
<td>Language skills were a promotive and protective factor for reading and maths.</td>
</tr>
<tr>
<td>Social Skills</td>
<td>Burchinal et al. (2006)</td>
<td>×</td>
<td>×</td>
<td>Social skills did not mediate or moderate the association between risk and reading skills.</td>
</tr>
<tr>
<td></td>
<td>Dubow &amp; Tisak (1991)</td>
<td>✓</td>
<td>×</td>
<td>Increases in social problem-solving skills were related to improvement in GPA. No significant findings emerged for the interaction terms of stressful events x social skills.</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>Cunningham et al. (2002)</td>
<td>×</td>
<td>×</td>
<td>There were no significant correlations between global self-esteem and GPA.</td>
</tr>
<tr>
<td></td>
<td>Miller &amp; McIntosh (1999)</td>
<td>✓</td>
<td>×</td>
<td>Collective self-esteem was positively correlated with GPA.</td>
</tr>
<tr>
<td>Social-emotional Competence</td>
<td>Gutman et al. (2003)</td>
<td>✓</td>
<td>×</td>
<td>Mental health had significant promotive effects on students’ average GPA. Better mental health was not a protective factor for students exposed to multiple risks.</td>
</tr>
<tr>
<td></td>
<td>Prelow &amp; Loukas (2003)</td>
<td>×</td>
<td>×</td>
<td>Socioemotional competence was not significantly associated with language or math attainment scores.</td>
</tr>
<tr>
<td>Racial identity</td>
<td>Miller &amp; MacIntosh (1999)</td>
<td>✓</td>
<td>✓</td>
<td>Ethnic identity was positively correlated with GPA, and a strong ethnic identity appears to protect adolescents against the obstacles presented by daily hassles.</td>
</tr>
<tr>
<td>Expected Discrimination</td>
<td>Burchinal et al. (2008)</td>
<td>✓</td>
<td>×</td>
<td>Low expectation of discrimination was a significant promotive factor for reading.</td>
</tr>
<tr>
<td>Ego resiliency</td>
<td>Manly et al. (2013)</td>
<td>×</td>
<td>×</td>
<td>There was no association between ego resiliency and later academic outcomes.</td>
</tr>
</tbody>
</table>
**Family Factors.** Table 3 presents a summary of the eight family factors explored. Mixed results were found for factors related to parenting with four out of five studies reported promotive effects (Browne et al., 2018; Burchinal et al., 2006; Masten et al., 1999; Pettit et al., 1997). This suggests that parenting skills are positively associated with academic attainment outcomes. Only two of these studies reported protective effects (Burchinal et al., 2006; Masten et al., 1999). One study found that consistent discipline was both a promotive and protective factor for GPA (Gutman et al., 2002).

Both promotive and protective effects were also found for parental monitoring (Cunningham et al., 2002; Prelow & Loukas, 2003), suggesting that parental monitoring may reduce the negative impact of adversity on academic attainment. No protective effects were found for parental involvement in school (Gutman et al., 2002; Prelow & Loukas, 2003), however, Gutman et al. (2002) found that this factor was positively associated with GPA, acting as a promotive factor. Interestingly, democratic decision making was a protective factor for GPA, but no promotive effects were found (Gutman et al., 2002). No promotive or protective effects were found for family support (Dubow & Tisak, 1991), racial socialization (Miller & McIntosh, 1999) or the home component of self-esteem (Cunningham et al., 2002).
Table 3

Summary of Principal Findings for Family Factors

<table>
<thead>
<tr>
<th>Family Factor</th>
<th>Study</th>
<th>Promotive (✓ or x)</th>
<th>Protective (✓ or x)</th>
<th>Main Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parenting</td>
<td>Browne et al. (2018)</td>
<td>✓</td>
<td>×</td>
<td>Parenting and quality of home environment significantly associated with academic attainment and receptive vocabulary. No significant interaction effects were found.</td>
</tr>
<tr>
<td></td>
<td>Burchinal et al. (2006)</td>
<td>✓</td>
<td>✓</td>
<td>Parenting was a significant predictor of reading. Parenting appeared to mediate the association between risk and mathematics scores for children exposed to risk in early childhood.</td>
</tr>
<tr>
<td></td>
<td>Burchinal et al. (2008)</td>
<td>×</td>
<td>×</td>
<td>Parenting was not a promotive or protective factor for either reading or math skills.</td>
</tr>
<tr>
<td></td>
<td>Masten et al. (1999)</td>
<td>✓</td>
<td>✓</td>
<td>Parenting resources were associated with good outcomes for academic functioning. Resilient adolescents had average or better parenting in common with their low adversity competent peers.</td>
</tr>
<tr>
<td></td>
<td>Pettit et al. (1997)</td>
<td>✓</td>
<td>×</td>
<td>Grade 6 academic attainment was significantly related to earlier parenting measures. Academic attainment in Grade 6 was not predicted by the interaction of supportive parenting with any adversity measure.</td>
</tr>
<tr>
<td>Parental Monitoring</td>
<td>Cunningham et al. (2002)</td>
<td>✓</td>
<td>✓</td>
<td>A positive statistically significant correlation was indicated between parental monitoring and GPA. The interaction term stressf ul events x personal independence monitoring (a subscale of parental monitoring) moderated the relationship with GPA.</td>
</tr>
<tr>
<td></td>
<td>Prelow &amp; Loukas (2003)</td>
<td>✓</td>
<td>✓</td>
<td>Maternal monitoring was positively associated with language attainment and marginally positively associated with math attainment. Maternal monitoring served as a protective factor for language.</td>
</tr>
<tr>
<td>School Involvement</td>
<td>Gutman et al. (2002)</td>
<td>✓</td>
<td>×</td>
<td>Parental school involvement was a significant promotive factor.</td>
</tr>
<tr>
<td></td>
<td>Prelow &amp; Loukas (2003)</td>
<td>×</td>
<td>×</td>
<td>Maternal academic involvement was not associated with language or math attainment.</td>
</tr>
<tr>
<td>Consistent Discipline</td>
<td>Gutman et al. (2002)</td>
<td>✓</td>
<td>✓</td>
<td>Consistent discipline was both a promotive and protective factor for GPA. Adolescents with a greater number of risks who had higher GPAs when they had higher levels of consistent discipline.</td>
</tr>
<tr>
<td>Democratic Decision Making</td>
<td>Gutman et al. (2002)</td>
<td>×</td>
<td>✓</td>
<td>Democratic decision making was a significant protective factor for GPA.</td>
</tr>
<tr>
<td>Family support</td>
<td>Dubow &amp; Tisak (1991)</td>
<td>×</td>
<td>×</td>
<td>Family support was not a promotive or protective factor for GPA.</td>
</tr>
<tr>
<td>Racial Socialization</td>
<td>Miller &amp; MacIntosh (1999)</td>
<td>×</td>
<td>×</td>
<td>No correlations were found between racial socialization and GPA.</td>
</tr>
<tr>
<td>Self-esteem (home)</td>
<td>Cunningham et al. (2002)</td>
<td>×</td>
<td>×</td>
<td>There were no significant correlations between the home component of self-esteem and GPA.</td>
</tr>
</tbody>
</table>

School or Neighbourhood Factors. Table 4 presents a summary of the seven school or neighbourhood factors explored. Dubow and Tisak (1991) found that peer support was a promotive factor for GPA and Gutman et al. (2002) found that peer support was a protective factor for math attainment test scores. A promotive effect was found for social support (Dubow & Tisak, 1991) and extracurricular activities (Prelow & Loukas, 2003). In one study, the peer or school component of self-esteem acted as both a promotive and protective factor,
suggesting that this type of self-esteem moderated the relationship between stressful life events and GPA. Duke (2020) found that the relationship between low academic achievement and school connection was marginally moderated by increasing school connection, but did not explore promotive effects. Analyses by Burcinal et al. (2006) found that, although there was no significant relationship between childcare quality and mathematic skills, childcare quality appeared to serve as a protective factor for mathematic skills over time. No promotive or protective effects were found for teacher support (Dubow & Tisak, 1991; Gutman et al., 2002).

**Table 4**

*Summary of Principal Findings for School or Neighbourhood Factors*

<table>
<thead>
<tr>
<th>School or Neighbourhood Factor</th>
<th>Study</th>
<th>Promotive (✓ or ×)</th>
<th>Protective (✓ or ×)</th>
<th>Main Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer Support</td>
<td>Dubow &amp; Tisak</td>
<td>✓</td>
<td>×</td>
<td>Increases in peer support were related to improvements in GPA. No significant findings emerged for the interaction terms of stressful events x peer support.</td>
</tr>
<tr>
<td></td>
<td>Gutman et al.</td>
<td>×</td>
<td>✓</td>
<td>Peer support was a significant protective factor for math attainment test scores.</td>
</tr>
<tr>
<td>Teacher Support</td>
<td>Dubow &amp; Tisak</td>
<td>×</td>
<td>×</td>
<td>Teacher support was not a promotive or protective factor for GPA.</td>
</tr>
<tr>
<td></td>
<td>Gutman et al.</td>
<td>×</td>
<td>×</td>
<td>Adult support in school was not a promotive or protective factor for GPA.</td>
</tr>
<tr>
<td>Social Support</td>
<td>Dubow &amp; Tisak</td>
<td>✓</td>
<td>×</td>
<td>Higher levels of initial social support predicted a higher GPA. No significant findings emerged for the interaction terms of stressful events x social support.</td>
</tr>
<tr>
<td>School connection</td>
<td>Duke (2020)</td>
<td>-×</td>
<td>✓</td>
<td>The relationship between below-average academic achievement and adversities were marginally attenuated by increasing school connection.</td>
</tr>
<tr>
<td>Self-esteem (peer, school)</td>
<td>Cunningham et al.</td>
<td>✓</td>
<td>✓</td>
<td>There was a significant prediction of school self-esteem for GPA. The school component of self-esteem also mediated the relation between stressful life events and GPA.</td>
</tr>
<tr>
<td>Childcare Quality</td>
<td>Burchinal et al.</td>
<td>×</td>
<td>✓</td>
<td>Analyses suggest that childcare quality increasingly serves as a protective factor for mathematic skills over time.</td>
</tr>
<tr>
<td>Extracurricular Activities</td>
<td>Prelow &amp; Loukas</td>
<td>✓</td>
<td>×</td>
<td>Extracurricular activity was significantly associated with higher math and language attainment. It did not serve as a protective factor.</td>
</tr>
</tbody>
</table>

*Not reported

**Discussion**

In this systematic review, we synthesised the key findings from 13 published studies on promotive or protective factors for academic attainment and childhood adversity. The findings of this review demonstrate that a range of child, family, and school or
neighbourhood factors have been studied in the literature and that some of these factors offer promotive or protective effects. We discuss the findings of each of our research questions in turn.

**Types of Promotive or Protective Factors**

There was a variety of factors explored, including child, family, school, and neighbourhood-level factors. These factors were identified by the researchers as they were theoretically or empirically positively associated with academic attainment outcomes. Other factors which have been identified in the literature but were not explored in studies included in this review should not be overlooked. Qualitative research by Downey (2014) identified eight factors which made a difference in academic success for children who faced serious life difficulties. Some of these included participants’ feelings and attitudes toward school and learning; personal conduct related to productive behaviours such as paying attention and completing work; and connections in the community. Other protective factors identified in the literature include school engagement (Threlfall et al., 2017), higher parental qualifications, and feeling safe in your neighbourhood (Jones et al., 2013).

**Which Factors Offer a Promotive or Protective Effect?**

In our synthesis, parenting and intelligence received the most empirical attention. Nine of the studies in this review explored variables related to the parent-child relationship, including parenting, parental monitoring, consistent discipline, and family support. The majority of these studies found promotive effects for these variables, with more than half reporting protective effects. This evidence lends support to the importance of parent-child relationships in reducing the negative impact of adversity on academic attainment outcomes. The power of the parent-child relationship has been espoused by many theoretical perspectives, including Bowlby’s attachment theory (1982). A secure attachment style between child and caregiver has been shown to be positively associated with resilience
Research has established that children who have experienced adversity tend to recover more effectively when they have a positive relationship with a competent adult (Masten et al., 1990). However, much of the research on parent-child relationships and parenting styles are based on mothers only, which is replicated in the current synthesis. It would be of interest to explore whether fathers’ characteristics and behaviours also influence children’s academic outcomes (Jones et al., 2013).

Research has established that cognitive abilities are strongly predictive of academic attainment in school and are also linked to adult outcomes (Duncan et al., 2007). Therefore, it is not surprising that findings from this review indicate that cognitive abilities moderate the negative relationship between experiencing adversity in childhood and academic attainment outcomes. While the brain and other biological systems and most adaptable early in life, emerging research in the areas of neuroplasticity and epigenetics indicate that it is never too late to build resilience; it is shaped throughout life by the accumulation of both positive and negative experiences (CDC, 2015). It is possible that these children may have experienced additional positive experiences or protective factors, such as at least one stable, caring and supportive relationship between a child and an adult (Gold, 2017), which supported the development of cognitive functions despite adversity. Other protective experiences identified in the research for altering brain structure and function at all ages include activities such as regular physical exercise (Erickson et al., 2011) and stress-reduction practices such as mindfulness (Farb et al., 2007). However, whether these interventions moderate the adverse effects of stress or result in a profile of neurobehavioural functioning that is “better than normal” requires more evidence (Davidson & McEwen, 2012).

Alternatively, beneficial effects of early exposure to mild stress or the type of stress experienced may offer an explanation for the protective effect of cognitive abilities on adversity. For example, animal studies demonstrate that those exposed to early mild stress
had lower cortisol, enhanced exploratory behaviour, and increased food consumption following stress exposure (Parker et al., 2004). A follow-up study, findings suggested that early exposure to stress enhances prefrontal regulatory mechanisms (Parker et al., 2005). The type of stress experienced by the child must also be considered. According to Perry and Szalavitz (2017), the long-term effects of stress are determined by the pattern of stress activation. Unpredictable, extreme, and prolonged stress lead to a cascade of risk in emotional, social, mental, and physical development. Alternatively, predictable, moderate, and controllable stress can lead to a stronger, more flexible stress-response capability, leading to resilience for these children. However, the distinction between the type and pattern of stress is not often made in the resilience literature. Thus, the impact of adversity or stress can vary widely within research and findings must be interpreted with this in mind.

Previous research identified that the presence of at least one supportive adult, such as a teacher, was needed to achieve academic success (Quin, 2017). However, teacher support did not act as a promotive or protective factor in the current review. Previous research also identified that peer relationships are a fundamental factor in adolescent development (Steinberg & Morris, 2001). This is consistent with the Resilience Portfolio Model, which suggests that when youth develop interpersonal resources such as interpersonal relationships, they are more likely to positively adapt when faced with adversity (Grych et al., 2015). The current synthesis offered mixed results for peer support. Most other factors, including peer and teacher support, were only explored in one or two studies, making it difficult to draw conclusions for these factors. Future research should further examine whether the child, family and school or neighbourhood level factors explored here offer a promotive or protective effect for children who have experienced adversity.
Limitations

The current review is not without its limitations. As stated in the introduction, terms like ‘trauma’ and ‘adversity’ have been used interchangeably in the literature which has led to a difficulty in identifying operational definitions (Parkinson, 2012). The studies in this review used a range of approaches to measure adversity, including standardised scales, cumulative risk approaches, and focusing on exposure to a specific traumatic event. Similarly, a range of academic attainment outcome measures was used, including GPA, standardised psychometric attainment tools, and scores on subject-specific tests. This should be considered when comparing the findings of the studies. The majority of the studies were conducted in North America and six of these studies focused on ethnic minority groups in their sample. This may impact the generalisability of the findings to the wider population. In addition, four of the studies are cross-sectional; therefore, direct causation assumptions cannot be made.

Although the search string was tested and refined using scoping searches to identify relevant search terms, terms such as ‘risk’ and ‘stress’ were not included in the search string which may have resulted in the omission of relevant articles. In addition, we did not conduct a search using keywords of specific types of adversity. This decision may have resulted in the omission of relevant articles.

