



# Family Processes and the Emotional and Behavioural Well-being of Autistic Children and Youth: A Systematic Review of Prospective Studies

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## Abstract

Emotional and behavioural difficulties including depression, anxiety, and hyperactivity are elevated in autistic children (AC). Family processes of a psychological nature are associated with these difficulties, but the direction of influence is uncertain. We searched seven bibliographic databases for prospective, quantitative studies on the impact of family processes across the parent, dyad, and family system levels on the later well-being of AC without intellectual disability, across a minimum of six months. Eligible studies were extracted following PRISMA guidelines and narratively synthesised. Sixteen of the 17 studies included for review reported significant associations between at least one family process and later well-being. Parenting stress and aspects of the parent–child relationship yielded most robust associations. Weaker support was found for parent mental health problems. Clinical and research implications are discussed.

**Keywords** Autism · Well-being · Family · Prospective

## Introduction

Autism Spectrum Disorder (ASD) is a pervasive and heterogeneous neurodevelopmental condition characterised by persistent impairments in social and communicative skills and restricted, repetitive and stereotyped behaviours and interests (American Psychiatric Association, 2022). ASD is diagnosed in approximately 1 in 100 school-aged children in the United Kingdom (Baird et al., 2006). It has a 4:1 male predominance (Fombonne, 2009).

Autistic children (AC) are at risk for co-occurring developmental and medical problems, including deficits in functional skills (Gilotty et al., 2002), epilepsy (Levisohn, 2007), gastrointestinal problems (Chaidez et al., 2014), and intellectual disability (ID; Baird et al., 2006). Moreover, a significant proportion of AC experience emotional and behavioural problems (Mattila et al., 2010; Simonoff et al., 2008). These include internalizing and externalizing problems such as anxiety, depression,

aggression, and hyperactivity, and peer relationship problems, which are generally assessed using parent report measures such as the *Child Behaviour Checklist (CBCL; Achenbach & Rescorla, 2001)* or the *Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997)*. These difficulties have been identified in young AC (Georgiades et al., 2011) and may vary according to age, with older children and adolescents often reporting fewer difficulties than younger children (Gray et al., 2012). However, for some AC, internalizing and externalizing problems can develop into psychiatric conditions. These difficulties can also adversely impact other outcomes for the child and family (Chiang & Gau, 2016; Sikora et al., 2013).

Identification of risk and protective factors are necessary to improve the guidance of prevention and intervention strategies for emotional and behavioural difficulties in AC. Thus, efforts have been made to examine what factors may modify these outcomes. Much of this research examines risk and protective factors at the individual child level, including age (Kanne & Mazurek, 2011) and sex (Holtmann et al., 2007), as well as clinical factors such as ASD symptom severity (Andersen et al., 2015), Intellectual Disability (ID) (Dominick et al., 2007), and gastrointestinal problems (Mazefsky et al., 2014) together with variables including executive functioning (Lawson et al., 2015), language ability

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(Dominick et al., 2007), and sleep quality (Mazurek & Sohl, 2016). However, studies examining individual child factors can report inconsistent findings. For instance, Dominick et al. (2007) found that low intellectual functioning and language ability were risk factors for emotional and behavioural difficulties in AC, whereas Witwer and Lecavalier (2010) reported fewer difficulties in AC with ID than AC with higher intellectual functioning. Due to these mixed findings, multilevel studies may provide more productive models.

Bronfenbrenner's bioecology model (2005), in conjunction with a risk and resiliency (Rutter, 1987), are useful theoretical frameworks for guiding our understanding of the multiple facets that may impact outcomes for AC. The bioecology model posits individual child development as a transactional process, impacted by factors across individual and social-environmental levels, with the latter defined as the micro-, meso-, exo- and macro-systems. The micro-system is the most proximal system to the child and thus most influential to development. The family is the primary micro-system where the child learns to understand and regulate their emotions and behaviours (Conger et al., 2010). The family itself is impacted by healthcare, work, school and community settings (micro- and meso-systems), and by social, cultural and policy conditions (exo- and macro-systems). The final level of Bronfenbrenner's model, the chrono-system consists of the environmental transitions and socio-historical circumstances that influence development. The purpose of the present review is to synthesise available prospective evidence on the impact of the family context on the emotional and behavioural well-being of AC.

