Risk and protective factors for depression and anxiety in adolescence: friendships, family functioning and emotion regulation

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Chapter I: Lay Summary

Overall, the thesis aimed to develop a greater understanding of the ways in which poorer family relationships link to adolescent anxiety and depression (together known as internalising difficulties).

Systematic review

The systematic review aimed to explore the role family plays in the development of supportive friendships in adolescents. Adolescents spend an increasing amount of time with their friends (N. Butler et al., 2022), and these relationships are important in protecting against the development of mental health difficulties (Hall-Lande et al., 2007; Roach, 2018), however little is known about the factors which influence their development. The family environment influences many aspects of young people's development, including their ability to establish friendships (Brown & Bakken, 2011). The review examined the relationship between whole system family functioning, defined as how well all family members interact with one another, and friendships.

The review had two aims, firstly to examine relationship between better whole system family functioning and more supportive peer relationships, and secondly to compare and contrast associations across the different areas of family functioning. These areas mostly corresponded to Olson's Circumplex model (2000), which proposes three important aspects: communication, cohesion (the degree of closeness and affection displayed between family members), and flexibility (adaptation to new stressors and challenges). The domain of conflict was also added given its importance in other models of family functioning (Bowen, 1976) and reported frequency within families of adolescents (Kiani et al., 2016).

A systematic review was conducted using predefined criteria and search terms to explore and summarize the psychological research literature. Search terms were developed to find relevant articles. Several inclusion and exclusion criteria were also applied to make sure the final articles were focussed on the topic. Participants with and without major mental health difficulties were included.

Two databases were searched, and 11 relevant articles were summarised. The majority of studies showed a link between better family functioning and more supportive friendships. When comparing the impact of different aspects of family functioning, good communication in the family was most consistently related to better peer relationships. Evidence was mixed for the importance of flexibility and cohesion. No evidence was found for the impact of family conflict

on peer relationships. In samples of adolescents with mental health difficulties, no relationship was found between family functioning and friendships. Similarly, parents report of family functioning had little similarity with adolescents', and only adolescent reported family functioning correlated with friendship supportiveness.

The research was found to be of a generally high quality. However, the certainty of the findings was affected by measurement issues with the most frequently used measure of family functioning, The Family Adaptability and Cohesion Scale (D. H. Olson et al., 1986). Strengths and limitations of the literature and review process were discussed. The research is useful in developing more streamlined interventions for adolescents who are struggling with friendships, enabling clinicians to target the contributing family difficulties, such as communication.

Research project

Poorer family functioning is known to increase the risk of developing internalising difficulties in adolescents (Scully et al., 2020a), however little research has examined the ways in which the variables are linked. Separate streams of literature suggest that more supportive peer relationships and the use of specific emotion regulation strategies are closely related to both family functioning and internalising difficulties (Delgado et al., 2022; Scully et al., 2020a).

Emotion regulation can be conceptualised in terms of the employment of different strategies (Gross & Muñoz, 1995) that are categorised as helpful or unhelpful in relation to the long term outcomes associated with their use (Schäfer et al., 2017). The study focused on two unhelpful strategies shown to have the strongest relationship with internalising difficulties (Schäfer et al., 2017); rumination (having repetitive unhelpful thoughts which keep us stuck in negative emotions) and emotional acceptance (allowing one's emotional response to pass without resistance). The hypothesis stated that poorer family functioning is related to increased rumination, decreased emotional acceptance and less supportive peer relationships, which are in turn related to increased internalising difficulties. The study also aimed to understand how different aspects of family functioning were related to internalising difficulties. Mediation analysis was completed, which is the consideration of how a third variable affects the relation between two other variables.

A mostly female sample of 181 16–18-year-olds were recruited from five schools. The participants completed five measures during a single lesson using an online platform. The results showed the unique role of the family's strength in supporting each other and adapting to challenges and internalising difficulties. The relationship between this aspect of family

functioning and internalising difficulties was partially explained through using the emotion regulation strategy rumination, but not by supportive peer relationships or the use of the emotion regulation strategy of emotional acceptance.

The results highlight the importance of assessing the role of family difficulties and the use of rumination in adolescent internalising difficulties. The current gold-standard treatments for adolescents with anxiety or depression treat the individual (NICE, 2023), but family members could helpfully be involved more in sessions, with a focus on the ways in which they support each other and adapt to stressors.

Integration, impact and dissemination plan.

The systemic review and empirical project overlapped in helpful ways. The relationship between family functioning and supportive peer relationships was explored in the systematic review, and the significant correlation between the two formed the conceptual basis exploring for the mediating role of supportive peer relationships in the empirical project. The systematic review highlighted several limitations in the research literature, such as poor ethnic and gender diversity of young people within samples and a reliance on research at a single point in time with only adolescents completing questionnaires. The empirical project was able to address some of these concerns, for example by including a more ethnically diverse sample, however further limitations around the sample and design were not possible to address due to practical and time constraints.

The impact of the results in the context of current government policies and clinical guidelines were explored. The importance of family dynamics in relation to adolescent internalising difficulties contradict current guidelines which promote individual approaches to treating internalising difficulties. The impact on myself as a researcher and participants was also explored.

The research will be disseminated back to the participants through a vlog and to other clinical psychologists and researchers through social media, conferences (such as the Association for Family Therapy and Systemic Practice) and publications (in journals such as The Journal of Family Therapy).

Chapter II: A systematic review examining the pattern of relationships between different domains of family functioning and supportive peer relationships

Abstract

Friendships become increasingly important in adolescence and play a protective role against the development of mental health difficulties. There is a lack of research about the factors influencing their development, however the family environment is argued to strongly contribute. The current review identified and critically examined literature focused on the influence of whole system family functioning, frequently defined according to the quality of interactions between all family members in several domains, on supportive peer relationships.

The review aimed to examine the relationship between whole system family functioning and supportive peer relationships and to compare and contrast associations across different domains of family functioning. The domains were defined according to Olson's Circumplex model (2000) (communication, flexibility, cohesion), with additional considerations given to measures of conflict.

A systematic search was conducted using two databases, Psych INFO and Web of Science. Studies were included if: the participants were 10–19-year-olds, from clinical or non-clinical samples, met the strict definitions of the variables and included an assessment of their relationship. Eleven papers were identified and summarised in a narrative synthesis. The quality of the studies was appraised using an adapted version of the Joanna Briggs Critical Appraisal Checklist and were found to be of a medium-high quality.

Findings indicated a positive relationship between whole system family functioning and supportive peer relationships in non-clinical samples and using adolescent reported family functioning only (compared with family or parent reports). When different aspects of family functioning were examined, strong evidence emerged for the domain of communication. There was mixed evidence for cohesion and flexibility, and no evidence for conflict. However, the results must be interpreted considering several limitations, particularly the reliance on the Family Adaptability and Cohesion Evaluation Scale (Olson et al., 1979). Concerns around the measures conceptual and psychometric properties impacted its reliability, limiting the certainty of the findings in papers using the measure.

Early intervention, prevention and treatments for friendship difficulties, commonly taking place in schools, should consider assessing for family functioning difficulties and involving families in treatments.

1.0 Introduction

Peer relationships take on an increasingly important role in adolescence and the development and maintenance of friendships is a central task of this period (Güroğlu, 2022). Friends also support the achievement of a number of other key developmental tasks, including identity formation and emotional autonomy from parents (Havinghurst, 1972; Pace & Zappulla, 2009), the success of which are related to mental wellbeing (Ragelienė, 2016). Supportive peer relationships are one of the most important protective factors against the development of mental health issues (N. Butler et al., 2022; Hall-Lande et al., 2007; Oliva et al., 2014; Roach, 2018; Zwierzynska et al., 2012). This review aimed to understand the role that family relationships might play in the development of these relationships.

Mitic (2021) defined supportive peer relationships as "of high perceived quality, which serve a protective function for an individual" (p2). Many researchers have attempted to define the qualities of supportive interpersonal relationships. Weiss' (1974) social provisions model draws together a number of different theories (C. Cutrona & Russell, 1983) and is the most well validated model for adolescents (Warren et al., 2009). It includes six important qualities: attachment, social integration, opportunity for nurturance, reassurance of worth, reliance alliance and guidance (Weiss, 1974). A lack of any of these can have distinct psychosocial consequences including social and emotional loneliness, anxiety and low-self-esteem (Cutrona & Russell, 1983).

Given the protective function of supportive relationships during adolescence, there is a lack of research into how they develop (Mitic et al., 2021). Much of the literature has focused on the psychosocial consequences of a lack of these relationships, such as loneliness (Balazova et al., 2017) and victimization (Esbensen et al., 1999), or the role of peers in the development of risky behaviours such as substance use and high-risk sexual activity (Abreu & Caiaffa, 2011; Altay et al., 2014; Anderson, 2017). This has acted as a barrier to the development of effective therapeutic interventions to support vulnerable adolescents in developing these protective relationships (Mitic et al., 2021; Oberle et al., 2010; Pollak et al., 2023).

Positive family relationships are central to the development of supportive peer relationships (Parke & Ladd, 2016). Family is arguably the most influential system in a person's life (Kiani et al., 2016), and an arena where several skills and behaviours central to successful social functioning are learned (Engels et al., 2002; Kiani et al., 2016). However, research examining the influence of the family environment have mostly focused on specific dyads such as the marital or parent-child (Coleman, 2003; Lucas-Thompson & Clarke-Stewart, 2007), rather than the

relationships between all family members. The current review focused on whole system family functioning, which examines the interconnected nature of all members of the family unit, and measured how well this unit functions in a number of different dimensions including communication, flexibility, cohesion and conflict (Bowen, 1976; D. H. Olson et al., 1979).

Several studies have reported a positive correlation between family functioning and supportive peer relationships (e.g. Cumsille & Epstein, 1994). This review aimed to explore this further and to understand how different aspects of family functioning correlate with supportive peer relationships. Clinically, the family system is a viable target for systemic interventions. This may have positive consequences for the development of supportive peer relationships in vulnerable adolescents, however for these interventions to be effective it is important to understand which dimensions of family functioning to target.

1.1 Importance of supportive peer relationships in adolescence

Sullivan (1953) suggested that peer relationships during adolescence are the first opportunity to experience acceptance, validation and closeness in a relationship not defined by the hierarchy of the parent-child dynamic, and therefore contribute significantly to the adolescent's sense of wellbeing. As a result, they have been linked to a number of positive outcomes such as higher self-esteem, confidence and independence, academic achievement, reduced engagement in risky behaviours, and better mental health (N. Butler et al., 2022; Roach, 2018). Butler et al (2022) found that for 8-15 year olds the role of peers in protecting their mental wellbeing was greater than that of family or an adult at school.

Romantic relationships start to develop for the first-time during this period. These also play an important role for adolescent mental wellbeing and identify formation (Collins, 2003; Farley & Kim-Spoon, 2014). However, exploring these relationships further is outside the scope of this review.

To support the development of healthy peer relationships, the factors contributing to their evolution must be established. Mitic et al., (2021) reviewed the determinants of supportive peer relationships, including family variables (e.g. attachment, marital conflict and parenting). However, they failed to include whole system family functioning, which is thought to play an important role (Parke & Ladd, 2016).

1.2 Theoretical links between family functioning and supportive peer relationships

Attachment theory (Bowlby, 1969, 1973) states that the sensitivity and responsiveness of the primary caregiver to the infant's distress will lay the foundation for the individual's

understanding of their own worth and expectations about the responsiveness and trustworthiness of others. Central to this theory is the concept of the “secure base”, where the caregiver provides the infant with consistent safety and acts as a source of emotional regulation, and from which they can safety go and explore the world (Bowlby, 1969, 1973). These experiences will lead the infant to develop a set of beliefs about themselves, others and the world, known as internal working models (Bowlby, 1969, 1973). By having multiple sensitive, responsive caregivers who act as a consistent secure base, the individual will develop a positive view of themselves as a person worthy of being loved and protected (Stevenson-Hinde, 1990). These models will be activated in all future relational experiences including friendships. For individuals with positive internal working models, friendships will be defined by good communication, support, intimacy and trust (Delgado et al., 2022; Zimmermann, 2004). On the other hand, when an adolescence does not experience a secure base, their internal working model may predict rejection or exclusion from others, making it increasingly difficult to form close friendships based on trust (Delgado et al., 2022).

Stevenson-Hinde (1990) first integrated family systems and attachment theories, stating that the family system provides the context for the development of attachment relationships. In fact, all family members can act as a secure base, where the child feels the relationship between members are “sufficiently collaborative to ensure that care is available at all times” (Byng-Hall, 1995, p.2). Difficulties in family functioning can impact the ability of the entire family unit to act as a secure base for the infant, which can have a long-term impact upon adolescent friendships.

1.2.1 Evidence. No research was identified examining the mediating role of attachment in the relationship between whole system family functioning and supportive peer relationships. Therefore, the research for the relationship between family functioning and attachment and attachment and supportive peer relationships will be summarised separately.

The small number of studies examining the relationship between family functioning and attachment security in adolescents found a trend towards optimal levels of communication, cohesion and flexibility within the family being related to secure attachment. In a sample of South African 12–18-year-olds Rawatlal et al., (2015) reported a correlation between the family functioning variables of communication and cohesion and secure attachment - a result replicated by Kapanee & Rao (2007) in a sample of Indian college students. In a slightly older sample of Japanese college students (18-23), Tanaka et al., (2008) reported that high levels of family adaptability and cohesion correlated with lower levels of insecure attachment styles.

Moreover, Feeney et al., (1994) found that lower levels of family conflict were associated with secure attachment in high school students.

There is also a large body of evidence linking secure attachment with supportive peer relationships during adolescence. A systematic review by Delgado et al., (2022) concluded that adolescents "who exhibited secure attachment developed in an environment dominated by parental warmth, autonomy, and resolving capacity…integrated positive interaction models, acquiring competencies that allow them to establish bonds of friendship based on intimacy and closeness, fluid communication, and comfort exploring and interacting with friends" (p.7). On the other hand, adolescents with insecure or anxious attachment styles struggled to create friendships based on intimacy and communication.

1.3 Conceptualisation and measurement

1.3.1 Family functioning.

Conceptualisation. "If the individual is part of an organised family system, [they are] never truly independent and can only be understood in context" (Minuchin, 1985, p.290). Family functioning theory views all family members as part of an interconnected system with the actions and emotions of one member of the family impacting the entire unit, and attempts to measure how well this unit functions (Margasiński, 2015; Winek, 2009). The current review chose Olson's Circumplex model (2000) to organise the literature.

This model has been used to organise the literature in several other systematic reviews (Desquenne Godfrey et al., 2024; Izzo et al., 2022; Van Schoors et al., 2016). It is an inclusive theory with the three factor structure emerging from the "conceptual clustering" of over 50 concepts describing marital and family dynamics (D. H. Olson, 2000, p144). The included variables were also found to be important in several other models (Beavers & Hampson, 2000; Epstein et al., 1983; D. H. Olson, 2000). The theory has also successfully bridged the gap between research, theory and practice (Burr & Lowe, 1987; D. H. Olson, 2000).

This model proposes three core dimensions which contribute towards the success of a family system:

1. Cohesion – defined as the "emotional bonding" within the family (Olson et al., 2019, p145), balancing connectedness and separateness.
2. Flexibility – defined as the "amount of change in [the families] leadership, role relationships and relationship rules" (Olson et al., 2019, p145), balancing stability and change.

3. Communication – includes the "behaviour, skills, and interactional patterns that facilitate positive interactions and transactions among family members" (Dunst, 2021, p2). This variable includes both listening (with empathy and attention) and speaking (for oneself and not for others) (D. H. Olson et al., 2019).

Olson theorised that cohesion and flexibility are curvilinear where both very high and very low levels are problematic. Extremely high levels of cohesion in families is characterised by overly high levels of consensus and too little independence from the family, whereas extremely low levels lead to family members having limited commitment to the family and being too independent (D. H. Olson, 2000). Extremely high levels of flexibility represent chaos, or change for changes sake, and low levels rigidity or a strong resistance to change (Craddock, 2001). Families which are balanced on the domains of cohesion and flexibility tend to be more successful than unbalanced families (D. H. Olson, 2000). Communication is viewed as a facilitating dimension, which enables the family to express preferences regarding the first two dimensions.

Conflict is a core concept in several other family system theories (e.g. Bowen, 1976) and is defined as the inability to solve difficulties - often characterised by tension, aggression and hostility (Kiani et al., 2016). This concept will also be used and is particularly relevant to the families of adolescents who may oppose the views of family members in pursuit of independence and identity formation (Kiani et al., 2016).

Measurement. Numerous different measures of family functioning have been developed to correspond with the various family system theories. The Family Adaptability and Cohesion Evaluation Scale (FACES, Olson et al., 1979, 1982, 1983, 2011) was developed by Olson and colleagues and maps onto the Circumplex model. However, a number of other measures with different theoretical underpinnings contain at least one subscale which roughly map onto the dimensions of family functioning as defined in this review (Hamilton & Carr., 2016). For example the Family Relations Scale (Tolan et al., 1997) and the Family Environment Scale (Moos, 1979) contain subscales which overlap with cohesion and conflict respectively.

In spite of criticisms of the FACES (Version I-IV; Olson et al., 1979, 1982, 1983, 2011, see Green et al., 1991 for summary) it remains one of the most widely used measures (Kouneski, 2000). Results of studies using the measures (particularly versions II and III) will be interpreted in light of their poor psychometric properties. They are not sensitive to extremely high or low levels of cohesion and flexibility, representing poorer family functioning (Olson, 2000). Possible reasons relate to criticisms of the curvilinear conceptualisation (Barber & Buehler, 1996; R. Green &

Werner, 1996), phrasing of questions and the response scale used (Kuehl et al., 1988; Perosa & Perosa, 1990). Therefore, the hypothesised positive relationship with less supportive peer relationships may not be captured in studies using these measures. Other poor psychometric properties have been reported for example, concerns around multi-collinearity (Dundas, 1994; Edman et al., 1990), unacceptably high social desirability bias and poor internal consistency (Tutty, 1995). These issues also affect the measures' reliability and validity, and accurate correlation with other variables. Version IV (D. Olson, 2011) has addressed some of the limitations, but is less frequently used (Guerrero-Muñoz et al., 2021; Lewandowski et al., 2010).

1.3.2 Supportive peer relationships.

Conceptualisation. For many decades researchers have grappled with how best to define the qualities that make interpersonal relationships supportive and have concluded that this is a multi-factorial concept (C. Cutrona & Russell, 1983; Mitic et al., 2021). Two dimensions have been focused on - the structure and the function of the network (Antonucci & Johnson, 1994; K. Rubin et al., 2015; Sarason & Sarason, 1994). Structural conceptualisations examine the size of the network and therefore the availability of sources of support (Berman & Syme, 1979). Functional conceptualisations examine the perceived function of these relationships at the dyadic level including companionship, guidance and emotional support (Weiss, 1974). This review will not focus upon structural conceptualisations of friendships, as the quantity of friendships provides little information on the supportiveness of these relationships (Maunder & Monks, 2019).

Weiss' (1974) social provisions model is the most well validated for describing the functions of social relationships (Cutrona & Russell, 1983). Provisions are defined as "opportunities or experiences that may be available within a social or personal relationship" (Bukowski et al., 1993, p29). Weiss defined six provisions which are necessary to prevent negative psychological outcomes such as loneliness, low self-esteem and anxiety. These are:

1. Attachment – feelings of intimacy, peace, and security.
2. Social integration – a sense of belonging to a group with whom one shares common interests and social activities.
3. Opportunity for nurturance – providing care to others.
4. Reassurance of worth – having others validate one's competence and value.
5. Reliable alliance – perceived access to assistance in times of need from others.
6. Guidance – having people available who can provide suggestions, solutions, and advice when needed (Perera, 2016).

Weiss's model was first developed based upon observations of divorced adults. However, tools have been since been developed to measure the provisions in adolescents (Dolan, 2006). They have acceptable psychometric properties (Osmane et al., 2021) and are related to positive psychosocial outcomes (Warren et al., 2009), confirming the importance of these provisions in adolescent friendships (Barber, 2008; Bukowski et al., 1993; Osmane et al., 2021; Warren et al., 2009).

Measurement. This study only includes papers measuring the supportiveness of peer relationships by examining whether an individual perceives they have people available who fulfil at least one of the provisions outlined by Weiss. Cutrona & Russell, (2018) developed the Social Provision Scale - the first questionnaire based on Weiss' model. Since then a number of other scales, which roughly map onto one or many of the provisions, have been developed e.g. Network of Relationship Inventory (Furman & Buhrmester, 2010) which measures all six provisions and The Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1987) which overlaps with the provision of attachment (Appendix A lists excluded questionnaires with reasons and Appendix B included questionnaires and the provisions they measure).

1.4 Current review

The current review aims to firstly examine the positive relationship between whole system family functioning and supportive peer relationships. Secondly it aims to compare and contrast the patterns of associations across different domains of family functioning (communication, cohesion, adaptability, and conflict) and supportive peer relationships. The expected directions were higher levels of family communication, cohesion and adaptability and lower levels of conflict would correlate with more supportive peer relationships. In addressing these questions, the review will assess the quality of the research examining the relationships between the two variables. Due to the infancy of the field, the possible moderating impact of additional variables such as age and gender will not be examined.

2.0 Method

The method is in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines (Moher, 2009). A search on the international prospective register of systemic reviews (PROSPERO) was conducted prior to the review to establish whether any similar reviews had been registered or undertaken and none were found.

The results were presented as a narrative synthesis, with guidance from Boland et al (2017). A meta-analysis was not advisable due to both the heterogeneity of measures and conceptualisation of constructs (Baumeister & Leary, 1997; Siddaway et al., 2019).

Briefly, the process involved:

- *Data extraction:* identifying and extracting key data from the papers on the study characteristics and main findings.
- *Quality appraisal:* quality assessing the papers and interpreting the study findings with reference to their quality.
- *Data synthesis:* organising and synthesising the findings from the studies according to the different aspects of family functioning (communication, flexibility, cohesion and conflict).
- *Interpretation of the results:* explaining the findings in relation to quality of the studies, consistency of results and heterogeneity of the study methodologies.
- *Critically reflecting on the review process:* reflecting on the strengths and weaknesses of the review process.

2.1 Eligibility criteria

Inclusion criteria:

a) Participants with a mean age of between 10-19 years drawn from both clinical and non-clinical samples.
b) Quantitative studies of a cross-sectional, cohort, longitudinal (retrospective or prospective) or intervention design.
c) Included a self or other reported or observational assessment of whole systems family functioning (see Appendix D for list of included and excluded terms).
d) Included a self or other reported or observational assessment of at least one aspect of supportive peer relationships as included in Weiss's Social Provision model (1974) (see Appendix D for further definitions of the provisions and included terms and Appendix F for excluded terms).
e) Included an assessment of the relationship between family functioning and supportive peer relationships.
f) Available in English, peer reviewed and published between 1990-2023.

Exclusion criteria:

g) Sample primarily characterised by neurodiversity, learning difficulties or medical difficulties in either the parent/carer, sibling or adolescent.
h) Assessment of the family system focused on parental and dyadic factors.
i) Assessment of other domains of peer relationships e.g. quantity of friendships, engagement in antisocial behaviour, bullying/victimisation and loneliness.

Table 1

Rationale for the inclusion and exclusion criteria

Criteria	Rationale
Inclusion criteria	
Age	The World Health Organization's age range for adolescence (10-19) was used (2021). Mean age was used to include papers where participants were recruited based on their school year, however participants aged 18-19 must not be in tertiary education.
Sample	Clinical and non-clinical samples were used as the research aimed to examine the relationship between the variables in the context of vulnerability for developing mental health difficulties. Clinical samples were defined through their mental health diagnosis or engagement with inpatient/outpatient mental health services as an individual or family.
Design	No study designs were excluded. Intervention studies were only included if data on the variables of interest was collected at baseline, to ensure the focus was not upon the effect of the intervention.
Measurement of variables	To ensure a high quality of studies and thorough examination of whether the definition and measurement of the variables met the inclusion criteria, the questionnaires must be available in English, accessible to the researcher, be validated for use in adolescent or adult/parents samples (in line with the age of the person completing the measure), and the questionnaire/subscale must include more than 3 items.

Exclusion criteria

Sample	It was outside the scope of this review to understand the variables in relation to neurodiversity, learning difficulties or in the context of medical difficulties.

Further justification of the inclusion and exclusion criteria is included in Appendix C.

2.2 Search strategy and terms

A search of two databases (Web of Science and Psych INFO) was completed on 1st September 2023. They were selected for the large number of high-quality psychological journals included in the search, and the appropriateness and comprehensiveness of the results retrieved.

Search terms were developed around three key phrases 'adolescent', 'family functioning' and 'supportive peer relationships'. Truncations and Boolean operators were used to maximise the inclusiveness of the search.

The final included search terms were:

- Child* OR adoles* or teenage* OR youth* OR young* OR "young adult"
- "Family function*" OR "family environment" OR "family context" OR "parental conflict" OR "sibling relation*" OR "marital conflict"
- "Peer support" OR "emotional support" OR "emotional connection" OR "social network*" OR "social relation*" OR "social connect*" OR "belongingness" OR "social acceptance" OR "friendship*" OR "peer relation*" OR "peer connection*" OR "quality of peer relationships" OR "peer relationship quality" OR "supportive peer relationship*" OR "friend*" OR "best friend" OR "social function*"

Filters were applied to the searches to organise results in line with the inclusion criteria. For PsychInfo the following were applied; application year 1990-2023, methodology empirical study and English language. For Web of Science the filter of 'Articles' was applied. A librarian specialising in psychology was consulted to optimise the searches.

2.3 Study selection

2.3.1 Identification. The main author ran initial scoping searches to refine the search criteria. Following identification of other key reviews in the field (Mitic et al., 2021) and refinement and finalisation of the search terms, the main author carried out searches from two

databases (PsychInfo and Web of Science). The results were exported to Rayyan, a reference management programme designed for use in systematic reviews, and duplicates were removed.

2.3.2 Screening. Rayyan was used to screen the papers' titles for relevance. Relevant papers were then exported to an excel database where the abstracts were reviewed. A decision was then made to exclude or review the full text.

2.3.3 Eligibility. The full text of the eligible papers was examined and reasons for exclusions recorded on an excel spreadsheet. A second reviewer (GB) then screened 20% of the papers at each of the three screening stages: title, abstract and full text. Any disagreements were resolved by a third party (HP), a co-supervisor of the project. The inter-rater reliability at each stage was good (between 0.96-1.00). The main author then manually searched relevant reference lists to ensure no relevant papers had been missed.

2.4 Data extraction and coding

2.4.1 Data extraction. The following data was extracted from the included papers:

- Author(s) and country the study was completed in.
- Sampling method and study design.
- Participant characteristics, including sample size, ethnicity, gender, age range and clinical characteristics.
- Family functioning and supportive peer relationships measures including any specific subscales, and the respondent.
- Method of analysis and additional variables included in each of the analyses.
- Summary of main findings.

2.4.2 Coding. Coding of the family functioning variables measured was necessary to organise findings in line with the Circumplex model (Olson, 2000) and compare and contrast associations across the domains of interest. Where variables spanned multiple constructs and/or defined themselves as a measure of general family functioning, the code of general family functioning was applied. A code of 'Other' was given to variables which did not fall into any of the categories.

For supportive peer relationships, the results were not synthesised according to the provision measured as this was not an aim of the study.

Samples were coded as clinical or non-clinical based upon a diagnosed mental health condition and/or interactions with inpatient or outpatient mental health services. In two papers

the adolescents were participating in a community/school-based intervention, however they were deemed to be non-clinical as they were not selected based upon a mental health diagnosis or engagement with services.

2.5 Quality appraisal

The quality of articles was evaluated using an adapted version of the Joanna Briggs critical appraisal checklist for cross-sectional studies (Martin, 2017)**.** The tool was selected due to its brief yet comprehensive assessment of the study's aims, inclusion and exclusion criteria, choice of measures, methodology and analysis. It is frequently used in systematic reviews **(**e.g. Silva et al., 2022)**.**

One item from the tool **"**Were objective, standard criteria used for measurement of the condition?" was removed, as participants were not included based upon a diagnosis. This was replaced with an item from the Fatal Flaw Checklist (Dixon-Woods et al., 2006) "Are the aims and objectives of the research clearly stated?".

The checklist consisted of 8 items graded as not meeting the criteria (0), unclear (1) and meeting the criteria (2). Total scores ranged from 0-16, and quality was classified as low (0-4), low-moderate (5-7), moderate (8), moderate-high (9-13) and high (14+).

One of the studies had a longitudinal design but was assessed using the same tool, as only the results of a cross-sectional analysis were extracted, and this facilitated easier cross-study comparisons of quality.