Conclusion

The current review offers a synthesis of the literature that explores factors which promote academic attainment in school, and in some cases, moderate the relationship between childhood adversity and academic attainment outcomes. The findings from this review suggest that factors relating to parenting and a child’s cognitive ability have a promotive effect on academic attainment, and can also reduce the negative impact of childhood adversity. These findings suggest that effective interventions may include how to support positive parenting and the development of a secure parent-child relationship, which
may, in turn, support the development of cognitive abilities. However, most other factors identified in this review have only been explored in one or two studies, making it difficult to draw definite conclusions for these factors. Given the importance of academic attainment in school (Tanaka et al., 2015), future research should continue to examine the moderating impact of protective factors for children who have experienced adversity.
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https://doi.org/10.1136/bmj.m3048

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Chapter 3: Empirical Study Methodology

Chapter Overview

This chapter details the methodology underpinning the empirical study presented in Chapter 4. The focus of the empirical article was guided by findings from the systematic literature review. The main finding from the review suggested that factors relating to parenting or a child’s cognitive ability were among the most identified, and offer promotive and/or protective effects for academic outcomes. However, most other factors were explored in only one or two studies, making it difficult to conclude for these factors. The review concluded that further research is needed to explore factors that promote academic performance in school, especially for those who have experienced adversity in childhood. In addition, it was evident from the review that few studies explored factors relating specifically to the school context. Therefore, the purpose of the empirical journal article was to identify and explore factors within the school context that promote academic attainment outcomes, and that moderate the relationship between childhood adversity and academic attainment.

This chapter introduces and outlines the key methodological considerations for the study, including the rationale for the research questions, the epistemological perspectives, and the research design considerations. As this study is a secondary analysis of the Growing Up in Ireland (GUI) study, an overview of the GUI’s participants, procedures, and methods are provided, alongside considerations for conceptualising and identifying appropriate variables within the dataset. The analysis strategy and possible limitations of the current study are also discussed.

Research Questions

The first research question is ‘what effect does experiencing childhood adversity have on an individual’s later academic attainment outcomes?’ Prior reviews have concluded that poor academic performance (e.g., grades, standardised assessment scores) is evident in those
who have experienced childhood adversity (e.g., Perfect et al., 2016). However, this has not been widely explored within the Irish context. It is hypothesised that experiencing adversity early in life will negatively impact one’s later academic attainment.

The second research question is ‘which school related factors promote better academic attainment outcomes for all?’ and the third research question is ‘which school-related factors moderate the relationship between experiencing adversity and academic attainment?’ Research to date has focused on individual characteristics such as cognitive ability (Flouri et al., 2010) or factors within the family context such as parenting (Burchinal et al., 2006). The impact of school-related factors has not yet been fully explored. It is hypothesised that some factors related to the school context will promote better academic outcomes for all students but also reduce the negative impact of adversity on academic attainment. It is not yet known which school factors will have the greatest impact.

**Epistemology**

This thesis is underpinned by the epistemological perspective of post-positivism. Adopting an objectivist position, post-positivism is similar to positivism in that both believe data can be objectively collected and analysed (Tracy, 2013). However, arising out of dissatisfaction with aspects of the positivist stance, post-positivists acknowledge that objective reality is not possible as subjectivity is inherent in the research process. This position holds that as human intellectual mechanisms are flawed and phenomena are intractable, one can never fully capture a “true” reality (Lincoln & Guba, 2000). Thus, researcher biases and backgrounds cannot be ignored and should be corrected or minimised. In addition, researchers adopting a post-positivist view are likely to use multiple types and sources of data, diverse methods of collection, and various theoretical frames to identify what is happening. Despite some differences between the paradigms, both perspectives share much
in common. For example, both emphasize cause and effect linkages of phenomena that can be studied, identified, and generalised (Ponterotto, 2005).

Driven by a post-positivist perspective, the empirical journal article described in Chapter 4 explores the relationship between the following phenomena: childhood adversity, academic attainment, and protective factors. Cause and effect linkages are identified whereby experiencing adversity early in life predicts academic achievement at age 15/16. Post-positivists believe that methodological triangulation is worthwhile as a key concern for good research in this paradigm, as is reliability and generalisability (Tracy, 2013). Taking this into consideration, data were collected from multiple perspectives such as the young person, his/her parent(s), and the school principal, and academic achievement was measured across different time points. Various theoretical perspectives for how constructs are operationalised were also adopted which highlights the subjectivity of the researcher whilst also aiming to reduce researcher bias. For example, ‘The Pair of ACEs Tree’ (Ellis & Dietz, 2017) was used as a framework to operationalise childhood adversity.

**Research Design**

Underpinned by a post-positivist perspective, the empirical journal article was conducted within the quantitative research paradigm. Positivists and post-positivists attempt to simulate strict scientific methods and procedures where variables are carefully controlled and manipulated aiming to uncover and explain relationships among variables. Therefore, both positivists and post-positivists serve as the primary foundation and anchor for quantitative research as such methods generally focus on the strict quantification of observations and careful control of empirical variables (Ponterotto, 2005). Quantitative research often incorporates large-scale sampling and the use of statistical procedures to examine group means and variances (Ponterotto & Grieger, 1999), whilst emphasising the measurement and analysis of causal or correlational relationships between variables (Denzin
& Lincoln, 2000). As the current study aimed to explore the causal relationship between clearly defined variables, namely childhood adversity, protective factors, and academic attainment, it was deemed that quantitative research within a post-positivist perspective was an appropriate choice of paradigm.

Within this paradigm, the journal article involved secondary analysis of quantitative, longitudinal data collected as part of the GUI study. GUI is a longitudinal study based on a fixed panel design, whereby the project follows a representative sample of children and their families who were recruited into the study at age 9 for re-interview on several occasions (Thornton et al., 2016). The empirical journal article, presented in Chapter 4, draws on variables from Wave 1 (age 9), Wave 2 (age 13), and Wave 3 (age 17/18) of the ‘98 cohort. At Wave 1, adversities the young person had experienced to date were identified, followed by protective factors related to the school context at Wave 2, and the young person’s academic outcome at Wave 3.

Longitudinal studies have considerable potential for yielding rich data that can trace changes over time with great accuracy. In addition, the ability to study developmental patterns and causality within cohorts is a strength of longitudinal designs, permitting researchers to examine individual variations or changes in characteristics or traits, which may result in changes in others (Cohen et al., 2018). However, limitations include problems of attrition as participants may be lost to follow-up over time. Longitudinal data are also affected by history (events occurring may change the observations of the group), maturation (participants mature at different speeds and in different ways), testing (whereby participants learn from repeated testing/interviewing), and the direction of causality not always being clear or singular (Ruspini, 2002).

There are several strengths to undertaking secondary analysis of large-scale, quantitative studies. GUI study offers a unique dataset in terms of its breadth, which allows
researchers to gain a novel understanding of children’s development in the Irish context across a range of domains (Murray et al., 2010). This, together with the large sample size and population representativeness, provides researchers with access to data on a scale that individual researchers may not be able to replicate first-hand. Secondly, the technical expertise involved in creating a dataset such as the GUI study leads to data that is of high quality. In addition, it omits the need for data collection which is often beyond the scope, time constraints, and cost of the independent researcher, especially when there is limited time and resources to apply for grants or other funding (Smith, 2011). The main challenge of using an existing dataset is that the research design and variables are pre-determined, and therefore the possibilities for methodology and identifying variables can be limited (Cohen et al., 2018). These challenges are discussed later in this chapter.

This doctoral thesis draws on Bronfenbrenner’s bioecological theory of human development and the PPCT model (Bronfenbrenner, 1979; Bronfenbrenner & Evans, 2000; Bronfenbrenner & Morris, 2006), as an overarching theoretical framework to consider the risk, promotive, and protective factors which impact on a child performance in school. Thus, considerations were given to how the empirical journal article described in Chapter 4 addressed the PPCT components. As for the person (P), demand characteristics in this study include the child’s gender. Resource characteristics include past experiences such as stressful life events and material resources such as access to school facilities. Force characteristics include the child’s attitude towards school and educational aspirations (Tudge, 2008). With regard to context, various microsystems were explored as both risk (e.g., neighbourhood safety) and protective (e.g., school facilities) factors. A range of proximal processes, which are the complex, reciprocal interactions between a developing individual and other people and/or objects around them, were also explored through moderation analysis. For example, the impact of the adversity or risk experienced by the child or positive interactions with
teachers on the child’s academic attainment could be described as proximal processes. The fourth component of the PPCT model, time, is reflected through the use of a longitudinal research design.

Bronfenbrenner’s model provides a holistic approach which considers all of the systems in which the child and family are involved (Hayes & O’Toole, 2017). It is widely adopted when exploring the theorisation of resilience, trauma, and attachment (Harney, 2007) and the empirical investigation of family relationships (Tudge et al., 2009). The application of Bronfenbrenner’s PPCT model could have been strengthened in this study by explicitly addressing the requirements outlined by Tudge et al. (2022) to ensure that the study design allows for a Bronfenbrennerian synergistic analysis. For example, although the empirical journal article adopts a longitudinal study design, the frequency or duration with which the individual engaged in a proximal process (e.g., positive interactions with teachers) was not considered as each variable was only measured at one point in time. In addition, it may have been useful to explore constructs at the macrosystemic level such as cultural background variables.

**Participants, Procedures, and Methods**

**Participants**

This study used data from Cohort ‘98 of the GUI study, and this section gives a brief overview of the sample recruited and followed up by the GUI study team over three waves of data collection. A total of 8,568 children completed the initial assessment at age 9 (Wave 1). This represented approximately one in every seven of the 9-year-olds residing in Ireland at the time of data collection (August 2007 and May 2008). Just under half of participating 9-year-olds were male (48.7%) and the majority lived in two-parent families (82%). With regard to social class, 47% of children lived in a household where at least one parent was in the ‘Professional/Managerial’ social class group, with approximately 40% in the ‘Non-
Manual or Skilled-Manual’ category and the remaining 13% in the ‘Semi-skilled or Unskilled Manual’ class group. The majority of 9-year-olds were Roman Catholic (84.8%) and citizens of Ireland (94.8%) (Williams et al., 2009). Over a fifth \((n = 1,960; 22.9\%)\) of children attended single-sex schools and 1,310 (15.9%) attended schools where free school meals were provided.

From this initial sample, 7,525 young adolescents participated in Wave 2 (age 13). Data collection for this wave occurred between August 2011 and March 2012. Reasons for attrition are documented in the study report (Thornton et al., 2016), and included child moving abroad/deceased \((n = 103)\), refusal \((n = 668)\), unable to contact participant \((n = 218)\) and other \((n = 54)\). Of this sample, 48.9% were male and the majority were 13 years old (98.4%). Wave 3 of data collection took place when the sample were aged 17/18 years, with 6,216 families participating which represented a 74 per cent retention rate of the original sample from Wave 1. A strong link was noted between participation at 17/18 years and performance in the Drumcondra Reasoning Test at age 13, with a higher response rate from children who were in the highest quintile compared to the lowest quintile (Murphy et al., 2019). Additional information on the sampling, recruitment, data collection, and data management procedures used by the GUI study team can be seen in Appendix B.

**Data Access and Management**

The GUI study data are stored at the Economic and Social Research Institute (ESRI) separately from all identifying information. The data are processed internally within the ESRI on behalf of the Department of Children and Youth Affairs in a pseudonymised form (with all identifying information removed). Access to the non-anonymised datasets is severely restricted and great care was taken to remove any identifying information from the anonymised dataset (Murray et al., 2010). Access to the Anonymised Microdata File in SPSS format was granted by the Irish Social Sciences Data Archive on the 16th of March 2020 and the SPSS dataset was provided via a secure file transfer service. The dataset was stored by the
researcher on an encrypted laptop which was accessible to the researcher only. When sharing the dataset between the researcher and research supervisor, the encrypted AMF was transferred via the secure file transfer service.

**Ethical Assurances**

The GUI study team obtained full ethical approval from the Research Ethics Committee of the Health Research Board at Wave 1 (Murray et al., 2010), and from the Research Ethics Committee of the Department of Health and Children for Wave 2 (Thornton et al., 2016) and 3 (Murphy et al., 2019). Practical application of ethical considerations by the GUI study team included: obtaining informed consent from all participants, interviewers were instructed to report any events or observations which caused them concern during their work to the GUI study, and interviewers were not to be left alone with children while interviewing. In addition, all interviewers and staff were appointed Officers of Statistics by the Central Statistics Office which imposed a legal obligation on them to preserve and protect the confidentiality of all information received during the study (Murray et al., 2010).

For the secondary analysis presented in this thesis, an application for a ‘low-risk study review’ was made to the UCD Human Research Ethics Committee (HREC), and approval was granted in June 2021 (HS-E-21-94-Odonovan-Sloan). A full ethical review was not deemed necessary because the data collected had already been approved by an independent research committee, there would be no direct contact with the participants in the study, and access to the dataset for secondary analysis was already granted by the data archiver.

**Identifying and Measuring GUI Variables**

There were a number of considerations when determining which variables to use from the GUI dataset to best answer the research questions. Considerations included how to best conceptualise childhood adversity and protective factors within the school context whilst ensuring that variables identified were based on theoretical frameworks and previous
research. The GUI data dictionaries from each wave were reviewed to identify appropriate variables which could be used to answer the research questions. This section provides an overview of such considerations and how constructs were conceptualised and operationalised in the empirical journal article presented in Chapter 4.

**Childhood Adversity (Age 9)**

**Conceptualising Childhood Adversity.** The terms ‘adversity’, ‘ACEs’ (Adverse Childhood Experiences), and ‘trauma’ have been used interchangeably in the literature, which has led to a difficulty in operationalising childhood adversity across different disciplines and studies (Perfect et al., 2016). Some studies define adversity by exposure, or the occurrence of an objective, observed experience, whereas others describe adversity through symptomology, or the individualised response (Eklund & Rossen, 2018). In addition, single exposures versus repeated exposures may be important distinctions that are not readily made within the literature and many studies do not acknowledge that there are individual differences in whether an event has a traumatic effect (Perfect et al., 2016). As a result, depending on the definition of childhood adversity chosen, its impact can vary widely within research. Furthermore, although many studies explore the impact of childhood adversity on academic attainment, no explicit model or framework exists for exploring this association. How childhood adversity is defined and measured has implications for the findings of this research, and thus was carefully considered.

The landmark CDC-Kaiser Permanente ACE Study (Felitti et al., 1998) has garnered significant attention from various disciplines, including education, medicine, and psychology (Eklund & Rossen, 2018). This study used an ACE scale which allows individuals to tally different types of adversity that one may experience during childhood. The scale included the following adverse experiences: physical, sexual, and verbal abuse; emotional and physical neglect; and elements of household dysfunction including mental illness, substance abuse,
incarcerated relative, divorce, and domestic violence. Analyses stemming from this study have provided broad insights into the associations between adverse experiences during childhood and negative outcomes in adulthood (Bellis et al., 2014; Kahn & Vezzuto, 2015). However, researchers have acknowledged that children often do not experience childhood adversity in isolation, but rather encounter a sequence of stressful experiences (Masten & Coatsworth, 1998). Poverty and household stressors such as unemployment, housing instability, and food insecurity combine to create an environment where a child’s home, school, and community are sources of stress (Chaudry & Wimer, 2016), whilst also increasing the risk of ACEs (Dreyer et al., 2016).

Thus, the empirical journal article adopted a broader perspective when examining the experience of childhood adversity. The Pair of ACEs tree (Ellis & Dietz, 2017) is one model which adopts such a viewpoint, aiming to explain the relationship between adversity within a family and the community context (Figure 1). The empirical journal article used this model as a framework to identify both the stressful life events and the broader systemic factors which may impact on a child’s academic outcomes. Thus, we operationalised childhood adversity as the cumulative impact of experiencing adverse childhood experiences rooted in an adverse community environment.