### Family Processes and Well-being Outcomes for Autistic Children

The family influences children's well-being and development through processes at three levels: the parent, dyad, and family (Shleider & Weisz, 2017). The parent level includes factors localized within the parent (e.g., parent psychological functioning) and between parents (e.g., aspects of the interparental relationship). The dyad level includes factors localised within the parent-child and sibling relationship including parenting behaviour). Lastly, the family level includes factors involving the family's functioning a single interactive and interdependent system, as defined by Family Systems Theory (Bowen, 1978). Importantly, evidence indicates that family processes can operate as stronger predictors of risk and resilience in some paediatric populations than some individual child and clinical characteristics (Hauser-Cram et al., 1999; McCusker et al., 2002). For instance, McCusker et al. (2002) found that family conflict and family cohesion predicted adjustment in children with intractable epilepsy over and above the type and severity of seizure.

Families of AC report a host of adverse outcomes that may operate as risk factors for emotional and behavioural difficulties in AC (Giallo et al., 2013; Sim et al., 2016; Zablotsky

et al., 2013; McStay et al., 2014). These outcomes are in light of the challenges faced by these families, including stigma and difficult child behaviours (Ludlow et al., 2012) and the need to orchestrate structured routines (Boyd et al., 2014) and mediate behavioural interventions (Pacia et al., 2021). These variables are effect modifiers, in that they can alter the impact of a risk or protective factor associated with outcomes for the family. Furthermore, many AC display insecure attachment behaviours (McKenzie & Dallos, 2017), which can influence and be influenced by parenting behaviour (Teague et al., 2018).

A systematic review by Sim et al. (2016) concluded that parents of AC report less relationship satisfaction and higher marital conflict than parents of typically developing (TD) children. Parents are also at risk for poor parenting self-efficacy (Giallo et al., 2013), mental health problems (Gau et al., 2012; Zablotsky et al., 2013), and parenting stress (McStay et al., 2014), which too may operate as risk factors for emotional and behavioural difficulties in AC. Moreover, outcomes for TD siblings of AC are more varied, and range from increased social competence (Gold, 1993), to high conflict and low warmth in the sibling relationship (Hastings & Petalas, 2014). These families also report adverse outcomes at the family level, including low levels of cohesion and adaptability (Gau et al., 2012).

Three reviews have been conducted to date on the impact of family processes on developmental outcomes for autistic individuals (Greenlee et al., 2018; Romero-Gonzalez et al., 2018; Yorke et al., 2018). Yorke et al., (2018;  $n=66$ ) synthesised available evidence on the transactional effects of parental distress (mental health problems and parenting stress) on emotional and behavioural difficulties in AC. Most studies in this review were cross-sectional ( $n=55$ ) and provided inconsistent evidence. Nevertheless, the longitudinal studies in this review yielded more consistent findings, and although the sample sizes were relatively small, these studies showed that parent distress was a risk factor for emotional and behavioural difficulties. Another systematic review by Romero-Gonzales et al. (2018;  $n=11$ ) found that parent expressed emotion, including criticism, was a risk factor for externalizing problems in AC, although its effects on internalizing problems were unclear. However, like Yorke et al. (2018), the findings of this review were based primarily on cross-sectional studies and studies that failed to consider the impact of comorbidity, particularly ID, through explicitly excluding AC with comorbidity or adjusting for its potential effects.

Moreover, a scoping review by Greenlee et al. (2018;  $n=9$ ) synthesised available research on the impact of the marital relationships and family-level processes (i.e., cohesion, routines, conflict, communication, adaptability, and household organisation). Six studies in this review examined emotional and behavioural difficulties in AC. Again, these studies were primarily cross-sectional and reported mixed

evidence. For instance, Kelly et al. (2008) reported significant correlations between family conflict (but not family cohesion) and internalizing problems as measured with the *SDQ* (Goodman, 1997) in a clinical sample, whereas Weiss et al. (2016) found no evidence that better family functioning (measured with the *Family Quality of Life scale* (Hoffman et al., 2006)) operated as a protective factor for emotional and behavioural difficulties in AC with comorbid ID. However, comparability of this mixed sample may be limited.