3.0 Results

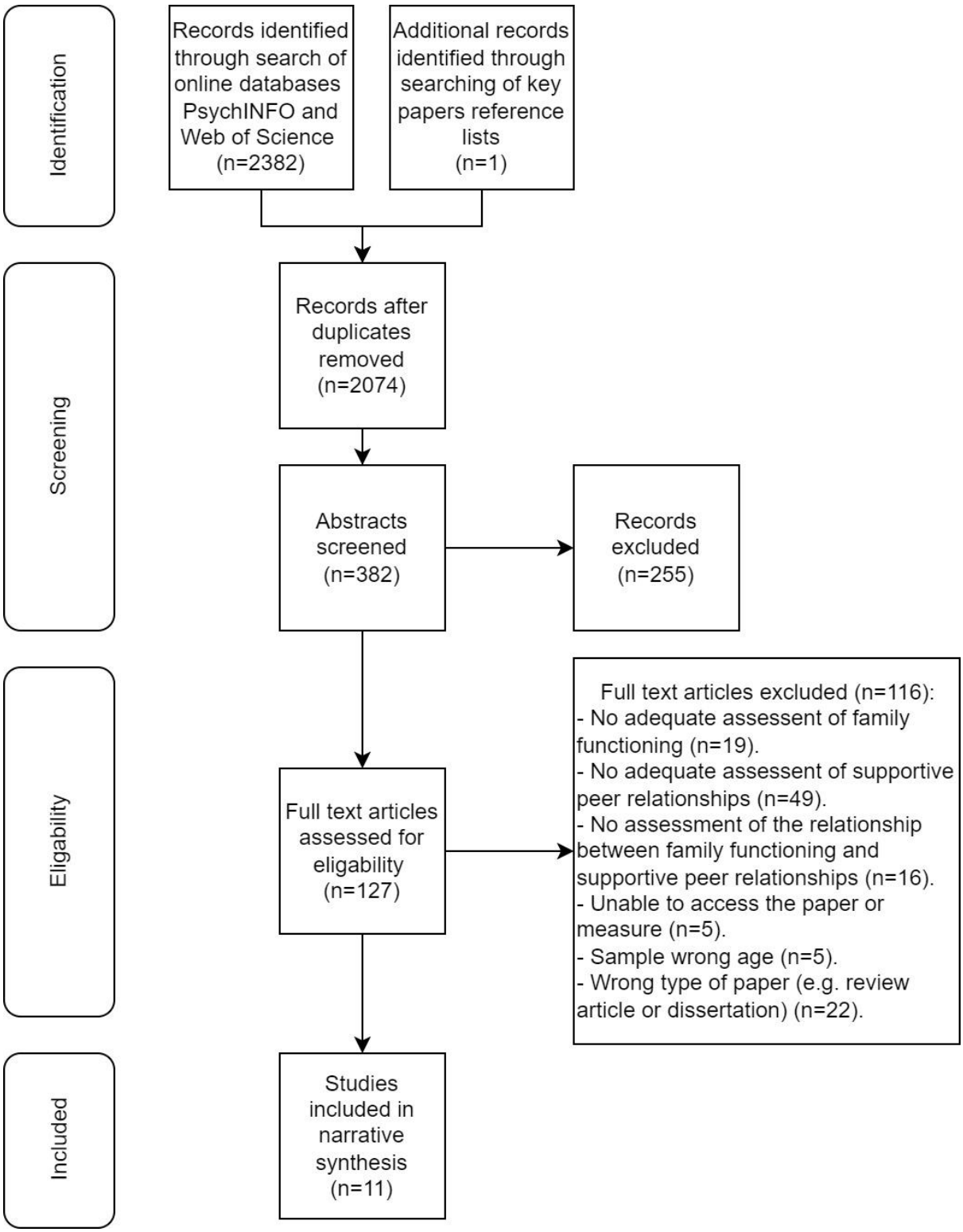
3.1 Literature search

The search, completed on September 1st 2023, yielded 2,382 articles, and an additional article was identified through searching of key papers reference lists. 309 articles were duplicated, leaving 2,074 articles. At the title screening stage, 1,692 papers were excluded and a further 255 at the abstract screening stage. The full text of 127 articles was reviewed by the main author, and 11 were deemed eligible for inclusion.

A second reviewer (GB) reviewed 20% of the articles at the title, abstract and full text screening stage. Reasons for exclusion at the full-text screening stage are detailed in Figure 1.

Figure 1

PRISMA flowchart of systematic search



3.2 Study characteristics

The main characteristics of included studies are summarised in Table 2.

3.2.1 Setting and sample. The majority of studies (n=9) took place in Western countries (USA, Australia, Canada, UK and Netherlands) with the remainder (n=2) from North Asia (Hong Kong and China). All the studies used opportunity or volunteer sampling, with the majority of the samples recruited from schools or local communities (n=8) and the rest from clinical settings (n=3). Data on the number of participants approached versus the number who took part was not included in any studies.

The studies included 3,667 participants (range 93-771). The median was 236 and the interquartile range 152.5-472.5. There was no standard metric for reporting age, but where stated (n=7), the range was 11.0-16.4-years-old (mean=13.1years). All the studies used mixed gender samples, with a majority (n=6) having more females. No studies reported individuals identifying as transgender or non-binary. For ethnicity, five of the studies provided no breakdown, and for the six that did, four had majority White participants and two majority Hispanic.

3.2.2 Design, methodology and analysis. The majority of the studies had a cross sectional design (n=10), with one employing a longitudinal design. All studies employed self-report measures for both variables. The adolescent was the sole responder for the majority of studies.

There was poor consistency in measurement of variables. Five different measures of family functioning were used, most commonly the FACES (D. H. Olson et al., 1982) (n=4). However, there was a large variation in the versions and subscales. Six different measures of supportive peer relationships were used, most frequently the Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1987) (n=4).

A variety of methods of analysis was used, with ten papers including correlation analysis (either Pearson's or Spearman's), five multiple regression analysis, and four using structural equational modelling (SEM).

Table 2

Main characteristics of studies included within narrative synthesis, organised by quality (lowest to highest)

Author (date) & country	Sampling method	Study design	Participant characteristics					Measurement	
			Number	Ethnicity	Gender (% female)	Age (Range, Mean, SD, years)	Clinical characteristics	Family functioning questionnaire (subscales)	Supportive peer relationship questionnaire (subscales)
Gauze, Bukowski, Aquana-Assee & Sippola (1996); Canada	Opportunity sampling from 2 primary schools	Cross-sectional	138	5% = VM	59	(Female M=10.7, Male M=10.9)	Non-clinical	FACES-II	FQS
Law, Cuskelly & Carroll (2013); Australia	Opportunity sampling from 8 secondary schools	Cross-sectional	563	NS	64 (0.5 not reported)	9-16.6	Non-clinical	FAD (PS, Comm, R, AR, AI, GF)	FQS (Sec, Cl)

Van Harmelen, Gibson, Clair, Owens, Brodbeck, Dunn, Lewis, Croudance, Jones, Kievit & Goodyer (2016); UK	Sample drawn from larger longitudinal study. Opportunity sampling from 18 secondary schools	Longitudinal	771	NS	58	Data collected at ages 14 and 17	Non-clinical	FAD (GF)	CFQ
Ying, Shuang & Jia (2022); China	Opportunity sampling from 2 public secondary schools for migrant children[A]	Cross-sectional	437	NS	45	(M=10.87, SD=0.72)	Non-clinical	FACES (Chinese version)	IPPA - Peer (Tr, Comm, Al)
Sun, Hui & Watkins (2006); Hong Kong	Opportunity sampling from 6 secondary schools	Cross-sectional	433	NS	45	11-16 (M=12.3, SD=0.73)	Non-clinical	FES (FRI)	PSS

Pilgrim, Abbey & Kershaw (2004); USA	Sample drawn from a larger study. Opportunity sampling of families engaged in an substance abuse prevention programme	Cross-sectional	225	NS	52	(M=11.9, SD=0.8)	Non-clinical	FES (Coh)	IPPA - Peer (Tr, Comm, Al)
Sheftall, Mathias, Furr & Dougherty (2013); USA	Volunteer sample receiving psychiatric care	Cross-sectional	236	56% = HS 44% = NHS	39	12-17 (M = 14.48; SD = 1.69)	Clinical sample categorised by suicide attempts: 53% = NSA 47% = SA	FACES-II	IPPA - Peer (Tr, Comm, Al)

Schwartz (2006); USA	Sample drawn from a larger randomized clinical trial for a preventative intervention. The interventions' sample was drawn from an opportunity sampling from 3 secondary schools	Cross-sectional	167	51%= NHS 49% = HS (Cu/Nic)	39	10-14 (M=12.4, SD=0.8)	Non-clinical sample characterised by children of Hispanic immigrant parents living in an urban community at risk of developing high risk problem behaviours.	FRS	SSAS (PS)
Engels, Dekovic, Meeus (2002); The Netherlands	Opportunity sampling from the community	Cross-sectional	508	Majority NED	50	12-18 (M=14.7, SD=1.97)	Non-clinical	FDS (Coh, Adap)	IPPA - Peer (Tr, Comm, Al); PNL

Cumsille & Epstein (1994); USA	Opportunity sampling of families attending outpatient family therapy appointments	Cross-sectional	93	60.2% = W 30.1% = Bl 9.7% = O	59	(Female M=15.1, SD=1.4) Male M=15.0, SD=1.5)	Clinical sample characterised by adolescent depression: 7.5% = Severe 17.2% = Moderate 34.4% = Mild 40.9% = Normal range	FACES-III & FSS	PSS
Prinstein, Boergers, Spirito, Little & Grapentine (2010); USA	Opportunity sample of adolescents admitted to an inpatient unit	Cross-sectional	96	72.9% = CS 10.4% = HS 4.2% = AA 12.5% = MX/O	67	12-17 (M= 14.82, SD = 1.44)	Clinical sample characterised by suicidality: 37.5% = SI 27.1% = TSA 14.6% = SA 20.8% = SA-MT	FAD (PS, Comm, GF)	SSSCA (CF)

Note:

Ethnicity - VM=Visible minorities; CS=Caucasian; NHS=Non-Hispanic; HS= Hispanic; AA=African American; MX/O= Mixed/other, NS=not stated

Clinical - SI= Suicidal ideation; TSA= Threatened suicide attempt; NSA= No suicide attempt; SA= Suicide attempt; SA-MT= Suicide attempt - medical treatment required

Family functioning questionnaire (subscales) - FAD (PS, Comm, R, AR, AI, GF scales)=Family Assessment Device (Problem Solving, Communication, Roles, Affective Responsiveness, Affective Involvement and General Functioning scales); FACES=Family Adaptability and Cohesion Evaluation Scale; FES (FRI)=Family environment scale (Family relationship index); FES (Coh)=Family environment scale (Cohesion subscale); FRS (Coh & Comm)=Family Relations Scale (Cohesion and Communication); FDS (Ad & Coh)=Family Dimension Scale (Adaptability and Cohesion scales); FSS=Family Satisfaction Scale

Supportive peer relationship questionnaire (subscales)- FQS (Sec, Cl)=Friendship Quality Scale (Subscales Security and Closeness)*;* CFQ=Cambridge friendship questionnaire; IPPA - Peer (Tr, Comm, Al)=Inventory or parent and peer attachment - peer scale (trust, communication and alienation subscales); PSS=Perceived social support; SSAS (PR)=Social support appraisal scale (peer support subscale); PNL=Personal Network

3.3 Quality appraisal

Where multiple variables were measured, studies were appraised based upon the family functioning and supportive peer relationship variables only. All the included studies were deemed to be of a moderate (n=1), moderate-high (n=8) or high quality (n=2).

There were several shared strengths amongst the 11 studies, contributing to the generally high quality. The aims and objectives were clear (n=10), the statistical analysis was appropriate (n=10) and the study settings were well described (n=9). Common limitations included: unclear participant inclusion criteria (n=7), poor reporting of measurement reliability and validity for either family functioning (n=8) or peer relationship variables (n=5) and failure to identify and control for potential confounding variables (n=4).

The intraclass correlation coefficient for the inter-rater reliability across the two reviewers was good: 0.773, CI 0.197-0.938 (Koo & Li, 2016) (see Appendix G for summary of quality appraisal ratings).

4.0 Narrative synthesis

The main study findings are detailed in Table 3. The results have been summarised according to the different family functioning variables: general family functioning, cohesion, adaptability, communication, conflict and other. To aid the summary, a visual overview of findings is presented in Table 4.

Table 3

Main findings ordered according to the outcome of quality appraisal (starting with lowest quality)

Ref	Family functioning variable		Supportive peer relationship variable	Informant for family functioning variable	Informant for supportive peer relationship variable	Method of analysis	Additional variables included in analysis	Main findings
	Original	Coded	Original					
Gauze et al., (1996)	1. Adaptability 2. Cohesion	1. Flexibility 2. Cohesion	1. Friendship quality (companionship, help/support, security and closeness)	Parent[a]	Adolescent	1. Bivariate (Pearson) correlation 2. Hierarchical multiple regression	1. None 2. Sex, family (adaptability and cohesion), friendship (mutuality and friendship quality), self-concept (social competence and general self-worth	1. The results showed non-significant correlations in the expected directions between the family functioning variables of cohesion and adaptability and friendship quality 2. No significant interactions were found between gender and either of the family functioning and peer relationship variables

Law et al., (2013)	1. Family Processes - problem solving and communication scales combined 2. Family affection - affective responsiveness and affective involvement scales combined 3. Family roles 4. General functioning	1. Communication 2-3. Other 4. General functioning	1.Peer connectedness (security and closeness)	Adolescent	Adolescent	1. Bivariate (Pearson) correlation 2. Mediation analysis 3. Multiple regression analysis	1. None 2. Family disconnectedness, peer connectedness, peer group and school connectedness and adjustment 3. Family disconnectedness, peer connectedness, peer group and school connectedness and adjustment	1. Significant correlations were found in the expected directions between each of the family functioning variables (affection, general functioning, processes and roles) and peer connectedness (EF=small) 3. The four family functioning variables were combined into one factor labelled family disconnectedness, which was found to negatively predict the peer connectedness variable ($\beta=0.13$, $p<0.01$).

Van Harmelen et al., (2016)	1. General functioning	1. General functioning	1. Perceived quality of friendships (number, availability and quality of friendships)	Adolescent	Adolescent	1. SEM	1. Gender	1. Multiple SEM models were created, with gender as a covariate. A positive (standardized) path coefficient was found between family support and friendship at age 14 ($\beta = 0.25$, $p < 0.001$) and 17 ($\beta = 0.22$, $p<0.001$). Another SEM model attempted to examine the differences between boys and girls, however none were found.

Ying et al., (2023)	1. Cohesion 2. Adaptability	1. Cohesion 2. Flexibility 3. General family functioning (combined cohesion and flexibility scores)	1. Peer attachment (trust, communication and alienation)	Adolescent	Adolescent	1. Bivariate (Pearson's) Correlation 2. SEM	1. None 2. Family function (adaptability and cohesion), peer attachment (trust, communication and alienation), self-esteem and social anxiety. Gender and SES were included in this model as two control variables.	1. Significant positive correlations were found between the two family functioning variables (cohesion and adaptability) and the three peer attachment variables (trust, communication and alienation) (EF=medium) 2. The two family functioning variables and three peer attachment variables were combined in the SEM. A significant positive path coefficient was found ($\beta = 0.54$, $p < 0.01$) between family function and peer attachment.

Sun et al., (2006)	1. Cohesion 2. Expressiveness 3. Conflict	1. Cohesion 2. Communication 3. Conflict	1. Peer support (perceived emotional and tangible support, support reciprocity, friendship intimacy and peer acceptance)	Adolescent	Adolescent	1. Bivariate (Pearson) correlation 2. Multiple regression analysis	1. None 2. Depression, self-esteem, suicidal ideation, family cohesion, expressiveness and conflicts, teacher support, teacher-student relationship and peer support	1. Significant correlations in the expected direction were found for the family functioning variables of cohesion and expressiveness and peer support (EF=small). However, the correlation between family conflicts and peer support was non-significant.

Pilgrim et al., (2004)	1. Family cohesion	1. Cohesion	1. Perceived social support from friends	Adolescent and mothers	Adolescent	1. Bivariate (Pearson) correlation 2. SEM	1. None 2. Mother and adolescent reports of family cohesion, mother's family religious activities, mother and adolescent school attachment, mother and adolescent negative attitude towards substance use, adolescent social support from friends	1. A significant positive correlation was found between adolescent report of family cohesion and friend social support. (EF=medium). A non-significant correlation was found between the mother's report of family cohesion and adolescent report of friend social support. 2. Significant positive path coefficient were found between adolescent's report of family cohesion and adolescent social support from friends ($\beta = 0.39$, $p < 0.05$). No significant differences in the model were found for males and females.

Sheftall et al., (2013)	1. Adaptability 2. Cohesion	1. Flexibility 2. Cohesion	1. Peer attachment	Adolescent and parent[a]	Adolescent	1. T-tests 2. Bivariate (Pearson) Correlation	1. Suicide attempt vs non-suicide attempt group comparisons on measures of attachment (maternal, parental and peer) as rated by the adolescent, and adolescent and parent ratings of family functioning measures of adaptability and cohesion 2. None	2. Correlations were calculated separately for the adolescent and parent measure of cohesion and adaptability with the suicide attempt and no suicide attempt groups. All of the results were non-significant.

Schwartz (2006)	1. Family cohesion and communication (subscales combined into one variable)	1.General family functioning	1. Peer support	Adolescents and parents (90% mothers)	Adolescent	1. Bivariate (Pearson) Correlation 2. SEM	1. None 2. Family functioning (adolescent and parent measure), school bonding, peer support, antisocial behaviour, self-concept, depressive symptoms, externalising symptoms (adolescent and parent report)	1. Significant correlations in the expected direction were found between the adolescent measures of family functioning and peer support (EF=medium/large). However, there was a non-significant relationship between parental measure of family functioning and the adolescent measure of peer support. 2. Significant positive path coefficient between adolescent's report of family functioning and peer support ($\beta = 0.39$, $p < 0.001$) were reported.

Engels et al., (2002)	1. Adaptability 2. Cohesion	1. Flexibility 2. Cohesion	1. Attachment and support	Adolescent	Adolescent	1. Bivariate (Pearson) correlation 2. Regression analysis (testing mediating model)	1. None 2. Testing mediating role of social skills (anxiety and performance) in the relationship between parental factors (affection, autonomy, responsiveness, discipline, strictness, monitoring, attachment, family cohesion and adaptability) and peer relations (activity, attachment and support)	1. There was a significant positive relationship between the family functioning variable of adaptability and support obtained from best friend (EF=small). There was a non-significant relationship between the family functioning variable of adaptability and peer attachment (EF=small). There was a non-significant relationship between the family functioning variable of cohesion and the two measures of peer relationships.

Cumsille & Epstein (1994)	1. Cohesion 2. Adaptability 3. Satisfaction with family functioning	1. Cohesion 2. Flexibility 3. Other	1. Perceived social support from peers	"Family"[b]	Adolescent	1. Bivariate (Pearson's) correlation 2. Multiple regression analysis	1. None 2. Depression, gender, family support and friend support	1. Three sets of correlations were completed (combined male and female score, and male and female scores separately) with the same results of a non-significant correlation in the expected direction for the relationship between the three family functioning variables (cohesion, adaptability and satisfaction with family functioning) and perceived support from friends.

Prinstein et al., (2010)	1. Problem solving 2. Communication 3. Global dysfunction	1. Other 2. Communication 3. General functioning	1. Social support from a close friend	Adolescent	Adolescent	1. Factor analysis 2. Partial correlation coefficients 3. SEM	1. N/A 2. Age and sex 3. Psychological symptoms (anxiety, depression, conduct problems, substance use, suicidal ideation), peer functioning (close friend support, peer acceptance, perceived peer rejection, deviant peer group affiliation), family functioning (global dysfunction, problem solving communication)	2. Non-significant relationships were found in the expected direction between the family functioning variables (global dysfunction, problem solving and communication) and close friend support.

[a]No further details provided of which parent completed the measure

[b]No details provided of which members of the family completed the measure

Table 4

A visual overview of findings in order of quality

Authors (date)	General family functioning	Communication	Flexibility	Cohesion	Conflict	Other
Clinical sample						
Sheftall et al., (2013)			×[a,b]	×		
Cumsille & Epstein (1994)			×	×		×
Prinstein et al., (2010)	×	×				×
Non-clinical sample						
Gauze et al., (1996)			×	×		
Law et al., (2013)	✓[c]	✓				✓✓
Van Harmelen et al., (2016)	✓					
Ying et al., (2023)	✓		✓	✓		
Sun et al., (2006)		✓		✓	×	
Pilgrim et al., (2004)				✓×[d]		
Schwartz (2006)	✓×					
Engels et al., (2002)			✓✓	××		

[a]Ticks or crosses indicate the variable was examined within the study; [b]× indicates a non-significant result; [c]✓indicates a significant result, ✓×[d] indicates a mixed pattern of results

4.1 General family functioning

Five studies examined the relationship between a measure of general family functioning and supportive peer relationships (Law et al., 2013; Prinstein et al., 2000; van Harmelen et al., 2016; Schwartz et al., 2006; Ying et al., 2023a). Four studies were of moderate-high quality (Law et al., 2013; Prinstein et al., 2000; van Harmelen et al., 2016; Schwartz et al., 2006; Ying et al., 2023a) and one of high quality (Prinstein et al., 2000).

Emerging support was found for the relationship between better family functioning and more supportive peer relationships in non-clinical samples. The relationship was not maintained in the one study using a clinical sample.

Four studies used non-clinical samples. Law et al., (2013) and Van Harmelen et al., (2016) used the same subscale measuring general family functioning (Family Assessment Device – General Functioning subscale, Epstein et al., 1983) and reported small but significant relationships between better family functioning and more supportive peer relationships (Law et al., 2013, $r = -0.28$, $p<0.01$; van Harmelen et al., 2016, $\beta = 0.24$, $p < 0.001$). Law et al., (2013) then combined four subscales (family affection, processes and roles, and general functioning) into one variable renamed family disconnectedness and found using multiple regression analysis that this variable negatively predicted peer connectedness ($\beta=0.13$, $p<0.01$). Similarly, Schwartz et al., (2006) and Ying et al., (2023) combined subscales to create a measure of general family functioning (Schwartz – cohesion and communication and Ying – cohesion and adaptability). Ying et al., (2023) used SEM and reported a medium effect size for the path analysis between family function and peer attachment ($\beta=0.58$, $p<0.01$). For Schwartz et al., (2006) the results differed by informant, with a significant medium effect size for the adolescent report ($r=0.47$, $p<0.001$) and a non-significant result for the parental report.

One paper used a clinical sample. Prinstein et al., (2000) also used the Family Assessment Device – General Functioning subscale (Epstein et al., 1983) but reported non-significant results. No power analysis was completed, however the small sample size (n=96) suggested the study could be underpowered.

4.2 Communication

Three studies examined the relationship between the family functioning variable of communication and supportive peer relationships. Two studies were of moderate-high quality (Law et al., 2013; Prinstein et al., 2000; Sun et al., 2006) and one of high quality (Prinstein et al., 2000).

Emerging support for the relationships between better communication within the family and more supportive peer relationships was established in non-clinical samples. The findings were not maintained in the one study using a clinical sample.

Two studies used non-clinical samples. Law et al., (2013) and Sun et al., (2006) used bivariate correlations and found small positive correlations (Law et al., 2013, $r= -0.29$, $p<0.01$ and Sun et al., 2006, $r=0.34$, $p<0.01$). One study used a clinical sample. Prinstein et al., (2000) used the same measure of communication as Law et al., (2013) but found a non-significant result. Prinstein et al., (2000) received the highest quality rating of all the studies, however the small sample size indicates it may have been underpowered.

4.3 Flexibility

Five studies examined the relationship between the family functioning variable of flexibility and supportive peer relationships (Cumsille & Epstein, 1994b; R. Engels et al., 2005; Gauze, Bukowski, AquanAssee, et al., 1996; A. Sheftall et al., 2013; Ying et al., 2023a). One study was of moderate quality (Gauze, Bukowski, AquanAssee, et al., 1996), three of moderate-high quality (R. Engels et al., 2005; A. Sheftall et al., 2013; Ying et al., 2023a) and one of high quality (Cumsille & Epstein, 1994b).

Inconsistent findings were reported across the non-clinical samples. Non-significant relationships were consistently found within the clinical samples. Limitations in the measures of family functioning used and differences in respondents may have accounted for some of the variance in findings.

Three studies used non-clinical samples. Ying et al., (2023) and Engels et al., (2002) both reported significant bivariate correlations of a small-medium effect size. However, Gauze et al., (1996) reported a non-significant finding ($p>0.05$). Two studies used clinical samples. Cumsille & Epstein (1994) and Sheftall et al., (2013) both reported non-significant results ($p<0.05$).

There was a pattern of non-significant results with the use of the FACES measure across clinical and non-clinical samples (D. H. Olson, 1986)**.** It was the sole measure used in the clinical samples (Cumsille & Epstein, 1994a; A. H. Sheftall et al., 2013)**,** and non-significant results were found for both papers. The pattern is more inconsistent in the non-clinical samples, with it being used in two papers with opposing results (Gauze, Bukowski, Aquan-Assee, et al., 1996 - non-significant; Ying et al., 2023 - significant). However, across both samples, the psychometric properties of the versions used may have contributed towards the variations in results. FACES-II and FACES-III were used in clinical samples (D. H. Olson, 1986; D. H. Olson et al., 1982) and in

non-clinical samples FACES-II and a Chinese translation (Fei et al., 1991). The Chinese version has the best psychometric properties and the study using it reported the only significant finding (Ying et al., 2023). This suggests that version of the FACES with the best psychometric properties was most accurately able to measure family functioning, and therefore report the expected significant relationship with supportive peer relationships.

Additionally, the informant for the family functioning measure contributed towards the variance in results. In the clinical samples, Cumsille & Epstein (1994) had a "family informant" (but it was unclear who this informant was), and Sheftall et al (2013) compared parent and adolescent reports. Both studies reported non-significant relationships between family/parent report of family functioning and the adolescent report of supportive peer relationships. In the non-clinical sample, Gauze, Bukowski, Aquan-Assee, et al., (1996) used a parent report of family functioning and an adolescent report of peer relationships also found a non-significant result.

4.4 Cohesion

Seven studies examined the relationship between the family functioning variable of cohesion and supportive peer relationships (Cumsille & Epstein, 1994b; R. Engels et al., 2005; Gauze, Bukowski, AquanAssee, et al., 1996; Pilgrim et al., 2004; A. Sheftall et al., 2013; Sun et al., 2006; Ying et al., 2023a). One study was of a moderate quality (Gauze et al., 1996), six studies were of a moderate-high quality (Engels et al., 2005; Pilgrim et al., 2004; Sheftall et al., 2013; Sun et al., 2006; Ying et al., 2023) and one was of high quality (Cumsille & Epstein, 1994b).

Inconsistent findings were reported across the non-clinical samples with three of the five-papers reporting significant results. Non-significant relationships were consistently found within the clinical samples. Limitations in the measures of family functioning used, differences in respondents, and methodological limitations such as the sample size and quality of papers may have accounted for some of the variance in findings.

Five papers examined the relationship in non-clinical samples. Pilgrim et al., (2004), Sun et al. (2006) and Ying et al. (2023) reported small effect sizes, measured using bivariate correlations. Pilgrim et al., (2004) compared adolescents' and mothers' self-reports of family functioning and found a significant relationship for the adolescent report but a non-significant relationship for the mother report ($p>0.05$). Engels et al., (2005) and Gauze et al., (1996) also reported non-significant correlations, with adolescent and parent reports of family functioning respectively.

Two papers examined the relationship in non-clinical samples. Cumsille & Epstein., (1994b) and Sheftall et al., (2013), and found non-significant results using bivariate correlations ($p>0.05$).

There was a pattern of non-significant results in studies using the FACES questionnaire (Olson et al., 1986). The same four papers that used the FACES to measure the domain of flexibility (Cumsille & Epstein, 1994a; Gauze, Bukowski, Aquan-Assee, et al., 1996; A. H. Sheftall et al., 2013; Ying et al., 2023b) also used it to measure cohesion. The same pattern of results was found. The only significant result found by Ying et al., (2023), could be attributed to the use of the Chinese translation of the FACES, which has superior psychometric properties to FACES-II and FACES-III used in the other studies (Cumsille & Epstein, 1994a; Gauze, Bukowski, Aquan-Assee, et al., 1996; A. H. Sheftall et al., 2013).

There were further methodological limitations in the studies reporting non-significant results using the FACES questionnaires (Olson et al., 1986) which may have contributed to the findings. In non-clinical samples, Gauze, Bukowski, Aquan-Assee, et al., (1996) was of a slightly lower quality than the other four studies (moderate compared with moderate-high). It also had a smaller sample size (n=138), indicating it could be underpowered. Similarly, in clinical samples Cumsille & Epstein (1994) had a small size of less than 100 (n=93), also suggesting it was underpowered.

The pattern of non-significant results could also be attributable to the different respondents for the family functioning variables. Across clinical and non-clinical samples, Cumsille & Epstein, (1994a); Gauze, Bukowski, Aquan-Assee, et al., (1996) and Pilgrim et al., (2003) all reported non-significant results for parent/family reports of family functioning and adolescent reports of supportive peer relationships.

4.5 Conflict

One study of a moderate-high quality examined the relationship between the family functioning variable of conflict and supportive peer relationships. In a non-clinical sample, Sun et al., (2006), reported a non-significant correlation. However, this is possibly due to the low prevalence of family conflict in the sample (mean conflict score was 2.67 out of 9, with higher scores representing more conflict). The low prevalence of families exhibiting high levels of conflict, may mean the study was underpowered to detect any potentially significant correlations with less supportive peer relationships.

4.6 Other domains

Three studies examined the relationship between other domains of family functioning and supportive peer relationships (Cumsille & Epstein, 1994b; Law et al., 2013; Prinstein et al.,

2000). One study was of a moderate-high quality (Law et al., 2013) and three of a high quality (Cumsille & Epstein, 1994b; Prinstein et al., 2000).

A variety of different family functioning variables were examined, but a significant relationship was reported in the one study examining non-clinical samples. Non-significant results were reported across the studies using clinical samples.

In non-clinical samples, Law et al., (2013) reported a significant correlation with a small effect size between the variables of family affection (combining the subscales of affective responsiveness and affective involvement) and family roles and peer connectedness.

Two studies reported results in clinical samples. Cumsille & Epstein (1994b) measured family members' satisfaction with their family functioning and found a non-significant relationship with perceived social support from peers. Prinstein et al., (2000) reported a non-significant relationship between family problem solving and close friend support ($p>0.05$). Both studies report sample sizes of less than 100, suggesting the non-significant results could be related to the studies being underpowered.