Although the ‘Pair of ACEs Tree’ has been used to guide conceptualisations of adversity in recent studies (e.g., Aytur et al., 2021), it has not been widely used in the literature to explore the association between adversity and academic attainment in school. In addition, there are many other individual risk factors that are associated with poor academic outcomes in the literature, including low birth weight, poor diet (Bynner, 2001), low cognitive ability (Hegelund et al., 2018), and having additional educational needs or a disability (Cosgrove et al., 2018). However, the impact of individual risk factors was not the focus of the empirical journal article and thus were excluded.
Measuring Childhood Adversity. Once a framework for childhood adversity was identified, consideration was given to how it would be operationalised using the available data. Research suggests that ‘multiples matter’ and, while children have an increased chance of recovering from one adverse event, they may find it much more challenging to overcome multiple adversities (Spratt et al., 2011). Therefore, the current study adopted a cumulative risk model (Evans et al., 2013), which focuses on the number of adverse experiences rather than the severity or type. Here, the researcher incorporates a large set of risk factors created by aggregating information relating to adversity and calculating a risk score by dichotomising each condition into two groups, representing the presence (1) or absence (0) of an event or risk, and then adding the resultant scores. This model was applied to the secondary dataset, and six distinct areas of risk were identified: stressful life events, economic vulnerability, free school meals, neighbourhood safety, quality of neighbourhood environment, and bullying. Consistent with previous studies (e.g., Gutman et al., 2002; Sameroff et al., 1987), a binary variable was created for each of these risks (0 = risk not present; 1 = risk present), and then summed into a multiple risk score which could range from 0 to 6. This approach was selected
to explore the quantity of risk rather than assessing relative individual risk. The following section provides an in-depth description of cumulative risk theory, including the strengths and limitations to consider when applying the theory to empirical research.

**Cumulative risk theory.** Developmental risk research initially focused on singular risk factors known or suspected to increase the probability of adverse child outcomes (Evans et al., 2013). However, Rutter (1979) and other developmentalists observed that children exposed to multiple risk factors were much more likely to experience psychological disorders than those exposed to a single risk factor, leading to two main underlying assumptions. Firstly, cumulative risk theory predicts that the greater the number of risk factors, the greater the prevalence of problems (Appleyard et al., 2005). Secondly, it is the accumulation of risk factors, rather than the presence or absence of particular risk factors or combinations of them, which impact developmental outcomes. These tenets are based on the principle of equifinality; that there are multiple routes to the same outcome (Dodge & Pettit, 2003).

Bronfenbrenner’s biological theory of human development provides an explanation for why cumulative risks have a greater impact on child development than single risk exposures. As previously explained, Bronfenbrenner’s theory posits that human development occurs through the progressively complex, reciprocal interactions between the child and the persons, objects, and settings surrounding them. Multiple rather than single risk factor exposures may be more likely to disrupt these proximal processes because they interfere with the progressively more complex exchanges as the child develops which are necessary for healthy development. The developing child may be able to overcome a single risk factor (e.g., parental loss) if given the opportunity to cultivate alternative sources of this interrupted proximal process (e.g., a responsive grandparent). However, if multiple risk factors are encountered (e.g., disinterested or incapable grandparent), the possibility of this process being disrupted is much greater, leading to negative outcomes for the developing child.
Although theories such as Bronfenbrenner’s biological theory have been used to explain cumulative risk theory in the literature, it should be noted that using a cumulative risk model is primarily an empirical endeavour and little theory precipitated the approach (Evans et al., 2013).

As outlined in a review by Evans et al. (2013), there are several strengths and weaknesses which must be considered when applying cumulative risk theory to empirical research. One theoretical shortcoming of the cumulative risk approach is it lacks clarity regarding the conceptualisation of risk factors for inclusion in the cumulative risk metric. As a result, the designation of risk in most models is arbitrary and typically based on statistical distribution such as the upper or lower quartile of exposure for continuous variables. In addition, cumulative risk models often define risk in a dichotomous manner by reducing factors into “risk present” or “risk absent” groups and thus information about the degree of exposure is lost. It is also usually explored using an additive model and thus precludes examination of possible synergistic or interactive effects among risk factors. A final drawback of adopting a cumulative risk approach is that it typically does not carefully consider the sequential timing of risk factor exposure or the chronicity of each risk variable itself (e.g., Appleyard et al., 2005). This provides little information about the underlying psychological and biological processes of risk factors and leaves us with little understanding regarding the risk-to-outcome relationship (Evans et al., 2013).

Despite these shortcomings, the cumulative risk model is the dominant model used within the ACE literature when exploring the effects of developmental adversity on later outcomes (LaNoue et al., 2020). This may be resulting from research indicating that cumulative risk metrics predict a wide array of adverse developmental outcomes and outperform singular risk factors. Another strength of this approach is that it does not make assumptions about the relative strength of different risk factors. This is important as research
(e.g., Gutman et al., 2003) has shown that it is the quantity rather than the quality of risk factor exposure which makes a difference. Research has also indicated that children often contend with constellations of risk rather than isolated instances of adversity, further supporting the value of investigating multiple risk factor exposure (Masten & Coatsworth, 1998). Furthermore, due to its simplicity, the metric is readily understood and easily communicated, which allows for research findings to be easily communicated and applied to policy and practice (Evans et al., 2013). With these shortcomings and strengths in mind, the current study adopted a cumulative risk approach when measuring childhood adversity to analyse its impact on academic outcomes. The following is an overview of the variables identified from the GUI dataset and the criteria for creating each binary risk variable when adopting the cumulative risk approach.

**Stressful Life Events.** At Wave 1, the primary caregiver was asked about their child’s exposure to 14 stressful life events (i.e., the death of a parent, the death of a close family member, the death of a close friend, a parent in prison, drug-taking or alcoholism in the immediate family, mental disorder in the immediate family, a stay in a foster home or residential care, serious illness or injury or injury of a family member, divorce or separation of parents, conflict between parents, moving house within Ireland, moving country or another unspecified, disturbing event). The questionnaire did not measure physical abuse, sexual abuse, or neglect of the participating child. In addition, the secondary dataset did not provide any further information relating to ‘another unspecified, disturbing event’. In the absence of information about what this included, this variable was excluded and the analysis was based on a total of 13 stressful life events.

In line with methods by Dhondt et al. (2019), childhood adversity was defined as experiencing three or more events, or at least one of the seven most stressful life events (i.e., death of a parent, death of a close friend, parent in prison, drug-taking/alcoholism in the
immediate family, mental disorder in the immediate family, serious illness/injury, and a stay in foster home/residential care). It should be noted that this is not in line with cumulative risk theory which states that it is the accumulation of risk factors, rather than the presence or absence of particular risk factors that impacts developmental outcomes (Dodge & Pettit, 2003). However, this definition of childhood adversity was applied to ensure that some children who experienced at least one stressful life event were recognised in the sample and in the overall risk score which adopts the cumulative risk approach. Children who met either of these criteria were assigned a risk score of one.

**Economic Vulnerability.** In line with methods by Maître et al. (2021), this study used three indicators that are associated with the experience of poverty and social exclusion: living in a low-income household, experiencing economic stress, and material deprivation. Families were identified as being at risk if they experienced one of these indicators, and thus obtained a risk of one.

The measure of low income was based on the equivalized disposable household income reported by the primary caregiver, with families in the bottom quintile being identified as at risk. The measure of economic stress was based on one question asked to the primary caregiver about the difficulty of making ends meet. Responses were on a 6-point scale ranging from 1 (very easily) to 6 (great difficulty). Households were identified as at risk of economic stress when they indicated having great difficulty or difficulty in making ends meet.

The measure of material deprivation was based on the Irish measure of basic deprivation (Maître et al., 2006) which identifies households that are lacking essential goods or services out of a list of 10 items (e.g., being able to afford two pairs of shoes, possessing a winter coat, keeping the home adequately warm etc.). Each item was computed to create a
total material deprivation score, ranging from one to ten. Higher scores indicated a higher level of material deprivation.

**Free School Meals.** In Ireland, schools that meet the criteria for Delivering Equality of Opportunity in Schools (DEIS) status, alongside others who can prove a need, are provided with funding for free school meals (Darmody, 2020). In addition, free school meals eligibility is a widely used indicator of social disadvantage (Pattara et al., 2019). Thus, the current study used free school meals as a proxy for disadvantaged school status. At Wave 1, the principal was asked to indicate whether or not his/her school provides free school meals at lunchtime with three responses given: *Yes, every day* (coded ‘1’); *Yes, some days* (coded ‘2’); or *No* (coded ‘3’), and was identified as a risk if the principal responded *Yes, every day*.

**Perceived Neighbourhood Safety.** At Wave 1, the primary caregiver was asked to rate the following item on a four-point scale from 1 (*strongly disagree*) to 4 (*strongly agree*): “It is safe to walk alone in this area after dark”. Higher scores indicated higher levels of neighbourhood safety. This is the first item from the Neighbourhood Safety Scale derived from the Canadian Longitudinal Study of Children and Youth (Murray et al., 2010). Families were identified as being at risk if they rated *disagree* or *strongly disagree* and obtained a score of one.

**Perceived Quality of Neighbourhood Environment.** At Wave 1, the primary caregiver was asked to rate four items relating to the quality of the neighbourhood in which they lived on a four-point scale from 1 (*very common*) to 4 (*not at all common*). These were: rubbish and litter lying about; homes and gardens in bad condition; vandalism and deliberate damage to property; and people being drunk or taking drugs in public. Higher scores indicated a higher quality of neighbourhood environment. This scale was adapted from the Living in Ireland Survey (Murray et al., 2010). The mean of the four items was obtained and
then recoded into quintiles. Families were identified as being at risk if they were in the bottom quintile and thus obtained a risk score of one.

**Bullying.** At Wave 1, parents were asked to identify whether or not their child had been a victim of bullying in the last year (yes = coded ‘2’; no = coded ‘1’). Those who responded ‘yes’ were identified as being at risk and obtained a risk score of one.

**Covariates**

In order to adjust for other factors which may contribute to differences in academic achievement outcomes, four covariates (maternal education, child gender, family social class and child prior academic achievement) were identified within the dataset based on previous research. Maternal education was included in all analyses in this study to adjust for, in part, the relationship between maternal education and child academic achievement in the current dataset (e.g., Williams et al., 2009). To adjust for the higher Junior Certificate grades in females in the current sample, gender was included as a covariate. As social class was significantly related to Junior Certificate achievement in the current sample (McNamara et al., 2020), family social class was included as a covariate and measured by primary and secondary caregiver reports of their occupation. Table 1 provides an overview of the items, codes, and percentages in the sample for each of these covariates.
Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Response</th>
<th>Codes in dataset</th>
<th>Percentage in sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal education</td>
<td>Lower secondary or less</td>
<td>1</td>
<td>17.6%</td>
</tr>
<tr>
<td></td>
<td>Leaving certificate</td>
<td>2</td>
<td>31.5%</td>
</tr>
<tr>
<td></td>
<td>Subdegree</td>
<td>3</td>
<td>24.8%</td>
</tr>
<tr>
<td></td>
<td>Graduate</td>
<td>4</td>
<td>26.1%</td>
</tr>
<tr>
<td>Child Gender</td>
<td>Male</td>
<td>0</td>
<td>48.6%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1</td>
<td>51.4%</td>
</tr>
<tr>
<td>Family Social Class</td>
<td>Semi-skilled/unskilled manual</td>
<td>1</td>
<td>8.6%</td>
</tr>
<tr>
<td></td>
<td>Other manual/skilled-manual</td>
<td>2</td>
<td>33.6%</td>
</tr>
<tr>
<td></td>
<td>Professional/managerial</td>
<td>3</td>
<td>52.4%</td>
</tr>
</tbody>
</table>

Academic attainment at age 9 and age 13, measured using the Drumcondra reading and mathematics tests (Educational Research Centre, 2006a; 2006b), were included as covariates as they are likely to predict future academic achievement. The mean of the child’s reading and mathematics score (percentage correct) was used to provide an estimate of the child’s academic achievement at each timepoint.

**School Factors (age 13)**

**Conceptualising School Factors.** The conceptualisation of school factors in this study was considered in light of resilience research in the field of child development. From an initial focus on the invulnerable child, psychologists and researchers began to recognise that much of what seems to promote resilience originates outside the individual (Fleming & Ledogar, 2008). In the past several decades, theoretical perspectives and empirical research on resilience have suggested that resilience may be best understood from an ecological systems perspective, in which the dynamic interactions between multiple levels of analyses are examined in relation to positive outcomes (Ungar et al., 2012). This led to a search for resilience factors at the individual, family, community, and more recently, cultural levels (Fleming & Ledogar, 2008). When exploring the concept of resilience, Daniel and Wassell (2002) place these factors within an ecological framework (Bronfenbrenner, 1989; 2006),...
identifying three ecological levels at which resilience factors can be located: the young person, family relationships, and the wider community (Figure 2). This framework was adopted to support the identification of factors which have been previously linked to better academic achievement outcomes within the school context.

Figure 2

Ecological framework

Note. Three ecological levels at which resilience factors can be located (Daniel & Wassell, 2002; Bronfenbrenner, 1989).

Measuring School Factors. Adopting a bioecological framework (Bronfenbrenner, 1989), the GUI data dictionary was reviewed to identify appropriate protective factors relating to the school context. The following protective factors at the individual, relational and broader ecological levels were identified at Wave 2 (age 13).

Attitudes and Beliefs Towards School. At Wave 2, three indicators which are associated with the young person’s attitudes and beliefs towards school were measured: attitude towards school, educational aspirations, and academic self-concept. The young person’s attitude towards school was measured using one self-report item: “What do you think about school?”. This item was reverse coded with responses on a 5-point scale ranging
from 1 (I hate it) to 5 (I like it very much). Educational aspirations were measured by asking the young person to identify the highest qualification expected by the time they finish their education from the following options: Junior Certificate (coded ‘1’); Leaving Certificate (coded ‘2’); Certificate, Diploma or apprenticeships (coded ‘3’); and Degree or higher degree (coded ‘4’).

Academic self-concept was measured using the Intellectual and School Status domain from the Piers-Harris Children’s Self-Concept Scale, 2nd Edition (Piers & Herzberg, 2002). This is a self-report instrument of 16 items reflecting the young person’s assessment of his/her abilities with respect to intellectual and academic tasks, general satisfaction with school and perception of future achievements (e.g., ‘I am smart’; ‘I am good at my schoolwork’; ‘My classmates in school think I have good ideas’). Total scale scores could range from 0 to 16, with higher scores reflecting better academic self-concept.

Caring and Supportive Relationships. At Wave 2, two indicators were identified to measure caring and supportive relationships within the school context. The quality of relations with teachers was captured using a ‘Positive Interaction’ scale (Smyth, 2017). The young person was asked to rate how often the following happen to them in school: “You are told by a teacher that your work is good”; “You are encouraged to ask questions in class”; “A teacher praises you for answering a question” and “You are asked questions in class by the teacher”. Responses were on a 4-point scale ranging from 1 (never) to 4 (very often). The mean of the four items was obtained to create a ‘Positive Interactions’ scale.

The Trust scale from the Inventory of Parent and Peer Attachment (IPPA) (Armsden & Greenberg, 1987) was used to assess the young person’s perceptions of their relations with their peers. The Trust subscale comprises of 10 self-report items on a 5-point scale ranging from 1 (almost never or never true) to 5 (almost always true or always true). It refers to the young person’s trust that peers understand and respect their needs and desires. Items include:
“My friends listen to what I have to say”; “My friends understand me”; “I feel my friends are good friends” and “I can count on my friends when I need to get something off my chest”.