The longitudinal studies reviewed by Greenlee et al. (2018) were heterogeneous in measures of family processes. Midouhas et al. (2013) reported little adverse impact of household chaos when controlling for individual child and maternal factors, whereas Baker, Seltzer et al. (2011a) found that family adaptability was associated with fewer difficulties in AC when adjusting for ID. The final study in this review (Stoutjesdijk et al., 2016) found that low levels of family support, poor family communication and problems in the marital relationship operated as risk factors for difficulties in a mixed sample of children with emotional and behavioural disorders including AC. However, the findings of this study are difficult to interpret as they do not provide effect sizes for AC, specifically (Stoutjesdijk et al. 2016).

The research to date, although mixed, suggests that family processes play a significant role in determining well-being outcomes for AC. Nevertheless, interpretation of findings across these studies is hampered by failure to consider the potential impact of individual child and social-environmental factors, and environmental transitions (Bronfenbrenner, 2005). Moreover, the cross-sectional nature of most of these studies means it is difficult to ascertain temporal pathways between the family and child.

## Review Aims

The purpose of this systematic review is to synthesise available prospective research on the association between family processes and the later well-being of AC. Due to the high prevalence rate of ID in AC (Baird et al., 2006) and its potential impact on well-being (e.g., Dominick et al., 2007), we limited to studies that included AC without ID, or that examined the relative impact of ID or intellectual functioning on well-being. We were interested only in family processes of a psychological nature (e.g., parent mental health, family adaptability) rather than structural processes (e.g., socioeconomic status [SES]). These family processes are modifiable and dynamic; that is, they are more open to psychological intervention than are structural family processes and some individual child characteristics like ASD symptom severity and associated comorbidity. A further aim of this review is to synthesise evidence (within the identified studies) on the relative impact of family processes compared to other individual child and social-environmental factors. We use identify-first language throughout this paper as it highlights the

inextricable nature of ASD and its integral role in a child's identity (Botha et al., 2021).

## Method

This review follows the methodological approach as outlined by the Preferred Reporting Items for Systematic Reviews & Meta-Analyses (PRISMA) Statement (Page & Moher, 2017). A review protocol was developed a-priori.

## Definition of Terms

**Family Processes** Include factors within the family that are modifiable and of a psychological nature. These are at the parent level (e.g., parent mental health, marital adjustment, and parent expressed emotion), dyad level (e.g., parent-child interaction and parenting behaviour) and family level (e.g., family adaptability and family cohesion). While individual child factors (e.g., ASD symptom severity) and structural family factors (e.g., SES) were not the focus of this review, such factors were noted in the findings if their impact on outcomes for AC was measured in relation to the family processes of interest.

**Well-being in AC** For the purpose of this review, well-being pertains to emotional and behavioural functioning, specifically reports of internalizing problems (e.g., anxiety, depression, peer problems, etc.), externalizing problems (e.g., oppositional behaviour, hyperactivity, aggression, etc.) and social problems, as measured using standardised screening scales such as the *SDQ* (Goodman, 1997) or the *CBCL* (Achenbach & Rescorla, 2001).

## Inclusion Criteria

Studies were included for review based on the following criteria:

- The use of a prospective design. Studies included a minimum of two waves of data collection, with at least a six-month interval, and where family processes were assessed at a wave prior to well-being, but with no restriction on the maximum time between predictors and outcomes. Research considers six months as a minimum time frame between predictor and outcome measures for longitudinal cohort studies of human development (Collins, 2006; Lerner et al., 2009),
- Outcomes were focused on individuals aged 0–24 years at baseline with a reported diagnosis of ASD. We chose 24 years as the upper limit as this is now seen as an upper age limit for adolescence (e.g., Sawyer et al., 2018),

- Outcomes were focused on one or more domain of emotional and/or behavioural functioning and were measured at either a univariate or multivariate level,
- Studies explicitly examined the impact of one or more family processes (identified as independent, predictor, moderator, or mediator variables) on well-being (dependent or outcome variable),
- Studies used standardised measures (e.g., including scale validity/reliability,) or a binary classification of family processes. We included a binary classification as some studies on paediatric populations include this a measure of dimensions of family processes including parent mental health,
- Studies sampled AC without ID (must have been explicitly stated) or intellectual functioning/ID must have been included as a confound or independent predictor of later well-being,
- Studies included interpretable statistical data such as effect sizes,
- Studies were written and published in English in a peer-reviewed academic journal.