5.0 Discussion

5.1 Study aims

The study characteristics and main findings were extracted, and a quality analysis completed. The study had two aims, firstly to examine the positive pattern of results between whole system family functioning and supportive peer relationships. Secondly, to compare and contrast the pattern of relationships between different domains of family functioning and supportive peer relationships. The domains of the Circumplex model, communication, flexibility and cohesion, were reviewed. Additional consideration was given to the domain of conflict, due to the frequency with which this variable is included in other models of family functioning and in the literature. Eleven papers were identified during the systematic search.

5.2 Interpretation of results

5.2.1 Summary. The results from the non-clinical samples suggest that greater family functioning is associated with more supportive peer relationships. All the papers which examined this aspect (with an adolescent respondent for family functioning) reported a trend towards a small-medium effect size.

The second aim of comparing and contrasting the pattern of relationships between different family functioning variables and supportive peer relationships, was difficult to achieve. This was

due to the: small number of studies identified, methodological limitations including small sample sizes, results varying by family functioning respondent and numerous studies measuring family functioning using the FACES-II and FACES-III (D. H. Olson, 1986; D. H. Olson et al., 1982) which have poor psychometric properties (Tutty, 1995). However, in non-clinical samples, the most consistent evidence was for the dimension of communication, with both papers reporting a small effect size. Evidence for flexibility and cohesion was mixed. Some studies supported a relationship across both variables with small-medium effect sizes. Slightly more studies reported evidence for the role of flexibility, compared with cohesion. However, the certainty of the findings was complicated by use the FACES questionnaire (Olson, 1986), which will be discussed further in section 5.1.3. One study examined the domain of conflict and found a non-significant result.

Although not an explicit aim of the study, results in clinical and non-clinical samples were reported separately due to the stark differences. Three papers reported findings in clinical samples (Cumsille & Epstein, 1994a; Prinstein et al., 2000; A. H. Sheftall et al., 2013) and non-significant results were found for all papers, across all domains. Again, the certainty of this result is impacted by two of the three studies using the FACES questionnaire (Olson et al., 1986). However, further reasons for the differing results could be due to demographic differences between the samples. Two of the three clinical samples (Prinstein et al., 2000; A. H. Sheftall et al., 2013) contained adolescents residing in inpatient mental health units. Adolescents residing within inpatient units typically have higher rates of adverse childhood experiences (Rytilä-Manninen et al., 2014), PTSD (Cabrera et al., 2020), neurodiversity and learning difficulties (Croen et al., 2006; Williams et al., 2023) compared with community samples. These adolescents are also more likely to have grown up in families where their carers were unemployed, had a history of psychiatric illness and substance misuse difficulties (Rytilä-Manninen et al., 2014; Serim Demirgoren et al., 2017). These demographic variables may act as confounding variables within the clinical samples potentially accounting for the non-significant relationship established in the systematic review. However, it was not possible to investigate these differences further as no information regarding these demographic variables were reported in any of the studies.

Another possible confounding variable was interventions received by the clinical sample, which may improve the adolescents family and peer relationships. To control for this only baseline data from studies in clinical samples was used.

Contrasting results were also reported for different respondents. Studies across clinical and non-clinical samples that used a family or parent reported measure of family functioning found a non-significant correlation with supportive peer relationships. However, when the adolescent report was used a significant relationship was found. Parents consistently reported better family functioning, resulting in only a small-medium correlation with adolescent scores (between 0.24-0.46). Other studies have also found that parents are less likely to report difficulties with family functioning (D. A. Cohen & Rice, 1997). The lower prevalence of difficulties reported by parents may mean the studies were underpowered to identify the hypothesised relationship with peer relationship difficulties.

5.2.2 Theoretical context. The literature identified supported healthy family functioning as important in the development of supportive peer relationships in adolescence. All the measures of supportive peer relationships used in the included papers were based on Weiss' provision of attachment (as documents in Appendix B). Weiss and Bowlby's conceptualisations appear to overlap, as evidenced by DiTomaso & Spinner (1997) who highlighted their similarities and reported that both concepts were central to the feeling of emotional loneliness.

In light of this, a possible mechanism for the relationship between healthy family functioning and supportive peer relationships is the development of positive internal working models (Bowlby, 1969, 1973). These positive models can be gained from a sensitive and responsive caregiver, who acts as a secure base from which the infant can safely explore the world (Byng-Hall, 1995; Stevenson-Hinde, 1990). Byng-Hall (1995) theorised that the entire family unit, rather than just the primary caregiver, can be viewed as a secure base, with all family members working together to ensure that sensitive and responsive care is always available. These working models represent a positive view of oneself as a person worthy of being loved and protected. These views are then activated in friendships where the individual is able to generate feelings of intimacy, peace and emotional security (Delgado et al., 2022; Zimmermann, 2004). Inversely, lower levels of family functioning lead to the development of more negative internal working models, which when activated act as a barrier to the development of more supportive peer relationships (Delgado et al., 2022).

No studies were identified directly examining the mediating role of internal working models in the relationship between family functioning and supportive peer relationships. However, several studies support the relationship between family functioning and secure attachment in adolescence (Kapanee & Rao, 2007; Rawatlal et al., 2015; Tanaka et al., 2008), and a recent

systematic review by Delgado et al., (2022) summarised the clear evidence for the links between secure attachment and more supportive peer relationships in this period.

The current findings suggested that good communication in the family is particularly important to the development of supportive peer relationships in adolescence. One study examined the role of communication in the development of internal working models in research focusing on dyads (Bretherton, 1990, 1995), and reported that inconsistent, unresponsive and negative patterns of communication in the attachment relationship may result in negative internal working models. These models may be based upon a sense of unworthiness and mistrust (Bretherton, 1990, 1995), which act as a barrier to the development of supportive friendships.

Family communication is also particularly important within the Circumplex model. Good communication facilitates the expression of preferences regarding flexibility and cohesion (D. H. Olson, 2000), resulting in more optimal levels (Schrodt, 2005). Better communication is also related to conflict, by facilitating more productive and less destructive conflicts (Ayoko et al., 2002). Therefore, better communication may relate to more supportive peer relationships through facilitating better family functioning in other domains.

No evidence for a relationship between poorer family functioning and less supportive peer relationships was found for adolescents in clinical samples. Although poorer family functioning has been reported in clinical samples (Guerrero-Muñoz et al., 2021), the findings could represent the impact that mental health difficulties have upon the interpersonal skills needed to develop and maintain friendships. For example, depression is linked to less frequent eye contact and responses in conversations, and more disclosure of negative information about themselves (Hames et al., 2013). Less close and more conflictual friendships have been reported for adolescents with mental illnesses, regardless of family functioning (Chen et al., 2009; Crawford & Manassis, 2011; Moses, 2014).

5.2.3 Certainty of findings. Comparisons between the roles of different domains of family functioning were inconclusive. A prominent reason was the poor validity and reliability in the measurement of family functioning. Five different questionnaires were used, but the FACES (Olson et al., 1986) was the most common. Across clinical and non-clinical samples four different studies used this scale, and non-significant results were found in three.

The measure may have contributed to a pattern of non-significant results for several reasons. Firstly, the versions of the FACES used in the studies (II and III) lack sensitivity to the extreme presentations of cohesion and flexibility (R. G. Green et al., 1991). These extreme scores map

onto poorer family functioning, meaning it is less validly and reliably measured. Therefore, the expected significant relationship between poorer family functioning and less supportive peer relationships is less likely to be reported. These extreme scores are more likely in families of adolescents with clinical diagnoses (Baetens et al., 2015; Guerrero-Muñoz et al., 2021), and so may have contributed to the pattern of non-significant findings in clinical samples.

Version II and III of the FACES also have poor psychometric properties more generally, with concerns around multi-collinearity, high social desirability bias and poor internal consistency reported (R. G. Green et al., 1991; Tutty, 1995). This affects the measures' reliability and validity, again meaning the relationship with supportive peer relationship may not be accurately captured, contributing to the pattern of non-significant results across both samples. No other patterns were found with any other family functioning questionnaires, as outlined in Table 5.

Table 5

Table examining the pattern of results in clinical and non-clinical samples according to different measures of family functioning

Family Variable	Non-clinical sample	Clinical sample
General family functioning	✓[a, c] (Law) ✓(Van Harmelen) ✓✗[d](Schwartz) ✓Ying	✗[b] (Prinstein)
Communication	✓(Law) ✓(Sun)	✗(Prinstein)
Flexibility	✗(Gauze) ✓(Ying) ✓ ✓ (Engels)	✗(Cumsille & Epstein) ✗(Sheftall)
Cohesion	✗(Gauze) ✓(Ying) ✓(Sun) ✓(Pilgrim) ✗✗(Engels)	✗(Cumsille & Epstein) ✗(Sheftall)
Conflict	✗(Sun)	
Other	✓✓(Law)	✗(Prinstein) ✗(Cumsille & Epstein)

Codes

FAD – purple; FACES – orange; FES – green; FDS – red; FRS – blue

[a]Ticks or crosses indicate the variable was examined within the study; [b]✗ indicates a non-significant result; [c]✓indicates a significant result, ✓✗[d] indicates a mixed pattern of results

5.3 Methodological limitations of included studies

5.3.1 Study design. The majority of studies employed a cross-sectional design precluding the ability to draw conclusions around causality (Spector, 2019). These designs are

also heavily impacted by confounding variables (Asiamah et al., 2021). Numerous variables may have had an impact, including individual factors such as age, gender and ethnicity and family factors such as SES, parental mental health or family set-up. However, these were not meaningfully controlled for in the majority of the studies, with the exception of age and gender.

5.3.2 Sample. Issues with sampling methods, similarities in study settlings and a lack of diversity in the sample were identified. These limitations resulted in more homogenous and less representative samples, reducing the generalisability of results.

All of the studies included used opportunity or volunteer sampling, again reducing the representativeness of the sample (Rosenthal & Rosnow, 2009). The majority of the non-clinical samples were recruited from schools, automatically excluding any young person not engaged in formal or mainstream education.

The number of participants who were approached but decided not to take part, or dropped out during the study, was not reported. Differences in characteristics between participants who did and did not take part could not be assessed, meaning the potential impact of any differences on the generalisability of the results could not be ascertained.

As power analyses were rarely reported, it is unclear whether any of the studies were sufficiently powered (Lakens, 2022). However, three of the studies included had very small sample sizes (n=90-138), and so were more likely to be underpowered.

There was a notable lack of gender and ethnic diversity amongst the samples. None of the studies reported participants identifying transgender or non-binary. It is unclear whether these participants are not represented within the samples, or if their identity was not captured by binary measures of gender within the demographic questionnaires. Exploring the determinants of supportive peer relationships in this sample is vital within the context of increased vulnerability to suicidality and mental health difficulties (Adams et al., 2017; Marshall et al., 2018; Yockey et al., 2022).

Few studies reported the ethnicity of their samples or took place in non-Western cultures. This is vital as there is strong evidence that healthy family functioning is socially and culturally constructed, with different family norms across relationship patterns and communication styles emphasised across cultures (Shon & Ja, 1982; Sumari et al., 2018, 2019). The lack of reporting or exploration or race and culture perpetuates racial inequality in psychological research by not allowing for the role of race to be explored (Roberts et al., 2020).

Finally, the majority of the studies did not report information on SES, meaning that it's influence could not be examined and potentially controlled for. This is important as financial stress is related to poorer family functioning (X. Li et al., 2014; Vondra, 1986) and less supportive peer relationships (Cavicchiolo et al., 2022).

5.3.3 Measurement. The family functioning measures used were reliable and appropriately validated in adolescent samples (see review by Hamilton and Carr, 2016). However, each measure was designed based upon their own theoretical models of family functioning, and so do not represent more current theories or the movement towards using more integrative approaches (Breunlin et al., 2011; Hamilton & Carr, 2016). This makes the results hard to compare. Interestingly, no studies used the Systemic Clinical Outcome and Routine Evaluation (SCORE-15, Stratton et al., 2010a). Several studies have recommended the use of this measure as a brief, psychometrically robust tool, which is not tied to any one theoretical model (Stratton et al., 2010a).

The measures of supportive peer relationships were psychometrically robust with their factor structures, reliability and validity all tested in adolescent samples and found to be acceptable (Bukowski et al., 1994). However, many of measures were decades old. The most frequently used measure in the study, the IPPA, was based upon a set of questions developed by Armsden & Greenberg in 1987, and have not changed significantly since (Armsden & Greenberg, 1987). However, the development of social media in the last few decades has significantly changed the way that adolescents conduct friendships, affecting the construct validity of these measures. New friendships can be developed through supportive online communities. This can be particularly beneficial for LGBTQ+ and other marginalised individuals to find like-minded communities (Berger et al., 2021). Moreover, existing face to face relationships can be enhanced through increased virtual communication – typically with less inhibitions resulting in more intimate disclosures (Antheunis et al., 2016). Unfortunately, peer relationship questionnaires which account for the role of online friendships have not yet been developed (Aydoğdu, 2021; Nick et al., 2018).

For both the family functioning and quality of peer relationship variables only self-report measures were used. These are prone to two main biases – social desirability and recall – both of which affect the reliability and validity of the measures (Paulhus & Vazire, 2007; Van de Mortel, 2008).

All of the studies relied on single-respondent measures. Several researchers have argued that construct validity of single respondent self-report measures of family functioning are poor. They

are heavily influenced by, and therefore predominantly measure, factors at the individual-level (e.g. mental health and personality) and dyad-level (e.g. marital quality) (Cook & Kenny, 2006; D. A. Kenny, 1996). These issues may explain the minimal correlation between parent and adolescent self-reports of family functioning (Cook & Kenny, 2006). Similarly, self-report measures of peer relationships poorly correlate with measures from other peers (Devine et al., 2018). A number of observational measures exist, such as the System for Coding Interactions and Family Functioning (SCIFF, Lindahl & Malik, 2000) and a number of methodologies for naturalist and laboratory observations for supportive peer relationships are summarised by Pepler & Craig, (1998). The use of these measures should be considered in future research to increase construct validity.

5.4 Quality of review process

There were several strengths and limitations to the review process. A major strength was the use of a second reviewer to review 20% of the papers at the screening stage and assess the quality of the studies. There was high inter-rater reliability for both processes.

However, there were also several limitations. The review did not search grey literature. This can reduce publication bias by acknowledging the many barriers to publishing research that limits the available evidence (Paez, 2017). However, this is an involved process which was not possible within the time limitations of this study. These papers are not commonly located in databases, and so are searched for by hand in places such as conference proceedings (Mahood et al., 2014). The reference lists of articles were searched which is a strength, however papers where the included studies were citated were not examined, again due to time constraints.

A further limitation was the exclusion of five potentially relevant papers where either the paper or questionnaires were inaccessible. Authors were contacted, but with no response. Similarly, one paper was excluded as it was not available in English.

The narrow inclusion and exclusion criteria, and stringent definition of terms, were both a strength and limitation of the study. The mapping of family functioning questionnaires onto the Circumplex model allowed for delineation of the effect of specific family functioning factors on supportive peer relationships, which no identified published studies have done. However, at times it was difficult to map variables which were measured by questionnaires which did not use the Circumplex model onto the three domains. Moreover, a number of important family functioning variables which may have influenced supportive peer relationships were not examined as they did not map onto the Circumplex model, such as family roles.

There were similar difficulties organising the literature around supportive peer relationships with several studies outlining the challenges with its definition and operationalisation (e.g. Mitic et al., 2021). To compensate for this, a relatively narrow definition of friendship was used. The rigor of the definition of both variables was a strength of the study, how it did risk excluding several potentially relevant papers. 49 papers were excluded for not meeting the definition of supportive peer relationships, and a further 19 for not meeting the definition of family functioning.

5.5 Theoretical, research and clinical implications

5.5.1 Theoretical implications. No other identified reviews have linked the concepts of family functioning and supportive peer relationships. Therefore, the review made a novel contribution to theory by taking a systemic approach to understanding the role of all family members and their dynamics, in relation to the supportive peer relationships, as opposed to previous research which had focused on relationships between individual family members (Coleman, 2003; Lucas-Thompson & Clarke-Stewart, 2007). Additionally, no published studies have compared and contrasted the roles of different domains of family functioning. Emerging evidence was found for the importance of communication, however further research is needed to replicate this finding.

An important theoretical implication of this study is the relationship between better family functioning and the provision of attachment within friendships. A theoretical model was outlined, emphasising the role of the entire family unit in the development of positive internal working models. Further research should be conducted to understand the potential mediating role of internal working models in the relationship between whole system family functioning and supportive peer relationships in adolescents.

5.5.2 Research implications. This review highlighted a number of limitations, many of which are common to the family functioning research in general and have been highlighted in a number of other systematic reviews (e.g. Scully et al., 2020). These include: heterogeneity of family functioning measures (Halliday et al., 2014), over-reliance on self-report measures from only one perspective (Holtom-Viesel & Allan, 2014; Kog & Vandereycken, 1985), the use of cross sectional study design, lack of consideration gender, ethnicity and class and poor control of confounding variables (Scully et al., 2020). Future studies should aim to address these limitations.

Given the growing rates of mental health difficulties in adolescents has been driven by increased symptoms in females, researchers have called for gender to be examined as a moderating variable (Shanahan & Copeland, 2024a). Although not a specific goal of this review, the author noted that there was a lack of research examining differences between genders. Gender also needs to be viewed as less of a binary concept to be more inclusive of adolescents identifying as transgender and non-binary (Cameron & Stinson, 2019).

5.5.3 Clinical implications. Early intervention and prevention strategies to support the development of peer relationships, which typically take place in schools, should focus upon assessing and strengthening family relationships. An example of good practice is the KidsMatter programme in primary schools in Australia, which works across multiple levels to promote the individual's social and emotion wellbeing, including by strengthening peer and family relationships (Goldberg et al., 2019; Graetz et al., 2008). The results also suggest the importance of parental involvement in interventions promoting peer relationships. Family involvement has been consistently shown to be more effective, but interventions working with the individual only are still more common (Pollak et al., 2023). Therefore, assessment and treatments of peer relationship difficulties should formulate dysfunctional family dynamics and intervene at the family level. Further theoretical and clinical impacts are highlighted in Chapter IV (section 2.0).

5.6 Conclusion and future implications

The review aimed to identify and review papers examining the relationship between different aspects of family functioning and supportive peer relationships. The identified literature provided emerging support for a positive relationship between general family functioning and supportive peer relationships in non-clinical samples. However, it was difficult to compare and contrast the impact of different family functioning domains. Variances in results could be attributable to methodological limitations, differences in family functioning respondents and poor psychometric properties of the most commonly used measure of family functioning.

Several directions for future research were identified including understanding the moderating role of gender, using more diverse participant groups and employing longitudinal, multi-informant methods. Research should continue to decipher the nuanced relationship between family functioning and supportive peer relationships and understand the potential mediating role of internal working models.

Chapter III: Risk and protective factors for depression and anxiety in adolescence: friendships, family functioning and emotion regulation

Abstract

Adolescents are particularly vulnerable to the development of mental health conditions, most commonly anxiety and depression (together known as internalising difficulties). Poorer family functioning can increase the risk of developing of internalising difficulties, however the influence of different aspects of family functioning is unknown. Additionally, few studies have explored the variables which mediate the relationship between different aspects of family functioning and internalising difficulties.

This study aims to examine the mediating role of the use of specific emotion regulation strategies (rumination and emotional acceptance) and supportive peer relationships. A cross-sectional design was used in which a sample of 181 predominantly female 16-18 year olds recruited from schools completed a battery of self-report measures at a single time point. Five questionnaires were used: the Systemic Clinical Outcome and Routine Evaluation-15 (Stratton et al., 2010), the Network of Relationship Inventory-Relationship Qualities Version (Buhrmester, 1992; Buhrmester & Furman, 2008), the rumination subscale of the Children's Response Style Questionnaire (Abela et al., 2002), the non-acceptance subscale from the Difficulties in Emotional Regulation Scale (Gratz & Roemer, 2004) and the Revised Child Anxiety and Depression Scale (Chorpita et al., 2000).

Results showed that poorer family functioning, particularly weaknesses in the family's strength in supporting each other and adapting to changes, rumination and emotional acceptance were associated with increased internalising difficulties. The relationship between poorer family functioning and increased internalising difficulties was mediated by increased rumination.

This study highlighted the use of specific emotion regulation strategies as the pathway by which family functioning and internalising difficulties were related. Treatments for emotion regulation and internalising difficulties typically focus on the individual, however these findings suggest that family members and their dynamics should potentially be considered more in the assessment, formulation and treatment of internalising difficulties. However, as the study design was correlational conclusions around causality could not be inferenced, and further longitudinal and intervention studies are needed to inform treatment guidelines.

1.0 Introduction

Adolescence is a period of vulnerability for the development of mental health disorders, most commonly internalising difficulties (Benton et al., 2021; Newlove-Delgado et al., 2022). One in five experience difficulties in the UK (NHS England, 2023) and one in seven globally (World Health Organization, 2021), however the rates are currently rising (Biswas et al., 2020; Kessler et al., 2012; Shorey et al., 2022). There is limited research examining risk and maintenance factors for these difficulties which could underpin the development of effective prevention and early intervention strategies (Gunnell et al., 2018; Schleider & Weisz, 2017; Zahn–Waxler et al., 2000). This empirical project aims to investigate the factors associated with the development of internalising difficulties in adolescence.

Anxiety and depression commonly co-occur, particularly in adolescent populations (Melton et al., 2016). Numerous studies suggest that they load onto one unitary dimension (McLaughlin & Nolen-Hoeksema., 2011). As a result, the constructs are commonly grouped to represent one concept of the inward experience of distress (Melton et al., 2016), known as internalising difficulties. Researching this unitary dimensions important in understanding any shared risk factors which may then be amenable to treatment (Yap & Jorm, 2015).

Adolescent development is influenced by a range of factors located both within the individual and in relation to the world around them (Bronfenbrenner & Morris, 2007). However, the family environment is arguably the most influential sphere affecting their development (Gullotta et al., 2005; Kiani et al., 2016), playing a central role in psychological wellbeing (Halliday et al., 2014; Holtom-Viesel & Allan, 2014; Scully et al., 2020). The family environment has been linked to adolescent internalising difficulties via parent-level, dyad-level and family-level processes (Schleider & Weisz., 2017). Whole family system processes have been given the least attention in the research (Brown & Bakken, 2011) but are vital in attempting to understand the impact of the entire family unit upon adolescent wellbeing. To address this gap, this study will focus upon the relationship between whole system family functioning and internalising difficulties.

Developing an understanding of the variables which mediate the relationship between family functioning and internalising difficulties is vital in order to further elucidate the developmental pathways which contribute to these difficulties (Kraemer et al., 2001; Lange et al., 2017). These variables could both act as protective factors or targets for treatments (Brawley, 1993; Schleider & Weisz, 2017). The possible mediating variables which will be investigated are: supportive peer relationships and specific emotion regulation strategies (emotional acceptance and rumination).

Dysfunctional family environments act as a barrier to developing supportive peer relationships (Brown & Bakken, 2011) likely through creating negative beliefs about oneself, e.g. as unworthy (Bowlby, 1969, 1973) which are then activated in friendships (Delgado et al., 2022). Subsequently, the buffering effects of friendships against the development of internalising difficulties are lost (N. Butler et al., 2022; Hall-Lande et al., 2007).

Poorer family environment are linked with difficulties with emotion regulation. Parents may be modelling less adaptive emotion regulation strategies and participating in poorer emotion related parenting practices (Morris et al., 2007). This places the adolescent at risk of using more maladaptive emotion regulation strategies, which facilitate the cognitive processes and negative emotional states characteristic of internalising difficulties (Hilt & Pollak, 2013).

In this introduction, the theory and evidence base for both the relationship between family functioning and internalising difficulties, and the mediating role of supportive peer relationships and use of specific emotion regulation strategies will be examined.

1.1 Family functioning and adolescent internalising difficulties

1.1.1 Theoretical model and supporting evidence. This study will focus upon the concept of family functioning, which examines the interconnected nature of all members of the family unit and measures how well this unit functions on several different dimensions (Bowen, 1976). Family functioning influences adolescent internalising difficulties in several ways. From a family life cycle perspective, numerous changes co-occur within the adolescent and their parent(s), which place a strain on the family unit. For example, the flexibility required to accommodate the burgeoning independence and identity of the adolescent may coincide with increased psychological stressors for the parents such as caring for aging parents and the menopause (Carter & McGoldrick, 1980; Scherz, 1967). According to the stage-fit theory, if the family are not able to meet the developmental needs of the adolescent, this results in poorer psychological outcomes (Eccles et al., 1997, 2013). For example, lower rates of depression have been found in adolescents whose autonomy is respected through involvement in family decision making (Smetana et al., 2004). Several systematic reviews have examined the impact of family functioning upon adolescent internalising difficulties (e.g. Scully et al., 2020) and found a strong correlation between poorer family functioning and higher rates of internalising difficulties.

1.1.2 Measurement of family functioning. The family functioning research base uses a variety of different measures of family functioning, typically grounded in one theoretical

assumption (Stratton, 2016). This makes it difficult to compare findings and draw wider conclusions (Scully et al., 2020; Stratton, 2016). The most frequently used measure is the Family Adaptability and Cohesion Evaluation Scale (FACES, D. H. Olson et al., 1986), which corresponds to the Circumplex model proposed by Olson et al., (1979). However, the tool has been heavily criticised on the basis of its conceptualisation of family functioning and poor psychometric properties (Craddock, 2001; Tutty, 1995) (outlined further in section 1.3.1 of the systematic review).

Instead, this study uses The Systemic Clinical Outcome and Routine Evaluation scale (SCORE-15; Stratton et al., 2010) to measure family functioning. Importantly, the SCORE-15 does not map onto any one theoretical model, but was created through a process of reviewing existing measures (Janes, 2005), therapist judgment and research-based indicators of good family functioning (Stratton et al., 2010b). The measure is sensitive to changes achieved through systemic therapy, giving the domains clinical as well as theoretical relevance (Stratton et al., 2014). The 15-item version measures three factors; strengths and adaptability, overwhelmed by difficulties and disrupted communication. The SCORE-15 has been deemed to have good psychometric properties across adolescent samples (Carr & Stratton., 2017). The measure has been validated cross-culturally and translated into numerous languages (Işık et al., 2022; Paolini & Schepisi, 2020; Vilaça et al., 2015; Zetterqvist et al., 2020).

Two unpublished studies were identified that have examined the role of specific family functioning processes in adolescent wellbeing using the SCORE-15. Butler (2015) examined internalising and externalising difficulties, in a sample of 13–16-year-olds, and found symptoms were predicted by the limitations in family's strengths and ability to respond to changes and risk of being overwhelmed by difficulties. Tomaselli (2020) reported the unique role of the overwhelmed by difficulties subscale in predicting internalising difficulties, in a large community sample aged 13-18.

To strengthen the current understanding of the relationship between family functioning and internalising difficulties, the mechanisms through which they are related need to be further understood. Separate streams of literature have summarised the relationship between the use of specific emotion regulation strategies and supportive peer relationships, and family functioning and internalising difficulties. Several systematic reviews highlight the importance of these variables during adolescence, and their relationship with increased vulnerability to internalising difficulties (N. Butler et al., 2022; Moltrecht et al., 2021a; Pandey et al., 2018). This

study sought to examine the mediating role of the emotion regulation strategies of rumination and emotional acceptance.

1.2 The mediating role of specific emotion regulation strategies

Emotion regulation is a complex and multifaceted process frequently defined as "all extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals" (Thompson, 1994, p27-28), and it plays a fundamental role in internalising difficulties.

1.2.1 Emotion regulation and adolescent internalising difficulties. Poor emotion regulation is an underlying process in the development and maintenance of internalising difficulties (Gross & Muñoz, 1995; Cai et al., 2021; Lougheed & Hollenstein, 2012). Neurological changes in adolescence facilitate the development of higher-order cognitive processes resulting in the greater use of both behavioural and cognitive emotion regulation strategies (Cavicchioli et al., 2023). Some adolescents can respond to the numerous challenges during this period by strengthening their emotion regulation abilities, however for others these changes challenge their newly developing skills (Cavicchioli et al., 2023; Cracco et al., 2017; Lougheed & Hollenstein, 2012). Maladaptive emotion regulation strategies result in internalising difficulties through processes such as increased attention on negative stimuli and by facilitating cycles of critical self-reflection, which increase the duration and intensity of negative emotional states (Aldao et al., 2016; Gonçalves et al., 2019).

1.2.2 Family functioning and emotion regulation. The family system plays a pivotal role in the development of emotion regulation abilities (Milojevich et al., 2021). Morris et al., (2007) proposed a tripartite model of how family influences shape children's emotion regulation skills. Firstly, children watch their parents and learn what emotions are acceptable and how to manage them. Secondly, the way parents express and discuss emotions informs the child's emotional understanding and competence. Thirdly, the overall emotional atmosphere in the family, influenced by factors like attachment, parenting styles and marital conflict, impacts children's emotional development. In difficult emotional climates, the child observes more emotional dysregulation and may become less emotionally secure.

There is a growing interest in researching the relationship between family functioning and emotion regulation abilities (e.g. Baiocco et al., 2017; Davies et al., 2004). However, this research has mostly focused on child and adult samples, where links between poorer family functioning and worse emotional clarity (Freed et al., 2016), security (Davies et al., 2004) and

dysregulation (Kivisto et al., 2015) have been found. This research will aim to understand the mechanisms for emotional difficulties in adolescents by examining the use of specific emotion regulation strategies.