School Environment. Three indicators relating to the school environment were identified at Wave 2, as reported by the school principal: perception of adequacy of school resources; perception of adequacy of school facilities; and perception of students’ attitudes. Adapted from the Early Childhood Longitudinal Study (as cited in Thornton et al., 2016), principals were asked to assess the adequacy of school facilities (number of classrooms, computing facilities, sports facilities, and science equipment) and school resources (number of teachers, learning support provision, language support provision and guidance counselling). Responses were on a 4-point scale ranging from 1 (poor) to 4 (excellent). The mean of the items were computed to create an overall score, with higher scores reflecting better school resources or facilities.

To assess the perception of attitudes of students, the principal was asked four items with responses on a 4-point scale, ranging from 1 (true of only a few) to 4 (true of nearly all). The four items were students: enjoy being at school, are well-behaved in class, show respect for their teachers and are rewarding to work with. The mean was computed to represent the scale score.

Outcome: Academic Achievement

At Wave 3, academic achievement was measured using results from participants’ Junior Certificate Examinations, a state examination which is completed at the end of the third year of secondary education. The results are given as letter grades based on the percentage of examination questions answered correctly. Participants were asked to report the level of the examination (Higher, Ordinary or Foundation) they sat for each subject and their grade. In line with methods outlined by McNamara et al. (2020), the levels and grades obtained in English and maths were converted into numerical scores using the scoring metric
seen in Table 2, allowing the data to be used in statistical analysis. The mean of the English and maths score was computed for each participant, and values ranged from 10 (a high-level grade across English and maths) to 0 (E, F, or NG grades in both English and maths).

Table 2

*Calculation of Junior Certificate Grade Points from Levels and Grades*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Higher Level</th>
<th>Ordinary Level</th>
<th>Foundation Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>9</td>
<td>6</td>
<td>3</td>
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<tr>
<td>C</td>
<td>8</td>
<td>5</td>
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</tr>
<tr>
<td>D</td>
<td>7</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>E, F or NG</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Analysis Strategy**

*Preliminary Analysis*

As the waves of the GUI ’98 Cohort dataset were in separate SPSS datasets, the three waves were firstly merged into one dataset. The identified variables were then sorted and screened to ensure they were fit for analyses. This included renaming all variables and recoding and reverse coding variables as needed. In order to become more familiar with the dataset, exploratory analyses were conducted by the researcher. This included generating descriptive statistics representing central tendency (mean, median and mode) and dispersion (range and standard deviation) for all variables. To analyse scale psychometric properties, exploratory factor analysis was conducted for quality of neighbourhood environment, material deprivation, adequacy of school resources, and students’ attitudes. Cronbach’s alpha was also used to examine the reliability of relevant scales. Please see Appendix C for more details.

*Multiple Risk Score*

A multiple risk factor index was computed to define childhood adversity (see Gutman et al., 2003; Sameroff et al., 1993). Each of the variables relating to childhood adversity was
assigned either a value of zero (risk absent) or one (risk present) and the total number were summed. In the case of continuous variables, the presence of risk was defined according to the lowest quintile of the sample. For dichotomous or categorical variables, cut-offs for risk were based on previous research. Preliminary analysis was conducted to ensure each variable was indeed a risk factor as outlined by Sameroff et al. (1997). Firstly, the variable had to be correlated with the academic achievement outcome in the expected direction. Secondly, there had to be a difference in academic outcomes between those in the risk present and risk absent group. All variables met the criteria (as detailed in Chapter 4) and thus the total score for childhood adversity was computed and ranged from zero (no risk factors present) to six (all risk factors present).

**Correlation and Linear Regression Analyses**

Bivariate correlations analyses were then conducted in SPSS to explore the statistical associations between the multiple risk score measuring childhood adversity, school protective factors, and academic achievement. In order to answer the first research question, the relationship between experiencing childhood adversity and future academic achievement was tested using linear regression. In addition, before answering research questions two and three, we needed to confirm that there was a significant relationship between childhood adversity and academic achievement. The linear regression model included one independent variable (childhood adversity) and one dependent variable (academic attainment). It also indicated whether the results were statistically significant and enabled us to control for covariates within the analysis (Cohen et al., 2018).

**Moderation Analysis**

A series of moderation analyses were conducted to test the second and third research questions on promotive and protective effects of school factors. In statistical terms, moderation is where a relationship between an independent variable and a dependent variable
changes according to the value of a moderator variable (Dawson, 2014). In this model, a moderator is a third variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable, whilst functioning as an independent variable (Baron & Kenny, 1986). Previous studies exploring promotive and/or protective effects often adopted a moderation model by using hierarchical multiple regression in their analyses (e.g., Gutman et al., 2002). However, for the current study we conducted moderation analysis using the SPSS PROCESS Model 1, following guidelines outlined by Hayes (2017). This model builds on hierarchical multiple regression by including an interaction term which is the product of the proposed moderator and the independent variable. It also generates code for visualizing interactions which supports the accurate interpretation of the analysis and produces the proportion of variance explained by the moderating effect (Ong et al., 2018).

Using this model, the outcome variable for the analysis was academic achievement at Wave 3. The predictor was childhood adversity as measured using the multiple risk score. Each of the school factors were then tested as moderating variables. Factors were considered to be promotive if there was a significant contribution to the positive outcome (i.e. direct effect of moderator on outcome) (Gutman et al., 2003). To test for the moderation effect, the relationships for (i), (ii), and (iii) had to be significant – (i) direct effect of predictor (adversity) on academic attainment, (ii) direct effect of moderator (school factors) on academic attainment, (iii) direct interactions effect (adversity x school factor) on academic attainment (Hayes, 2017). The conceptual model for the moderation analysis used in the current study can be seen in Figure 3. The statistical model can be seen in Figure 4.
Figure 3

*Conceptual model for moderation analysis*

![Conceptual Model](image)

*Note.* The direct effects of the controls (child gender, maternal education, socioeconomic status, academic attainment at Wave 1 and Wave 2) were included in the analyses but are not represented in the figure to facilitate clarity of presentation.

Figure 4

*Statistical model for moderation analysis*

![Statistical Model](image)

*Note.* $X =$ predictor; $W =$ moderator; $Y =$ outcome. The direct effects of the controls (child gender, maternal education, socioeconomic status, academic attainment at Wave 1 and Wave 2) were included in the analyses but are not represented in the figure to facilitate clarity of presentation.
Limitations

The current study must be interpreted in light of its limitations. As with any secondary data analysis, we were limited by the data available to us. For example, some experiences such as physical, sexual and emotional abuse, and environmental factors such as economic mobility and social capital identified in The Pair of ACEs Tree (Ellis & Dietz, 2017) were not directly measured in the dataset and thus could not be included in analyses. Nevertheless, using The Pair of ACEs Tree as a framework for identifying appropriate variables supported the conceptualisation of childhood adversity. In addition, as with any longitudinal study, attrition between waves of data collection needs to be considered. Thornton et al. (2016) noted that response rates at age 13 were lower amongst socially disadvantaged families within the GUI dataset which has implications for the analysis of the current study. To account for differential response attrition, researchers may consider statistically adjusting or ‘reweighting’ the data to ensure that they were fully representative of the population of children who were resident in Ireland at 9 years old and were still living in Ireland at 13 and 17/18 years. However, there is no general consensus in the literature on whether weights should be routinely used in multivariate models such as regression or moderation analyses (e.g., Kott, 2007). Aitkin et al. (2005) note that the use of weights in regression models is inappropriate as “they change the parameter estimates by giving higher weight due to the samples from larger populations, though each observation in fact represents a single individual, not an aggregate of several individuals, and the weights increase the standard errors of the estimated coefficients” (p. 112). Therefore, sampling weights were not applied in the current study. Nevertheless, it is possible that some children from the population of interest are not represented within the sample and this should be taken into consideration when interpreting the findings of the study.
Summary

The purpose of the empirical journal article is to explore the impact of experiencing childhood adversity on future academic achievement, and identify factors related to the school context which moderate this relationship. This chapter introduced and provided justification for the study’s research questions, the epistemological perspective of post-positivism, and the reasons for which the quantitative research paradigm was selected. This was followed by an overview of the participants, procedures, and methods of the GUI study. Some of the key considerations for conceptualising childhood adversity was explored and it was demonstrated how The Pair of ACEs Tree (Ellis & Dietz, 2017) provided an appropriate framework for identifying variables within the GUI dataset. In addition, the use of Bronfenbrenner’s bioecological model (1989) as a framework for identifying appropriate protective factors within the school context was outlined. Following an overview of the measures and screening of the data, linear regression and moderation analysis was introduced as the statistical approach to answer the research questions, and the limitations of the research design and approaches used were discussed.
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Educational Research Centre (2006b). The Drumcondra Primary Reading Test Revised (DPRT-R).


http://dx.doi.org/10.1037/spq0000244


Chapter 4: Empirical Journal Article

Childhood adversity and academic attainment: The moderating role of positive school factors

Abstract
Research has established the negative association between experiencing adversity in childhood and academic attainment in school. Despite the widely recognised importance of school for a young person’s development, most empirical articles have not thoroughly investigated protective factors for academic attainment within the school context. Using data from the Growing Up in Ireland study, this study examined the impact of childhood adversity on a young person’s academic attainment in secondary school and the individual, relational and broader ecological school factors that moderate this relationship. As expected, results indicated that experiencing childhood adversity was negatively associated with academic attainment. Moderation analysis indicated that individual factors such as attitudes and beliefs towards school, educational aspirations, and academic self-concept moderated this relationship. The implications of study findings for the promotion of these individual factors, especially for young people who experience adversity, are discussed.

Keywords
Childhood adversity; Academic attainment; Academic resilience; Protective; Promotive; School.
Childhood adversity and academic attainment: The moderating role of positive school factors

Childhood adversity is a broad term that refers to a wide range of negative exposures during childhood which may pose a threat to a child’s physical and/or psychological well-being (McLaughlin et al., 2014). Examples include the experience of child abuse and neglect, substance abuse, divorce, domestic violence, and maternal depression, which are often rooted in environments characterised by poverty, discrimination, and community disruption (Ellis & Dietz, 2017). Research has established the negative impact of childhood adversity on a range of school-related outcomes such as academic attainment, school engagement, and behavioural problems in school (Perfect et al., 2016). Despite this, not all children who experience adversity perform poorly in school. These individuals have been considered as demonstrating academic resilience which is the capacity to overcome acute and/or chronic adversity that would otherwise predict poorer academic attainment amongst students (Morales, 2014).

Whilst the important role of schools and education in the development of one’s cognitive, social, and emotional functioning is widely recognised (Weare & Nind, 2011), factors within the school context which promote school success for children who have experienced adversity have not been thoroughly investigated (Perfect et al., 2016). This gap in the research makes it difficult for schools and educators to draw from the literature when designing programmes and interventions to ensure that students who experience adversity succeed academically. The importance of supporting these students has been highlighted in recent government policy, with the following being stated as a strategic action: “students at risk of educational disadvantage [should] access appropriate educational resources which reflect their diverse needs and support improved outcomes” (Department of Education, 2021, p. 20).
Adopting a moderating effects model of risk and resilience (Gutman, 2020), the current study explores the positive school factors for academic attainment in the face of adversity. Using data from a national longitudinal cohort study, Growing Up in Ireland (Williams et al., 2009), this study aimed to extend previous research by examining the protective effect of school factors in moderating the association between adversity and academic attainment. The impact of childhood adversity on future academic attainment and the promotive effect of school factors for all within an Irish context will also be explored.

**Childhood Adversity and Academic Attainment**

In the literature, the terms ‘childhood adversity’ or ‘adverse childhood experiences’, refer to a wide range of experiences during childhood that may pose a pervasive threat through the deprivation of a child’s basic needs such as emotional security, social interaction, and physical sustenance (McLaughlin et al., 2014). These experiences are thought to impact a child’s brain development, potentially resulting in neurocognitive impairments (van der Kolk, 2005). As a result, exposure to adversity predicts a variety of difficulties in a child’s development, including school-related outcomes such as academic attainment (Gutman et al., 2020). Exposure to specific types of adversity, such as child abuse or maltreatment, has been linked to an array of negative academic outcomes (Overstreet & Matthews, 2011). The negative impact of family background characteristics and poverty indicators such as maternal education, social class, and income on academic attainment has also been established (e.g., Growing Up in Ireland Study Team, 2019).

However, children often do not experience risk in isolation, but instead encounter a sequence of stressful experiences (Masten & Coatsworth, 1998). According to cumulative risk theory (Evans et al., 2013), it is the sum of experiences, rather than any single event, which leads to poor outcomes. The additive effects of adversity were highlighted in the original Adverse Childhood Experiences (ACE) study (Felitti et al., 1998). Through the use
of an ACE scale, the authors identified a graded negative relationship between adverse events and a range of physical and mental health outcomes throughout the lifespan. The ACE scale included a measure of the following 10 events: physical, emotional, or sexual abuse; physical and emotional neglect; parental separation; domestic violence; or a household member who was mentally ill, in prison, or a substance abuser. Since this landmark study, a negative relationship between ACEs and school-related outcomes such as academic attainment has also been established (Houtepen et al., 2020).

More recently, researchers have taken a broader perspective when examining factors which impact a child’s development. Poverty and household stressors such as unemployment, housing instability and food insecurity combine to create an environment where a child’s home, school and community are sources of stress (Chaudry & Wimer, 2016) whilst also increasing the risk of ACEs (Dreyer et al., 2016). There is also substantial evidence that aspects of community and neighbourhood settings can influence children’s school achievement, such as living in unsafe neighbourhoods (Nettles et al., 2008). The ‘Pair of ACEs Tree’ (Ellis & Dietz, 2017) is one model which adopts this broader perspective, aiming to explain the relationship between adversity within a family and the community context (Figure 1). The current study uses this model as a framework to identify both the adverse events and the broader systemic factors that may influence a child’s academic attainment in school.
The Pair of ACEs Tree

Promotive and Protective Factors within the School Context

The identification of children who demonstrate academic resilience has led to the exploration of a range of promotive and protective factors that predispose children to positive outcomes in school (Gutman, 2020). Promotive factors are those which are related to positive outcomes for all children, regardless of their risk exposure. On the other hand, protective factors are those that are related to positive outcomes for those who experience adversity (Jones et al., 2013). One of the most widely investigated factors is a child’s intellectual ability, with strong evidence highlighting its protective effects on academic attainment (Flouri et al., 2010). Protective effects for family characteristics such as parent-child interactions (Washbrook, 2010) and quality of parenting (Burchinal et al., 2006) have also been identified. However, for educators working with young people who experience adversity, individual and family level factors such as these are often outside their capacity to
change. Thus, we must begin to further explore factors within the school context which promote academic resilience.

Using an ecological framework (Bronfenbrenner, 1989), three broad types of factors have been identified in the literature: individual, relational, and broader ecological factors. When exploring the relationship between school factors and future academic attainment outcomes, many factors have been identified at each of these levels. Individual factors which have been linked to better academic outcomes include a positive academic self-concept (Ghazvini, 2011), high educational aspirations (Khattab, 2015), positive attitudes toward school (Sölpük, 2017), and good attendance (McCoy et al., 2007). For relational factors, research has highlighted the importance of student-teacher interactions, with the quality of interaction with teachers being highly predictive of a range of educational and post-school outcomes (McCoy et al., 2014). The influence of peers on academic achievement has also been highlighted, especially during secondary school years (Eccles & Roeser, 2011). Broader ecological factors within the school context linked to better academic outcomes include school expectations (Smyth et al., 2011), a positive school climate (Daily et al., 2019), and school size (Leithwood & Jantzi, 2009). However, it should be noted that many of these studies focus on identifying factors which promote better academic outcomes for all students. There remains a lack of research exploring protective factors for students who have faced adversity, especially within the school context (Jones et al., 2013).