Studies were excluded from review based on the following criteria:

- Cross-sectional studies only, or retrospective, case-control, or intervention (e.g., randomized control) designs or secondary analysis, with no empirical element,
- Studies used a qualitative design only,
- Studies examined effects of ASD on the family or that focused solely on the impact of structural family processes,
- Studies focused on adults through the duration of data collection,
- Studies sampled AC with reported comorbidity such as ID, Attention Deficit Hyperactivity Disorder (ADHD) or Epilepsy (to qualify for inclusion, the comorbidity must be included as an independent predictor or confounding variable).

## Search Strategy and Study Selection

Search terms were initially run in the Cochrane Database of Systematic Reviews to evaluate coverage of the topic by existing reviews. No review was found. A search was conducted in September 2021, of Academic Search Complete, MEDLINE, CINAHL, PsycArticles, PsycInfo, Web of Science-Core Collection and EMBASE. Search terms were developed to capture the full range of family processes (across the parent, dyad, and family systems levels) and well-being outcomes for AC (as defined above). Search terms can be found in Appendix Table 1

The search was restricted to studies published from the year 2000 to September 2021 to include contemporary studies. No other search restrictions were applied. All studies were title and abstract screened by the main reviewer (BF), and 30% of these studies were cross-screened by all secondary reviewers (ADG, CMC & MD). Full-text screening was conducted by the main reviewer. Full-text cross-screening was performed by all secondary reviewers on all studies, with each secondary reviewer screening one-third of the studies. Screeners agreed on over 95% of studies for both stages of the screening process.

## Quality Appraisal

The scientific merit of all studies for inclusion was appraised using a modified version of the *National Institute of Health Quality (NIH) Assessment Tool for Observational and Cohort Studies* (NIH, 2016). This tool comprises 14 items. A numeric value of '1' or '0' was assigned depending on whether the study met the requirements of each item, with '1' indicating the study met the requirement, and '0' indicating that the study did not meet the requirement or that this was unclear from the study. Item 12 was removed since it was only appropriate to intervention studies. For item 14, a score of 1 was allocated if the study measured key confounding variables (e.g., intellectual functioning/ID) or included these variables as independent predictors of later well-being. Thus, the total maximum quality score for each study was 13. A score of 11 to 13 was deemed 'good', whilst a score of 8 to 10 was 'fair', and a score of 7 or under was 'poor.' Studies were quality appraised by the main reviewer. Cross-appraisal was conducted by the other reviewers on all studies.

## Data Extraction and Synthesis

Relevant information pertaining to child and family characteristics (e.g., sample size, mean child age, child gender ratio, and family demographics), informants, study designs, family and child measures, main findings, and study strengths and limitations were extracted using a bespoke data extraction form, adapted from the Cochrane Data Collection Form. Studies were extracted by the main reviewer and discussed with a secondary reviewer (ADG). Due to the heterogeneous nature of family and child measures, methodological designs and available data, a meta-analysis of findings was deemed inappropriate. Instead, we provide a narrative synthesis of studies (Lisy & Porritt, 2016; Popay et al., 2006), which is supported by statistical information such as the effect sizes from univariate and multivariate analyses.



## Results

### Search Results

A total of 9,875 study records including duplicates were identified through database searches. After the removal of duplicates, 3,731 records remained, and these records were title and abstract screened. Seventy-seven of these records were full text screened. Moreover, one other potentially relevant study was identified through a hand-search of reference lists in all full-text screened studies. This study was also full text screened. In total, 17 studies met the inclusion criteria and were included in the review (see Fig. 1).