1.2.3 Specific emotion regulation strategies and internalising difficulties. Two emotion regulation strategies have been shown to be particularly important in the development of adolescent internalising difficulties - the maladaptive strategy of rumination and the adaptive strategy of emotional acceptance (Schäfer et al., 2017).

Rumination is defined as "having non-productive, recurrent, and distress-focused thoughts that maintain the negative emotions" (Kökönyei et al., 2024, p.143; Nolen-Hoeksema, 1991). Rumination may lead to internalising difficulties through: increasing negative thinking, reducing the generation and implementation of effective solutions to problems and reducing willingness to engage in mood-altering activities (Nolen-Hoeksema et al., 2008; Watkins & Roberts, 2020).

Emotional acceptance is defined as not "experiencing negative emotions in response to one's own emotional reactions" (Gratz & Roemer, 2004, p42). The acceptance of emotions can prevent dysfunctional reactions such as supressing or judging the experience of negative emotions or emotional or behavioural avoidance (Werner & Gross, 2010). Both these mechanisms are linked to the development of internalising difficulties (Schäfer et al., 2017).

A number of studies have examined the role of rumination and emotional acceptance in the development of internalising difficulties. McLaughlin & Nolen-Hoeksema (2011) employed a longitudinal design in a large sample of adolescents. Results showed that rumination was central to the development of anxiety and depression, implicating it as a transdiagnostic process which explained their high comorbidity. Additionally, a meta-analysis by Schäfer et al., (2017) concluded that of the six adaptive and maladaptive strategies studied, internalising symptoms were most strongly correlated with reduced emotional acceptance and increased rumination in adolescents.

1.2.4 Mediating role. Very few studies have attempted to identify the impact of different family functioning domains upon the development of specific emotion regulation strategies (Francisco et al., 2016; Rodriguez et al., 2014). Francisco et al., (2016) found in a community sample of adolescents, that rumination, among other coping strategies, mediated the relationship between family functioning and internalising difficulties. Emotional acceptance was not examined. Interestingly, although the study used the SCORE-15, the authors did not examine the role of different aspects of family functioning. Tomaselli (2020), using the SCORE-

15, reported a relationship between the family functioning domain of overwhelmed by difficulties and internalising symptoms, mediated by rumination and emotional acceptance. This study aims to replicate the novel results of Tomaselli (2020). However, emotion regulation was only found to partially mediate the relationships, necessitating the need to explore further potential mediators. Peer relationships have been linked to both family functioning and internalising difficulties and become increasingly important during adolescence, necessitating the exploration of any mediating role they play.

1.3 The mediating role of supportive peer relationships

1.3.1 Peer relationships and adolescent internalising difficulties. Peer relationships take on a greater importance during adolescence as the young person attempts to achieve the developmental tasks of identity exploration and formation and achieving emotional independence from parents (Pace & Zappulla, 2009; Ragelienė, 2016). Peer relationships offer a protective function for the adolescent's mental health by helping them achieve these developmental tasks as well as supporting with stress, providing a sense of belonging and acceptance and improving emotional regulation (N. Butler et al., 2022; Oliva et al., 2014; Roach, 2018; Zwierzynska et al., 2012). A lack of supportive peer relationships act as a risk factor for the development of internalising difficulties (Hall-Lande et al., 2007).

1.3.2 Models of supportive peer relationships. As outlined in the systematic review, Weiss' Social Provision model (1974) is the most prominent theory on the "opportunities or experiences" needed within social relationships to make them supportive. The model outlines six provisions; attachment, social integration, opportunity for nurturance, reassurance of worth, reliable alliance and guidance. These provisions have been well validated in adolescents (Osmane et al., 2021; Warren et al., 2009) (for more details on the model, see section 1.3.2 of the systematic review).

The questionnaire used in the study, The Network of Relationship Inventory-Relationship Qualities Version (Buhrmester, 1992; Buhrmester & Furman, 2008), was selected due to its theoretical overlap with Weiss' model and robust psychometric properties (Ackermann et al., 2018).

1.3.3 Family functioning and supportive peer relationships. It has been suggested that the family environment plays a central role in laying the foundation for the development of supportive peer relationships in adolescence (Bryant & DeMorris, 1992; Parke & Ladd, 2016). Attachment theory suggests that the sensitivity and responsiveness of the primary caregiver

(and other members of the family system) to the infant's distress will lay the foundation for the individual's understanding of their own worth and expectations about the responsiveness and trustworthiness of others (Bowlby, 1969, 1973). These internal working models of relationship expectations will then be activated in friendships throughout the person's life (Delgado et al., 2022). The role of the entire family unit in the development of secure attachment has been recently emphasized and studied (Stevenson-Hinde, 1990), with Byng-Hall (1995) stating that in well-functioning families the entire family system can act as a secure base from which the infant can safely explore the world (for more detail see section 1.2 of the systematic review).

1.3.4 Mediating role. A thorough search of the relevant literature yielded no research examining the mediating role of peer relationships. Francisco et al., (2016) examined the mediating role of help-seeking in the relationship between family functioning and adolescent internalising difficulties, and found it to be significant, however the questions were not specific to help-seeking from peers.

1.4 Overview of the study

The study aimed to explore whether the relationship between family functioning and adolescent internalising difficulties was mediated by the use of specific emotion regulation and supportive peer relationships. It sought to build upon existing research by using a measure of family functioning, the SCORE-15, which assesses multiple clinically relevant family functioning processes and is not grounded in any one theoretical model (Stratton et al., 2014). The study aims to move beyond examining family functioning as a general risk factor to understanding the role of three specific family processes. These were the family's strength in supporting each other and adapting to changes, disrupted communication and risk of becoming overwhelmed by difficulties. Importantly, given the high comorbidity of anxiety and depression the study aimed to understand the underlying transdiagnostic processes.

The mediating role of the use of the specific emotion regulation strategies of rumination and emotional acceptance were examined. Emotional dysregulation has been examined as a mediating variable (Compas et al., 2017), however this study aims to make a novel contribution by elucidating the underlying mechanisms of this dysregulation by examining the use of specific maladaptive emotion regulation strategies (Aldao et al., 2016). Previous studies have also shown that emotion regulation only partially mediates the relationship between family functioning and internalising difficulties (Tomaselli, 2020). Here the mediating role of supportive peer relationships will also be examined. Less supportive peer relationships have been linked with internalising difficulties in a number of studies (N. Butler et al., 2022; Hall-

Lande et al., 2007) and the systematic review provides evidence for the relationship with family functioning. However, the mediating role has never been explored. Few studies have investigated the role of multiple mediating variables in explaining the relationships between family functioning and internalising difficulties, and this study aimed to address this gap.

The study recruited participants from schools and sixth form colleges. They were asked to complete five questionnaires at a single time point assessing: different aspects of family functioning, internalising difficulties, supportive peer relationships, and the emotion regulation strategies of rumination and emotional acceptance.

1.5 Research questions and hypotheses

Research Question 1: Is there a relationship between family functioning, the use of specific emotional regulation strategies, and supportive peer relationships and internalising symptoms?

> Hypothesis 1: Poorer family functioning across all domains of the SCORE-15 will be associated with increased internalising difficulties for adolescents.
>
> Hypothesis 2: Increased rumination and decreased emotional acceptance by adolescents will be associated with increased internalising difficulties for adolescents.
>
> Hypothesis 3: Reduced supportive peer relationships will be associated with increased internalising difficulties for adolescents.

Research Question 2: Do the use of specific emotional regulation strategies and supportive peer relationships mediate the relationship between family functioning and internalising symptoms?

> Hypothesis 5: Rumination will mediate the relationship between family functioning and internalising difficulties. Specifically, lower levels of family functioning will be associated with increased levels of rumination and, in turn, increased internalising difficulties for adolescents.
>
> Hypothesis 6: Emotional acceptance will mediate the relationship between family functioning and internalising difficulties. Specifically, lower levels of family functioning will be associated with decreased levels of emotional acceptance and, in turn, increased internalising difficulties for adolescents.
>
> Hypothesis 7: Supportive peer relationships will mediate the relationship between family functioning and internalising difficulties. Specifically, lower levels of family

functioning will be associated with decreased supportive peer relationships and, in turn, increased internalising difficulties for adolescents.

2.0 Methods

2.1 Design

The study employed a cross-sectional design, with participants completing a battery of self-report questionnaires at a single timepoint.

2.2 Participants

181 participants were recruited, and their ages ranged from 16-19 years old. 154 identified as female, 24 as male, and one as non-binary, transgender and preferred not to say respectively.

Opportunity sampling was used, with data collected across 5 schools across London and the South of England. The schools were recruited through professional contacts with the main point of contact the head of psychology. The percentage of students receiving free school meals was used a proxy indicator of the demographics of the students attending the school. This variable was reported for 4 of the 5 schools, and ranged from 13.6%-53.2%, with an average of 30.3%. This is above the national average of 19.7%, reported in October 2020 (Gov.uk, 2021).

All participants were studying psychology at A-level. Participants were eligible to take part if they were aged between 16-18 (or if over 18 were in school years 12 or 13) and had sufficient literacy skills to complete the questionnaires. In line with similar studies (Butler, 2015; Tomaselli, 2020) no other inclusion or exclusion criteria were applied. All participants were entered into a prize draw to win one of two £50 vouchers and the schools were offered a talk from the researcher on a topic of their choice. All participants who were approached agreed to take part.

An a priori power calculation was conducted to estimate the required sample size for parallel mediation analysis with three mediators. The calculation was carried out using Monte Carlos Power Analysis for Indirect Effects (Schoemann et al., 2017), where X was 'Family Functioning', Y was 'Internalising difficulties' and the mediator variables were the specific emotional regulation strategies of rumination and emotion acceptance (M1, M2) and supportive peer relationships (M3). Based upon previous work by Tomaselli (2020) a correlation coefficient of 0.340 (a medium effect size, Cohen, 2013) was used for the X/Y correlation, and for mediators M1 and M2 a coefficient of 0.4 was used. For M3 a coefficient of 0.4 was also used. The relationship between mediator variables was estimated as 0.052 (a minuscule effect). Based upon the recommendations of Perugini et al., (2018) the number of replications was set at 1000

and sample size steps at 5. Based upon the conventions of α = .05 and power = 0.8 it was estimated that a minimum sample size of 50 would be needed for M1, M2 and M3, resulting in a minimum sample size of 150.

Ethical approval was obtained from the Joint Chair for Research Sub-committee as well as the University of Royal Holloway Ethics Committee (REC ProjectID: 3763, see Appendix H). Written approval was also provided by the headteacher of each participating school (see Appendix I for template). To safeguard the participants, the researcher disclosed the names of participants who scored above the clinical cut for the RCADS to the point of contact at each school. The teacher then liaised with the safeguarding lead, and sent a letter drafted by the research to the participants parents or carers (Appendix J).

2.3 Measures

2.3.1 Demographic questionnaire. A demographic questionnaire (Appendix K) was completed by all participants, based on that used by Butler (2015). The following information was collected:

- Age
- Gender identity
- Ethnicity
- Occupation of parents/carers (used as a proxy measure of socio-economic status (SES))
- Diagnosis of mental health difficulties, neurodiversity (ADHD and/or Autism) or learning difficulties
- Support received via medication or therapy, and location of therapy (CAMHS or privately)
- Experiences of significant life events over the past year (moved house, moved school, death of a friend or family member, separation or divorce of parents or carers, serious illness of parents, carers or sibling) (Taken from Life Events Record, Coddington, 1972)

2.3.2 Family functioning. The Systemic Clinical Outcome Routine Evaluation Scale-15; (SCORE-15, Stratton et al., 2010, see Appendix L) was used to assess family functioning. The self-report measure contains 15-items which assesses family functioning across three domains; strengths and adaptability, disrupted communication and overwhelmed by difficulties. Participants rate 15 statements regarding the dynamics within their family on a scale of 1-5 (1 = describes us very well, 5 = describes us not at all). Scores range between 15 and 75, with lower scores indicating healthier family functioning. The measure is suitable for participants aged over 11 and has been validated in representative samples in the UK (Fay et al.,

2013; Stratton et al., 2014) and cross-culturally (Işık et al., 2022). It has acceptable internal consistency, test-rest reliability and construct validity (Fay et al., 2013; Stratton et al., 2014).

2.3.3 Adolescent internalising difficulties. The Revised Child Anxiety and Depression Scale-25 (RCADS-25, Ebesutani et al., 2012, see Appendix J) was used to assess internalising difficulties. Participants rate 25 items regarding the frequency of anxiety and major depressive symptoms on a four-point Likert scale (0 = never, 3 = always). Raw scores range between 0-75, with higher scores representing greater difficulties. The RCADS-25 was selected, as opposed to the original 47 item version, to reduce the burden on participants and to ensure it was possible to complete the entire battery of questionnaires within a standard 50-minute lesson time.

The RCADS-25 has been shown to have good psychometric properties in a representative samples of adolescents including reliability in clinical and non-clinical samples, internal consistency, test-retest reliability and convergent validity (Ebesutani et al., 2012; Klaufus et al., 2020). Obtaining the clinical cut off (t-scores) for the RCADS traditionally involved assigning participants a binary male/female gender category, as scores are compared with a reference group matched on gender and age. For non-binary or transgender participants, following advice from the development team at University of California, Los Angeles (UCLA), gender assigned at birth was used.

2.3.4 Emotion regulation skills. The Children's Response Style Questionnaire (CRSQ; Abela et al., 2002, Appendix N), was used to assess the emotion regulation skill of rumination. The CRSQ is designed to measure three emotion regulation skills (problem solving, distraction and rumination), however only the rumination subscale was used. Participants rate 13 items indicating how they respond psychologically and behaviourally to feeling sad. Responses are scored on a four-point scale (0 = almost never, 4 = almost always). Total scores for each subscale range between 0 and 39, with higher scores representing greater rumination. The rumination subscale has good psychometric properties including reliability, internal consistency and concurrent validity with other validated measures (J. Abela et al., 2008; J. R. Abela & Hankin, 2011; Lo et al., 2017).

The 'non-acceptance' subscale of the Difficulties in Emotional Regulation Scale (DERS; Gratz & Roemer, 2004, Appendix O) was used to assess emotional acceptance. The DERS is designed to assess difficulties in emotional regulation across six domains, however only the non-acceptance of emotional responses subscale, consisting of six items, was used. Participants rate how frequently items apply to themselves on a five-point Likert scale (1 = almost never, 5 = almost always). Total scores range from 6-30, with higher scores reflecting poorer acceptance.

The non-acceptance subscale has been validated individually for use in an a diverse range of adolescents and was shown to have good psychometric properties including internal consistency and convergent validity in both clinical and non-clinical samples (Charak et al., 2019; Gratz & Roemer, 2004; Hallion et al., 2018; Neumann et al., 2010).

2.3.5 Supportive peer relationships. Supportive peer relationships was assessed using the Network of Relationships Inventory – Relationships Qualities Versions (NRI-RQV, Furman & Buhrmester, 2010, Appendix P). The NRI-RQV is a 30 item self-report questionnaire designed to measure the supportive and discordant qualities of relationships among children, adolescents and adults. Only the supportive qualities subscale was used, which consists of three questions assessing five qualities: companionship, intimate disclosure, satisfaction, emotional support and approval. Participants answer questions thinking about their best friend and rate how often the statements apply to them on a five-point Likert scale (1 = never or hardly at all, 5 = always or extremely much). Scores range between 15 and 75, with higher scores representing more supportive friendships. Total scores are calculated by taking an average of each of the subscale scores, with higher scores indicating more positive qualities in friendships. This frequently used measure has been validated in large samples of diverse adolescents (Ackermann et al., 2018), and shows good internal consistency (Furman & Buhrmester, 2010), concurrent validity and test-retest reliability (Kouwenberg et al., 2013).

2.4 Procedure

At least 2 weeks prior to the study, information sheets were sent out to the participants parents (Appendix Q), informing them their child had been invited to take part. As the participants were over 16, parental consent was not sought. Participants were informed about the reseach via a pre-recorded video shown a week before the study (see Appendix R for consent video script). They were given information on the purpose of the study, what participation involved, examples of questions and how their data will be anonymized and stored. Participants were informed that if they scored above the clinical cut off on the anxiety and depression measure that their parents would be informed via letter. However, it was made clear that all other information was confidential. Finally, participants were informed that their participation was voluntary and that they could choose to withdraw their data from the study up until a cut-off date.

The study was delivered in person by the main researcher. Participants read a copy of the information sheet (Appendix S) and completed the consent form (Appendix T) and questionnaires either on paper or via a secure electronic link depending on whether the pupils had access to an electronic device at school. Participants who did not wish to take part were

informed that they could complete some independent work. Participants were encouraged to be silent whilst completing the study and not confer with their classmates. The questionnaires were completed in the same order by all participants: demographic questionnaire, RCADS-25, NRI, SCORE-15, CRSQ and DERS, and took between 25 and 30 minutes to complete. Following completion of the questionnaires, participants were provided with a debrief sheet (Appendix U) outlining information on places they could access support if they felt distressed by the study, including speaking to a teacher or specialist charity.

2.5 Service user involvement

At the design stage, a consultation was set up with six female A-level psychology students attending a private day school in London. The aim of the consultation was to hear feedback on the appropriateness of the research materials (participant information sheet, consent video script, consent form, debrief sheet and questionnaires) and procedure.

Recommendations from the group included:

- Using example questions from the demographic and research questionnaires in the information sheet and consent video to support with informed consent.
- Clarifying that the only information that would be passed onto parents following elevated RCADS scores was that they had scored above the cut off, and that no information from the demographic or research questionnaires would be disclosed.
- Changes the phrasing of the demographic questions to make them clearer and more inclusive.
- Amending the wording of the information and debrief sheets to improve clarity.

Additionally, one 16-year-old piloted the survey on Qualtrics. Several technical difficulties with the questionnaire were identified and addressed.

2.6 Data analysis plan

2.6.1 Data screening. The data was analysed using the Statistical Package for Social Sciences (SPSS Version 28). Firstly, the data was cleaned. Participants with more than 5% of data missing on any single measure were excluded and for less than 5% imputation of the mean value for the scale or subscale was used (B. G. Tabachnick & Fidell, 2003, 2007).

The dataset was screened for outliers, defined as a data point more than three standard deviations above or below the mean total score for the variable (Osborne & Overbay, 2004; B. Tabachnick, 2007). Continuous variables were checked to ensure they were normally

distributed and if not, transformations were attempted (Field, 2018). If the transformations were unsuccessful non-parametric tests were used.

Assumptions of linearity, homoscedasticity and normality of estimation error were verified using plots of standardised residual, and if the necessary criteria are met the following analysis was completed.

2.6.2 Data analysis. Descriptive statistics were completed and preliminary analysis conducted (t-test and ANOVA) to examine the influence of demographic factors and determine whether they needed to be controlled for in the subsequent analyses. Any significant main effects revealed by the ANOVA were explored using post-hoc tests and the Bonferroni correction was applied to control the Type 1 error (Field, 2018).

The first research question was examined using hierarchical regression to ascertain whether the independent, and potential mediating variables, predicted scores for internalising difficulties (Field, 2018). Hierarchical regression was selected so that the effect of any confounding variables on the dependent and independent variables could be partialed out.

The second research question was examined using parallel mediation analysis. Parallel mediation analysis was selected over serial mediation, as it was not hypothesized that the that the mediators operated sequentially, but instead had independent relationships with the dependent and independent variables (Kane & Ashbaugh, 2017). Any mediating variables which were shown by the regression analysis to have a significant relationship with the dependent variable were tested. The effect size of the direct and indirect effect and their significance was assessed and reported using the Hayes PROCESS macro (2022)

3.0 Results

Two incomplete datasets were removed, leaving a final sample of 179 participants. Imputation of mean values was completed for six participants for questionnaires with less than 5% of scores missing. No outliers were found for any variables.

To examine for normal distribution, a visual inspection of the histograms against the normal curve was completed rather than conducting tests of normality. The large sample size mean that normality tests are sensitive to small deviations of normality which are inconsequential in larger samples (Field, 2018). The DERS total score variable was transformed. Square root was attempted first but on further visual inspection Log10 produced a better fit (Field, 2018). The means and standard deviations of the untransformed DERS scores are provided in Appendix V.

The assumptions of linearity, homoscedasticity and normality of estimation error were met following the examination of plots of standardised residuals.

3.1 Participant characteristics

Table 6

Participant characteristics reported as number of participants (n), mean (M), standard deviations (SD) and percentages

Variable (n)	M	SD	n	%
Age (n=173)				
	17.35	0.62	-	-
Categorical age (n=169)				
16-17	-	-	58.00	34.30
17+	-	-	111.00	65.70
Gender identity (n=179)				
Female	-	-	153.00	85.47
Male	-	-	23.00	12.85
Non-binary	-	-	1.00	0.56
Transgender	-	-	1.00	0.56
Prefer not to say	-	-	1.00	0.56
Ethnicity (n=177)				
White British/White Other	-	-	80.00	44.69
Asian/Asian British	-	-	55.00	31.84
Black/Black British	-	-	27.00	15.08
Arab	-	-	7.00	3.91
Mixed/multiple ethnic groups	-	-	8.00	4.47
SES (n=174)				
High	-	-	101.00	58.00
Middle	-	-	23.00	13.00
Low	-	-	42.00	24.00
Unemployed	-	-	8.00	5.00

Participants ages ranged from 16-19 years old. The majority were aged 17 or over (65.70%) and identified as female (85.47%) (see Table 6). One participant identified as non-binary, transgender or preferred not to say respectively, and these proportions are in line with national statistics (Office of National Statistics (ONS), 2021)

The sample was very ethnically diverse. The most recent census data (ONS, 2021) states that 81.0% of the UK population identify as White British/White Other - far higher than the sample

(44.69%). The location of the schools likely contributed to the over-representation of ethnic minority groups, as the majority of the participants were recruited from inner city London schools, and London is the most ethnically diverse city in the UK (ONS, 2021).

SES was established using the National Statistics Socio-Economic Classification (ONS, 2016) three class system. This classifies participants into low, medium or high SES according to the proxy measure of parental occupation. There was a skew towards high SES families. This is likely due to two of recruitment sites being fee paying boarding schools. A small number of participants identified their parents as unemployed (n=8) and for a minority of cases it was not possible to classify the families SES from the vague description of the parent's job (n=5).

As part of the SCORE-15 family functioning questionnaire, participants were asked to define who they considered their family to be. 80.45% (n=144) of participants included a sibling, and 39.11% (n=70) included wider family members (e.g. aunts, uncles and grandparents). 12.85% (n=23) of participants had parents who were separated or divorced or were being raised in a one parent family. This was less that the general population - the current UK divorce rate is around 30% (ONS, 2022) with 23% of families headed by a single parent (de Souza, 2023).

A quarter (24.86%) of the sample defined themselves as having one or more mental health difficulty, compared with 17.40% of the general population (NHS digital, 2021) (see Appendix W for summary table). This is likely as higher rates of participants self-identified as having difficulties in the demographic questionnaire, compared with the lower rates reported in prevalence studies (NHS digital, 2021) where clinical cut-off scores are calculated from measures such as the Strengths and Difficulties Questionnaire (SDQ, Goodman, 1997) in UK prevalence studies. There were no significant differences between the rates of mental health difficulties across genders, ethnicity or SES (see Appendix X for summary of chi-squared tests).

For the minority of participants identifying as neurodiverse (4.49%) or having a learning difficulty (9.55%), there was a significantly higher rate of multiple mental health conditions than those without (see Appendix Y for summary of chi-squared test).

Of those who disclosed having a single mental health condition, half had received therapy for their condition. Of those who disclosed having comorbid conditions, 73.10% had accessed therapy, but only 10.60% of participants said that this support was from statutory CAMHS.

The majority of participants had experienced a significant life event in the past year (55.06%) – mostly commonly death of a family member or friend, moving schools, moving house and a parent, carer or sibling having been seriously ill. There were no significant differences in the

rates of identified mental health difficulties for participants who had experienced a significant life event in the past 12 months compared those who had not (Appendix X)

3.2 Preliminary analysis

Table 7

Number of participants (N), Means (M), standard deviations (SDs), Cronbach's alpha (α) and correlations between the main variables

	RCADS-Depression	RCADS-Anxiety	RCADS-Total	Score-15 - Strengths and adaptability	Score-15 - Overwhelmed by difficulties	Score-15 - Disrupted communication	Score 15 - Total	NRI - Supportive Peer Relationships	CSRQ - Rumination	DERS - Acceptance
RCADS-Anxiety	0.72**	-								
RCADS-Total	0.90**	0.94**	-							
aScore-15 - Strengths and adaptability	0.42**	0.36**	0.42**	-						
Score-15 - Overwhelmed by difficulties	0.52**	0.43**	0.50**	0.70**	-					
Score-15 - Disrupted communication	0.40**	0.34**	0.39**	0.69**	0.80**	-				
Score 15 - Total	0.49**	0.42**	0.48**	0.88**	0.92**	0.91**	-			

	RCADS-Depression	RCADS-Anxiety	RCADS-Total	Score-15 - Strengths and adaptability	Score-15 - Overwhelmed by difficulties	Score-15 - Disrupted communication	Score 15 - Total	NRI - Supportive Peer Relationships	CSRQ - Rumination	DERS - Acceptance
[b]NRI - Supportive Peer Relationships	-0.18*	-0.17*	-0.19*	-0.13	-0.04	-0.02	-0.07	-		
CSRQ - Rumination	0.71**	0.69**	0.75**	0.31**	0.47**	0.32**	0.41**	-0.15*	-	
[c]DERS - Acceptance	0.57**	0.53**	0.59**	0.21**	0.33**	0.25**	0.29**	0-.16*	0.70**	-
N	179	179	179	179	179	179	179	179	179	179
Mean	52.72	50.84	51.83	11.44	10.68	11.99	34.11	53.96	17.09	17.38
Standard deviation	13.07	12.42	13.36	4.05	4.04	3.85	10.81	9.24	8.55	8.17
Cronbach's Alpha	0.87	0.84	0.91	0.86	0.96	0.84	[d]0.96	0.88	0.89	0.91

[a]Scale is scored such that higher scores reflect greater difficulties across this domain

[b]Higher scores reflect more supportive relationships

[c]Higher scores reflect poorer acceptance

[d]Positive items were reverse scored to enable a calculation of the alpha score

*p=0.05; **p=0.01

For the main analysis gender was collapsed into the categories of male and female. The three participants who did not identity as one of these binaries were re-coded in line with their gender assigned as birth (female). This process precluded a loss of power for the RCADS questionnaires.

As shown in Table 7, the mean t-score for the internalising difficulties measure (M=52.72, SD=13.07) was below the clinical cut off (T=70, Chorpita et al., 2005). 12.8% (n=23) of the sample scored above the cut off. Similarly, the mean item score for the family functioning measure (M=2.34) was less than the clinical cut off (M=2.90, Fay et al., 2013). 18.43% (n=33) of the sample scores above the cut off.

There was a significant correlation between the anxiety and depression subscales of the RCADS ($r(177)=0.72$, $p<0.01$). Both variables were significantly correlated with all the other variables, in the expected direction and showed similar correlation coefficients. This supported the decision to combine them into one variable, representing internalising difficulties.

Significant correlations in the expected direction were found between internalising difficulties and family functioning and the rest of the variables. A smaller correlation was found between internalising difficulties and supportive peer relationships ($r(177)=-0.19, p<0.05$), compared with rumination ($r(177)=0.75, p<0.01$) and emotional acceptance scores ($r(177)=0.59, p<0.01$). However the relationship between supportive peer relationships and total family functioning scores was non-significant ($r(177)=-0.07$, $p>0.05$).

The correlations between internalising difficulties, family functioning, emotional regulation and supportive peer relationship variables were less than 0.9, partially reducing concerns about multicollinearity between the variables (Field, 2018). All measures had acceptable alpha scores ($a > 0.07$; Field, 2018) indicating acceptable internal reliability.

3.2.1 Impact of demographic variables and significant life events. No significant differences were found for the main effect of age (16-17 year olds compared with 17+, see Appendix Z for t-test). For the variable of gender, female participants reported significantly more difficulties than male participants on measures of internalising symptoms ($t(177)=3.10, p<0.001$), family functioning ($t(177)=3.55$, $p<0.001$), rumination ($t(177)=3.62$, $p<0.001$) and emotional acceptance ($t(177)=2.23$, $p=0.03$) (Appendix AA).

A one-way ANOVA revealed a significant main effect of SES on depression ($F(3,170)=3.02, p=0.03$) and supportive peer relationships ($F(3,170)=4.32, p=0.01$) (Appendix BB). However, the post-hoc tests revealed differences for the supportive peer relationship variable only, where participants with high SES reported more supportive peer relationships than those with unemployed parents ($p<0.001$) (see appendix CC for post hoc test results)**.** There are a number of possible reasons for a lack differences being found for the variable of depression, including being underpowered through the small sample size for the unemployed group (n=8) and the Bonferroni correction applied representing a conservative approach (Lee & Lee, 2018).

For the variable of ethnicity, a one-way ANOVA revealed no significant effect for any of the main variables (see Appendix DD).

Neurodiverse participants, compared with those identifying as neurotypical, reported more internalising symptoms ($t(170)=4.86$, $p<0.001$), greater difficulties in the overwhelmed by difficulties domain of family functioning ($t(170)=3.48$, $p<0.001$), higher levels of rumination ($t(170)=4.47$, $p<0.001$) and lower levels of emotional acceptance ($t(170)=3.57, p<0.001$) (Appendix EE). There was also a significant effect of learning disability on depression ($t(170)=2.23$, $p<0.02$), with those identifying as having a learning disability reporting greater levels of depression than those who did not (Appendix FF).

Finally, participants who identified as having experienced a significant life event in the past year reported more difficulties in the overwhelmed by difficulties domain of family functioning ($t(174)=-2.28$, $p=0.02$) (Appendix GG).