**The Current Study**

This study used longitudinal data from an Irish nationally representative cohort study to examine 1) the effects of experiencing adversity on children’s later academic attainment outcomes, 2) the school factors which promote positive academic attainment for all, and 3) the school factors which moderate the relationship between adversity and academic attainment. Adopting a cumulative risk model to define childhood adversity (Evans et al.,
a total score was calculated by summing the number of experiences of adversity present by age nine. We examined the promotive (i.e., direct) and protective (i.e., interactive) effects of three types of school factors at age 13 by adopting a moderating (interactive) model of risk and resilience (Rutter, 1979). These factors included individual factors (i.e., attitude toward school, educational aspirations, academic self-concept), relational factors (i.e., positive interactions with teachers and peer trust) and broader ecological factors (i.e., school resources and attitude of students). We hypothesized that childhood adversity at age nine would be negatively associated with attainment at age 15-16. We also hypothesized that school factors would demonstrate direct, promotive effects on academic attainment, and in some cases interactive, protective effects by reducing the negative impact of adversity.

**Methods**

**Sample**

This study is a secondary analysis of the Growing Up in Ireland (GUI) survey. The GUI survey is a government-funded, longitudinal study which examines the development of Irish children within their social, economic, and cultural environment (https://www.growingup.ie/). This secondary analysis used data from ‘Cohort ‘98’, a nationally representative sample of nine-year-olds (n = 8,568; 48.7% male), which represented approximately one in every seven of the 9-year-olds residing in the country at the time of the first wave of data collection in 2007/08. The cohort was followed up at Wave 2 in 2011/12, at age 13 (n = 7,525), and again at Wave 3 in 2015/16, when they were 17/18-year-olds (n = 6,216).

**Measures**

**Childhood Adversity (Age 9).** Acknowledging the relationship between adversity within a family and the community context, the current study used the ‘Pair of ACEs Tree’ (Ellis & Dietz, 2017; see Figure 1) as a framework to identify the adverse events a child
experiences and the broader systemic factors which may negatively impact a child’s academic attainment in school. In applying this model to the secondary dataset, a multiple risk model (Evans et al., 2013) was adopted and six distinct areas of adversity or risk were identified: stressful life events, economic vulnerability, free school meals, neighbourhood safety, quality of neighbourhood environment, and bullying. A binary variable was created for each of these (0 = risk absent, 1 = risk present), and then summed into a risk score which could range from 0 to 6 (Gutman et al., 2003). For continuous variables, the presence of risk was defined according to the lowest quintile of the sample and for dichotomous or categorical variables, cut-offs were based on previous research.

**Stressful Life Events.** At Wave 1, the primary caregiver was asked about their child’s exposure to 13 stressful life events (i.e., the death of a parent, the death of a close family member, the death of a close friend, a parent in prison, drug-taking or alcoholism in the immediate family, a mental disorder in the immediate family, a stay in a foster home or residential care, serious illness or injury or injury of a family member, divorce or separation of parents, conflict between parents, moving house within Ireland, moving country or another unspecified, disturbing event). Families obtained a risk score of one if they experienced three or more events or at least one of the seven most stressful life events (see Dhondt et al., 2019).

**Economic Vulnerability.** Three indicators that are associated with the experience of poverty and social exclusion were identified: living in a low-income household, experiencing economic stress, and material deprivation (see Maître et al., 2021). Families who met the risk criteria for at least one of these indicators obtained a risk score of one. Low income was based on the equivalized disposable household income reported by the primary caregiver, with families in the bottom quintile being identified as at risk. Economic stress was based on one question asked to the primary caregiver about the difficulty of making ends meet. Responses were on a 6-point scale ranging from 1 (*very easily*) to 6 (*great difficulty*).
Households were identified as at risk of economic stress when they indicated having great difficulty or difficulty in making ends meet. Families were identified as experiencing material deprivation if they were lacking two or more essential goods or services out of a list of 10 items (e.g., afford two pairs of shoes, keeping the home adequately warm etc.).

**Free school meals.** In line with other studies (e.g., Pattara et al., 2019), free school meals were used as a proxy for disadvantaged school status. At wave one, schools were identified as being at risk if the principal identified that his/her school provides free school meals every day.

**Neighbourhood Safety.** Families obtained a risk score of one if they rated disagree or strongly disagree with the following item: “It is safe to walk alone in this area after dark”.

**Quality of Neighbourhood Environment.** At Wave 1, the primary caregiver was asked to rate four items relating to the quality of the neighbourhood in which they lived on a four-point scale from 1 (very common) to 4 (not at all common). These were: rubbish and litter lying about; homes and gardens in bad condition; vandalism and deliberate damage to property; and people being drunk or taking drugs in public. The mean of the items was obtained and recoded into quintiles. Families in the bottom quintile obtained a risk score of one.

**Bullying.** At Wave 1, parents who identified that their child was a victim of bullying in the last year obtained a risk score of one.

**Risk Score.** A preliminary analysis was conducted to ensure each experience of adversity was indeed a risk factor as outlined by Sameroff et al. (1997). Firstly, the factor had to be correlated with the academic attainment outcome in the expected direction. Secondly, there had to be a difference in academic outcomes between those in the risk present and risk absent group. All risk factors met the criteria and thus the total score for childhood adversity ranged from 0 (no risk factors present) to 6 (all risk factors present). Twenty-five per cent of
the sample had zero risks, 33% had one risk, 24% had two risks, 11% had three risks and 7% of the sample had four or more risks. Table 1 provides an overview of the means, standard deviations, frequency, and percentage of the sample that obtained a risk score of one for each variable.

**Table 1**

*Risk Variable Means, Standard Deviations, and Frequencies*

<table>
<thead>
<tr>
<th>Variable</th>
<th>$M$</th>
<th>$SD$</th>
<th>Min-Max</th>
<th>$n = I^a$</th>
<th>$%^b$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stressful life events</td>
<td>1.46</td>
<td>1.27</td>
<td>0-13</td>
<td>2135</td>
<td>24.9</td>
</tr>
<tr>
<td>Economic vulnerability</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Income</td>
<td>21259</td>
<td>13724</td>
<td></td>
<td>2181</td>
<td>25.5</td>
</tr>
<tr>
<td>Material Deprivation</td>
<td>.71</td>
<td>.99</td>
<td>0-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulty making ends meet</td>
<td>2.83</td>
<td>1.09</td>
<td>1-6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Free school meals</td>
<td>2.66</td>
<td>.74</td>
<td>1-3</td>
<td>1310</td>
<td>15.9</td>
</tr>
<tr>
<td>Neighbourhood safety</td>
<td>2.79</td>
<td>.81</td>
<td>1-4</td>
<td>2748</td>
<td>32.2</td>
</tr>
<tr>
<td>Neighbourhood quality</td>
<td>3.20</td>
<td>.64</td>
<td>1-4</td>
<td>2155</td>
<td>25.2</td>
</tr>
<tr>
<td>Bullying</td>
<td>1.22</td>
<td>.41</td>
<td>1-2</td>
<td>1850</td>
<td>21.6</td>
</tr>
</tbody>
</table>

$^a$Number of participants who obtained a risk score of 1; $^b$Percentage of participants who obtained a risk score of 1.

**Covariates.** To adjust for other factors which may contribute to differences in academic attainment outcomes, four covariates were identified within the dataset based on previous research.

**Child Gender.** To adjust for the higher Junior Certificate grades in females in the current sample, gender was included as a covariate (McNamara et al., 2020). The primary caregiver reported their child’s gender as male (coded ‘0’) or female (coded ‘1’).

**Child’s Prior Academic Attainment.** Attainment at age 9 and age 13, measured using the mean of the child’s score (percentage correct) in the Drumcondra reading and mathematics tests (Educational Research Centre, 2006a; 2006b), were included as they are likely to predict future academic attainment.
Maternal Education. Maternal education was included to adjust for the relationship between maternal education and child academic attainment in this sample (Williams et al., 2009). At Wave 1, mothers reported their highest qualification obtained to date and responses were grouped into four categories: lower secondary or below (coded ‘1’; 17.6%), Leaving Certificate (coded ‘2’; 31.5%), Subdegree (coded ‘3’; 24.8%) and Graduate (coded ‘4’; 24.1%).

Family Social Class. As social class was significantly related to Junior Certificate attainment in the current sample (McNamara et al., 2020), family social class was included and measured by primary and secondary caregiver reports of their occupation across three categories: semi-skilled/unskilled manual (coded ‘1’; 8.6%), other non-manual/skilled-manual (coded ‘2’; 33.6%), and professional/managerial (coded ‘3’; 52.4%).

School Factors (Age 13). Adopting an ecological framework (Bronfenbrenner, 1989), the following school factors at the individual, relational and broader ecological levels were identified at Wave 2 (age 13).

Attitudes and Beliefs Towards School. At Wave 2, three indicators which are associated with the young person’s attitudes and beliefs towards school were measured: attitude towards school, academic self-concept, and educational aspirations. The young person’s attitude towards school was measured using one self-report item: “What do you think about school?” and responses were on a 5-point scale ranging from 1 (I hate it) to 5 (I like it very much). Academic self-concept was measured using the Intellectual and School Status domain from the Piers-Harris Children’s Self-Concept Scale, 2nd Edition (Piers & Herzberg, 2002). This is a self-report instrument of 16 items reflecting the young person’s assessment of his/her abilities for intellectual and academic tasks, general satisfaction with school, and perception of future achievements (e.g., ‘I am smart’; ‘I am good at my schoolwork’). Total scale scores could range from 0 to 16, with higher scores reflecting better
academic self-concept. Educational aspirations were measured by asking the young person to identify the highest qualification expected by the time they finish their education from the following options: Junior Certificate (coded ‘1’); Leaving Certificate (coded ‘2’); Certificate, Diploma or apprenticeships (coded ‘3’); and Degree or higher degree (coded ‘4’). Two values were coded as missing (8 = ‘refusal’ and 9 = don’t know).

**Caring and Supportive Relationships.** At Wave 2, two indicators were identified to measure caring and supportive relationships within the school context. The quality of relations with teachers was captured using a ‘Positive Interaction’ scale (Smyth, 2017). The young person was asked to rate how often the following happen to them in school: “You are told by a teacher that your work is good”; “You are encouraged to ask questions in class”; “A teacher praises you for answering a question” and “You are asked questions in class by the teacher”. Responses ranged from 1 (never) to 4 (very often) and the mean of these items was obtained. The Trust scale from the Inventory of Parent and Peer Attachment (IPPA) (Armsden & Greenberg, 1987) was used to assess the young person’s perceptions of their relations with their peers. This comprised of 10 self-report items on a 5-point scale ranging from 1 (almost never or never true) to 5 (almost always true or always true). Items included: “My friends listen to what I have to say” and “I feel my friends are good friends”.

**School Environment.** Three indicators relating to the school environment were identified at Wave 2, as reported by the school principal: adequacy of school facilities, adequacy of school resources, and perception of students’ attitudes. Adapted from the Early Childhood Longitudinal Study (as cited in Thornton et al., 2016), principals were asked to assess the adequacy of the school’s facilities (number of classrooms, computing facilities, sports facilities, and science equipment) and resources (number of teachers, learning support provision, language support provision, and guidance counselling). Responses were on a 4-point scale ranging from 1 (poor) to 4 (excellent). The mean of the items was computed with
higher scores reflecting better school resources or facilities. For the perception of student attitudes, the mean of 4 items on a 4-point scale was computed, ranging from 1 (*true of only a few*) to 4 (*true of nearly all*). The four items were students: enjoy being at school, are well-behaved in class, show respect for their teachers and are rewarding to work with.

**Outcome: Academic Attainment (Age 15/16).** At Wave 3, academic attainment was measured using results from participants’ Junior Certificate Examinations, a state examination which is completed at the end of the third year of secondary education. The results are given as letter grades based on the percentage of examination questions answered correctly. Participants were asked to report the level of the examination (Higher, Ordinary or Foundation) they sat for each subject and their grade. The levels and grades obtained in English and maths were converted into numerical scores using the scoring metric seen in Table 2 (see McNamara et al., 2020). The mean of the English and maths score was computed for each participant, and values ranged from 10 (a high-level grade across English and maths) to 0 (E, F, or NG grades in both English and maths subjects).

**Table 2**

*Calculation of Junior Certificate Grade Points from Levels and Grades*

<table>
<thead>
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<td>5</td>
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</tr>
<tr>
<td>D</td>
<td>7</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>E, F or NG</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Analysis Plan**

All statistical analyses were performed using the SPSS version 27.0. Bivariate correlations determined the linear relationships between childhood adversity as measured by the risk score, positive school factors, and academic attainment. Simple linear regression analyses examined the predictive relationship of experiencing childhood adversity on
To establish if school factors could be considered promotive or protective, we used the SPSS PROCESS Model 1 to conduct moderation analyses, following guidelines outlined by Hayes (2017). Factors were considered to be promotive if there was a significant contribution to the positive outcome (i.e., direct effect of moderator on outcome) (Gutman et al., 2003). To test for the moderation effect, the relationships for (i), (ii) and (iii) had to be significant – (i) direct effect of predictor (adversity) on academic attainment, (ii) direct effect of moderator (positive school factors) on academic attainment, (iii) direct interactions effect (adversity x positive school factor) on academic attainment. In SPSS, PROCESS macro automatically calculates the interaction effect.

**Results**

**Correlations Among Variables**

Table 3 presents the correlations, means, and standard deviations of childhood adversity, covariates, positive school factors, and the outcome variable (academic attainment at Wave 3). Although the significance between the variables varied, childhood adversity was significantly related to academic attainment in Wave 3 ($p < .01$), indicating that adversity by age 9 is negatively correlated with future academic attainment. In addition, the negative correlation between childhood adversity and academic attainment across Wave 1 ($r = -.239$), Wave 2 ($r = -.209$), and Wave 3 ($r = -.259$), was consistent. Not surprisingly, mean academic attainment in Waves 1 and 2 were moderately correlated with their academic attainment in Wave 3 ($r = .587; r = .629$). There was a significant positive correlation for all school factors and future academic attainment ($p < .01$). Of note, there was a moderate correlation for educational aspirations ($r = .416$).
Table 3

Means, Standard Deviations, and Correlations of Variables

<table>
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<tr>
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<th>1</th>
<th>2</th>
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<td>.123**</td>
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<td>.008</td>
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<td>13. Attitudes of students</td>
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<td>.089**</td>
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<td>.104**</td>
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<td>14. Academic attainment W3</td>
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<td>.587**</td>
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<td>63.46</td>
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<td>.76</td>
<td>.58</td>
<td>.24</td>
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*Correlation is significant at the 0.05 level **Correlation is significant at the 0.01 level (2-tailed)
Childhood Adversity and Academic Attainment

Regression analyses were conducted to test the relationship between experiencing childhood adversity, as measured using a multiple risk score, and future academic attainment. Results show that experiencing childhood adversity by age 9 is negatively associated with academic attainment at age 15/16 ($b = -.343$, $r^2 = .067$, $F(1,6112) = 439.17$, $p < .001$). When including gender, maternal education, socioeconomic status and academic attainment at Waves 1 and 2 as covariates within the analyses, the results still suggest a negative association between adversity and academic attainment ($b = -.121$, $r^2 = .483$, $F(6,5444) = 846.46$, $p < .001$).

Promotive and Protective Effects of School Factors

A series of moderation analyses were conducted to test the second and third hypotheses on the promotive and protective effects of school factors. The outcome variable for the analysis was academic attainment at Wave 3. The predictor variable was childhood adversity, as measured by a multiple risk score. The school factors were the moderator variables. There was a significant direct promotive effect for the following school factors on academic attainment: attitude towards school, academic self-concept, educational aspirations, and positive interactions with teachers.