### Characteristics of Studies Included in the Review

Appendix Table 2 provides an overview of study characteristics, including country of origin, design details, study duration, number of waves, participant characteristics, number of respondents, measures of interest, and a synthesis of relevant findings (such as effect sizes and results of univariate and multivariate analyses). Statistical information on the relative impact of other factors to later well-being is also included where available. We also provide a synthesis of the family processes measured in each study and whether these were associated with the later well-being of AC (Appendix Table 3).

Fourteen studies reported on secondary data. Six of these studies drew their findings from a study by Seltzer et al. (2003), two from the Special Needs and Autism Project (SNAP), two from the Millennium Cohort Study (MCS), and another from Osborne et al. (2008). The data origin was unclear in the remaining three studies. Moreover, three studies used primary data. Participants ranged in age from 3 years to 22 years (mean age) at baseline. Sample sizes ranged from 65 to 364.

Sixteen studies used only parent-report measures, and one study used a parent-report family measure and a teacher-proxy measure of child well-being. Eight studies included two waves of data collection, with follow-up times ranging from approximately 10 months to 4 years. The remaining nine studies included between 3 and 6 waves of data collection. These studies varied in length from 2 to 10 years, with follow-up times ranging from 12 months to approximately 7.5 years.

The mean methodologic quality of studies was found to be 'fair' ( $M = 10.82$ ,  $SD \pm 0.71$ ). A Quality Index Rating (QIR) score for each study and a breakdown of these scores can be found in Appendix Table 2.

## Narrative Synthesis of Study Findings

### Parent Mental Health and Parent Emotion-Focused Coping

Four studies examined parent mental health problems as risk factors for later emotional and behavioural difficulties in AC (Baker et al., 2011a; Greenlee et al., 2021b; Simonoff et al., 2013; Stringer et al., 2020) and one study examined parent emotion-focused coping as a protective factor (Szatmari et al., 2020). Three studies supported the hypothesised relationship between parent mental health problems and later difficulties (Baker et al., 2011a; Greenlee et al., 2021b; Simonoff et al., 2013). Just one study adjusted for confounders (Baker et al., 2011a). The remaining studies examined the relative impact of individual child and social-environmental factors including ID and SES (see Appendix Table 2).

Greenlee et al. (2021b) found that maternal depression was weakly correlated with difficulties across 4 years, while ASD symptom severity was moderately to strongly correlated with later difficulties (measured at a univariate level). Fewer symptoms of maternal depression predicted a greater decline in difficulties; however, this was stronger predicted by fewer restricted and repetitive behaviours at baseline. Similarly, Baker et al. (2011a) found that maternal depression was weakly correlated with difficulties (at a univariate level) after 36 months, however this had no predictive effects when adjusting for ID. The same study found a small, positive correlation between ID and follow-up difficulties.

Another study by Simonoff et al. (2013) found that maternal mental health problems was moderately correlated with internalising problems after 4 years, while aspects of SES were weakly to moderately correlated with this across time. Although maternal mental health was not correlated with externalising problems, these were correlated with earlier intellectual functioning and functional ability (with small to large effect sizes). Stringer et al. (2020) also found no evidence that maternal mental health (measured on a binary classification) predicted difficulties at a multivariate level (conduct, emotional and hyperactivity symptoms) over 11 years, and Szatmari et al. (2021) found no predictive effects of maternal emotion-focused coping on internalizing or externalizing problems across time. In Stringer et al. (2020), difficulties were predicted across time by developmental functioning (including ASD severity and ID), and SES (with small to large effect sizes). Szatmari et al. (2021) found that SES predicted later externalizing problems ( $\beta = -0.80$ ), while baseline internalizing and externalizing problems predicted growth in these problems over time ( $\beta = 0.09$  and  $\beta = 0.10$ ).

## Parenting Stress

Four studies examined parenting stress as a risk factor (Osborne et al., 2008; Osborne & Reed, 2009; Simonoff et al., 2013). Three studies reported at least one significant association between parenting stress and difficulties across approximately 10 months, adjusting for ASD severity, intellectual functioning, and functional skills (Osborne et al., 2008; Osborne & Reed, 2009).