3.3 Main analysis

3.3.1 Research question 1: Is there a relationship between family functioning, use of specific emotional regulation strategies, and supportive peer relationships and internalising symptoms?

It was hypothesised that increased internalising difficulties would be related to poorer family functioning across all domains of the SCORE-15, increased rumination, decreased emotional acceptance and reduced supportive peer relationships.

A hierarchical multiple regression analysis was completed. Family functioning domains, rumination, emotional acceptance and supportive peer relationships were entered as predictor variables and internalising difficulties as the dependent variable. Following the preliminary analysis, gender, neurodiversity, learning difficulties, and SES, were entered as a first step, to partial out their impact on internalising difficulties.

To check for multicollinearity, the variance inflation factor (VIF) and tolerance values were examined. No VIF values exceeded 10 and no tolerance values were less than 0.1, indicating that multicollinearity was not a concern (Appendix HH).

Results showed that the addition of the family functioning, emotion regulation and peer support variables contributed an increase of variance from 12.7% to 63.7% (adjusted $R^2 = 0.61$), which was statistically significant ($F(10,168)=29.46$, $p<0.001$).

The correlation coefficients, as shown in Table 8, revealed that the only variables making a significant contribution to the increase in variance were; the strength and adaptability domain of family functioning (B=0.50, β=0.15, $t(177)=2.20$, p=0.03) and the emotional regulation strategies of rumination (B=0.85, β=0.54, $t(177)=7.59$, $p<0.001$), and emotional acceptance (B=7.00, β=0.13, $t(177)=1.98$, p=0.05).

The results partially supported the hypotheses, as represented visually in Figure 2. Only the family functioning domain of family strength and adaptability was significantly associated with internalising difficulties. Both emotion regulation variables investigated (rumination and emotional acceptance) were significantly associated with internalising difficulties, however supportive peer relationships were not.

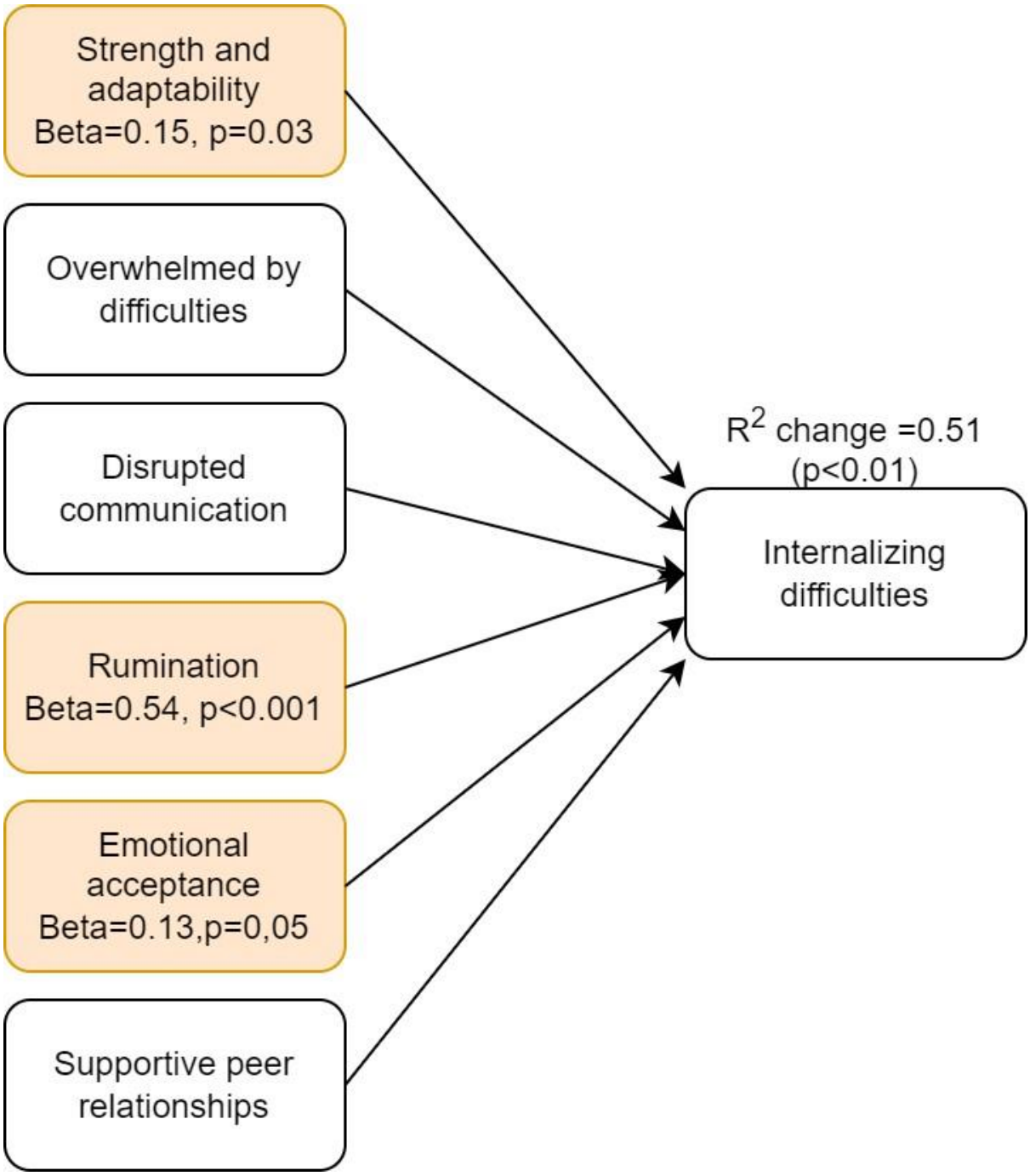
Table 8

Partial regression coefficients for multiple regression analysis with internalising symptoms as the dependent variable (DV)

Independent Variable	B	SE (B)	β	t	Sig(p)
Strengths and adaptability	0.50	0.23	0.15	2.18	0.03
Overwhelmed by difficulties	0.22	0.30	0.07	0.73	0.47
Disrupted communication	0.07	0.29	0.02	0.23	0.82
Rumination	0.85	0.11	0.54	7.60	<.001
Acceptance	7.00	3.55	0.13	1.97	0.05
Supportive peer relationships	-0.09	0.07	-0.06	-1.26	0.21

Figure 2

Multiple regression model for the additional variance in internalising symptoms accounted for by family functioning, emotional regulation variables and supportive peer relationships, after controlling for the demographic variables.

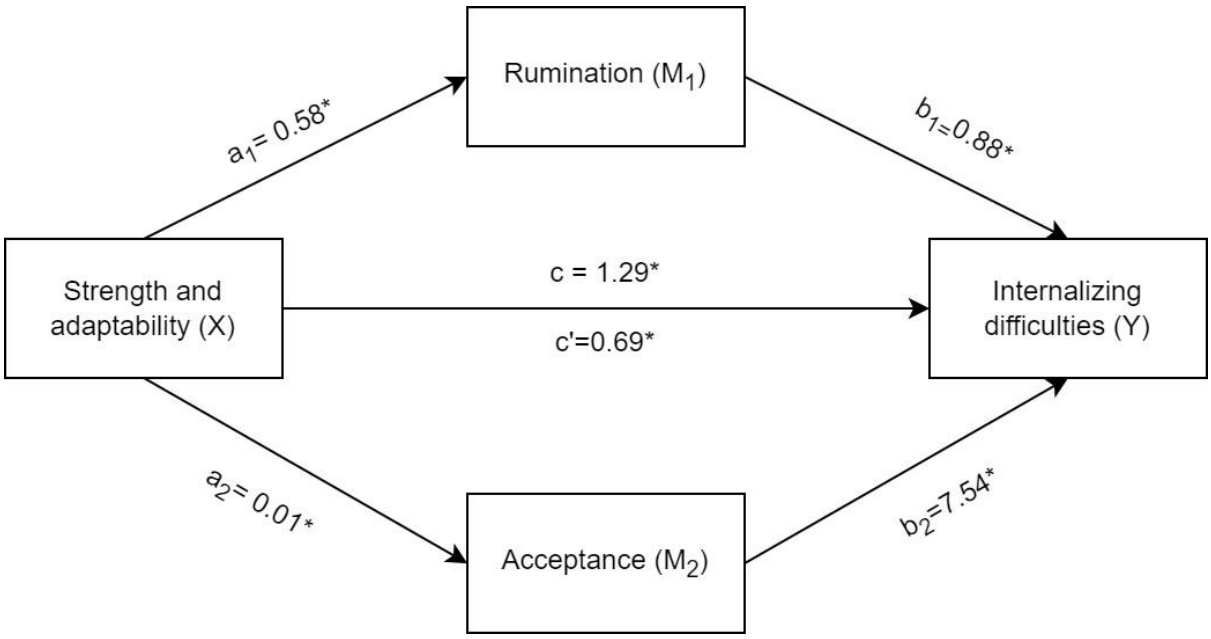


3.3.2 Research question 2: Does the use of specific emotion regulation strategies and supportive peer relationships mediate the relationship between family functioning and internalising symptoms? It was hypothesized that lower levels of family functioning and higher levels of adolescent internalising difficulties would be associated with increased levels of rumination, decreased levels of emotional acceptance and reduced supportive peer relationships.

Based on the results of the regression analysis, supportive peer relationships was not entered as a mediator and only the family functioning domain of strength and adaptability from the SCORE-15 was entered as an independent variable. Therefore, the mediation model examined whether the relationship between family functioning and internalising difficulties was mediated by the use of rumination and emotional acceptance. The variables of school, gender, neurodiversity, learning difficulties and SES were entered as covariates within the model.

Figure 3

The mediating effect of emotional acceptance and rumination in the relationship between family functioning and internalising difficulties, reported as unstandardized coefficients.



a represents the effect of family functioning on the emotion regulation variables.

b represents the effect of the emotion regulation variables on the internalising symptoms.

c represents the total effect of family functioning on internalising difficulties (the relationship between X and Y accounting for the mediating variables).

c' represents the direct effect of family functioning on internalising difficulties (the relationship between X and Y that remains after accounting for the effects of the mediating variables).

Table 9

Standardised coefficients for the indirect effects established in the mediation analysis

Mediator	Effect of IV on Mediator (a)	Effect of Mediator on DV (b)	Indirect effect (a*b)	Indirect effect 95% CI
Total effect			0.18	0.07-0.29
Rumination	0.28	0.56	0.15	0.19-0.86
Acceptance	0.19	0.14	0.03	-0.01-0.22

DV = internalising difficulties

IV = family functioning

CI = confidence interval

A 95% percentile-corrected confidence interval (CI), based on 10,000 bootstrap samples, was calculated. The CI for indirect effects through rumination were entirely above zero, meaning the mediator was significant. But for the mediator of emotional acceptance the CI included zero, indicating it was not a significant mediator (see Table 9).

Partial, and not complete mediation was reported, as the direct effect (c') remained significant, meaning the mediators did not fully explain the relationship between family functioning and internalising difficulties.

The results of the parallel mediation analysis showed support for the hypotheses that poorer family functioning in the domain of strengths and adaptability was associated with increased adolescent rumination which was subsequently related to increased internalising difficulties.

4.0 Discussion

4.1 Study aims

Adolescents are uniquely vulnerable to developing internalising difficulties (Biswas et al., 2020; Kessler et al., 2012; Shorey et al., 2022). Despite their burgeoning independence, their mental wellbeing is still heavily influenced by their family's functioning (Scully et al., 2020, Simpson et al., 2018, Wang et al., 2021). However, the ways in which different aspects of family functioning

contribute to internalising difficulties are poorly understood. Distinct streams of research have linked the use of specific maladaptive emotion regulation strategies and peer relationships to both family functioning and internalising difficulties. In a large community sample, the study aimed to examine whether the use of specific emotion regulation strategies and supportive peer relationships mediated the relationship between family functioning and internalising symptoms. Key findings are now discussed in relation to relevant research and theoretical models, before examining the implications of these findings for future research and practice.

4.2 Main findings

4.2.1 Relationship between family functioning, specific emotional regulation strategies, supportive peer relationships and internalising symptoms.

Family functioning and internalising difficulties. Weaknesses in the family's ability to support each other and more difficulties adapting to change were found to be associated with increased adolescent internalising difficulties. This partially supports the first hypothesis which posited that all three family functioning domains would predict internalising symptoms.

The results are partially line with Butler (2015) who, also using the SCORE-15 (Stratton et al., 2010a), reported that for younger adolescents (13-16-years) internalising and externalising difficulties were significantly predicted by weaknesses in the family's ability to support each other and difficulties adapting to change ($p=0.002$) and families risk of becoming overwhelmed by difficulties ($p=0.033$). In contrast, this study did not highlight the role of the overwhelmed by difficulties domain. Tomaselli (2020), using the same measure, and also reported the unique role of the overwhelmed by difficulties subscale in predicting internalising difficulties in a sample of 13–18-year-olds. As the current study included an older sample (16+), the differing results may mean that across the adolescent period different family difficulties may contribute to internalising difficulties, in accordance with different family life cycle changes (Kapur, 2015) and developmental tasks (Shulman & Ben-Artzi, 2003). However, further research is needed replicate and further understand these differences.

Additionally, the divergent results may have resulted from different measurements of internalising difficulties. Butler (2015) measured internalising and externalising symptoms together and Tomaselli (2020) using the 47-item version of the RCADS (Chorpita et al., 2000) which contains additional items examining the different anxiety disorders. Both measures sensitivity to different internalising and externalising difficulties may have resulted in relationships with different family functioning difficulties.

Overall, the results align with the stage-fit hypothesis stating that adolescents living in dysfunctional family environments are less likely to have their developmental needs met, resulting in poorer psychological outcomes (Eccles et al., 1997; Gutman & Eccles., 2007).

Emotion regulation and internalising difficulties. The results supported the hypothesis that increased rumination and reduced emotional acceptance was associated with adolescent internalising difficulties. These were in line with Schäfer et al., (2017) who conducted a meta-analysis on the role of six different adaptative and maladaptive emotion regulation strategies in adolescent samples and showed that internalising symptoms were most strongly correlated with reduced emotional acceptance and increased rumination. These results add to the body of evidence indicating that difficulties in emotion regulation are an important transdiagnostic factor in the development and maintenance of internalising difficulties Gross & Muñoz, 1995; Cai et al., 2021; Lougheed & Hollenstein, 2012).

Rumination is hypothesised to be an underlying process in both anxiety and depression, explaining their high comorbidity (Nolen-Hoeksema et al., 2008; Watkins & Roberts, 2020). In adolescents, rumination increases repetitive cycles of self-referential thoughts such as 'Why did this happen to me?' or 'Why am I feeling so bad?'. These types of thoughts are normal and even helpful in trying to unpack difficult social interactions and prevent future mistakes, however this process can tip into a pathological focus upon negative events or emotions (Hilt & Pollak, 2013). Rumination has also been shown to influence attention. More attention is given to negative stimuli and less attention to positive stimuli, which may represent an opportunity to break the rumination cycle that leads to internalising symptoms (Hilt & Pollak, 2013).

Similarly, a lack of emotional acceptance can result in internalising difficulties through dysfunctional reactions to negative emotions such as judgement or suppression (Gratz & Roemer, 2004). These reactions lower mood, increase negative thinking and reduce willingness to engage in mood-altering activities (Gratz & Roemer, 2004). Moreover, non-acceptance can result in emotional or behavioural avoidance, which temporarily reduces distress, but in the long term does not teach the individual to cope with emotions (Werner & Gross, 2010).

Supportive peer relationships and internalising difficulties. The hypothesis that less supportive peer relationships would be associated with increased internalising difficulties was not supported. This is contrary to many studies which found that more supportive peer relationships lowers the risk of internalising difficulties (Butler et al., 2022; Hall-Lande et al., 2007, Oliva et al., 2014; Roach, 2018; Zwierzynska et al., 2012). However, these studies had a variety of methodological differences including utilising data from surveys of over 2000 people

(with the potential ability to detect smaller effect sizes) (N. Butler et al., 2022; Hall-Lande et al., 2007; Oliva et al., 2014), or using alternative measures of peer relationships such as popularity, social competence or victimisation (Roach, 2018; Zwierzynska et al., 2013)

However, several studies of a similar sample size and using the same measure as this study, The Network of Relationship Inventory-Relationship Qualities Version (Buhrmester, 1992; Buhrmester & Furman, 2008) reported differing results. Guvensel, (2016) reported a significant relationship with poorer psychological well-being in a sample of college men and Kenny et al., (2013) reported a significant relationship with internalising difficulties in a school sample of adolescents. However, the NRI-RQV contains two factors: closeness and discord. In this study, only the closeness factor was calculated, and the discord factor, made up of the five subscales of conflict, criticism, pressure, exclusion and dominance, was not used. Both studies reporting significant results used different scales and/or calculated relationships with subscale scores. Guvensel (2016) reported a significant relationship with the discordant factor and Kenny et al., (2013) found a significant relationship the closeness subscales of disclosure and satisfaction and the discordant subscale of exclusion. Only one scale was used in the study to ensure the battery of questionnaires could be completed during a school lesson. The closeness scale was chosen as the subscales closely map onto Weiss' Social Provisions model and built upon the link between family functioning and supportive peer relationships explored in the systematic review. Individual subscales were not analysed due to the added complexity and the short time scale off the thesis.

Additionally, the NRI-RQV does not include questions accounting for the role social media plays in friendships which may have also contributed towards contradictory results between the current study and Guvensel (2016) and Kenny et al., (2013). In the 2010s when the studies were completed, there were fewer social media sites and adolescent users (Dixon, 2022; Faverio et al., 2024; Ortiz-Ospina, 2019). However, there has since been a proliferation of sites including TikTok, Instagram and Snapchat, and adolescents now report spending more time online with their friends than in-person (Anderson & Jiang, 2018). Both the closeness and difficulties in friendships caused by social media were less relevant to the participants in Guvensel, (2016) and Kenny et al., (2013), but are central to the current participants. The fact they are not captured by the NRI-RQV potentially contributed to the opposing results.

Finally, there were a narrow range of scores at the lower end of the questionnaire, representing less supportive peer relationships, which may have contributed to the non-significant relationship with internalising difficulties. The minimum possible score was 15, but no

participants scored below 28. This either suggests that the majority of students did not struggle significantly with their peer relationships or that the measure did not capture the difficulties they were experiencing. Participants completed the questionnaires in the presence of their peers, which may have resulted in them feeling less comfortable expressing their difficulties with peer relationships for fear of being judged or overseen by others (Nederhof, 1985).

4.2.2 The use of specific emotional regulation strategies and supportive peer relationships in mediating the relationship between family functioning and internalising symptoms? As supportive peer relationships were not found to predict internalising difficulties, this variable was not included in the mediation analysis. Only rumination mediated the relationship between family functioning and internalising difficulties, which partially supported the hypothesis that both rumination and emotional acceptance would act as mediators. Emotional acceptance had a significant relationship with both family functioning and internalising difficulties, and the lower confidence interval was just below zero (-0.01), suggesting the result was close to significant. These results partially replicate the findings of Francisco et al., (2016) and Tomaselli (2020). Francisco et al., (2016) reported the mediating role of rumination in the relationship between family functioning (as measured by the SCORE-15 questionnaire) and internalising difficulties in adolescents and Tomaselli (2020) supported the mediating role of rumination and, to a lesser extent, emotional acceptance. The smaller sample size in the current study could contribute towards emotional acceptance only approaching significance.

Theoretically, the results are in line with Morris' tripartite model (2007), which suggests that that the entire family plays a role in the development of their child's emotion regulation skills. In a dysfunctional family environment, the child will develop less adaptive emotion regulation abilities through several different processes. Firstly, by observing/modelling the less adaptive ways in which family members manage their emotions. Secondly, through poorer emotion related parenting practices, such as dismissing or punishing negative emotional expression, rather developing their skills through emotion coaching or providing comfort. Finally, more difficult emotional climates, including marital conflict, mean parents are less likely to notice or respond to the child's emotional cues in a supportive way (Morris, 2007, Morris, Criss, et al., 2017; Morris, Houltberg, et al., 2017).

4.3 Further findings

Although not the main focus of the study several interesting patterns emerged through the preliminary analysis.

4.3.1 Gender. Female participants reported more internalising and family functioning difficulties and were more likely to ruminate or not accept their emotions, than male participants. Increases in internalising difficulties in adolescents have been driven by an increase in symptoms in girls (NHS digital, 2023). A possible mechanism is women's greater sensitivity to interpersonal factors, including family functioning difficulties, than men (Freed et al., 2016). This sensitivity may have been represented in the increased family functioning difficulties reported by females, with them noticing and therefore reporting more difficulties. The results are also in line with a number of studies suggesting that females struggle to regulate their negative emotions more than boys, and are more likely to use the maladaptive emotion regulation strategies of rumination and emotional non-acceptance (Bender et al., 2012; Johnson & Whisman, 2013).

4.3.2 Neurodiversity and learning difficulties. Participants who identified as neurodiverse reported more internalising and family functioning difficulties, specifically being overwhelmed by difficulties, and greater rumination and emotional non-acceptance. Research suggested that emotion regulation difficulties are a transdiagnostic processes across ADHD and ASD, linking to higher rates of internalising difficulties (England-Mason, 2020; Hargitai et al., 2023). To the author's knowledge, no studies have examined differences in family functioning domains for neurodiverse compared with neurotypical individuals, which usefully could be the focus of further research. The family functioning difficulties may be bidirectional, reflecting some of the challenges raising a child with neurodiversity can have on the entire family unit (Schaaf et al., 2011).

Participants who identified as having a learning difficulty reported higher rates of depression. This finding is in line with research suggesting that depression is more common in students with a learning difficulty as a result of their feelings of academic inadequacy (Kiuru et al., 2011).

4.3.3 SES. Less supportive peer relationships were reported by participants whose parents were unemployed compared with participants of high SES, a result found in other studies (Hjalmarsson & Mood, 2015; J. Li et al., 2020). One reason could be that adolescents with lower family incomes have fewer economic resources themselves, so they are more likely to miss out on social activities, resulting in greater social isolation at school (Hjalmarsson & Mood., 2015).

4.4 Strengths and limitations

The current study had several strengths. The sample size required to sufficiently power the study was met. The sample also contained an ethnically diverse range of adolescents, increasing the representativeness of the sample and generalisability of results. An effort was made to control for many confounding variables which may have influenced the variables studied. Finally, the questionnaires chosen had strong psychometric properties and had been validated in representative samples of adolescents.

However, there were also several limitations, including the use of a cross-sectional design, reliance on the use of self-report questionnaires and the adolescents as single informants, and a lack of consideration of social media as a risk factor.

The cross-sectional design did not allow for causality to be inferred, or the bidirectional nature of the variables to be examined (Spector, 2019). Whole system family functioning theory emphasises the interconnection and circularity of relationships between family members (Bowen, 1976). The study hypothesised that whole family functioning difficulties led to internalising difficulties, however research has shown that internalising difficulties can negatively impact family functioning. For example, emotional difficulties in the adolescent may lead to poorer communication, greater conflict, and poorer interpersonal relationships (Crocetti et al., 2016; Koutra et al., 2014; Mastrotheodoros et al., 2020). Similarly, more maladaptive emotional responses from adolescents may result in more negative responses from family members (Shapero et al., 2013). These bidirectional relationships need to be examined in further detail using longitudinal research methods.

The use of self-report questionnaires was also a weakness. Responses on self-report questionnaires are significantly impacted by the individuals ability to accurately and honestly recall information (Fadnes et al., 2009). Adolescents' responses may be limited by their poorer meta-cognitive abilities leading to worse identification of their inner emotional states (Cartwright-Hatton et al., 2004; Weil et al., 2013). Concerns around confidentiality may have also impacted their responses. Although no adolescent refused to take part in the study, many expressed concerns about internalising difficulties being disclosed to their parents, and this concern possibly impacted the truthfulness of their responses.

The use of a single informant was also a weakness. A number of studies on family functioning have shown discrepancies between parent and child reports of family functioning (Bögels & Brechman-Toussaint, 2006; Bögels & Melick, 2004), with adolescents reporting more difficulties. The discrepancy increased when the adolescent reporter was experiencing internalising difficulties (Lipschitz et al., 2012). The different perceptions of family functioning

are clinically interesting and suggests that the use of aggregate scores from multiple informants or observational methods are needed for a more accurate reflection of family functioning processes.

Additionally, the generalisability of the results is somewhat limited by the sample, which was skewed towards white, upper-class, female-identifying, neurotypical individuals. The results should be replicated in a more diverse sample of individuals to understand their generalisability.

Finally, a lack of consideration of the impact of social media was a weakness of the study. Social media usage is a known risk factor for adolescent internalising difficulties. Two recent systematic reviews found that time spent on social media and problematic or addictive activities such as repeatedly checking messages or networking sites was a risk factor for internalising difficulties (Keles et al., 2020; Piteo & Ward, 2020). Further research could consider social media usage as a mediating variable in the relationship between family functioning and adolescent internalising difficulties. Within healthy families, social media usage can increase a sense of closeness and facilitate easier communication, particularly within sibling and grandparent relationships, enhancing mental health (Balayar & Langlais, 2021; Procentese et al., 2019; Tariq et al., 2022). However, for families with poor functioning, creating healthy boundaries around social media can cause arguments, which may enhance feelings of anxiety, depression and isolation within the adolescent (Caprì et al., 2021). Further research should aim to examine the nuanced relationship between family functioning, social media use and adolescent internalising difficulties.

4.5 Future directions

In addition to addressing the limitations outlined, future research should develop explanatory models for increased internalising difficulties found in various groups such as females and neurodiverse individuals, in order to better tailor treatments (Keyes & Platt, 2024; Shanahan & Copeland, 2024a).

The rise in internalising difficulties in adolescents in the UK and globally (NHS England, 2023; World Health Organization, 2021) are thought to be driven by increased rates of internalising difficulties in girls. More research is needed to understand the factors influencing this increase (Keyes & Platt, 2024; Shanahan & Copeland, 2024a). Future research would benefit from the systematic approach taken in this study, focussing upon the interpersonal relationships of girls with friends and families, as girls are thought to both experience more and be more sensitive to interpersonal difficulties (Calleja & Rapee, 2020; Rudolph, 2002).

Increased internalising difficulties for neurodiverse individuals was noted and should be further explored. The results suggest a potential mechanism for these symptoms, via greater family functioning difficulties and greater use of maladaptive emotion regulation strategies, making them promising targets for further research.

Moreover, a potential link between different family functioning difficulties relating to internalising difficulties across the adolescent period was highlighted and should be further explored. The results could have implications for tailoring assessments and interventions across the age span of adolescence (Weisz & Hawley, 2002).

Finally, models aiming to understand the relationship between family functioning and internalising difficulties could benefit from examining the bidirectional nature of the relationship between family functioning and internalising difficulties (Crocetti et al., 2016; Koutra et al., 2014; Mastrotheodoros et al., 2020).

4.6 Theoretical and clinical implications

4.6.1 Theoretical. The current study sought to address the need for more multi-factor explanatory models to understand the transdiagnostic processes underlying adolescent internalising difficulties, which aim to understand the complexity of risk and protective factors (Patalay & Fitzsimons, 2016; Shanahan & Copeland, 2024b). To the authors knowledge, family functioning has not been included in any existing explanatory models, with individual or dyadic family factors emphasised instead (Patalay & Fitzsimons, 2016) (see Chapter IV section 2.2 for further discussion). Therefore, this research took a novel systemic approach by aiming to understand the individual's difficulties within the context of their relationships with all family members.

A novel contribution was also made by emphasising the relationship between weaknesses in the families strength and adaptability and greater use of rumination. Future research could benefit from using a process-based model of family functioning to better streamline assessments and treatments to target specific family processes. The SCORE-15 (Stratton et al., 2010a) was particularly useful to this approach, as it is not based on any one theoretical model and was instead developed through a review of clinically and theoretically important variables, resulting in a brief and psychometrically robust measure (Carr & Stratton, 2017). Further theoretical implications are outlined in Chapter IV (section 2.2).

4.6.2 Clinical. The results have several implications in the context of current government policies for early intervention and preventions (NHS, 2019) and guidelines for gold standard psychological interventions (NICE, 2023).

Whole school approaches have been implemented to provide early intervention and prevention of internalising difficulties (Department of Health and Department for Education, 2017, further context provided in Chapter IV section 2.1). Schools could benefit from providing psychoeducation and interventions for the maladaptive emotion regulation strategies of emotional acceptance and rumination to pupils, parents and teachers, given the evidence for their role in internalising difficulties (more details provided in Chapter IV section 2.1).

The study needs to be replicated in clinical samples, however as several studies have shown that family functioning difficulties are related to clinical levels internalising difficulties (Scully et al., 2020a), tentative recommendations are made for the treatment of clinical and well as non-clinical difficulties. The NHS Long Term Plan (NHS, 2019) increased funding for school and community based mental health interventions (further context provided in Chapter IV section 2.1). However, the recommendations for psychological treatments, from early intervention to the treatment of moderate-to-severe internalising difficulties, have an individual focus (NICE 2005, 2013, 2019). The results support a link between family functioning and internalising difficulties, even at the sub-clinical levels, meaning that assessments, formulations and treatments for all level of internalising difficulties could benefit from becoming more holistic. Clinicians may be able to streamline their assessments and treatments of internalising difficulties through focusing on the family's strength in supporting each other and adapting to difficulties. Emphasis should be placed on how this impacts the emotional socialisation of the adolescent, resulting in use of more adaptive emotion regulation strategies. Treatments for adolescent internalising difficulties could benefit from targeting how emotions are regulated both individually and between family members. Emotion regulation difficulties within the family potentially underly the family functioning difficulties most strongly related to internalising difficulties: how family members listen to and comfort each other, deal with everyday problems and not blame each other when things go wrong.