Analyses demonstrated that there was a moderating effect for variables exploring the young person’s attitude and beliefs towards school and themselves as a learner. There was a significant interaction effect between academic attainment and attitude towards school ($b = .03$, $p = .036$), academic self-concept ($b = .01$, $p = .02$), and educational aspirations ($b = .07$, $p < .001$). For these positive school factors, individual post-hoc analysis for interactions revealed that the impact of adversity on academic attainment reduces as each school factor increases. There was a significant direct effect for positive interactions with teachers on academic attainment ($b = .15$, $p < .001$), but no moderating effect ($b = .04$, $p = .12$). There
was no direct or moderating effect found for the other school factors (peer trust, adequate school facilities, adequate school resources, and attitude of students). An overview of results from the moderation analysis can be seen in Table 4.
### Table 4

Results from Moderation Analysis of School Factors using PROCESS

<table>
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<tr>
<th>Ecological level</th>
<th>School factor</th>
<th>Effecta, variable</th>
<th>R²</th>
<th>b</th>
<th>p</th>
<th>Promotiveb</th>
<th>Protectivec</th>
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<td>Individual</td>
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<td>-.21</td>
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<td>ii. Direct effect of moderator (attitude) on academic attainment</td>
<td>.49</td>
<td>.07</td>
<td>.001</td>
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<tr>
<td></td>
<td></td>
<td>iii. Direct interaction effect (adversity x attitude) on academic attainment</td>
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<td>.03</td>
<td>.036</td>
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<td>Academic self-concept</td>
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<td>&lt;.001</td>
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<td></td>
<td></td>
<td>iii. Direct interaction effect (adversity x self-concept) on academic attainment</td>
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<td>.01</td>
<td>.02</td>
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<td></td>
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<td>Educational aspirations</td>
<td>i. Direct effect of predictor (adversity) on academic attainment</td>
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<td>ii. Direct effect of moderator (aspirations) on academic attainment</td>
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<td>iii. Direct interaction effect (adversity x aspirations) on academic attainment</td>
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<td>Relational</td>
<td>Positive interactions with teachers</td>
<td>i. Direct effect of predictor (adversity) on academic attainment</td>
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<td>&lt;.001</td>
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<td></td>
<td></td>
<td>ii. Direct effect of moderator (teacher interactions) on academic attainment</td>
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<td>.15</td>
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<td>iii. Direct interaction effect (adversity x teacher interactions) on academic attainment</td>
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<td>Peer trust</td>
<td>i. Direct effect of predictor (adversity) on academic attainment</td>
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<td>ii. Direct effect of moderator (peers) on academic attainment</td>
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<td>iii. Direct interaction effect (adversity x peers) on academic attainment</td>
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<td>Broader ecological</td>
<td>School facilities</td>
<td>i. Direct effect of predictor (adversity) on academic attainment</td>
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<td>iii. Direct interaction effect (adversity x school facilities) on academic attainment</td>
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<td>.89</td>
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<td>School resources</td>
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<td>iii. Direct interaction effect (adversity x attitude) on academic attainment</td>
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<td>.08</td>
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</table>

aAdjusted for gender, academic attainment at Wave 1 and 2, maternal educational and social class; bSchool factor is a significant predictor of academic attainment; cThe interaction between adversity and school factor is significant
Discussion

Research has established the negative impact of childhood adversity on academic attainment. However, less is known about factors within the school context which support these students. This study aimed to examine the relationship between experiencing adversity in childhood and academic attainment outcomes at age 15/16 and to identify the promotive and/or protective factors within the school context that moderate this relationship. The marker of attainment was Junior Certificate grades and moderator variables included school factors at individual, relational and broader ecological levels. In line with our expectations, experiencing adversity by age of 9 was negatively associated with academic attainment at age 15/16. Our findings indicated that attitudes and beliefs towards school and learning at the individual level had significant promotive and protective effects on academic attainment outcomes. In other words, the impact of adversity on academic attainment reduces as attitude towards school, educational aspirations or academic self-concept increases. A promotive effect was found for positive interactions with teachers, indicating that positive interactions improve academic attainment outcomes for all students. No promotive or protective effects were found for relationships with peers or school environmental factors.

Childhood Adversity and Academic Attainment

In this study, students obtained lower grades in their Junior Certificate examinations as their exposures to adversity increased, even when controlling for other variables such as gender and maternal education. This finding is consistent with past research (e.g., Ashworth & Humphrey, 2018) and supports the assumption of the cumulative risk theory whereby a greater number of risks leads to a greater prevalence of problems (Evans et al., 2013). However, it should be noted that this study adopted an additive rather than an interactive model when
exploring the impact of multiple risks. As highlighted in Rutter’s (1979) original work, the combination of stressors has more than a simple additive effect on children’s outcomes; rather there is an accumulative effect whereby the impact of the risk is more than the sum of the individual effects. Accordingly, the interaction between and the accumulative effect of experiencing adversity on academic attainment warrants more attention in future research.

**Promotive and Protective Effects of Individual-Level Factors**

Our study also found a direct, promotive effect and an interactive, protective effect for individual-level factors. This finding suggests that having a positive attitude towards school, higher educational aspirations, and a positive academic self-concept promotes academic success for all students and reduces the negative impact of experiencing adversity on academic attainment. A recent review of the literature concluded similar findings, indicating that children’s perception of their ability and their expectations for future success leads to improved academic outcomes, especially for low-attaining pupils (Gutman & Schoon, 2013). However, the possible reciprocal nature of these relationships, as noted by Bronfenbrenner’s bioecological model (1989), should not be ignored. For example, research has found that academic resilience subsequently predicts enjoyment of school (Martin & Marsh, 2006). In addition, Marsh & Craven (2006) noted that self-concept of ability has a reciprocal rather than a causal relationship with performance and thus argued that researchers and practitioners should aim to improve academic self-concept and academic skills simultaneously.

Nevertheless, these findings highlight the importance of maintaining and developing a student’s positive disposition towards learning for academic success. Initially, it would seem that these individual-level factors are outside the control of the school. However, there is growing evidence that non-cognitive skills which are positively associated with academic outcomes are
malleable (Gutman & Schoon, 2013). A meta-analysis of interventions specifically focused on self-concept enhancement found that they were effective in improving self-concept of ability (O’Mara et al., 2006). Research has also found that non-cognitive skills, such as learner mindsets (Blackwell et al., 2007) and meta-cognition (Dignath et al., 2008), can also be developed within the school setting. Therefore, interventions and approaches within the school setting which promote individual-level factors must not be ignored.

With regard to students’ disposition towards learning, intervention studies found that adopting a ‘growth mindset’ (Dweck, 2006) has significant effects on academic outcomes (e.g., Good et al., 2003) and promotes positive attitudes and high expectations (OECD, 2019). For student expectations, experimental studies have indicated that interventions which increase students’ expectations for academic success, as well as their value of schooling, have a significant impact on future achievement (e.g., Cohen et al., 2009), especially for low-achieving students with low expectations (Hulleman & Harachkiewicz, 2009). Positive results have also been found for Social and Emotional Learning Programmes in improving students’ attitudes about self and others and their academic performance (e.g., Payton et al., 2008). However, whether these interventions moderate the relationship between childhood adversity and school-related outcomes has not been fully explored in the literature.

**Promotive Effect of Positive Interactions with Teachers**

The current study also found a direct effect for positive interactions with teachers and academic attainment. This suggests that having positive interactions with teachers leads to better academic attainment outcomes for all students, regardless of their experience of adversity. This finding is consistent with a large body of international research showing a strong association between the quality of relationships and a range of student outcomes, including school
engagement (Martin & Collie, 2019) and academic achievement (Allen et al., 2011), even when accounting for young people’s investment of time in homework and student and their prior achievement levels (Smyth et al., 2011). However, a protective effect for positive interactions with students was not found. Nonetheless, research has established the relationship between positive interactions with teachers and student outcomes, and thus ways in which this can be promoted should be considered. Mentoring programmes, such as Big Brothers Big Sisters of America and Chance UK have grown in popularity internationally (Gutman & Schoon, 2013) and their positive impact on academic outcomes has been demonstrated in a meta-analysis by DuBois et al. (2011). However, researchers have concluded that positive effects are only expected if a relationship characterized by mutuality, trust, and empathy, is established. For this to occur, mentors and youth are likely to need to spend time together consistently over a significant period (Grossman & Rhodes, 2002). Other intervention approaches include increasing positive-to-negative interactions with students as research suggests that the type of attention (e.g., praise) teachers provide predicts positive student outcomes (Hamre & Pianta, 2005). A practical example of this approach which has been endorsed in the literature is the 5:1 ratio, first developed by Gottman et al., (1998).

**Peer Relationships**

In contrast to some reports in the literature, we did not find any promotive or protective effect on peer relationships. As only one dimension of peer relationships, degree of mutual trust, was explored in the current study, future research may warrant further exploration of other aspects of peer relationships within the school setting. For example, studies have shown that interacting with peers who are achievement-orientated enhances examination performances
(Eccles & Roeser, 2011) and that larger friendship networks play a protective role for students transitioning to secondary school (Smyth, 2017).

**School Environmental Factors**

In addition, no promotive or protective effects were found for broader ecological factors within the school setting, such as school facilities, school resources, and attitudes of students. As these factors were reported by the school principal, it would be of interest to explore broader ecological factors from other perspectives within the school community. For example, international research found that the share of academically resilient students was larger amongst those where students reported a better school climate, greater cooperation, and better discipline in schools (OECD, 2019).

**Limitations**

The current study is not without its limitations. Given that the Growing Up in Ireland dataset consists of a nationally representative sample of children from across Ireland, the external validity of these findings can be supported. However, secondary analysis is limited by the design and measures included in the study. The study itself is not designed specifically to study childhood adversity and therefore the operationalisation of some variables could be improved. Although the identification of risk factors was based on Ellis and Dietz’ (2017) Pair of ACEs Tree, it was not possible to include all risks identified by this framework as events such as emotional and sexual abuse and physical and emotional neglect were not measured in the dataset. Similarly, despite the established link between cognitive ability and academic attainment (e.g., Flouri et al., 2010), this was not captured at age 9 and thus was not included in the analysis. In addition, stressful life events are measured as binary variables which do not account for repeated exposure, severity or stress experienced by the young person. As with any longitudinal study,
attrition between waves of data collection needs to be considered. Thornton et al. (2016) noted that response rates at age 13 were lower amongst socially disadvantaged families. Therefore, it is possible that some children from the population of interest are not represented within the sample and this should be taken into consideration when interpreting the findings of the study.

Nevertheless, the longitudinal design of the study, where data was explored at three time points, allowed for the exploration of cause-and-effect relationships and developmental trends across childhood.

Conclusion

The current study explored the relationship between childhood adversity and academic attainment outcomes, and factors within the school context which may moderate this relationship. The findings from this study suggest that inequality in young people’s academic outcomes exists, with those who experience adversity early in life obtaining lower grades in the Junior Certificate examination when compared to their peers. This emphasises the need to continue to examine current policy initiatives which aim to bridge the attainment gap for students at risk. Individual factors related to attitudes towards school and learning dispositions were positively related to academic performance and moderated the negative impact of risk on academic attainment. This finding may have potential implications for the types of approaches and interventions used in schools, especially for those who are at risk of academic failure. The findings also highlight the importance of positive interactions with teachers for academic success. Thus, promoting a school climate characterised by positive interactions and mutual respect between teachers and students should represent an important focus of initial and continuous teacher education, and form a strong element of school development planning. Future
research should continue to explore broader ecological factors which promote academic resilience.
References


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Chapter 5: Implications for Practice

As knowledge regarding the negative impact of childhood adversity on child development and social, emotional, behavioural, and cognitive outcomes has grown over the last number of decades, so has the opportunity to research evidence-based approaches and practices that examine how best to support these individuals. This thesis aimed to explore the factors which support children to reach their potential in school and in particular, the protective factors which reduce the negative impact of childhood adversity on academic outcomes. The systematic literature review focused on identifying factors at the level of the individual, family, and wider community that have been explored in the literature to date. The empirical journal article narrowed this focus by exploring factors specifically related to the school context. Given the role of the educational psychologist in supporting the “psychological and educational development of persons of all ages” (The Psychological Society of Ireland, 2017, p. 3), the two pieces of research offer important considerations and new insights for educational psychologists and the legislations and policies which guide their practice.

Promoting Awareness of Childhood Adversity

In line with previous research (e.g., Perfect et al., 2016), a significant finding highlighted in the empirical journal article is the negative graded relationship between experiencing adversity within the home and community by age 9 and future academic outcomes. In addition, findings from the empirical journal article suggest that childhood adversity is common, with 75 percent of the sample having at least one adverse experience by the age of 9, which is comparable with previous research (e.g., Healy et al., 2021). These findings are essential points for educational psychologists to note when working with young people and their families. As outlined by the Psychological Society of Ireland (2017), one role of educational psychologists is to conduct
multi-method assessments, which involves integrating information, case formulation, and individualised planning. During the formulation process, educational psychologists consider factors that contribute to the child’s presentation. This provides a structure for facilitating the psychologist’s understanding of the child, which can be shared with those who work with them, and informs intervention planning. Given the prevalence of experiencing adversity identified in the empirical journal article, it is essential that the experience of adversity is considered during this process, in particular for children who are not reaching their academic potential. This supports the psychologist to adopt a curious stance, and move from thinking ‘What is wrong with you?’ to considering ‘What happened to you?’ This is a fundamental paradigm shift and allows the psychologist to move away from a deficit-based model to a more trauma-informed approach (Sweeney et al., 2018).

This finding from the empirical journal article also has implications for school staff. Firstly, it is important that schools are aware of the prevalence of experiencing adversity and its potential to negatively impact a child’s academic performance in school. This supports the development of compassion, patience, and empathy, which is a key intervention in itself (Downey, 2007). This may be achieved through continuous professional development that builds awareness of childhood adversity or trauma-informed approaches. International research has shown promising results for these trainings in developing staff’s knowledge (e.g., Orapello et al., 2021) and children’s adjustment (e.g., Dorado et al., 2016). However, not all trauma-informed training is equal and research shows that training that focuses on self-reflection leads to stronger trauma-informed attitudes than those with only knowledge training (e.g., Loomis & Felt, 2021). Thus, including opportunities for reflection may be considered when delivering training for school staff.
However, Maynard et al. (2019) note that adopting a trauma-informed approach is not a standalone intervention that can be delivered in isolation, but rather a framework to guide systems. Hanson and Lang (2016) identify three core domains central to the approach which they derived from analysing definitions across several organisations and authors. Alongside workforce or professional development, they identified organisational change and practice change using evidence-informed practices as other core domains to adopting a trauma-informed approach. This would involve a change at the systemic level, and thus support from government policy and funding would likely be required for implementation. As suggested by Maynard and colleagues, a potential space for implementing a trauma-informed approach could be within the various three-tiered models currently active in schools, such as the Continuum of Support (NEPS, 2007a). In line with this continuum, the primary focus at the whole-school and classroom level might be on prevention and the use of screening tools to identify students who may be impacted by adversity. At the individual level, individualised intervention may be considered for children presenting with more complex needs. In the United States, Healthy Environments and Response to Trauma in Schools (HEARTS) is a whole-school, multi-level intervention which is showing promising evidence (e.g., Dorado et al., 2016). However, evidence in the Irish context for multi-level trauma-informed approaches is currently lacking; thus, school leaders should proceed with caution when implementing such approaches.

**Supporting a Child’s Cognitive Development and Parent-Child Relationships**

When exploring factors that have been identified in the literature which promote academic success, the systematic literature review identified that a child’s cognitive ability or intelligence has received the most empirical attention to date. Our synthesis concluded that cognitive ability supports academic success, and in some cases, reduces the negative impact of
childhood adversity on academic attainment outcomes. This finding is expected as there is a broad agreement in the literature that there is a significant relationship between cognitive ability and educational achievement (e.g., Deary et al., 2007). Thus, it is imperative that consideration is given to supporting the cognitive development of children, in particular those who are at risk of experiencing adversity.