Osborne & Reed (2009) measured parenting stress with the *Questionnaire on Resources and Stress* (QRS; Friedrich et al., 1983) and found that this predicted difficulties at a multivariate level (oppositional behaviour, hyperactivity, and ADHD symptoms). In a related study, Osborne and Reed (2009b) used several measures of child and parent functioning and measured both at a univariate level. They found that parenting stress as measured with the *Parenting Stress Index* (PSI; Abadin, 1983) predicted scores of the *Developmental Behaviour Checklist* (DBC; Einfeld & Tonge, 2002) and the *Strengths and Difficulties Questionnaire* (SDQ; Goodman, 1997). However, QRS measured parenting stress was only found to predict DBC scores. By contrast, Osborne et al. (2008) found that QRS measured parenting stress strongly correlated with later SDQ scores. The only study on to find non-significant associations, Simonoff et al. (2013) reported non-significant correlations between PSI scores and SDQ scores (measured at a multivariate level) across adolescence. While this study did not adjust for confounders, SDQ scores significantly correlated with earlier reports of intellectual functioning, functional skills, and SES (with small to moderate effect sizes).

## Parent-Child Relationship and Parenting Behaviour

Parent expressed emotion is defined by criticism, hostility and emotional over-involvement. Four studies examined expressed emotion as a risk factor over different time periods (Baker et al., 2011b; Greenberg et al., 2006; Hickey et al., 2020; Woodman et al., 2015). Two studies found significant associations for at least one construct of expressed emotion (with difficulties measured at a univariate and multivariate level) across 18 months to 10 years. Criticism was a predictor in both studies (Baker et al., 2011b; Greenberg et al., 2006).

Greenberg et al. (2006) found that parent criticism was moderately, positively correlated with difficulties at a multivariate level (internalizing, externalizing and asocial symptoms) after 36 months, adjusting for ID and sex. Criticism was also found to predict internalising and asocial scores across time ( $\beta=0.27$  and  $\beta=0.22$ , respectively). The same study found small, positive correlations between ID and sex and later difficulties, while ASD severity was moderately correlated. Similarly, Baker et al. (2011b) found small

correlations between criticism and difficulties (measured at a univariate level) after 18 months (wave 2) and at 36 months (wave 3); but not at 83 months (wave 4). Criticism at wave 2 was moderately correlated with difficulties at wave 3; but not at wave 4. The same study found that ID moderately to strongly correlate with difficulties across time, while age and sex had weak and non-significant correlations. In this study, criticism predicted the trajectory ( $\beta=0.78$ ) and end levels of difficulties ( $\beta=0.58$ ) when adjusting for ID and sex.

On the contrary, Hickey et al. (2020) found no association between maternal or paternal criticism and difficulties (measured at a univariate level) across 2 years (at 12 and 24 months). While they did not adjust for confounders, a small and moderate correlation was reported between ID and ASD severity and difficulties across time. Similarly, Woodman et al. (2016) found no evidence that criticism predicted developmental outcomes at a univariate level (combined difficulties, ASD severity, and daily living skills) across 10 years. Multivariate analysis showed that these outcomes were predicted by earlier reports of developmental functioning, age, and level of school inclusion (with effect sizes ranging from  $\beta=0.08$  to  $\beta=-1.92$ ).

Just one study examined parent expressed emotion as a risk factor (as a combination of criticism and over involvement). Greenberg et al. (2006) reported small, positive correlations between expressed emotion and difficulties (at multivariate level: internalising, externalising and asocial problems) after 18 months. This also predicted these difficulties across this time when adjusting for ID and sex ( $\beta=0.21$ ,  $\beta=0.18$ , and  $\beta=0.27$ ). The same study found a small correlation between over-involvement and later asocial problems; however, emotional over-involvement did not predict difficulties at a multivariate level across time.

Five studies examined positive aspects of the parent-child relationship as protective factors, including parent warmth (Hickey et al., 2020; Midouhas et al., 2013; Smith et al., 2008), parent praise (Smith et al., 2008; Woodman et al., 2015), parent positivity (Woodman et al., 2016), and parent-child closeness (Flouri et al., 2015). The impact of warmth was mixed. Midouhas et al. (2013) found that this predicted declines in conduct ( $\beta=0.020$ ) and peer ( $\beta=0.028$ ) problems across early childhood when adjusting for other factors including ID and parent education. Similarly, Hickey et al. (2020) reported small, negative correlations between warmth and difficulties (at a univariate level) at 12 and 24 months. Although this study did not adjust for confounders, ID and ASD severity were correlated with later difficulties. By contrast, the final study (Smith et al., 2008) found no predictive effects of warmth on internalizing, externalizing or asocial problems after 18 months, adjusting for sex and ID.