4.7 Conclusion

The present study aimed to advance understanding of the relationship between family functioning processes, internalising difficulties, and the mechanism through which they are related. The mediating role of specific emotion regulation strategies (rumination and emotional acceptance) and supportive peer relationships were examined. Findings indicated that greater

difficulties in the family functioning domain of strengths and adaptability, were associated with increased levels of rumination, which were in turn associated with increased internalising difficulties. The mediating role of emotional acceptance approached significance; however, the role of supportive peer relationships was non-significant.

Results should be interpreted in the context of several limitations including use of a cross-sectional, self-report, single informant design. Specific difficulties with the measurement of supportive peer relationships potentially explained the findings for its non-significant relationship with internalising difficulties. The findings have implications for the early intervention and prevention of difficulties in emotionally vulnerable youth, whereby an individual's difficulties may benefit from being assessed and treated in the context of family functioning process and difficulties with rumination.

Chapter IV: Integration, impact and dissemination plan

1.0 Integration

The overall aim of this thesis was to develop a greater understanding of the pathways through which family functioning might be related to adolescent internalising difficulties. The current study built upon previous research reporting the partial mediating role of the specific emotion regulation strategies of acceptance and rumination (Tomaselli, 2020), and examined the potential mediating role of supportive peer relationships in addition. .

1.1 Systematic review

1.1.1 Overview. A systematic review of the literature was undertaken to explore the relationship between whole system family functioning and supportive peer relationships and to compare and contrast the role of different domains (communication, flexibility, cohesion and conflict). This laid the conceptual basis for exploring the mediating role of supportive peer relationships in relation to family functioning and internalising difficulties in the empirical project. Findings supported the relationship between general family functioning and supportive peer relationships in non-clinical samples. When family functioning was broken down into different aspects, the most consistent evidence was for the relationship with the communication abilities of families. Mixed results were found for the domains of flexibility and cohesion, and no evidence was found for the domain of conflict.

The ability to compare the influence of different domains of family functioning was limited by the small number of studies. The respondent for the family functioning measure also had an effect, with non-significant results reported for the parent/family report when compared with significant results for the adolescent report. The certainty of the findings was also impacted by the reliance upon the FACES (D. H. Olson et al., 1986) measure of family functioning. This has weak psychometric properties, and was used for most studies examining clinical samples and the domains of flexibility and cohesion. As a result, no concrete conclusions regarding the contribution of any specific domain of family functioning on the development of peer relationships could be drawn.

Several other limitations of the literature base were highlighted in the systematic review. Most studies employed cross-sectional designs using single informant self-report measures of the variables, again limiting the inferences that could be drawn from the results. Limited information on the complexity of family functioning can be gained from single informant designs (Birnie et al., 2017). Multi-informant approaches have been used to overcome these limitations

(Birnie et al., 2017; De Los Reyes & Epkins, 2023) and a promising approach uses the discrepancies between reports from different family members to predict outcomes (Honda & Hohashi, 2015; Shek, 1998).

Additionally, the samples rarely reported on ethnicity, gender identify and SES . Where reported there was an under-representation of participants from minority gender or minority ethnic groups and low SES families, limiting the generalisability of the results.

1.1.2 Reflections. Conceptualising family functioning and supportive peer relationships and then operationalising these conceptualisations was challenging. Researchers have been struggling with developing an inclusive definition which can then be used to develop and test meaningful research hypotheses for decades (C. Cutrona & Russell, 1983; Stratton et al., 2010a).

I sought to address this challenge by drawing on the most prominent models in the family functioning and supportive peer relationship literature around which I created the inclusion and exclusion criteria and organised the literature. Consequently, potentially important variables within both literature bases had to be excluded as they did not map onto the models. For example, social competence is tied to the development of more supportive peer relationships (Ladd, 1999; K. H. Rubin et al., 2012) and family roles and family problem solving correlate positively with peer relationships (section 4.6), however neither were included in the review. Applying the criteria I developed was challenging and required an iterative process, particularly as a large number of potentially relevant papers arose in the search.

1.2 Empirical project

1.2.1 Overview. The empirical project built upon the results of the systematic review to test the mediating role of supportive peer relationship in relation to family functioning and internalising difficulties. The results supported the mediating role of the emotion regulation strategy of rumination, however the role of emotional acceptance only approached significance. The role of supportive peer relationships was non-significant. The non-significant findings are interpreted in light of sample size limitations and issues around the construct validity of the measure of supportive peer relationships, the NRI-RQV. Of particular relevance was the measure's inability to capture aspects of friendship which take place online (Anderson & Jiang, 2018; Berger et al., 2021).

1.2.2 Reflections.

Expert by experience involvement. I greatly valued the perspectives of the experts by experience I consulted during the development of the empirical project and several important changes were made as a result. However further criticisms and suggestions were also made by participants during the study, which I was unable to act upon, suggesting it could have benefited from further consultation at an early stage. My planning of how to use the experts could have been guided by a specific model, such as the study-focused framework, which lays out ways to maximise their involvement and impact (Evans et al., 2015; Greenhalgh et al., 2019). Evans et al., (2015) emphasises the importance of developing strong relationships between the experts by experience and the principal investigator. This could have enabled their involvement throughout all the stages of the research process (Greenhalgh et al., 2019). For example, their help with the questionnaire selection could have revealed that many were not capturing their experiences of online friendships. However, developing this relationship was challenging as safeguarding considerations meant that I could not meet with them without a teacher present, and the teachers were too busy to facilitate more than one meeting.

Ethical considerations. There is inevitably a power differential between researchers and participants in research with adolescents (Alderson & Morrow, 2020). Power was conferred upon me through age and educational status as well as my position as a teacher within a lesson, replicating a relationship where students have less power (Wong, 2016). This was amplified by needing to contact their parents/carers if they scored over the clinical cut off on the RCADS. Several students found this distressing and I wonder if they were less honest as a result. I personally found this a challenging position and was surprised that every participant who was approached decided to take part. Perhaps this reflects a powerlessness amongst the cohort as they are unused to being able to refuse consent to take part in work set by teachers for example. I tried to minimise the power differential in other ways. I ensured that participants understood what their involvement consisted of, making it clear that there would be no negative consequences to not participating. I also sought feedback after they had completed the study and encouraged questions at all stages (Nixon et al., 2022; UK Research and Innovation, 2023). I discussed these concerns with the panel of experts at the design stage and they suggested: ensuring participants had an alternative task to complete so they could opt out discreetly, providing examples of the questions and reassuring them that data from other questionnaires would never be passed onto their parents. Therefore, I attempted to be sensitive to this power dynamic, but despite my attempts to mitigate it, it was inevitably at play within this project.

1.3 Synergy

The high degree of synergy between the systematic review and empirical project was a major success of the project. The systematic review provided the conceptual basis for the relationship between family functioning and supportive peer relationships, and this was built upon in the empirical project.

Through the two projects my conceptualisation of family functioning developed. In the systematic review I used Olson's circumplex model (2000) to organise the findings. This model was used in several other systematic reviews (Desquenne Godfrey et al., 2024; Izzo et al., 2022; Van Schoors et al., 2016) and spanned several different constructs contained in other models of family functioning (Olson et al., 2000). However, during the review process, I uncovered concerns associated with the psychometric properties of the questionnaires based upon this model (FACES, Olson et al., 1983). To address this within the empirical project, I used a different conceptualisation and measure of family functioning - the SCORE-15 (Stratton et al., 2010). This measure has strong psychometric properties (Hamilton & Carr, 2016), and is not based upon any one theoretical foundation. It was developed by reviewing existing measures (Janes, 2005), research-based indicators of good family functioning and through therapist judgment (Stratton et al., 2010). The results showed the measure had good internal consistency, supporting the decision to use it.

However, there was still a degree of disparity between the two studies, most notably in replicating methodological issues highlighted in the systematic review. These included limitations in sample, design and measurement.

1.4 Disparity

1.4.1 Sample. The empirical project attempted to address the lack of diversity in the systematic review samples by recruiting the majority of participants from state schools in London, the most diverse city in the UK (ONS, 2023). The sample was ethnically diverse, with 55.31% from a non-white background, however several other marginalised groups were not represented, such as participants with gender non-conforming identities or from low SES families.

The skew towards the high SES background of the participants was a result of difficulties with recruitment. All the schools were recruited through either a personal contact of my supervisor, having attended the school myself, or knowing someone who worked there. My supervisor and I were both from high SES backgrounds, and the schools we attended or had personal contacts with reflected this. I tried to mitigate this by contacting more state schools in London, as well as

schools that were not offering A-levels (i.e. those offering vocational courses such as BTECs) but was ultimately unsuccessful.

I tried to not recruit only psychology students, as I knew this would heavily skew the gender of the participants towards female. However, time pressure within the curriculum meant that no other subject teachers could participate. Psychology teachers and students valued learning more about psychological research methods as it is part of the A-level syllabus. As a result, the sample was 85% female.

It was not unexpected that too few participants identified as non-binary or transgender to conduct a separate analysis to examine these participants unique experiences further. However it saddened me to place three students who identified as other than male or female into a binary category based upon their gender assigned at birth, as this mirrors the transphobic society in which these individuals live. However, this was necessary both so that t-scores from the RCADS could be calculated and to preclude loss of power.

1.4.2 Design and measurement. The design of the empirical study mirrored the cross-sectional, single informant, self-report design of most studies in the systematic review. Time constraints prevented me from applying a longitudinal research design. It was also not possible to collect data in the temporal sequence required to establish family functioning difficulties as the cause of internalising difficulties. To best achieve this, data on family functioning difficulties should be collected from birth, however I was unable to access data from birth cohort studies (Letourneau et al., 2013; Van Hulst et al., 2022; Velders et al., 2011).

This research also replicated another common limitation - the use of single-information self-report measures. To collect measures from other family members would have been theoretically possible, but incredibly challenging within the time limits of the study. The more complex recruitment and consent process would likely have resulted in a smaller sample size resulting in loss of power (Homburg et al., 2012). Similarly, time restraints and lack of funds made it hard to use observational techniques such as the System for Coding Interactions and Family Functioning to measure family functioning (SCIFF, Lindahl & Malik, 2000). Here families visit a laboratory and are prompted to have discussions on topics they have previously identified as common areas of conflict, which are then taped and coded (Waller et al., 2019).

2.0 Impact

In this section, I outline the impact of the findings in these key areas:

- Early intervention, prevention and treatment of internalising difficulties

- Psychological theory
- Myself as a researcher
- The participants

2.1 Early intervention, prevention and treatment of internalising difficulties

Early intervention and prevention of mental health difficulties in adolescents has been considered through whole-school approaches, led by Mental Health in Schools Teams (MHSTs). Treatment is delivered both through MHSTs, via practitioners trained to deliver low intensity interventions, and community-mental health teams, who treat more complex difficulties.

The study has several implications. Within whole-school approaches, adolescents, teachers and parents should all be taught how to recognise and intervene with maladaptive emotion regulation strategies. This study needs to be replicated in clinical samples, however as several studies have shown that family functioning difficulties are related to clinical levels of internalising difficulties (Scully et al., 2020a), tentative recommendations are made for treatment of clinical difficulties. Currently, the recommended treatment for mild to more severe difficulties is individual CBT over a family-based treatment approach (The National Institute for Health and Clinical Excellence (NICE), 2023). However, clinicians treating internalising difficulties could helpfully ask the adolescent about any family functioning difficulties, formulate their impact, and include family members in treatments.

2.1.1 Context. Increasing access to timely mental health support for adolescents has been outlined as a priority in several green papers and NHS strategies. The Long Term Plan (NHS, 2019) lays out the strategy for mental health services for child and young people for the next 10 years and states that the "the NHS will continue to invest in expanding access to community-based mental health services…[and that] by 2023-24, at least an additional 345,000 children and young people aged 0-25 will be able to access support via NHS funded mental health services and school or college-based MHSTs" (NHS, 2019, p,50).

A whole school approach to mental health was proposed in the 2017 green paper, Transforming Children and Young People's Mental Health Provision (Department of Health and Department for Education, 2017). This was opperationalised through MHSTs and the initial 2017 funding commitment was expanded within the Long Term Plan.

In relation to early intervention and prevention, the principes for the whole school approach include "curriculum teaching and learning to promote resilience, support social and emotional learning" and "working with parents and carers" (Department for Education, 2021, p.1).

However, no details were provided on how to implement these principes. In 2022, NICE published guidance stating that “evidence-based, culturally appropriate information about social, emotional and mental wellbeing [should be taught] to develop children and young people's knowledge and skills as part of the whole-school approach” (NICE, 2022, p.41). Again, no details on what this should include were given.

NICE outlines the following gold-standard evidence based psychological interventions to treat internalising difficulties. For adolescents (12-18) with mild-moderate clinical levels of anxiety or depression, the first line intervention is individual CBT (NICE, 2023). Family based treatments are only recommended for mild-moderate cases of depression following the failure of individual approaches, and as a first line treatment for moderate to severe presentations (NICE, 2019). Family based approaches are not recommended for treatment of any anxiety disorders (NICE, 2005; NICE, 2013). As a result, most clinicians working with adolescents deliver CBT. The Children and Young People’s Improving Access to Psychological Therapies programme (CYP IAPT) programme, first developed in 2011, was created to deliver individual CBT to adolescents (Department of Health, 2011; Fonagy et al., 2017). In MHSTs, Education Mental Health Practitioners (EMHPs) are trained in individual low intensity CBT (NHS, 2020).

2.2.1 Clinical implications

Whole school approach. As the results showed a significant effect for the processes of rumination and emotional non-acceptance on internalising difficulties, psychoeducation on these processes and how to intervene to interrupt them should be provided to adolescents, teachers and parents as part of the whole school approach.

There are a plethora of evidence-based interventions which reduce the process of rumination in adolescents (Moltrecht et al., 2021b). Online rumination focused CBT approaches have been successfully trialled as early intervention strategies within schools (Topper et al., 2017). Despite the effectiveness of CBT interventions for rumination, there is little guidance for individuals, parents and teachers for identifying and targeting rumination processes. A notable exception is MindWell in Leeds, a NHS funded mental health website, which provides guidance on recognising and stopping the process of rumination (MindWell, 2019). Further guidance which simply distils the effective CBT interventions should be developed.

No successful early intervention and prevention programmes for emotional non-acceptance were identified (Eadeh et al., 2021). Theoretically, mindfulness should be helpful. However, a recent large-scale trial in 11-14-year-olds for mindfulness in schools found higher self-reported

ADHD, panic disorder and OCD symptoms and lower mindfulness skills at 1 year follow up (Kuyken et al., 2022; Montero-Marin et al., 2022). It is vital that evidenced based early interventions targeting the process of emotional non-acceptance are developed.

Psychological interventions. Evidence for the underlying emotion regulation difficulties linking both depression and anxiety symptomologies, suggests that when they co-occur for an individual they could be helpfully treated as a single condition.

From low intensity interventions to treatment for moderate-severe difficulties in internalising and peer relationships, family dynamics should be considered in assessment and formulation and family members included in treatment. Clinicians and families should be supported to understand and treat the links between a family's strength in supporting each other and adapting to changes, emotional socialisation, use of maladaptive emotion regulation strategies and internalising difficulties. For peer relationship difficulties, the link with family functioning difficulties should also be emphasised.

Individual CBT is still the predominant approach to treating internalising difficulties (NICE, 2023) but these recommendations could be integrated into training and treatment delivery within both schools and other services. The CYP IAPT programme already has parental involvement, teaching "simple questioning styles and behavioural techniques which allow their CYP to engage more actively in challenging negative thoughts and changing toxic behaviours" (Wood, 2021, p.2). As helpful as this may be in targeting the maladaptive emotion regulation process, it does not formulate and treat family functioning difficulties. Instead, at the assessment stage the adolescent could be asked about family functioning difficulties. Parents/other family members could also be invited to the assessment or asked to complete questionnaires assessing for these difficulties. Family functioning could then be included in the CBT formulation in relation to the individual's emotional socialisation, especially around maladaptive emotion regulation strategies or avoidance behaviours (Morris, Criss, et al., 2017). Treatment could then be modified to include the family, or family groups could be set to offer psychoeducation on the link between family functioning and internalising difficulties. The family's strength in supporting each other and adapting to changes could be supported by teaching better communication skills or supporting family members in managing their own stress with interactions such as mindful parenting (J. Kabat-Zinn & Kabat-Zinn, 2021; M. Kabat-Zinn, 2009) or using more adaptive emotion regulation strategies. Questioning styles and behavioural techniques to intervene with maladaptive emotion regulation strategies could remain (Rudy et al., 2017; Thirlwall et al., 2017).

2.2.3 Broader systemic factors. Systemic models aim to embed difficulties with whole family functioning within the broader societal context (Dallos & Draper, 2015; Stratton, 2016). Poverty is known to have an impact upon family functioning (Banovcinova et al., 2014; Negrão et al., 2014) and it is estimated that one in three children in the UK lives in poverty (Sinha et al., 2020). Parents experiencing economic stress offer reduced levels of involvement and sensitivity and display increased hostility with more negative displays of emotion (Banovcinova et al., 2014; Negrão et al., 2014). However, the 2017 government report entitled 'Helping Parents to Parents' (Clarke & Younas, 2017) aimed to review evidence for ways to mitigate the impact of poverty on parenting. The empirical project reported the direct effect of parental unemployment on depression and supportive peer relationships in adolescents. Government policies to reduce poverty, would reduce this burden upon individual families.

2.2.3 Evidencing the benefits. The impact of these clinical recommendations could be measured at a national level by looking at changes in levels of internalising difficulties in adolescence. Routinely collected data e.g. by NHS digital could be used. Whole school approaches and clinical interventions could also use questionnaires to measure family functioning, use of maladaptive emotion regulation strategies, and internalising difficulties, in both adolescents and parents, to capture changes. Moreover, the potential bidirectional impact of the reduced use of maladaptive emotion regulation strategies in adolescents on family functioning could be recorded.

2.2 Theoretical impact

Across developmental psychology there is a need for multi-factor explanatory models, particularly those that combine learning from different psychological perspectives (Patalay & Fitzsimons, 2016). A number of researchers are building large explanatory models for the development of internalising difficulties and supportive peer relationships (Mitic et al., 2021; Patalay & Fitzsimons, 2016; Sebastian et al., 2021). Patalay & Fitzsimons (2016) examined the correlation between 10 different variables and internalising difficulties but did not include either specific emotion regulation strategies or family functioning. Mitic et al., (2021) reviewed the determinants of peer relationships in adolescents but did not include family functioning. This research could contribute to these large-scale models.

The use of the SCORE-15 questionnaire to examine specific family functioning processes in relation to both relational and cognitive processes was also unique. To the authors knowledge, the SCORE-15 is still predominant within clinical practice and the associations between each dimension and clinical outcomes is rarely considered. This research makes a strong case for

both process-based family functioning research and the use of the SCORE-15 questionnaire in this research. Process based family functioning research allows for the difficulties which have the greatest impact upon psychological distress to be assessed for and targeted.

2.3 Impact on me as a researcher

My interest in this project was ignited at a specialist systemic therapy placement. My supervisor opened my eyes to the many ways in which individual mental health difficulties relate to relationships with family members and society more generally. The theory-practice link was made during the assessment of a family where the daughter was presenting with psychosis. I read about the double-bind theory (Bateson et al., 1956; Cullin, 2006) and then witnessed the opposing messages she was receiving from her brother, mother and father about how to elicit care, and how her symptoms were a logical conclusion to the complexities in family functioning she lived within. Subsequently, a particularly successful case, where I treated an adult mother-daughter pairing, made me question some of the individual work I had done with adolescents on previous CAMHS placements. In the systemic placement I saw firsthand the added challenges of involving other family members, particularly with more complex cases, but also wondered whether interventions that do not tackle complex family dynamics head on could be less effective.

The current project was my first systematic review or quantitative project. I have always favoured a qualitative approach. The learning curve was steep and in hindsight more time spent on the design of both projects could have avoided some of the resulting methodological limitations. My inexperience left me without an early overview of the entire process and a lack of understanding of the consequence of each decision. Qualitative research seems to offer more flexibility. Using a semi-structured interview schedule for example means that interesting patterns that arise in interviews can be explored further in subsequent interviews in an iterative way. It was frustrating that throughout both projects, when interesting findings or suggestions arose, I was unable to incorporate them.

2.4 Impact on participants

By collecting data in person, I was able to witness the impact my research was having upon the adolescent participants. They engaged well in the presentation I delivered about research methods and in subsequent discussions about the purpose of the study and the critique of the methodology. The teachers and I supported them to think about systemic risk factors related to the development of mental health difficulties. They highlighted the role of death of pets, exam

pressure (from self, parents and teachers) and parental mental health. They raised several novel criticisms of the questionnaires used in the study, which I included in the limitations of the empirical project. These conversations highlighted the importance of involving experts by experience when conducting research.

After completing the study, one student discussed their emotional difficulties with me and the teacher. I hope that this student, and any others who were struggling, were encouraged to seek professional support. I aimed to role model the kindness and empathy they might expect from a clinical psychologist, breaking down barriers to seeking support. Several students expressed a desire to become a clinical psychologist, and I encouraged them to contact me in the future for help (with their teachers copied into any emails).

3.0 Dissemination

The dissemination plan was informed by the National Institute for Health and Care Research guidance on principles of good dissemination (NIHR, 2019). Key stakeholders have been identified including: adolescents and their families, educators, clinicians working with adolescents, researchers and policy makers.

Firstly, the research will be disseminated to participants. During the data collection process both teachers and participants were very engaged and keen to see the results. In line with NICE guidance (2019) I will focus upon formatting the results in an appropriate way so that they are understandable and useful to the participants. A vlog might be a good way to continue the personal relationship I developed with participants (Hammond & Cooper, 2011). The summary will also be shared on my personal and professional social media platform, as well as those of my supervisors, with encouragement for readers to share it further with other relevant stakeholders.

The research will also be disseminated to future clinicians through a research presentation to clinical psychology trainees on the Royal Holloway doctorate. This will include an overview of the study design and findings, followed by a discussion. A copy of the thesis will be uploaded onto Royal Holloway's online repository (PURE). This can be accessed by both staff and students.

Several conferences have been identified at which to present the findings. These include: the developmental psychology section of the British psychological Society (BPS), the Association for Child and Adolescent Mental Health (ACAMH) and the Association for Family Therapy and Systemic Practice (AFT). The presentation could either involve an individual poster or

presentation, or a symposium with two other qualified Royal Holloway students (Butler and Tomaselli) who also completed projects examining the relationship between family functioning and adolescent mental health difficulties.

Submission for publication of the systematic review and empirical project will be an important step in disseminating the research to educators, clinicians, researchers and policy makers. Several journals will be considered - selected for a focus on adolescent mental health and systemic therapy:

- Journal of Family Therapy
- Journal of Adolescence
- Journal of Child Psychology and Psychiatry (JCPP)
- Child and Adolescent Mental Health Journal (CAMH)
- Plos One

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Appendices

Appendix A: List of excluded peer relationships questionnaires and reasons for exclusion

Questionnaire/method	Description of questionnaire	Reason(s) for exclusion
The Peer Relations Questionnaire	Includes three subscales; bully, victim and social subscale.	The majority of questions focus on negative relationship experiences rather than the subjective interpersonal qualities of relationships The social subscale describes the experience of being a social person (e.g. I like to make friends), rather than the qualities of the relationships
Friend Nominations	Participants were asked to name up to five of their best friends in their grade at school, starting with their very best friend. In addition, they were asked to name up to five same-gender students in their grade with whom they did not like to spend time. From these nominations, social-preference scores were computed for each participant as the number	Measure focuses on the quantity of established social connections.

	of positive nominations received minus the number of negative nominations received	
Peer Relationship Scale	Subscales include: feelings of loneliness and social adequacy/inadequacy, estimations of peer status and filler items to help children feel more relaxed and open about indicating their attitudes about various topics	Measure focus on the psychosocial consequences of a lack of supportive peer relationships, e.g. feeling lonely Measure also focuses on quantity of relationships Questions on social adequacy and inadequacy (e.g. I'm good at working with other children") gives a measure of social competence rather than examining relational quality
Youth Self Report (YSR)	The degree of emotional and behaviour problems experienced in social interactions with peers were measured via three items from the YSR.	Only 3 items were used Measure focuses on internalising and externalising symptoms which are experienced in social interactions in peers. The measures does not corresponds to the provisions outlined by Weiss.
Social Network Risk	Network risk was measured by asking subjects about the smoking habits of their best friends	Assessing relationships to peers who are engaging in anti-social behaviours.

The Peer Delinquency Scale of the Pittsburgh youth study interview	Number of friends of the subject that have engaged in a variety of antisocial and delinquent behaviours over the past 6 months. These behaviours range from skipping school without an excuse, to using weapons, to using force to commit robbery.	Assessing relationships to peers who are engaging in anti-social behaviours.
Child Behaviour Checklist, parent version (CBCL)	A peer relations subscale of three items was created from items 25 (“Does not get along with other kids”), 38 (“Gets teased a lot”), and 48 (“Not liked by other kids”) of the caregiver-reported CBCL	Only contained 3 items.
The Experiences in Close Relationship scale	Measures attachment style and close relationships. It contains 36 items, measuring attachment styles of respondents using two bidirectional subscales namely avoidance of intimacy and closeness and anxiety about being rejected, feelings of jealousy and fears of abandonment.	Not specific to peer relationships – includes questions about romantic relationships.
Adolescent Social Connection and Coping during COVID-19 Questionnaire	This questionnaire was developed during the COVID-19 outbreak to assess adolescents’ connection means and perceived connectedness when following physical	Questionnaire specific to experiences the COVID-19 lockdown.

	distancing restrictions. After asking how often adolescents connected by these means with their peers, we asked how socially connected this made them feel.	
SDQ Peer Relationships Problem Subscale	A brief emotional and behavioral screening measure of children and adolescents aged 3 through 17 years.	Only contains 3 questions
The Peer Affiliation Measure	Assesses four different aspects of peer affiliation: (a) the frequency in which the youth affiliated with delinquent peers (peers who use weapons, skip school on a 4-point scale from never, seldom, often, to frequently); (b) involvement with prosocial peers (peers are involved in clubs, do homework, want to go to college, ranging on a 4-point scale from never to frequently); (c) the frequency of free time with peers; and (d) parent-peer affinity—the proportion of the youth's friends the parents like (4-point scale from none, few, some, all), and degree to which parents and the youth's peers liked each other.	Focuses on association with peers who engage in certain prosocial or antisocial behaviours.

Adolescent Social Connection and Coping during COVID-19 Questionnaire	This questionnaire was developed during the COVID-19 outbreak to assess adolescents' connection means and perceived connectedness when following physical distancing restrictions.	Questionnaire specific to experiences in lockdown.
Peer Victimization Questionnaire	A seven-item questionnaire was used to measure how often adolescents were exposed to aggression from peers	Questions focus on negative relationships experiences rather than the subjective interpersonal qualities of relationships.
Adolescent Family and Social Life Questionnaire	Used to evaluate participants' family conflict, rank and subjective perception with respect to the peer group, and connectedness to school	Unable to access copy of questionnaire to assessment whether the peer group subscale met the inclusion criteria.
The Interpersonal Competence Questionnaire	Contains items assessing multiple aspects of interpersonal abilities, for example, abilities to initiate relationships; provide emotional support to other people; assert influence by convincing other people; unveil personal thoughts, feelings or opinions; and resolve conflicts	Measure of adolescent social skills, which does not provide information on the quality of peer relationships.
The Child Adaptive Behavior Inventory	Contains items assessing children's academic and social competence, problematic social	Measure focuses on behaviour, social competence and acceptance/rejections,

	behaviors, and teachers' view of whether the child is accepted or rejected by peers.	which do not map onto the subjective interpersonal qualities of relationships.
The Relationship Questionnaire	A self-report measure designed to provide continuous ratings of attachment patterns	Not specific to assessing the provision of attachment in relation to peer relationships.
Positive peer influence questionnaire	Assesses the degree of positive peer influence each participant received from various sources such as his or her best friend, his or her group of friends and wider peers in his or her community, and young people in the popular culture and media.	Assessing influence on peers (and other sources) in relation to antisocial behaviours.
Problem Oriented Screening Instrument for Teenagers: Peers	10-item scale examining associations with deviant peer groups	Assessing association with peers engaging in anti-social behaviours.
Eyberg Child Behavior Inventory	This instrument was used to assess conduct/behavior problems in children. The ECBI is a parent-rated scale of child behavior that measures the intensity or frequency of the behavior and whether the behavior has been a problem for the parent.	Assessment of conduct or behavioural problems.

Multi-Perspective Multi-Domain Self-Concept Inventory	The 32-item MMSI was designed to measure students' self-concept in four domains, namely academic (8 items), social (8 items), appearance (8 items), general (8 items) in perspectives of reflected parental appraisal, reflected school appraisal, upward comparison, downward comparison, and global perception.	Unable to access copy of questionnaire to assessment whether it met the inclusion criteria.
UCLA Social Attainment Survey	Evaluates social functioning in the areas of peer relationships, romantic relationships, and involvement in activities during ages 16–20. UCLA SAS comprises the seven following items: 1. Same-sex peer relationships, 2. Leadership in same-sex peer relationships, 3. Opposite-sex relations, 4. Dating history, 5. Sexual experience, 6. Outside activities and 7. Participation in organizations	More than half of the questions assess factors not relevant to the social provisions, e.g. romantic relationship history or participation in organisations.
Prosocial Behavior Questionnaire	Evaluating the different behaviours of help used by participants, such as sharing, understanding, encouraging and collaborating with peers.	Measure focusing on behaviours than individuals engage in with peers which are prosocial, but do not provide information on the individuals experience of the quality of the relationships.