We know from research on brain development that from birth to three years is a highly sensitive period for children’s learning. In this narrow window, a child’s brain and subsequently their cognitive abilities grow faster than at any other time of life (Shonkoff & Phillips, 2000). With this in mind, it may be most beneficial to focus on the early years when supporting the cognitive development of children, which has already been highlighted in government policy through the First 5 Strategy (Government of Ireland, 2018). This is a whole-of-government ten-year plan which uses evidence to identify goals, objectives, and the specific actions required to support children (and their families) in the early years of life. This strategy has identified evidence-based ways at the community and home levels to support cognitive outcomes for young children, including high-quality Early Learning and Care services, engaging in activities such as reading, playing board games, and contact with grandparents (McGinnity et al., 2015), a positive home-learning environment (Morris et al., 2017), and positive infant-parent relationships (Waldfogel, 2004). However, those working with older children and adolescents who have experienced adversity should not be disheartened. Despite research establishing that the brain and other biological systems are most adaptable early in life, emerging knowledge in the areas of epigenetics and neuroplasticity indicate that resilience is shaped throughout life by the accumulation of positive and negative experiences (CDC, 2015). For example, evidence suggests that activities such as regular physical exercise and stress-reduction practices (e.g., mindfulness)
can alter brain structure and function (Davidson & McEwen, 2012). Thus, it is important to consider ways in which the development of positive cognitive functions can be supported throughout the lifespan. When working within multi-disciplinary teams, Educational Psychologists may consider adopting an approach such as “The Neurosequential Model of Therapeutics”, a developmentally sensitive, neurobiology-informed approach to clinical problem solving. It integrates core principles of traumatology and brain development during the assessment process and the selection and sequencing of therapeutic and educational interventions (Perry & Szalavitz, 2017).

Alongside cognitive abilities or intelligence, the parent-child relationship also was identified as a promotive and/or protective factor in many studies, with the review concluding that supporting parent-child relationships may reduce the negative impact of adversity on academic outcomes. In the literature, a ‘neuro-relational approach’ has emerged (Lebedeva, 2018), in recognition that experience, not simple maturation, changes the brain and that all learning happens in the context of relationships. In other words, the brain is an organ that is changed in interactive and complex ways, through interactions with others. Therefore, when considering appropriate interventions for children and their families who have experienced adversity and thus are at risk of poor educational outcomes, educational psychologists may consider adopting this neuro-relational approach by focusing interventions on the parent-child relationship. This, in turn, will support healthy brain and cognitive development (Mistry et al., 2010), leading to improved academic outcomes (Deary et al., 2007).

This approach is in line with the infant mental health framework, which directs attention to the well-being of all infants and toddlers within the context of secure and nurturing relationships. This framework is characterised by the following strategies: using the therapeutic
relationship as the instrument for change; meeting with the infant and parent together whenever possible; inviting parents to talk about their infant or toddler and listening to what they have to say; responding with empathy; and offering developmental guidance, support, and information to strengthen parental caregiving capacities (Fitzgerald et al., 2011). Other practical and evidence-based interventions that focus on building safe and secure parent-child relationships which may be considered by educational psychologists include Theraplay (Booth & Jernberg, 2010), parent-infant psychotherapy (Barlow et al., 2016), and Video Interactive Guidance (Kennedy & Underdown, 2018).

**Building Positive Attitudes towards Education and Learning**

One significant finding from the empirical journal article is that factors related to a young person’s attitudes toward school and themselves as a learner significantly reduced the negative impact of childhood adversity on future academic outcomes, acting as protective factors. Initially, it would appear that these individual-level factors are outside the control of professionals working with young people. However, research suggests that some non-cognitive skills such as self-concept, learner mindsets, and meta-cognition, which are positively associated with academic outcomes, are malleable (Gutman & Schoon, 2013). Therefore, alongside academic curricula, schools may consider including evidence-based interventions which promote these skills and their academic performance. ‘My Learner ID’ is one example of a school-based intervention in the Irish context (Parkinson, 2020). This resource is designed for learners from pre-school to sixth class which supports children in becoming learners and in articulating perspectives of themselves as learners and their experience of school (INTO, 2017). However, as this is a relatively new resource, evidence of the efficacy of the intervention is lacking, and thus school leaders should proceed with caution. Other approaches which also promote academic
outcomes that may be considered include supporting the development of a ‘growth mindset’ (Dweck, 2006) or Social and Emotional Learning Programmes (Durlak et al., 2011).

This finding also has implications for educational psychology practice. Alongside promoting interventions in schools that support the development of non-cognitive skills, educational psychologists may consider a young person’s attitudes and dispositions towards learning and school during the assessment and formulation process. This would require gathering information from the perspective of the child or young person, which has been highlighted as a need in recent national policy documents (Department of Children and Youth Affairs, 2015). The National Educational Psychological Service (NEPS) has developed some practical tools which may help gather this information, such as the “My thoughts about school checklist” (NEPS, 2007b). The Pupil Attitudes to Self and School (PASS) is another useful tool that identifies students’ attitudes towards school and themselves as a learner which may be considered. This tool can also be used as a universal screener within the school setting (GL Education, 2022). Once explored with the young person, educational psychologists may use this information to guide formulation and intervention planning.

Prevention and Early Intervention

Lastly, findings from the empirical journal article indicated that factors within the school setting, such as positive relationships with teachers and peers, and school environmental factors, including facilities, resources, and climate, do not act as buffers for childhood adversity and future academic attainment outcomes. Therefore, it may be more beneficial to focus on prevention and early intervention when considering the impact of childhood adversity which is central to the work of educational psychologists (The Psychological Society of Ireland, 2017).
Within a trauma-informed approach, routine screening has been identified as a first step in preventing and mitigating its negative effects by The National Child Traumatic Stress Network (2008). Therefore, when adopting a trauma-informed approach into their practice, educational psychologists may consider screening of childhood adversity. Based on the most recent literature in the field, Bartlett (2020) outlines key challenges and recommendations which are important to consider, which include the following: assessment of childhood adversity should consider exposure, symptoms, and adversities related to socio-structural inequities; professionals should adopt a strength-based approach by also screening for child, family, and community strengths and protective factors; and that the tool should be reliable and valid for the child’s age and developmental stage. In addition, in line with the Code of Professional Ethics (The Psychological Society of Ireland, 2019), ethical challenges such as avoiding further harm to children and families need to be considered. To reduce the re-traumatisation of vulnerable children and families, it is important that screening is part of a comprehensive, trauma-informed approach, that psychologists are trained in trauma-informed practices, and a system for onward referral and follow-up given a positive screen is in place. In addition, during the screening process it would be important to consider ways which do not require recounting details which may be re-traumatizing, that children and families feel safe before ending the screening session, and that psychologists utilise self-care practices and engage in supervision to prevent and address secondary traumatic stress (SAMHSA, 2014).

Implications for government policy also need to be highlighted. The Centre for Disease Control and Prevention (2019) has identified several evidence-based strategies for preventing Adverse Childhood Experiences (ACEs). These include approaches that strengthen economic support for families, promoting social norms that protect against violence and adversity, ensuring
a strong start for children, teaching parenting and social and emotional learning skills, connecting youth to caring adults and activities, and intervening to lessen immediate and long-term harms. Educational psychologists may consider promoting preventative strategies such as these within the school context and when working with families. As recommended by the Prevention and Early Intervention Network (PEIN, 2019), it is essential that policymakers address the impact of childhood adversity by integrating approaches such as these into current government policy, such as the First 5 Strategy.

**Dissemination**

The final part of the research process is the dissemination of research findings. Firstly, the Growing Up in Ireland team hold a research conference annually for researchers working on Growing Up in Ireland data. We plan to submit findings from the empirical journal article presented in this thesis with the aim of presenting at the next annual conference in 2023. In addition, we plan to disseminate findings of the systematic literature review (Chapter 2) and the empirical journal article (Chapter 4) to relevant academic journals for publishing such as the International Journal of School and Educational Psychology, The Irish Journal of Psychology, Psychology in the Schools, and Review of Educational Research. Finally, as the focus of the empirical journal article is the school context, a summary of findings will be shared with the National Educational Psychological Service (NEPS).

**Conclusion**

The experience of childhood adversity in Ireland is common and poses a severe threat to a child’s performance in school. This is a source of concern, particularly as school performance often predicts one’s life trajectory. To support these students, it is essential that factors that support academic success and reduce the negative impact of adversity are identified and
implemented in practice. Findings from this thesis indicated that cognitive ability, positive parent-child relationships, and positive attitudes towards learning and school are protective; thus, promoting these factors may support the academic success of children who have experienced adversity. Among educational psychologists, this may be achieved by adopting a neuro-relational approach or Infant Mental Health framework when working with families and promoting interventions that support the development of non-cognitive skills within the school setting. At a systemic level, it may be beneficial to focus on preventative approaches for childhood adversity such as strengthening a family’s economic stability and ensuring a good start for children. Future research should continue to explore the broader environmental factors within the school context which promote academic success for children, especially those who have experienced adversity.
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Appendices

Appendix A: Quality Appraisal Procedure

As outlined by Tod et al., (2021), five steps were followed to support the critical appraisal of quantitative studies and present the results in a review. Firstly, the study-types of individual papers included in the review were identified, which included observational studies such as longitudinal and cross-sectional studies. Secondly, appropriate checklists were identified and reviewed for suitability (e.g., appraisal tools from the Centre for Evidence-based Management (2017) and the Joanna Briggs Institute (2017)). The third step is to choose a tool based on its suitability. The CASP checklist (2018) was chosen as it is readily available online and addresses three broad issues that need to be considered when appraising a study: the validity of the results, the results of the study, and how the results will help locally. It consists of 12 questions, which can be seen in Tables A1 and A2. These questions are designed to support the researcher to consider these issues systematically. The final two steps involve conducting the appraisal of each study and summarizing and using the results. As suggested by Tomey (2016), studies received scores of 1 (yes), 0.5 (unsure or partially met), and 0 (no) for each question. However, the research supporting this checklist and scoring systems is limited and few checklists have been calibrated against meaningful criteria (Crowe & Sheppard, 2011). Therefore, as suggested by Tod et al. (2021), additional details are provided in Tables A1 and A2 which allows the reader to evaluate a study for themselves. Nevertheless, the aggregate scores and additional information provided indicated that all studies were deemed to be of medium or high quality, and thus were included in the review.
# Table A1

*CASP Quality Review Questions 1 to 6*

<table>
<thead>
<tr>
<th>Authors</th>
<th>Question 1</th>
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<th>Question 3</th>
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<th>Question 6a</th>
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<tbody>
<tr>
<td>Browne et al. (2018)</td>
<td>Yes (1)* – Contextual risk on school readiness outcomes via family mediating mechanisms</td>
<td>Yes (1) – Families recruited through Healthy Babies Happy Children, a program where parents of newborns are contacted a week within birth. Inclusion factors identified.</td>
<td>Yes (1) – Risk factors were assessed at birth which included maternal report and reliable neighbourhood observations.</td>
<td>Yes (1) – Child cognitive and academic outcomes assessed at school entry conducted by external examiner using standardised assessment tools.</td>
<td>Yes (1) – Selected based on relation to cognitive outcomes, including child birth weight, maternal language, gender, and age at follow up.</td>
<td>Yes (1) – Authors stated that analysis was adjusted for covariates.</td>
<td>Yes (1) – Best practices were followed for missing data in order to minimise the effect of attrition.</td>
<td>Unsure (0.5) – No follow up beyond elementary school.</td>
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<td>Burchinal et al. (2006)</td>
<td>Yes (1) – Academic and school behaviour trajectories from kindergarten to 3rd grade were followed to</td>
<td>Yes (1) – Children were recruited during their first year of life and followed prospectively.</td>
<td>Yes (1) – The cumulative risk scores for each year were averaged to describe exposure to risk.</td>
<td>Yes (1) – The child’s gender and maternal IQ were identified.</td>
<td>Yes (1) – Included in analyses and reported by researcher.</td>
<td>Yes (1) – Almost all risk factors and some protective factors (e.g., social skills) were collected annually.</td>
<td>Yes (1) – Exposure to risk measured at 2 months, cognitive performance measured at entry to kindergarten.</td>
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<td>test hypothesized protective factors.</td>
<td>(Woodcock-Johnson, Revised).</td>
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<td>Burchinal et al. (2008)</td>
<td>Yes (1) – To identify mediators and protective factors related to the severity and timing of risk exposure to academic achievement and adjustment.</td>
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<td>Yes (1) – Child academic outcomes were based on scores from standardised assessment tools (Woodcock-Johnson, Revised).</td>
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<td>Yes (1) – Included in analyses and reported by researcher.</td>
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<td>Unsure (0.5) – No follow up beyond Grade 6.</td>
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<td>Cunningham et al. (2002)</td>
<td>Yes (1) – Investigated factors that influence academic success among high-achieving African American students who are exposed to stressful life events.</td>
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<td>No (0) – Case study on one high school. Although reasons for choosing school are justified by the researchers.</td>
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<td>No (0) – Self-report of stress using the Life Events Questionnaire which may be susceptible to bias.</td>
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<td>Yes (1) – Student academic outcomes were measured by using the students’ transcript grades.</td>
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<td>N/A (0) – Cross-sectional design.</td>
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<td>Dubow &amp; Tisak (1991)</td>
<td>Yes (1) – This study investigated the contributions of stressful life events and resources support and</td>
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<td>Unsure (0.5) – Parental consent obtained from two urban and two suburban lower-middle-class schools.</td>
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<td>Unsure (0.5) – Stressful life events measured using standardised scale (Coddington’s Life Events Scale).</td>
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<td>Yes (1) – Grade Point Averages were calculated based on the child’s grades in English, math, spelling, and reading.</td>
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<td>Yes (1) – Gender, race, and socioeconomic status.</td>
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<td>Yes (1) – Covariates included in analysis.</td>
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<td>Yes (1) – Authors described methods to retain recruitment of sample.</td>
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<td>No (0) – Two year follow up.</td>
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<td>Study Reference</td>
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<td>Education-Related Outcomes</td>
<td>Data Source</td>
<td>ACE Representation</td>
<td>Demographic Covariates</td>
<td>Included in Analysis</td>
<td>Study Design</td>
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<td>Duke (2020)</td>
<td>Yes (1) – The purpose of this study was to examine relationships between ACEs and three education-related outcomes.</td>
<td></td>
<td>Yes (1) – Data from 11th grade participants from the 2016 Minnesota Student Survey.</td>
<td>Yes (1) – 10 questions from the study were chosen to represent ACEs.</td>
<td>No (0) – Students were asked to self-report grades.</td>
<td>Yes (1) – Demographic covariates, sex, race, family structure, urban vs rural, individual factors.</td>
<td>N/A – Cross-sectional design.</td>
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<tr>
<td>Gutman et al. (2002)</td>
<td>Yes (1) – Examined the effects of multiple risk, promotive, and protective factors on three achievement-related measures.</td>
<td></td>
<td>Yes (1) – Data part of Maryland Adolescent Development In Context Study.</td>
<td>Yes (1) – Multiple risk score created from parental interviews and standardised scales.</td>
<td>Yes (1) – GPA and score on standardised maths test used.</td>
<td>Yes (1) – Age and gender.</td>
<td>N/A – Cross-sectional design.</td>
<td></td>
</tr>
<tr>
<td>Gutman et al. (2003)</td>
<td>Yes (1) – Examined the effects of multiple and social risk factors and preschool child factors of IQ and mental health on</td>
<td></td>
<td>Yes (1) – Data obtained from the Rochester Longitudinal Study.</td>
<td>Yes (1) – Environmental risk score for each family was calculated by summing 10 risk factors.</td>
<td>Yes (1) – GPA was used.</td>
<td>No (1) – Not reported.</td>
<td>Yes (1) – Study explored academic trajectory from 1st to 12th grade.</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Yes (1) – Study explored academic trajectory from 1st to 12th grade.</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Yes (1) –</td>
<td>Recruitment of maltreated children identified through the Department of Human Services.</td>
<td>Yes (1) –</td>
<td>Cognitive performance obtained from standardised assessment tools.</td>
<td>Yes (1) –</td>
<td>Report in analyses.</td>
<td>Yes (1) –</td>
<td>Academic attainment and cognitive outcomes obtained at kindergarten/ 1st grade.</td>
</tr>
<tr>
<td>-------------------------------------------</td>
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</tr>
<tr>
<td>Masten et al. (1999)</td>
<td>Yes (1) –</td>
<td>Three major domains of competence from childhood through adolescent, adversity, and psychosocial resources were assessed.</td>
<td>Yes (1) –</td>
<td>Recruited from a normative school population in two urban schools.</td>
<td>Yes (1) –</td>
<td>GPA and Peabody Individual Achievement Test.</td>
<td>Yes (1) –</td>
<td>Sex, age and minority status.</td>
</tr>
<tr>
<td></td>
<td>Unsure (0.5) –</td>
<td>Authors did not explicitly state how participants were contacted.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yes (1) –</td>
<td>Only gender included in analyses.</td>
</tr>
<tr>
<td>Miller &amp; McIntosh (1997)</td>
<td>Yes (1) –</td>
<td>Study explores the resilience and protective factors among urban African American adolescents.</td>
<td>Yes (1) –</td>
<td>Standardised self-report assessment tools were used.</td>
<td>No (0) –</td>
<td>Only gender included.</td>
<td>No (0) –</td>
<td>Only gender included in analyses.</td>
</tr>
<tr>
<td>Pettit et al. (1997)</td>
<td>Yes (1) –</td>
<td>Examined the relationship between students’ academic trajectories.</td>
<td>Yes (1) –</td>
<td>Family adversity was indexed by data on academic performance were drawn</td>
<td>Yes (1) –</td>
<td>Gender and ethnicity.</td>
<td>(1) –</td>
<td>Included in analyses.</td>
</tr>
<tr>
<td>Study</td>
<td>Supportive parenting and children’s adjustment</td>
<td>Child Development Project</td>
<td>Single parenthood, SES, and family stress</td>
<td>From teacher ratings and archival school records</td>
<td>Kindergarten and Grade 6</td>
<td>Elementary school</td>
<td></td>
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</tr>
<tr>
<td>Predlow &amp; Loukas (2003)</td>
<td>Yes (1) – Examined the effects of cumulative risk, resource, and protective factors on the language and math achievement scores of economically disadvantaged Latino youths.</td>
<td>Yes (1) – Data obtained from Wave 1 of the Welfare, Children, and Families: A Three-City Study.</td>
<td>Yes (1) – A multiple risk factor index was computed.</td>
<td>Yes (1) – Academic achievement was measured using a standardised assessment tool.</td>
<td>Yes (1) – Age and gender.</td>
<td>Yes (1) – Covariates reported in analyses.</td>
<td>N/A – Cross-sectional design.</td>
<td>N/A – Cross-sectional in design.</td>
</tr>
</tbody>
</table>