There was also mixed evidence on praise as a protective factor. Woodman et al. (2015) found that this predicted fewer difficulties at a univariate ( $\beta=-0.23$ ) and multivariate ( $\beta=-.09$ ) level (internalizing, externalizing and asocial

symptoms) across 8.5 years. Difficulties were stronger predicted by ID ( $\beta = 0.38$  to  $\beta = 1.81$ ), and weaker predicted by age ( $\beta = -0.02$  to  $\beta = -0.05$ ). However, another study (Smith et al., 2008) found no predictive effects of praise on difficulties (at a multivariate level) after 18 months, adjusting for sex and ID.

The only study to examine positivity as a protective factor, Woodman et al. (2016) found that this predicted developmental change at a univariate level (combined difficulties, ASD severity, and daily living skills) across 10 years ( $\beta = 0.25$ ), over and above the effects of age ( $\beta = 0.08$ ); but below the effects of ID ( $\beta = -1.92$ ), ASD severity ( $\beta = -0.30$ ), language ability ( $\beta = 0.57$ ) and level of school inclusion ( $\beta = 1.67$ ). Just one study (Flouri et al., 2015) examined parent–child closeness and found that this had no predictive effects on difficulties (measured at multivariate level) across early and middle childhood.

Other parenting behaviours have also been examined. Osborne et al. (2008) used the *Parent–Child Relationship Inventory* (PCRI; Gerard, 1994), which measures autonomy, communication, involvement, and limit setting. Of these, only limit setting was a protective factor for difficulties after 10 months (with a moderate negative correlation) when adjusting for ASD severity, intellectual functioning, and parenting stress. Limit setting also negatively mediated the correlation between parenting stress and difficulties after adjusting for ASD severity, intellectual functioning, and functional skills ( $p < 0.001$ ) (Osborne et al., 2008).

In line with Osborne et al. (2008), Midouhas et al. (2013) found no evidence that parent involvement operated as a protective factor when adjusting for factors including ID and maternal education. Another study by Greenlee et al., (2021a) used the *Parenting Styles and Dimensions Questionnaire* (Robinson et al., 2001) to measure authoritarian, permissive and authoritative parenting. Authoritarian and permissive parenting were significantly correlated with internalizing and externalizing problems after 12 months, with small to moderate effect sizes. The same study found that mother’s use of authoritarian parenting predicted later internalizing ( $\beta = -0.0138$ ) and externalizing ( $\beta = -0.0120$ ) problems, while father’s use of authoritarian parenting predicted later internalizing problems ( $\beta = -0.0165$ ). They adjusted for earlier ASD severity and internalizing and externalizing problems.

Four studies (Baker et al., 2011a; Greenlee et al., 2021b; Smith et al., 2008; Woodman et al., 2015) assessed parent–child relationship quality as a protective factor using the *Positive Affect Index* (PAI; Bengtson & Schrader, 1982). The PAI measures reciprocal feelings such as trust, respect, and affection. All studies reported negative correlations between relationship quality and later difficulties; however, only two studies found predictive effects across time (Smith et al., 2008; Woodman et al., 2015). Smith et al. (2008) found that

relationship quality was moderately, negatively correlated with difficulties (measured at multivariate level: internalizing, externalizing and asocial) after 18 months; with stronger effect than ID. Relationship quality predicted fewer difficulties when adjusting for sex and ID ( $\beta = -0.45$  to  $\beta = -0.52$ ). In line with this, Woodman et al. (2015) found that relationship quality predicted fewer difficulties at a univariate ( $\beta = -0.11$ ) and multivariate level (externalizing and asocial:  $\beta = -0.05$  and  $\beta = -0.04$ , respectively) across 8.5 years. They did not adjust for confounders, however ID had stronger effects on these difficulties across time ( $\beta = 0.03$  to  $\beta = 1.81$ ), while age had weaker effects ( $\beta = -0.02$  to  $\beta = -0.05$ ).