The MOS Social Support Survey – adapted for use in COVID-19	This tool measures social support across four dimensions: 1) emotional/informational, 2) tangible, 3) loving, and 4) positive social interactions. A sample item is “Since the beginning of the COVID-19 lockdown measures, how often have you had someone with whom to share your worries and your most intimate fears?	Specific to experiences of peer relationships in the COVID-19 lockdown.

Appendix B: Social provisions measured in included supportive peer relationships questionnaires

Study	Questionnaire	Social Provisions					
	Measure	Attachment	Social integration	Reassurance of worth	Reliable alliance	Guidance	Opportunity of nurturance
Law, Cuskelly & Carroll (2013); Australia	Friendship Quality Scale	X					
Gauze, Bukowski, Aquana-Assee & Sippola (1996); Canada	Friendship Quality Scale	X			X	X	
Prinstein, Boergers, Spirito, Little & Grapentine (2010); USA	Social Support Scale for Children and Adolescents (SSSCA) – close friend subscale	X					
Van Harmelen, Gibson, Clair, Owens, Brodbeck,	Cambridge Friendship Questionnaires	X					

Dunn, Lewis, Croudance, Jones, Kievit & Goodyer (2016); UK		
Ying, Shuang & Jia (2023); China	Inventory of Parent and Peer Attachment	X
Sun, Hui & Watkins (2006); Hong Kong	Perceived Social Support	X
Cumsille & Epstein (1994); USA	Perceived Social Support	X
Pilgrim, Abbey & Kershaw (2004); USA	Inventory of Parent and Peer Attachment	X
Sheftall, Mathias, Furr & Dougherty (2013); USA	Inventory of Parent and Peer Attachment	X

Schwartz (2006); USA	Peer support subscales from the Social Support Appraisal Scale	X
Engels, Dekovic, Meeus (2002); The Netherlands	Inventory of Parent and Peer Attachment	X

Appendix C: Justification of Inclusion and Exclusion Criteria

Inclusion Criteria	Justification
Age: The mean age of the sample was between 10-19 years.	The World Health Organization's definition of adolescence as between 10-19 years old (WHO, 2023) was used. The mean age, rather than the age range of the sample needed to be between 10-19, so as not to exclude papers where a small number of participants fell outside of the age range. This was relevant to papers including participants based on their school year, rather than age. However, participants at the upper end of the age range must not be attending college or university.
Clinical Characteristics: Participants were drawn from both clinical and non-clinical samples. Clinical samples were defined through their mental health diagnosis or interactions with inpatient/outpatient mental health services either as individuals or families.	The aim of the research was to understand the relationship between the variables in the context of vulnerability for developing mental health difficulties.
Design: Quantitative studies of a cross-sectional, cohort, longitudinal (retrospective or prospective) or intervention design.	Restrictions were placed on the age range of participants within the longitudinal designs to ensure that the focus of the study was still the adolescent period.
Longitudinal studies were only included if the average age of participants was between 10-19 years old when data on the variables of interest were collected.	Restrictions were placed on data that could be extracted from intervention studies to ensure that baseline data, rather than the

Intervention studies were only included if data on the variables of interest was collected prior to the intervention.

effect of the intervention was being collected.

Family variables: Studies were included if an assessment of whole system family functioning was used. A full list of eligible terms is included in Appendix 2.

There are a number of different theoretical models of family functioning which have been used to develop the different questionnaires, all of which will be included in the study.

In the review the family functioning literature will be organized around the dimensions of cohesion, flexibility, communication and conflict. However, studies which include a measure of 'general' family functioning or other dimensions of family functioning will be included.

Inclusion criteria for the questionnaires have been created to ensure the questionnaires are: of a high standard, thoroughly examine the variable of interest and are available to the researcher to check whether the questions in the measure meet the inclusion criteria.

However, the questionnaire must:

- Be available in English and accessible to the researcher.
- Be validated for use in adolescent or adult/parents samples, in line with the age of the person completing the measure.
- The questionnaire/subscale must include more than 3 items.

Peer relationship variables: Studies included an assessment of supportive peer relationships which included at least one aspect of Weiss's Social Provision's Model (1974). Weiss' model includes 6 variables: attachment, social integration, reassurance of worth, reliable alliance, guidance, opportunity of nurturance. (See Appendix 3 and 4 for a further definition of the criteria and a list of included and excluded questionnaires).

The questionnaire must:

- Be available in English and accessible to the researcher.
- Be validated for use in adolescent or adult/parents samples, in line with the age of the person completing the measure.
- The questionnaire/subscale must include more than 3 items.
- The majority of questions in the measure must focus on the qualities of peer relationships as defined by Weiss.
- The questionnaire must not be specific to the experience of being lockeddown in The COVID-19 pandemic.

The inclusion criteria were defined using Weiss's Social Provisions model, which encompasses a number of different theories, and is the most well used and validated model (Cutrona & Russell, 1983).

Inclusion criteria for the questionnaires have been created to ensure the questionnaires are: of a high standard, thoroughly examine the variable of interest, and are available to the researcher to check whether the questions in the measure meet the inclusion criteria.

It is anticipated that a number of measures may not thoroughly measure supportive peer relationships, and instead may be a subscale of a questionnaire measuring social-emotional difficulties more generally. To exclude these measures, it is necessary for the questionnaires to contain more than 3 items.

Additionally, it is anticipated that some measures may examine a number of different constructs - for example one measure may look at both experiences of bullying and supportive peer relationships. To ensure that the construct is thoroughly measured, the

	majority of the questions on the measure must focus on supportive peer relationships. (See Appendix 5 for a list of measures that did not meet the inclusion criteria and why.) Questionnaires were excluded on the basis of being specific to the COVID-19 lockdown period, as it was outside the scope of the study to examine the impact of the pandemic on family and peer relationships.
Analysis: Studies included an assessment of the relationship between at least one aspect of family functioning and supportive peer relationships as defined in the inclusion criteria.	Studies using the following statistical tests were included: bivariate correlations, regression analysis, path analysis and structural equational modelling (SEM).
Report Characteristics: Studies were included if they were available in English, were published between 1990 and 2023 and were peer reviewed.	These criteria were applied to ensure a minimum standard of quality across the studies as well as a number of practical considerations. As recommended by Mitic (2021), in order to increase the translatability of the findings to the current context of adolescent peer relationships, only articles published after 1990 were included.

Exclusion criteria	Justification
Sample: Sample primarily characterized by the adolescent or parent/carers having a diagnosis of: • Neurodiversity, such as ASD or ADHD • Learning disability • Medical difficulties (e.g. cancer, chronic pain, diabetes).	The aim of the study is to understand the variables in relationship to the individuals vulnerability to mental health conditions, and it was outside the scope of this review to understand the variables in relation to atypical development, or development in the context of medical difficulties.
Family variables: Assessment of the family system focused on parental or dyadic factors. (See Appendix 2 for a full list of the excluded terms.)	Several other reviews have focused on the impact of parenting factors, marital discord and dyadic factors such as parent-adolescent attachment on the adolescent's peer relationships (Brown & Bakken, 2011). The unique contribution of this study to the literature base is in focusing on the understudied concept of whole family system functioning.
Peer relationship variable: Assessment of peer relationships which focused on other aspects of peer relationships such as quantity of friendships, anti-social behaviors completed with peers, negative experiences with peers such as bullying and psychosocial consequences of a lack of peer relationships such a loneliness and isolation.	The aim of this review is to fill a gap in the research which understands the factors which relate to the development of supportive peer relationships, rather than the aspects of peer relationships listed which have already been studied extensively. (See Appendix 4 and 5 for further details of excluded terms and measures).

Appendix D: Examples of whole system family functioning terms to include and exclude

Included or excluded	Category of terms	Examples of terms
Included	Whole system family functioning	Family functioning, family dysfunction, family cohesion, family adaptability, family cohesion, family flexibility, family communication styles, family conflict, family support, general family functioning
Excluded	Parenting characteristics	Parenting styles, parental control, parental warmth, parental expressiveness
	Characteristics of the parent-child dyad	Parent-child attachment, parent-mother attachment, parent-father attachment, attachment styles
	Additional dyadic components of the family system	Marital relations, marital conflict, marital discord, sibling relationships, sibling conflict
	Adolescent, parent/carer or sibling diagnosis of neurodiversity or learning difficulty	Autism, ADHD, and specific or global learning difficulty
	Adolescent, parent/carer or sibling diagnosis of a medical condition	Cancer, diabetes, chronic pain, spinabifida

Appendix E: Definition of Weiss' Social Provisions, example questions from the Social Provision scale and examples of included terms

Provision	Definition	Example questions (from Social Provision Scale)	Examples of included terms
Attachment to peers	Measure of emotional closeness provided by relationships	I feel a strong emotional bond with at least one other person I feel that I do not have close personal relationships with other people I have close relationships that provide me with a sense of emotional security and well-being I lack a feeling of intimacy with another person	Security, trust, closeness, intimacy
Social integration	A sense of belonging to a group that shared common interests, concerns, and social activities	There are people who enjoy the same social activities I do I feel part of a group of people who share my attitudes and beliefs	Belongingness, integration, shared beliefs, interests, social activities and concerns

		There is no one who shares my interests and concerns	
		There is no one who likes to do the things I do	
Opportunity for nurturance	A sense of being relied upon by others and that the individual is responsible for the care of others	There are people who depend on me for help	Responsible for others, being relied upon, supporting others
		I feel personally responsible for the well-being of another person	
		There is no one who really relies on me for their well-being.	
		No one needs me to care for them	
Reassurance of worth	Recognition of the individual's competence/values/skills by others	There are people who admire my talents and abilities	Admiration, recognition of talents and skills
		Other people do not view me as competent	

		I have relationships where my competence and skills are recognised	
		There are people who admire my talents and abilities	
Reliable alliance	Assurance that social relationships can be relied on for the provision of tangible aid/help	There are people I can depend upon to help me if I really need it	Help from others, counting on others, depending on others, someone to talk to
		There is someone I could talk to about important decisions in my life	
		There is no one I can depend on for aid if I really need it	
		There are people I can count on in an emergency	
Guidance	Having people available who can provide trustworthy suggestions, solutions, and advice when needed	There is no one I can turn to for guidance in times of stress	Advice, guidance, support
		If something went wrong, no one would come to my assistance	

There is a trustworthy person I could turn to for advice if I were having problems

There is no one I feel comfortable talking about problems with

Appendix F: Examples of terms excluded from the definition of supportive peer relationships

Category of terms	Examples of terms
Negative peer relationship experiences	Being bullied or bullying other, cyber-bulling, victimization
Psychosocial consequences of a lack of supportive peer relationships	Loneliness, isolation
Romantic relationships	Dating, boyfriend, girlfriend, partner, romantic relationship
Antisocial behaviours	Delinquency, risk taking, taking illegal drugs, smoking cigarettes, drinking alcohol, internet, gaming or social media addiction, risky sexual behaviours, juvenile offending behaviours, being involved with a deviant peer group
Adolescent social skills	Social skills, social competence
Quantity of friendships	Sociometric status, network analysis, popularity
Experiences at the group level	Peer group acceptance or rejection

Appendix G: Quality Appraisal ratings for all articles included within the Systematic Review

Quality Assessment Table based on the Joanna Briggs Critical Appraisal Checklist for cross-sectional studies (Briggs, 2017)

Study	Quality assessment items								Global Quality Rating	Global Quality Classification
	Are the aims and objectives of the research study clearly stated?	Were the key criteria for inclusion in the sample clearly defined?	Were the study subjects and the setting described in detail?	Was the exposure (risk) factor measured in a valid and reliable way?	Were confounding factors identified?	Were strategies to deal with confounding factors stated?	Were the outcomes measured in a valid and reliable way?	Was appropriate statistical analysis used?		
Law, Cuskelly & Carroll (2013)	✓	×	✓	-	×	-	✓	✓	10	Moderate-high
Gauze, Bukowski, Aquana-Assee & Sippola (1996)	✓	-	✓	-	-	-	-	✓	8	Moderate
Prinstein, Boergers, Spirito, Little & Grapentine (2010)	✓	✓	✓	-	✓	✓	-	✓	14	High

Van Harmelen, Gibson, Clair, Owens, Brodbeck, Dunn, Lewis, Croudance, Jones, Kievit & Goodyer (2016)	✓	-	-	-	✓	✓	-	✓	12	Moderate-high
Ying, Shuang & Jia (2022)	✓	-	✓	✓	-	×	✓	✓	12	Moderate-high
Sun, Hui & Watkins (2006)	✓	-	✓	-	✓	✓	✓	-	13	Moderate-high
Cumsille & Epstein (1994)	✓	✓	✓	-	✓	✓	✓	✓	15	High
Pilgrim, Abbey & Kershaw (2004)	-	-	-	✓	-	✓	✓	✓	12	Moderate-high
Sheftall, Mathias, Furr & Dougherty (2013)	✓	✓	✓	-	×	×	-	✓	10	Moderate-high

										Green Sticker
Schwartz (2006)	✓	-	✓	-	×	×	✓	✓	10	Moderate-high
Engels, Dekovic, Meeus (2002)	✓	-	✓	✓	×	×	-	✓	10	Moderate-high

Note. Ratings are as follows; '✓' = Yes, '-' = unclear, '×' = no

Appendix H: Ethical Approval received from Royal Holloway University Ethics Committee

Email received from ethics@rhul.ac.uk on the 8th September 2023

Subject: Result of your application to the Research Ethics Committee (application ID 3763)

PI: Dr Helen Pote
Project title: Risk and protective factors for depression and anxiety in adolescence: friendships, family functioning and emotion regulation.

REC ProjectID: 3763

Your application has been approved by the Research Ethics Committee.
Please report any subsequent changes that affect the ethics of the project to the University Research Ethics Committee ethics@rhul.ac.uk

Appendix I: Headteacher consent form

Approval for Doctoral Thesis Research

The project aims to examine the relationship between family functioning (i.e. the way in which families interact and treat with another), adolescents' methods of managing their emotions, their relationships with their friends and experiences of anxiety and/or low mood.

This study has been approved by the Joint Chair for Research Sub-committee, Professor Andy Macleod as well as the University of Royal Holloway Ethics Committee (REC ProjectID: 3763).

The project is being supervised jointly by Professor Helen Pote (Director of Clinical Programmes for Psychological Practitioners, Course Director, Doctorate in Clinical Psychology) and Dr Olivia Tomaselli (Clinical Psychologist, Snowsfield Adolescent Unit, National and Specialist Child and Adolescent Mental Health Service, N&S CAMHS)

I hereby give permission for Annie Bird, Trainee Clinical Psychologist, to engage pupils from my school as participants in her Doctoral Thesis Research.

I am satisfied that this research falls within the range of usual activities for my pupils, and that I, as the member of staff legally responsible for my pupil's wellbeing, have assessed the risks of this study and have concluded that they are 'low' in accordance with the British Psychologist Society Code of Human Research Ethics. The definition of 'low-risk' research is that it involves innocuous, de-identified data gathering on non-sensitive topics' (2021, p12).

NAME OF SCHOOL:

FULL NAME:

SIGNAURE:

DATE:

Appendix J: Letter to parents/carers following elevated RCADS scores

To the Parents/Carers of [student name],

Re: Adolescent Mental Health Project

As you know, [student name] recently gave her permission to take part in a research project examining the relationship between family functioning and adolescent mental health. This project took place on the [date and school]. This project was led by Annie Bird, Trainee Clinical Psychologist and Dr Helen Pote, Clinical Psychologist.

We wanted to inform you that your daughter scored within the clinical range for overall [Anxiety, Depression or Anxiety and Depression] on the Revised Children's Anxiety and Depression Scale. This is not a comprehensive clinical assessment, however her scores indicate that she was experiencing some difficulties at the time of participating in this project and suggests that she may benefit from some additional support.

We invite you to contact [the school SENCo/pastoral team/tutor] to discuss any concerns you may have about her overall well-being. If you have serious concerns and would like to access further support, you may wish to discuss this with your GP.

Yours sincerely,

Ms Annie Bird

Trainee Clinical Psychologist Royal Holloway University, London

Dr Helen Pote

Clinical Psychologist

Royal Holloway University, London

Appendix K: Demographic Questionnaire

Please circle your answer

1. **What is your full name**

……

2. **What is your Date of birth?**

Day_____ Month_____ Year_____

3. **What school year are you in?**

Year 12 Year 13

4. **What is your gender identity?**

Female

Male

Non-binary (please type below the gender you were assigned at birth)

……..

Transgender

Prefer not to say

5. **How would you describe your ethnic background?**

White

- White - British
- White - Irish
- White – Gypsy or Irish Traveler
- White - Roma
- Other White

Black or Black British

- African
- Caribbean
- Other Black

Asian or Asian British

- Indian
- Pakistani
- Bangladeshi
- Chinese
- Other Asian

Mixed or Multiple Ethnic Groups

- Mixed White and Black Caribbean
- Mixed White and Black African
- Mixed White and Asian

Any Other Ethnic Background – please write below

……

6. **What is the occupation of your parents or carers?**

A parent or carer works and their job is:

1. ……..

OR Two parents or carers work and their jobs are:

1. ……
2. ……

OR No parent or carer works

7. **Have any of the following terms of diagnoses been used to describe your mental health status? (Please circle all answers that are true for you)**

I do not identify as having a mental health difficulty

Anxiety

Obsessive Compulsive Disorder

Social Anxiety Disorder

Specific Phobia

Depression

Eating Disorder

Post Traumatic Stress Disorder

Conduct Disorder

Other (please write)……

I prefer not to say

8. Have any of the following terms or diagnoses been used to describe your neurodiversity or learning difficulties? (Please circle all answers that are true for you)

I do not identify as neurodiverse

Autism

ADHD

Learning difficulty e.g. dyslexia or dyspraxia

Other (please write)……..

I prefer not to say

9. Are you currently on any medication to help you with any mental health difficulties or difficulties associated with your neurodiversity?

Yes

No

I prefer not to say

10. Have you ever received therapy or counselling for mental health difficulties or difficulties associated with your neurodiversity?

Yes

No

I prefer not to say

11. Has this support been from a child and adolescent mental health service (CAMHS)? Please circle your answer

I have not received any support

Yes – I have received support and it came from CAMHS

No – I have received support but it was not from CAMHS

I prefer not to say

12. Have you experienced any of the following events in the last year?

Moved house

Moved school

Death of a family member of friend

Separation or divorce of parents or carers

Parents, carers or sibling been seriously ill

I prefer not to say

Other (please write)…….

I have not experienced any of the above events

Appendix L: The Systemic Clinical Outcome Routine Evaluation Scale

We would like you to tell us about how you see your family at the moment. So we are asking you for YOUR view of your family. When people say 'your family' they often mean the people who live in your house. But we want you to choose who you want to count as the family you are going to describe. Do not think too long about any question, but do try and circle one box for each of the questions.

For each question, would you say this describes your family; very well, well, partly, not well or not at all

Who do you consider your family to be (e.g. parents, step-parents, siblings, aunts etc) - please write your answer below

……

1	In my family we talk to each other about things which matter to us	Very well	Well	Partly	Not well	Not at all
2	People often don't tell each other the truth in my family	Very well	Well	Partly	Not well	Not at all
3	Each of us gets listened to in our family	Very well	Well	Partly	Not well	Not at all
4	It feels risky to disagree in our family	Very well	Well	Partly	Not well	Not at all
5	We find it hard to deal with everyday problems	Very well	Well	Partly	Not well	Not at all
6	We trust each other	Very well	Well	Partly	Not well	Not at all
7	It feels miserable in our family	Very well	Well	Partly	Not well	Not at all
8	When people in my family get angry they ignore each other on purpose	Very well	Well	Partly	Not well	Not at all
9	We seem to go from one crisis to another in my family	Very well	Well	Partly	Not well	Not at all
10	When one of us is upset they get	Very well	Well	Partly	Not well	Not at all

	looked after within the family					
11	Things always seem to go wrong for my family	Very well	Well	Partly	Not well	Not at all
12	People in the family are nasty to each other	Very well	Well	Partly	Not well	Not at all
13	People in my family interfere too much in each other's lives	Very well	Well	Partly	Not well	Not at all
14	In my family we blame each other when things go wrong	Very well	Well	Partly	Not well	Not at all
15	We are good at finding new ways to deal with things that are difficult	Very well	Well	Partly	Not well	Not at all

Appendix M: The Revised Child Anxiety and Depression Scale-Child-25

For the following questions, please circle the one response that shows how often each of the following things happen to you. There are no right or wrong answers.

1	I feel sad or empty	Never	Sometimes	Often	Always
2	I worry when I think I have done poorly at something	Never	Sometimes	Often	Always
3	I would feel afraid of being on my own at home	Never	Sometimes	Often	Always
4	Nothing is much fun anymore	Never	Sometimes	Often	Always
5	I worry that something awful will happen to someone in my family	Never	Sometimes	Often	Always
6	I am afraid of being in crowded places (like shopping centers, the movies, buses, busy playgrounds)	Never	Sometimes	Often	Always
7	I worry what other people think of me	Never	Sometimes	Often	Always
8	I have trouble sleeping	Never	Sometimes	Often	Always
9	I feel scared if I have to sleep on my own	Never	Sometimes	Often	Always
10	I have problems with my appetite	Never	Sometimes	Often	Always
11	I suddenly become dizzy or faint when there is no reason for this	Never	Sometimes	Often	Always
12	I have to do some things over and over again (like washing my hands, cleaning or putting	Never	Sometimes	Often	Always

	things in a certain order)				
13	I have no energy for things	Never	Sometimes	Often	Always
14	I suddenly start to tremble or shake when there is no reason for this	Never	Sometimes	Often	Always
15	I cannot think clearly	Never	Sometimes	Often	Always
16	I feel worthless	Never	Sometimes	Often	Always
17	I have to think of special thoughts (like numbers or words) to stop bad things from happening	Never	Sometimes	Often	Always
18	I think about death	Never	Sometimes	Often	Always
19	I feel like I don't want to move	Never	Sometimes	Often	Always
20	I worry that I will suddenly get a scared feeling when there is nothing to be afraid of	Never	Sometimes	Often	Always
21	I am tired a lot	Never	Sometimes	Often	Always
22	I feel afraid that I will make a fool of myself in front of people	Never	Sometimes	Often	Always
23	I have to do some things in just the right way to stop bad things from happening	Never	Sometimes	Often	Always
24	I feel restless	Never	Sometimes	Often	Always
25	I worry that something bad will happen to me	Never	Sometimes	Often	Always

Appendix N: The Children's Response Style Questionnaire – Rumination Subscale

We are interested in what you are like. The following items ask you questions about how you feel. This is a survey, not a test - there are no right or wrong answers. When people feel sad, they do and think different things. What about you - what do you do and think when you feel sad? For each question indicate what you usually do not what you think you should do. Please circle one answer only.

1	When I am sad, I think about how alone I feel	Almost never	Sometimes	Often	Almost Always
2	When I am sad, I go away by myself and think about why I feel this way	Almost never	Sometimes	Often	Almost Always
3	When I am sad, I think: "I'm ruining everything"	Almost never	Sometimes	Often	Almost Always
4	When I am sad, I think about how sad I feel	Almost never	Sometimes	Often	Almost Always
5	When I am sad, I go someplace alone to think about my feelings	Almost never	Sometimes	Often	Almost Always
6	When I am sad, I think about how angry I am with myself	Almost never	Sometimes	Often	Almost Always
7	When I am sad, I think about other times when I have felt sad	Almost never	Sometimes	Often	Almost Always
8	When I am sad, I think about a recent situation wishing it had gone better	Almost never	Sometimes	Often	Almost Always
9	When I am sad, I think: "There must be something wrong with me or I wouldn't feel this way"	Almost never	Sometimes	Often	Almost Always
10	When I am sad, I think: "I am disappointing my	Almost never	Sometimes	Often	Almost Always

	friends, family, or teachers”				
11	When I am sad, I think about all of my failures, faults, and mistakes	Almost never	Sometimes	Often	Almost Always
12	When I am sad, I think: “Why can’t I handle things better?”	Almost never	Sometimes	Often	Almost Always
13	When I am sad, I think about how I don’t feel like doing anything	Almost never	Sometimes	Often	Almost Always

Appendix O: Difficulties in Emotional Regulation Scale – Non-acceptance subscale

Please circle the one response that is most true for you.

1	When I'm upset, I become angry with myself for feeling that way	Almost never (0-10%)	Sometimes (11-35%)	About half the time (36-65%)	Most of the time (66-90%)	Almost always (91-100%)
2	When I'm upset, I become embarrassed for feeling that way	Almost never (0-10%)	Sometimes (11-35%)	About half the time (36-65%)	Most of the time (66-90%)	Almost always (91-100%)
3	When I'm upset, I feel ashamed with myself for feeling that way	Almost never (0-10%)	Sometimes (11-35%)	About half the time (36-65%)	Most of the time (66-90%)	Almost always (91-100%)
4	When I'm upset, I feel like I am weak	Almost never (0-10%)	Sometimes (11-35%)	About half the time (36-65%)	Most of the time (66-90%)	Almost always (91-100%)
5	When I'm upset, I feel guilty for feeling that way	Almost never (0-10%)	Sometimes (11-35%)	About half the time (36-65%)	Most of the time (66-90%)	Almost always (91-100%)
6	When I'm upset, I become irritated with myself for feeling that way	Almost never (0-10%)	Sometimes (11-35%)	About half the time (36-65%)	Most of the time (66-90%)	Almost always (91-100%)

Appendix P: Network of Relationships Inventory – Relationships Qualities Versions

Please rate the below statements in relation to your one closest friend (please do not answer the questions based on a romantic partner, parent/carer or sibling). Please circle one answer only.

1	How often do you spend fun time with this person?	Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or extremely much
2	How often do you tell this person things that you don't want others to know?	Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or extremely much
3	How happy are you with your relationship with this person?	Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or extremely much
4	How often do you turn to this person for support with personal problems?	Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or extremely much
5	How often does this person praise you for the kind of person you are?	Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or extremely much
6	How often do you and this person go places and do things together?	Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or extremely much
7	How often do you tell this person everything that you are going through?	Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or extremely much
8	How much do you like the way things are between you and this person?	Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or extremely much
9	How often do you depend on this person for help, advice, or sympathy?	Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or extremely much

10	How often does this person seem really proud of you?	Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or extremely much
11	How often do you play around and have fun with this person?	Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or extremely much
12	How often do you share secrets and private feelings with this person?	Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or extremely much
13	How satisfied are you with your relationship with this person?	Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or extremely much
14	When you are feeling down or upset, how often do you depend on this person to cheer things up?	Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or extremely much
15	How much does this person like or approve of the things you do?	Never or hardly at all	Seldom or not too much	Sometimes or somewhat	Often or very much	Always or extremely much

Appendix Q: Information sheet for parents

Dear Parent/Carer,

My name is Annie Bird and I am a Trainee Clinical Psychologist from Royal Holloway University. I am currently completing a project looking at the relationship between family functioning (i.e. the way in which families interact and treat with another), adolescents' methods of managing their emotions, their relationships with their friends and experiences of anxiety and/or low mood. It is anticipated that the information gathered from this project will further our understanding of how families can build on their strengths to enhance young people's ability to manage their emotions and, in turn, their overall mental health.

What does the project involve?

I have partnered up with [school name] in order to carry out this project and I will be attending one of your child's lessons in [date]. I have worked closely with staff at the school to ensure that participating in this project does not hinder your child's educational timetable. Students will be given some short questionnaires to complete that will ask them about their family life, friendships, experience of emotions, overall mood. Your child's answers will be kept entirely confidential and anonymised. They will be stored in a secure electronic space, only accessible to myself and my two research supervisors, and will not contain their name. In the unlikely case that your child's answers were to raise any concerns, I will write to you outlining the concerns alongside recommendations of how best to support your child.

How will the project benefit your child?

The results of this project will contribute to our overall understanding of how to support young people's wellbeing. Furthermore, all students who take part will be placed in a prize draw with a chance to win one of two £50 vouchers.

Your child's participant in this project is entirely voluntary and they will be given the opportunity to not take part in the study or withdraw from the project up until the data has been collected and analyzed in January 2024.

If you would like to discuss the project further or have any questions regarding your child's participation, please feel free to contact me at annie.bird.2021@live.rhul.ac.uk

Your sincerely,

Ms Annie Bird

Trainee Clinical Psychologist, Royal Holloway University, London

Dr Helen Pote

Clinical Psychologist, Royal Holloway University, London

Further information on how we will keep the data safe:

Royal Holloway, University of London is the sponsor for this study and is based in the UK. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it

properly. Any data you provide during the completion of the study will be stored securely on hosted on servers within the European Economic Area.

Royal Holloway is designated as a public authority and in accordance with the Royal Holloway and Bedford New College Act 1985 and the Statutes which govern the College, we conduct research for the public benefit and in the public interest. Royal Holloway has put in place appropriate technical and organisational security measures to prevent your personal data from being accidentally lost, used or accessed in any unauthorised way or altered or disclosed.

Royal Holloway has also put in place procedures to deal with any suspected personal data security breach and will notify you and any applicable regulator of a suspected breach where legally required to do so.

To safeguard your rights, we will use the minimum personally-identifiable information possible. The lead researcher will keep your contact details confidential and will use this information only as required (i.e., for the prize draw). The lead researcher will keep information about you and data gathered from the study for up to 5 years after the study has finished.

Certain individuals from RHUL may look at your research records to check the accuracy of the research study. If the study is published in a relevant peer-reviewed journal, the anonymised data may be made available to third parties. The people who analyse the information will not be able to identify you.

You can find out more about your rights under the GDPR and Data Protection Act 2018 by visiting https://www.royalholloway.ac.uk/about-us/more/governance-and-strategy/data-protection/ and if you wish to exercise your rights, please contact dataprotection@royalholloway.ac.uk.