*For each question, studies received a score of 0, 0.5, or 1.*
### Table A2

**CASP Quality Review Questions 7 to 12**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Question 7</th>
<th>Question 8</th>
<th>Q.9</th>
<th>Q.10</th>
<th>Question 11</th>
<th>Question 12</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browne et al. (2018)</td>
<td>(1) Households characterised by low-SES risk had lower levels of investment and responsivity and maternal responsivity was significant associated with all child outcomes.</td>
<td>(1) Path analysis used to conduct analysis.</td>
<td>Yes (1).</td>
<td>No (0) – Canadian population.</td>
<td>Yes (1) – Family protective factors moderate the relationship between risk early in life and future cognitive outcomes.</td>
<td>(1) For Urban immigrants in Canada, when families are struggling economically, parents are less able to promote early learning, and their children are behind by the time they enter school.</td>
<td>13</td>
</tr>
<tr>
<td>Burchinal et al. (2006)</td>
<td>(1) Children exposed to multiple risks in early childhood showed lower levels of academic skills. Parenting, language skills, and child care quality mediated the association.</td>
<td>(1) Descriptive statistics and unstandardised regression coefficients noted.</td>
<td>Yes (1).</td>
<td>No (0) – African American population.</td>
<td>Yes (1).</td>
<td>(1) Findings support further evidence supporting current policies related to ensuring that children exposed to risk can attend child care programs which enhance cognitive and language skills.</td>
<td>12.5</td>
</tr>
<tr>
<td>Burchinal et al. (2008)</td>
<td>(1) Longitudinal analyses indicated that severity more</td>
<td>(1) Descriptive statistics and</td>
<td>Yes (1).</td>
<td>No (0) – African American Population.</td>
<td>Yes (1).</td>
<td>(1) To decrease risk and its impact on outcomes; focus on</td>
<td>12.5</td>
</tr>
</tbody>
</table>
than timing of risk exposure was negatively related to all outcomes and language skills moderated the relationship between risk and future outcomes.

<table>
<thead>
<tr>
<th>Study</th>
<th>Methodology</th>
<th>Findings</th>
<th>Sample</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cunningham et al. (2002)</td>
<td>(1) The school domain of self-esteem mediated negative impact of stressful life events on GPA</td>
<td>(1) Descriptive statistics and multiple regression models reported.</td>
<td>Yes (1).</td>
<td>No (0) – African American population in one school.</td>
</tr>
<tr>
<td>Dubow &amp; Tisak (1991)</td>
<td>(1) Results revealed prospective effects for Time 1 social support on later GPAs. Increases over time in social support and problem-solving skills were significantly related to improvement in academic adjustment.</td>
<td>(1) Descriptive statistics and regression models reported.</td>
<td>Yes (1).</td>
<td>No (0) – Research conducted in four American schools.</td>
</tr>
<tr>
<td>Duke (2020)</td>
<td>(1) Multiple types of ACEs were significantly associated with each adverse education outcome. Relationships between some types of ACEs and</td>
<td>(1) Descriptive statistics and logistical regression analyses reported.</td>
<td>Yes (1).</td>
<td>Unsure (0.5) – Data from Minnesota Student Survey (N = 81,885). However, American population.</td>
</tr>
<tr>
<td>Study</td>
<td>Description</td>
<td>Statistics/Modeling</td>
<td>Population/Target</td>
<td>Importance/Outcome</td>
</tr>
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<td>------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
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<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Gutman et al. (2002)</td>
<td>Peer support and consistent discipline buffer the effects of risk factors on school outcomes.</td>
<td>Yes (1).</td>
<td>No (1) – African-American population.</td>
<td>Intervention efforts aimed at increasing parental school involvement are important for a broad spectrum of African-American students, whereas those exposed to risk may benefit from efforts designed to enhance peer networks in early adolescence.</td>
</tr>
<tr>
<td>Gutman et al. (2003)</td>
<td>HLM modelling showed that high-risk students had lower grades than did low-risk students. Child factors had significant effects only for low-risk students.</td>
<td>Yes (1).</td>
<td>Unsure (0.5) – American population from longitudinal study.</td>
<td>Prevention and intervention programmes may be more effective if they alleviate the multiple social risks in children’s lives rather than focus solely on strengthening children’s personal characteristics.</td>
</tr>
<tr>
<td>Manly et al. (2013)</td>
<td>Neglected children had significantly lower scores on academic performance at 1st grade than non-neglected children.</td>
<td>Yes (1).</td>
<td>No (0) – High-risk urban children from upstate New York.</td>
<td>Preventative approaches should focus on reducing the occurrence of child neglect as well as assisting families with</td>
</tr>
<tr>
<td>Study</td>
<td>Description</td>
<td>Methodology</td>
<td>Results</td>
<td>Implications</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Masten et al. (1999)</td>
<td>Children’s cognitive performance at kindergarten mediated this relationship. Better intellectual functioning and parenting resources were associated with good outcomes across competence domains. Results suggest that IQ and parenting scores are markers of fundamental adaptational systems that protect child development in the context of severe adversity.</td>
<td>Yes (1). Descriptive statistics and hierarchical regression results reported.</td>
<td>Unsure (0.5) – American population.</td>
<td>Yes (1). (1) Implications discussed supporting intervening to promote more desirable outcomes among children.</td>
</tr>
<tr>
<td>Miller &amp; MacIntosh (1997)</td>
<td>The findings suggest that a positive racial identity can protect African American adolescents against the discrimination and daily hassles that they experience as they seek to promote cognitive and coping skills. Providing high quality preschool and elementary programs can support positive development.</td>
<td>Yes (1). Descriptive statistics and regression coefficients reported.</td>
<td>No (0) – African American population.</td>
<td>Yes (1). (1) Implications for policy noted. Resilience is important to explore when investigating the issues and needs of ethnic minority adolescents.</td>
</tr>
</tbody>
</table>
perform well in school.

<table>
<thead>
<tr>
<th>Study</th>
<th>Findings</th>
<th>Sample Characteristics</th>
<th>Implications for Future Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pettit et al. (1997)</td>
<td>(1) Academic performance at Grade 6 was not predicted by interaction of supportive parenting with any family adversity measure, but it did for social skilfulness and externalising problems.</td>
<td>Unsure (0.5) – Sample diverse with respect to gender, ethnicity, and family composition, but based in America.</td>
<td>Yes (1). (0.5) Only implications for future research discussed.</td>
</tr>
<tr>
<td>Prelow &amp; Loukas (2003)</td>
<td>(1) Regression analyses indicated that each resource variable (maternal monitoring, maternal academic involvement, socioemotional competence, and extracurricular activity) made a unique contribution to at least one achievement-related variable, over and above the effects of risk.</td>
<td>Yes (1). No (0) – Sample consisted of economically disadvantaged Latino youth.</td>
<td>Yes (1). (1) Results of the study suggest that interventions aimed at increasing maternal monitoring and involvement, participation in extracurricular activities may increase achievement-related functioning of low-income Latino youth.</td>
</tr>
</tbody>
</table>

*For each question, studies received a score of 0, 0.5, or 1.*
References

https://www.cebma.org/resources-and-tools/what-is-critical-appraisal/


Crowe, M., & Sheppard, L. (2011). A review of critical appraisal tools show they lack rigor:
Alternative tool structure is proposed. *Journal of Clinical Epidemiology,* 64(1), 79-89. https://doi.org/10.1016/j.jclinepi.2010.02.008


Appendix B: Procedures used by the GUI Study Team

This section describes the sampling, recruitment, data collection, and data management procedures used by the GUI study team to produce the data analysed for this thesis. The GUI team operationalised their study inclusion criteria as children born between the 1st November 1997 and the 31st October 1998 (meaning they would be about 9 years of age at the time of data collection in 2007/2008). The sample for Wave 1 was achieved using a two-stage clustered strategy, with schools as the primary sampling unit and 9-year-old children within schools as the secondary units. In the first stage of sampling, schools were split into two subgroups. Schools who had fewer than 40 9-year-olds enrolled were selected based on a systematic stratified basis, according to the following variables: county, disadvantaged status, denominational status, categorical size and gender mix. Schools with more than 40 9-year-olds were selected based on probability proportionate to the size of the school, meaning that the larger the school the higher its selection probability. This ensured that children in large schools were adequately accounted for within the sample (Murray et al., 2010). As the focus of the empirical journal article is the relationship between childhood adversity and academic attainment, and the factors within the school context which moderate this relationship, the sample used in the GUI study ensured that the topic could be explored across a representative sample of the school going population.

Following the school’s selection into the sample, the GUI study team despatched an information pack containing detailed information about the study for the principal and teachers. On agreeing to participate, the school provided a record of the names and basic details of children within the school whose dates of birth fell within the specified age range. Information packs, including consent forms, were then despatched to selected children and their parents/guardians through the school. Once recruited into the sample, the principal was asked to
complete structured questionnaires about themselves and their school, and teachers were asked to complete structured questionnaires about themselves, their class and any participating children within their class (one questionnaire per participating child). In addition, a GUI researcher visited the school and administered standardised English reading and Maths tests (Educational Research Centre, 2006a; 2006b) and the Piers Harris 2 self-concept questionnaire (Piers & Herzberg, 2002) in group self-completion sessions. On completion of the school-based phase, the participating households were assigned an interviewer for the household-based component of the study. The main interviews (with the primary caregiver, secondary caregiver and study child) were administered on a CAPI (Computer Assisted Personal Interview) basis (Murray et al., 2010).

With the transition of almost all participants to second level education by Wave 2, there was a major change in the design of data collection model. In Wave 2, as participating children were taught by multiple teachers, it was not possible to have the detailed questionnaire completed by the class teacher, therefore almost all individual-level data were recorded in the home. A parallel survey of schools was undertaken in the autumn/winter of 2011 to include details of the characteristics of the school, and its resources and policies. The main interviews with the primary and secondary caregivers were administered on a Computer-Assisted Personal Interview (CAPI) basis, while for ethical reasons, more sensitive questions were administered on a Computer-Assisted Self-Interview (CASI) basis (Thornton et al., 2016). Similarly, there were two phases to the data collection at Wave 3; the main phase consisting of a home-based interview with the young person and primary and secondary caregivers, and the school-based phase which involved a principal questionnaire (Murphy et al., 2019).
References


Educational Research Centre (2006b). The Drumcondra Primary Reading Test Revised (DPRT-R).


Appendix C: Scale Psychometric Properties

To examine the associations between items, exploratory factor analysis was conducted for the following scales: quality of neighbourhood environment, material deprivation, perception of adequacy of school resources, and perception of students’ attitudes. Factor analysis for quality of neighbourhood environment and students’ attitudes indicated that the scales consisted of one component and that there was a weak to moderate relationship between the items in each scale. For material deprivation, factor analysis indicated that one of the items, having a roast joint (or its equivalent) at least once a week, did not significantly contribute to the factor, and thus was not included in analysis. Therefore, the measure of material deprivation consisted of 10 rather than 11 items. With regard to perception of adequacy of school resources, principal component analysis indicated that the scale of eight items was made up of two components: school facilities (number of classrooms, computing facilities, sports facilities, and science equipment), and school resources (number of teachers, learning support provision, language support provision, and guidance counselling). Thus, it was decided to analyse each component separately.

Cronbach’s alpha was used to examine reliability of relevant scales. Using this method, the reliability of the scales used in this study ranged from moderate (.5 ≤ α ≤ .7) to high (.7 ≤ α ≤ .9), as defined by Hinton et al. (2014). It was deemed appropriate to use scales with only moderate reliability once the measures had been used in previous research. For example, the measure of material deprivation was based on the Irish measure of basic deprivation (Maitre et al., 2006) and the ‘Positive Interactions’ scale has been used in previous research studies (e.g., McCoy et al., 2014) and has been to be highly predictive of a range of educational and post-school outcomes (Smyth, 1999).
Some measures or items were omitted from analysis as reliability analysis showed they were not a valid measure of the construct. For example, the primary caregiver was asked three items associated with neighbourhood safety which was derived from the Neighbourhood Safety Scale used in the Canadian Longitudinal Study of Children and Youth (Murray et al., 2010). However, reliability analysis showed low reliability for this scale ($\alpha = .45$) and thus only the first item was used. Table B1 provides an overview of reliability statistics of scales used in the analysis. With regard to external validity, the data used in the current study were drawn from a nationally representative sample, which strengthens the generalisability of the findings of this study (Howitt & Cramer, 2017).

**Table C1**

*Reliability Analyses of Scales Used*

<table>
<thead>
<tr>
<th>Scale</th>
<th>Number of items</th>
<th>$\alpha$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material deprivation</td>
<td>10</td>
<td>.56</td>
</tr>
<tr>
<td>Quality of neighbourhood environment</td>
<td>4</td>
<td>.83</td>
</tr>
<tr>
<td>Academic self-concept</td>
<td>16</td>
<td>.70$^a$</td>
</tr>
<tr>
<td>Positive Interactions scale</td>
<td>4</td>
<td>.56</td>
</tr>
<tr>
<td>Trust subscale IPPA$^b$</td>
<td>10</td>
<td>.86$^c$</td>
</tr>
<tr>
<td>School resources</td>
<td>4</td>
<td>.73</td>
</tr>
<tr>
<td>School facilities</td>
<td>4</td>
<td>.80</td>
</tr>
<tr>
<td>Attitudes of students</td>
<td>4</td>
<td>.75</td>
</tr>
</tbody>
</table>

$^a$As reported by Williams et al., 2019; $^b$Inventory of Parent and Peer Attachment; $^c$As reported by Gullone & Robinson, 2005
References