Appendix R: Consent video script

Hi everyone! My name is Annie Bird and I am training to become a Psychologist. As part of my training, I complete a research study and I would be really grateful if I could have your help. I am going to give you some information about the study to help you decide whether you want to take part or not.

My research is looking at the relationship between young people's family lives and their experiences of anxiety and depression, and whether this relationship may be explained by the way that young people manage their emotions and by their relationships with their friends.

You have been invited to take part because you are aged between 16-18.

Before you decide to take part, it is important for you to understand what participating will involve.

The first part of the study involves you providing me with some information about yourself, your family/carers and any mental health difficulties you have experienced.

Questions will include:

- Questions about yourself, including information about your ethnicity, gender identity, and neurodiversity.
- Questions about your family and carers, including if they work, and if so the jobs they do
- Questions about your mental health history including if you have ever received professional support such as counselling or are on any medication

Then, I will ask you to complete some questionnaires about your family life, your friendships, how you cope with emotions and your experience of anxiety and depression.

Some example questions are:

- Rating how well statements describe your family e.g. people in my family interfere too much in other people's lives
- Rating your experiences of anxiety and depression e.g. how often do you feel nothing is much fun anymore
- Rating how you cope when you are feeling sad e.g. watching TV or playing video games or feeling embarrassed about feeling this way
- Rating different aspects of your close friendships e.g. how often you tell this person everything that you are going through

The questionnaires are likely to take between 30 and 45 minutes to complete. When completing the questionnaires it is important not to discuss your answers with other people as I am only interested in your thoughts/answer to the question. Please read each question carefully and try and tell me how you really feel about each of the questions. Getting your true answers to the questions is very important to me and will help make my research more useful and help other young people.

Next I am going to tell you what happens to your data

Your answers will be anonymised, meaning that no one will be able to identify you from your answers. Your data will be stored in a secure electronic space, which is only accessible to

myself and my research supervisors and will not contain your name. At the end of the study I will write up the findings, but your name will not be included.

If your answers shows that you are experiencing significant emotional distress and may require some additional support, I will write to your family, via school, explaining that your questionnaire answers indicated some emotional distress and some recommendations on ways to proceed to support you, including people to talk to within the school.

It is important to note that if this happen your answers to specific questions will not be included in this feedback. So for example, if you shared your gender identity, this would remain confidential.

I will also send information to your parents/carers about the fact that you are taking part in this study, but in the end it is your choice, not theirs, whether or not you take part.

Do I have to take part?

It is your choice whether you would like to take part in the study or not, and it is OK if you decide you would not like to take part. There will be another activity that you can complete in the lesson instead of the research study.

You can also change your mind about taking part after having completed the questions and request to have your answers removed from the study and destroyed at any point up to the end of January 2024, at which point the data will have been collected and analysed.

There will be no negative consequences of doing this. To withdraw from the study you can email me directly on the email address I have provided, or ask your teacher to contact me.

If you do complete the questionnaires you will be entered into a prize draw for the chance to win one of 2 £50 shopping vouchers.

What if I want to talk to someone after the study?

We know that thinking about how we feel, or our relationship with friends or families/carers can sometimes be difficult. If you notice yourself feeling worried or low after the study, we encourage you to seek support from a friend, family member/carer or teacher such as Miss St Ledger. Alternatively, I will provide some information on services that can provide helpful confidential support.

I hope this has provided you with enough information to decided whether you want to take part or not. If you have any questions, please do ask your teacher or ask me directly when I come to your school. I looking forward to meeting you all soon.

Appendix S: Introduction and Information for Participants

Name of study: Risk and protective factors for depression and anxiety in adolescence: friendships, family functioning and emotion regulation

Name of researcher: Annie Bird

Email address of researcher: annie.bird.2021@live.rhul.ac.uk

Supervisor: Dr Helen Pote

Introduction

My name is Annie Bird and I am Trainee Clinical Psychologist. As part of my training, I complete a research study and I would be really grateful if I could have your help in completing this piece of research looking at the relationship between young people's family lives and their experiences of anxiety and/or low mood. You have been invited to take part because you are aged between 16-18, and I am aiming to recruit around 300 young people.

In particular, my research is interested in whether this relationship may be explained by the way that young people manage their emotions and by their relationships with their friends. I hope that the information I gather from you will help increase our understanding of how families/carers can help build on their strengths to support the mental health of young people.

Before you decide to take part, it is important for you to understand why the research is taking place and what participating in the research will involve. Please take your time reading this information and do ask me if anything is not clear or if you would like more information.

What does the study involve?

The study involved firstly providing me with some information about yourself, your family/carers and some information about any mental health difficulties you have experienced. Secondly, I will ask you to complete some questionnaires about your family life, your friendships, how you cope with emotions and your experience of anxiety and/or low mood. The questionnaires are likely to take between 20 and 30 minutes to complete. When completing the questionnaires it is important not to discuss your answers with other people as I am only interested in your thoughts/answer to the question. Please read each question carefully and try and tell me how you really feel about each of the questions. Getting your true answers to the questions is very important to me and will help make my research more useful and help other young people.

What happens to my data (answers)?

Your answers will be anonymised, meaning that no one will be able to identify you from your answers. Your data will be stored in a secure electronic space, which is only accessible to myself and my research supervisors and will not contain your name. At the end of the study I will write up the findings, but your name will not be included.

If your answers shows that you are experiencing significant distress and may require some additional support, I will write to your family, via school, outlining the difficulties you are experiencing alongside

some recommendations on how best to support you. Your answers to specific questions will not be included in this feedback.

Do I have to take part?

It is your choice whether you would like to take part in the study or not, and it is OK if you decide you would not like to take part. You can also change your mind about taking part and request to have your answers removed from the study and destroyed at any point up to the end of April 2024, at which point the data will have been collected and analysed. There will be no negative consequences of doing this. To withdraw from the study you can email me directly on annie.bird.2021@live.rhul.ac.uk or ask your teacher to contact me.

If you do complete the questionnaires you will be entered into a prize draw for the chance to win one of 2 £50 vouchers.

What if I want to talk to someone after the study?

We know that thinking about how we feel, our friendships and our families/carers can sometimes be difficult. If you notice yourself feeling worried or low after the study, we encourage you to seek support from a friend, family member/carer or teacher such as [insert details here]. Alternatively, the services listed below can provide helpful confidential support:

Childline

Childline is a free 24 hour a day service which can be contacted by calling **0800 1111** or if you create an account you can email a councelllor or chat to them online. Their website is www.childline.org.uk

Samaritans

Samaritans is a free 24 hour a day service which can be contacted by calling **116 123, emailing jo@samaritans.org or writing a letter which you can post to Freepost SAMARITANS LETTERS**

Kooth

Kooth is an online platform through which you can access online counselling and support. Their website is www.kooth.com

Who can I contacted if I have any questions?

If you have any questions after today, you can contact me at: annie.bird.2021@live.rhul.ac.uk

Further information on how we will keep your data safe:

Royal Holloway, University of London is the sponsor for this study and is based in the UK. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. Any data you provide during the completion of the study will be stored securely on hosted on servers within the European Economic Area.

Royal Holloway is designated as a public authority and in accordance with the Royal Holloway and Bedford New College Act 1985 and the Statutes which govern the College, we conduct research for the public benefit and in the public interest. Royal Holloway has put in place appropriate technical

and organisational security measures to prevent your personal data from being accidentally lost, used or accessed in any unauthorised way or altered or disclosed.

Royal Holloway has also put in place procedures to deal with any suspected personal data security breach and will notify you and any applicable regulator of a suspected breach where legally required to do so.

To safeguard your rights, we will use the minimum personally-identifiable information possible. The lead researcher will keep your contact details confidential and will use this information only as required (i.e., for the prize draw). The lead researcher will keep information about you and data gathered from the study for up to 5 years after the study has finished.

Certain individuals from RHUL may look at your research records to check the accuracy of the research study. If the study is published in a relevant peer-reviewed journal, the anonymised data may be made available to third parties. The people who analyse the information will not be able to identify you.

You can find out more about your rights under the GDPR and Data Protection Act 2018 by visiting https://www.royalholloway.ac.uk/about-us/more/governance-and-strategy/data-protection/ and if you wish to exercise your rights, please contact dataprotection@royalholloway.ac.uk

Appendix T: Consent Form

Name of study: Risk and protective factors for depression and anxiety in adolescence: friendships, family functioning and emotion regulation

Name of researcher: Annie Bird

Email address of researcher: annie.bird.2021@live.rhul.ac.uk

Supervisor: Dr Helen Pote

Research Participant - please read the following statements and circle your response

I confirm that I have read the information sheet about this study	Yes/No
I agree to participate in this study	Yes/No
I have had the opportunity to ask any questions I have about this study	Yes/No
I am happy with the answers I have received to any questions about this study	Yes/No
I understand my participation in this study is voluntary	Yes/No
I understand that I am free to withdraw from the study until the data is collected and analyzed (approximately April 2024) without giving a reason and without detriment to myself	Yes/No
I understand that my data will be anonymized (meaning I can't be identified from the data), stored securely on an electronic device, which will be only accessible to the researcher and 2 research supervisors, and will be destroyed 5 years after the study has ended	Yes/No
I understand that if my questionnaire answers show that I am experiencing significant distress and may require extra support the researcher will write to the school and my parents/carers, outlining their concerns and recommendations on how best to support me	Yes/No

Participant Name:…….

Date ……..

Please note that this Consent form will be stored separately from the responses you provide.

If you have any concerns about this research, please email ethics@rhul.ac.uk.

Appendix U: Debrief Sheet

Thank you for your answers and for taking part in this study. It remains entirely your choice whether or not you take part. If you change your mind at any time, that's okay, just let me know by telling your teacher or contacting me on the email below, before April 2024.

Now that you've filled in the questionnaires, I will keep your answers safe and secure. Other people will not know how you filled in any of the questions as your name will not appear in my project.

If I feel from your answers that you might be experiencing significant distress, then I will write to your family and the school advising that you might benefit from some additional support.

If any of the questions have upset or concerned you then please talk to me, a friend or a teacher for additional support. Alternatively, the services listed below can provide helpful confidential support:

Childline
Childline is a free 24 hour service which can be contacted by calling 0800 1111 or if you create an account you can email a counselor or chat to them online. Their website is www.childline.org.uk

Samaritans
Samaritans is a free 24 hour service which can be contacted by calling 116 123, emailing jo@samaritans.org or writing a letter which you can post to Freepost SAMARITANS LETTERS

Kooth
Kooth is an online platform through which you can access online counselling and support. Their website is www.kooth.com You can also contact me on: annie.bird.2021@live.rhul.ac.uk

Appendix V: Mean (M) and standard deviation (SD) of untransformed DERS scores

Measure	M	SD
DERS - acceptance	13.35	6.07

Appendix W: Number of respondents (n) and percentage (%) of participants experiencing mental health difficulties, neurodiversity, learning difficulties and treatment, and experience of significant life events

Variable	**%**
Mental Health Status (n=177)	
Do not identify as having a mental health difficulty	71.75
Identify as having 1 mental health difficulty	10.17
Identify as having more than 1 mental health difficulty	14.69
Prefer not to say	3.39
Specific mental health difficulties (n=177)	
Anxiety	20.90
OCD	1.13
Panic	1.69
Social anxiety	6.78
Specific phobia	1.13
Depression	10.17
Eating disorder	5.08
PTSD	1.69
Conduct	0.00
PD/BPD	0.56
Prefer not to say	3.95
Identify as having a learning (n=178)	
No	84.83
Yes	11.80
Prefer not to say	3.37
Identify as being neurodiverse (n=178)	
No	89.33
Yes	7.30
Prefer not to say	3.37

Taken medication (n=179)	
No	95.53
Yes	4.47
Had therapy (n=179)	
No	74.30
Yes	25.14
Prefer not to say	0.56
Location of therapy (n=179)	
Have not had therapy	73.74
Had therapy from CAMHS	10.61
Had therapy not from CAMHS	15.08
Prefer not to say	0.56
Life Events (n=178)	
None	42.70
Yes	55.06
Prefer not to say	1.12
Specific life events (n=179)	
Moved house	14.53
Moved school	20.68
Death of a family member or friend	27.37
Separation or divorce of parents or carers	5.02
Parents, carers or siblings have been seriously ill	11.17
Other	2.79
Prefer not to say	1.12

Appendix X: Cross-tab table and chi-squared tests examining the different rates of mental health difficulties by ethnicity, binary gender identity SES and significant life events

Ethnicity

Ethnicity	Count	Mental health difficulty				
		No	Yes - 1	Yes - more than 1	Prefer not to say	Total
White	Count	52	8	17	3	80
	Expected Count	57.4	8.1	11.8	2.7	80
Asian	Count	46	4	4	1	55
	Expected Count	39.5	5.6	8.1	1.9	55
Black	Count	21	3	2	1	27
	Expected Count	19.4	2.7	4	0.9	27
Arab	Count	5	1	1	0	7
	Expected Count	5	0.7	1	0.2	7
Mixed	Count	3	2	2	1	8
	Expected Count	5.7	0.8	1.2	0.3	8
Total	Count	127	18	26	6	177
	Expected Count	127	18	26	6	177

	Value	df	Sig (p)
Pearson Chi-Square	13.96	12	0.30
N of Valid Cases	177		

Gender identity (binary)

Gender	Count	Mental health difficulty				
		No	Yes - 1	Yes - more than 1	Prefer not to say	Total
Female	Count	108.0	16.0	24.0	6.0	154.0
	Expected Count	110.5	15.7	22.6	5.2	154.0
Male	Count	19.0	2.0	2.0	0.0	23.0
	Expected Count	16.5	2.3	3.4	0.8	23.0
Total	Count	127.0	18.0	26.0	6.0	177.0
	Expected Count	127.0	18.0	26.0	6.0	177.0

	Value	df	Sig (p)
Pearson Chi-Square	2.03	3	0.57
N of Valid Cases	177		

SES

SES	Count	Mental health difficulty				
		No	Yes - 1	Yes - more than 1	Prefer not to say	Total
High	Count	70	10	16	4	100
	Expected Count	70.9	10.5	15.1	3.5	100
Middle	Count	16	3	1	2	22
	Expected Count	15.6	2.3	3.3	0.8	22
Low	Count	30	5	7	0	42
	Expected Count	29.8	4.4	6.3	1.5	42
Unemployed	Count	6	0	2	0	8
	Expected Count	5.7	0.8	1.2	0.3	8
Total	Count	122	18	26	6	172
	Expected Count	122	18	26	6	172

	Value	df	Sig (p)
Pearson Chi-Square	7.26	9	0.61
N of Valid Cases	172		

Significant life events

Experience of significant life events	Count	Mental health difficulty				
		No	Yes - 1	Yes - more than 1	Prefer not to say	Total
No	Count	53	6	13	3	75
	Expected Count	53.7	7.7	11.1	2.6	75
Yes	Count	72	11	13	3	99
	Expected Count	70.9	10.1	14.6	3.4	99
Prefer not to say	Count	1	1	0	0	2
	Expected Count	1.4	0.2	0.3	0.1	2
Total	Count	126	18	26	6	176
	Expected Count	126	18	26	6	176

	Value	df	Sig (p)
Pearson Chi-Square	4.69	6	0.585
N of Valid Cases	176		

Appendix Y: Cross-tab table and chi-squared tests examining the different rates of mental health difficulties for individuals who identify as having a learning difficulty vs those who do not and individuals who identify as neurodiverse vs those who do not

Neurodiverse

		Mental health difficulties				
Identify as neurodiverse		No	Yes - 1	Yes – more than 1	Prefer not to say	Total
Yes	Count	3	1	9	0	13
	Expected Count	9.3	1.3	1.9	0.4	13
No	Count	122	16	16	4	158
	Expected count	113.4	16.1	23.2	5.4	158
Prefer not to say	Count	2	1	1	2	6
	Expected count	4.3	0.6	0.9	0.2	6
Total	Count	127	18	26	6	177
	Expected count	127	18	26	6	177

	Value	df	Sig (p)
Pearson Chi-Square	7.148	12	0.848
N of Valid Cases	179		

Learning disabled

		Mental health difficulties				
Identify as learning disabled		No	Yes - 1	Yes – more than 1	Prefer not to say	Total
Yes	Count	12	3	5	1	21
	Expected count	15.1	2.1	3.1	0.7	21
No	Count	113	14	20	3	150
	Expected count	107.6	15.3	22	5.1	150
Prefer not to say	Count	2	1	1	2	6
	Expected count	4.3	0.6	0.9	0.2	6
Total	Count	127	18	26	6	177
	Expected count	127	18	26	6	177

	Value	df	Sig (p)
Pearson Chi-Square	21.06	6	<.001
N of Valid Cases	177.00		

Appendix Z: T-test of comparisons between 16-17 and 17+ year olds across all main variables with means (M) and standard deviations (SDs)

Measure	Levene's Test		16-17 (n=58)		17+ (n=111)		df	t	Sig (p)
	F	Sig (p)	M	SD	M	SD			
RCADS – Depression	1.58	0.21	53.05	12.24	52.19	13.82	167.00	0.40	0.69
RCADS – Anxiety	0.06	0.81	51.33	12.49	50.32	12.64	167.00	0.49	0.62
RCADS – Internalising symptoms	0.44	0.51	52.38	12.84	51.21	13.87	167.00	0.54	0.59
SCORE-15 – Strengths and adaptability	5.91	0.02	11.10	3.32	11.63	4.33	144.40	-0.88	0.38
SCORE-15 – Overwhelmed by difficulties	0.98	0.32	10.28	3.44	10.89	4.24	167.00	-0.96	0.34
SCORE-15 – Disrupted communication	0.07	0.80	11.72	3.56	12.21	3.87	167.00	-0.79	0.43
SCORE-15 - Total	2.36	0.13	33.10	9.32	34.73	11.21	167.00	-0.95	0.35
NRI – Supportive peer relationships	1.69	0.20	53.16	8.64	54.26	9.70	167.00	-0.73	0.47
CRSQ - Rumination	0.00	0.98	17.66	8.45	16.82	8.63	167.00	0.60	0.55
DERS – Acceptance	2.06	0.15	3.12	0.22	3.11	0.26	167.00	0.33	0.74

Appendix AA: T-test of comparisons between genders across all main variables with means (M) and standard deviations (SDs)

Measure	Levene's Test		Female (n=156)		Male (n=23)		df	F	Sig (p)
	F	Sig (p)	M	SD	M	SD			
RCADS – Depression	3.05	0.08	53.61	13.17	46.65	10.76	177.00	2.42	0.02
RCADS – Anxiety	0.04	0.85	52.03	12.04	42.74	12.13	177.00	3.45	<.001
RCADS – Internalising symptoms	0.51	0.48	52.99	13.28	43.96	11.27	177.00	3.10	0.00
SCORE-15 – Strengths and adaptability	3.45	0.07	11.74	4.10	9.39	3.04	177.00	2.65	0.01
SCORE-15 – Overwhelmed by difficulties	0.35	0.55	11.09	4.00	7.87	3.15	177.00	3.69	<.001
SCORE-15 – Disrupted communication	1.33	0.25	12.35	3.87	9.61	2.74	177.00	3.27	0.00
SCORE-15 - Total	1.60	0.21	35.18	10.77	26.87	8.16	177.00	3.55	<.001
NRI – Supportive peer relationships	0.88	0.35	54.13	9.34	52.83	8.65	177.00	0.63	0.53
CRSQ - Rumination	1.51	0.22	17.95	8.08	11.26	9.48	177.00	3.62	<.001
DERS – Acceptance	0.03	0.86	3.14	0.24	3.01	0.26	177.00	2.23	0.03

Appendix BB: One way ANOVA of comparisons across SES for all main variables with means (M) and standard deviations (SDs)

Variable	Levene's Test		High SES (n=101)		Middle SES (n=23)		Low SES (n=42)		Unemployed (n=8)		df	F	Sig (p)
	F	Sig(p)	M	SD	M	SD	M	SD	M	SD			
RCADS – Depression	0.23	0.88	51.74	12.72	50.17	13.20	55.1	12.65	64	14.42	3,170	3.02	0.03
RCADS – Anxiety	1.52	0.21	50.56	11.19	47.57	14.39	52.81	13.34	56.75	14.70	3,170	1.52	0.21
RCADS – Internalising symptoms	0.93	0.43	51.2	12.50	48.87	14.51	54.12	13.57	60.88	15.67	3,170	2.13	0.10
SCORE-15 – Strengths and adaptability	1.58	0.20	11.42	3.89	10.96	5.04	11.86	3.91	11.63	3.11	3,170	0.26	0.85
SCORE-15 – Overwhelmed by difficulties	1.09	0.35	10.9	4.20	9.57	4.29	10.6	3.05	12.5	4.63	3,170	1.26	0.29
SCORE-15 – Disrupted communication	1.57	0.20	12.12	3.99	11.09	4.20	12.07	3.03	13.63	4.27	3,170	0.95	0.42
SCORE-15 - Total	1.08	0.36	34.44	11.17	31.61	12.64	34.52	8.13	37.75	10.14	3,170	0.77	0.51
NRI – Supportive peer relationships	0.22	0.88	55.53	8.74	52.87	9.14	52.90	9.27	44.38	10.90	3,170	4.34	0.01

CRSQ - Rumination	0.67	0.57	17.09	7.99	15.00	9.99	18.57	8.39	21.00	9.41	3,170	1.42	0.24
DERS – Acceptance	0.65	0.58	3.11	0.24	3.04	0.25	3.18	0.26	3.17	0.20	3,170	1.83	0.14

Appendix CC: Post hoc test with Bonferroni correction for One-way ANOVA across SES for the main variables of depression and supportive peer relationships

Dependent Variable	(I) SES	(J) SES	Mean Difference (I-J)	Sig.
Depression	high	middle	1.57	1.00
		low	-3.35	0.94
		unemployed	-12.26	0.06
	middle	high	-1.57	1.00
		low	-4.92	0.85
		unemployed	-13.83	0.06
	low	high	3.35	0.94
		middle	4.92	0.85
		unemployed	-8.91	0.44
	unemployed	high	12.26	0.06
		middle	13.83	0.06
		low	8.91	0.44
Supportive peer relationships	high	middle	2.67	1.00
		low	2.63	0.69
		unemployed	11.16	0.01
	middle	high	-2.67	1.00
		low	-0.04	1.00
		unemployed	8.50	0.14
	low	high	-2.63	0.69
		middle	0.04	1.00
		unemployed	8.53	0.091
	unemployed	high	-11.16	0.006
		middle	-8.50	0.14
		low	-8.53	0.09

Appendix DD: One way ANOVA of comparisons across ethnic groups across all main variables with means (M) and standard deviations (SDs)

Variable	Levene's Test		White British or White Other n=80		Asian or Asian British n=57		Black or Black British n=27		Arab n=7		Mixed/Multiple n=8		df	F	Sig(p)
	F	Sig(p)	M	SD	M	SD	M	SD	M	SD	M	SD			
RCADS – depression	2.20	0.07	54.31	13.22	50.16	11.46	50.26	13.85	50.26	13.85	54.50	13.55	4,174	2.20	0.07
RCADS – anxiety	0.82	0.52	51.70	11.97	49.09	12.04	50.85	13.44	48.86	14.60	56.38	14.83	4,174	0.82	0.52
RCADS – Internalizing Symptoms	0.99	0.41	53.14	13.11	49.56	12.51	50.59	14.44	55.00	16.05	56.38	15.81	4,174	0.99	0.41
SCORE-15 – Strengths and Adaptability	0.38	0.82	11.16	3.74	11.72	4.21	11.74	4.85	12.29	4.50	10.50	2.98	4,174	0.38	0.82

SCORE-15 – Overwhelmed by Difficulties	0.42	0.79	10.91	3.97	10.18	3.75	10.85	5.03	11.71	4.23	10.38	3.38	4,174	0.42	0.79
SCORE-15 – Disrupted Communication	0.12	0.98	11.99	3.84	11.82	3.74	12.11	4.23	12.86	4.95	12.13	3.23	4,174	0.12	0.98
SCORE-15 - Total	0.17	0.95	34.06	10.44	33.72	10.58	34.70	12.95	36.86	13.22	33.00	7.93	4,174	0.17	0.95
NRI – Supportive Peer Relationships	0.97	0.43	55.05	9.16	53.18	9.01	52.78	9.71	56.71	10.37	50.25	9.21	4,174	0.97	0.43
CRSQ - Rumination	0.44	0.78	17.77	7.81	15.93	8.94	17.74	10.24	16.86	7.86	16.50	8.28	4,174	0.44	0.78
DERS – acceptance	0.50	0.74	3.14	0.23	3.10	0.26	3.13	0.29	3.05	0.11	3.07	0.23	4,174	0.50	0.74

Appendix EE: T-test of comparisons between participants identifying and not identifying as neurodiverse across all main variables with means (M) and standard deviations (SDs)

Measure	Levene's Test		Identify as neurodiverse (n=13)		Do not identify as neurodiverse (n=159)		df	t	Sig (p)
	F	Sig (p)	M	SD	M	SD			
RCADS – Depression	0.08	0.78	71.38	10.96	50.94	12.11	170.00	5.89	<.001
RCADS – Anxiety	0.16	0.69	65.62	12.21	49.24	11.64	170.00	4.86	<.001
RCADS – Internalising symptoms	0.32	0.57	70.00	12.66	49.94	12.27	170.00	5.65	<.001
SCORE-15 – Strengths and adaptability	0.08	0.78	12.31	3.79	11.30	4.11	170.00	0.86	0.39
SCORE-15 – Overwhelmed by difficulties	0.12	0.73	14.23	4.17	10.30	3.90	170.00	3.48	<.001
SCORE-15 – Disrupted communication	0.75	0.39	12.69	4.35	11.89	3.81	170.00	0.72	0.47
SCORE-15 - Total	0.02	0.89	39.23	9.96	33.48	10.83	170.00	1.85	0.07
NRI – Supportive peer relationships	4.23	0.04	55.08	13.07	54.11	8.86	12.92	0.26	0.80

CRSQ - Rumination	0.58	0.45	26.77	7.42	16.16	8.27	170.00	4.47	<.001
DERS – Acceptance	1.15	0.29	3.35	0.19	3.10	0.24	170.00	3.57	<.001

Appendix FF: T-test of comparisons between identifying as having a learning difficulty and not across all main variables with means (M) and standard deviations (SDs)

Measure	Levene's Test		Learning difficulty (n=21)		No learning difficulty (n=151)		df	t	Sig (p)
	F	Sig (p)	M	SD	M	SD			
RCADS – Depression	0.19	0.66	58.67	13.53	51.62	12.93	170.00	2.33	0.02
RCADS – Anxiety	0.093	0.76	52.48	11.41	50.20	12.57	170.00	0.79	0.43
RCADS – Internalising symptoms	0.304	0.58	56.05	13.17	50.82	13.31	170.00	1.69	0.09
SCORE-15 – Strengths and adaptability	12.971	<.001	12.62	5.96	11.20	3.75	22.246	1.063	0.299
SCORE-15 – Overwhelmed by difficulties	8.97	0.003	12.71	5.60	10.30	3.71	22.51	1.92	0.07
SCORE-15 – Disrupted communication	6.537	0.01	12.76	5.18	11.84	3.63	22.81	0.79	0.44
SCORE-15 - Total	12.654	<.001	38.10	15.97	33.34	9.86	12.654	<.001	0.20
NRI – Supportive peer relationships	0.214	0.65	54.90	8.57	54.08	9.30	170.00	0.38	0.70
CRSQ - Rumination	0.174	0.68	19.71	7.98	16.58	8.71	170.00	1.56	0.12

DERS – Acceptance	1.32	0.25	3.19	0.29	3.11	0.24	170.00	1.42	0.16

Appendix GG: T-test of comparisons between life events across all main variables with means (M) and standard deviations (SDs)

Measure	Levene's Test		Experienced (n=100)		Not experienced (n=76)		df	t	Sig (p)
	F	Sig (p)	M	SD	M	SD			
RCADS – Depression	0.28	0.60	53.43	13.27	52.07	12.99	174.00	-0.68	0.50
RCADS – Anxiety	0.00	0.99	51.56	12.28	50.01	12.44	174.00	-0.82	0.41
RCADS – Internalising symptoms	0.02	0.89	52.59	13.28	51.05	13.46	174.00	-0.76	0.45
SCORE-15 – Strengths and adaptability	0.67	0.42	11.72	4.13	11.16	3.96	174.00	-0.91	0.36
SCORE-15 – Overwhelmed by difficulties	0.34	0.56	11.33	4.11	9.95	3.83	174.00	-2.28	0.02
SCORE-15 – Disrupted communication	6.18	0.01	12.47	4.27	11.46	3.20	173.97	-1.79	0.08
SCORE-15 - Total	1.77	0.19	35.52	11.35	32.57	9.90	174.00	-1.81	0.07
NRI – Supportive peer relationships	3.63	0.06	53.96	8.53	53.88	10.27	174.00	-0.06	0.96
CRSQ - Rumination	0.46	0.50	17.56	8.28	16.58	8.89	174.00	-0.75	0.45

DERS – Acceptance	0.90	0.35	3.14	0.24	3.09	0.26	174.00	-1.14	0.26

Appendix HH: Collinearity Diagnostics for independent variables entered into a multiple regression with internalising symptoms as the dependent variable

Independent Variable	Tolerance	VIF
Family Functioning Variable		
Strengths and Adaptability	0.78	1.28
Overwhelmed by Difficulties	0.46	2.20
Disrupted Communication	0.28	3.57
Emotion Regulation Variables		
Rumination	0.44	2.28
Acceptance	0.51	1.95
Supportive Peer Relationships	0.87	1.15