By contrast, Baker et al., (2011a) found a weak, negative correlation between parent-child relationship quality and difficulties (at univariate level) after 3 years. They also found a weak correlation between ID and later difficulties. The final study to use the PAI, Greenlee et al. (2021b) found that relationship quality was moderately to strongly, negatively correlated with difficulties (measured at multivariate level) across 2 years, however this had no predictive effects across time. The same study found that ASD severity was correlated with later difficulties with moderate to large effect sizes. Another study (Flouri et al., 2015) examined parent-child conflict and found that this predicted growth in conduct (but not emotional) problems across early and middle childhood when adjusting for ID ( $\beta = -0.024$ ). However, conduct problems were stronger predicted by ADHD ( $\beta = 0.289$ ).

### The Marital Relationship

Two studies examined the marital relationship as a protective factor, with both finding significant associations with outcomes for AC across time. Greenlee et al. (2021b) found that marital coping predicted declines in difficulties (measured at univariate level) across 2 years when adjusting for age, sex, and ID. Similarly, Greenlee et al. (2021a) found that marital satisfaction was negatively correlated with difficulties (at a univariate level) across 3 years, with small to moderate effect sizes. Satisfaction was also found to predict fewer difficulties across time through the use of an authoritarian parenting style when adjusting for ASD severity and difficulties at baseline ( $\beta = -0.0120$  to  $\beta = -0.0165$ ).

### Family Level Processes

Three studies examined family-level processes, with two of these reporting significant associations with later difficulties (Baker et al., 2011a; Midouhas et al., 2013; Szatmari et al., 2021). Baker et al. (2011a) examined family adaptability as a protective factor, defined as the ability of the family system to change its power structure, roles and relationships in response to situational and developmental stress. Adaptability was weakly, negatively correlated with difficulties (at

a univariate level) after 3 years. It also negatively predicted this across time when adjusting for ID ( $\beta = -0.17$ ). Difficulties were stronger predicted across time by baseline difficulties ( $\beta = 0.68$ ). Similarly, Szatmari et al. (2021) examined family functioning as protective factor using the *General Family Functioning Scale* of the *McMaster Family Assessment Device* (Epstein et al., 1983). Family functioning predicted fewer internalizing and externalizing problems across time ( $\beta = -0.80$  and  $\beta = -1.03$ ), over and above baseline difficulties ( $\beta = 0.09$  and  $\beta = 0.10$ ) and household income (which predicted externalizing problems only:  $\beta = -0.80$ ). Lastly, Midouhas et al. (2013) examined household chaos as a risk factor. This had no predictive effects on later difficulties across early and middle childhood when adjusting for developmental functioning, sex, and maternal education. However, household chaos did predict the risk for conduct problems (Midouhas et al., 2013).

## Discussion

This review is the first to synthesise available longitudinal research on the associations between psychological processes relating to the family and the later well-being of AC. Due to the potential impact of ID on outcomes for AC, we included studies that focused on AC without ID, or that examined intellectual functioning as a confound or independent predictor of later well-being. In total, seventeen studies were reviewed. Taken together, the methodological quality of these was deemed ‘fair,’ evaluated using the *NIH Quality Assessment Tool for Observational and Cohort Studies* (NIH, 2016).

Notwithstanding the impact of ASD on outcomes for the family (e.g., Gau et al., 2012; Phetrasuwan & Shandor Miles, 2009), the findings of our review suggest that, collectively, family processes can have significant implications for the longitudinal well-being of AC, even when adjusting for other individual child and social-environmental factors. This is in line with reviews on other paediatric populations (e.g., Drotar, 1997; Otero, 2009). Crucially, our findings indicate that outcomes for AC are often influenced more across time by family processes than by some individual child characteristics such as age, ASD symptom severity and ID, as well as structural family processes like SES.

All studies reviewed (except Stringer et al., 2020) reported at least one significant association between at least one family process and the later well-being of AC. However, some studies did not note effect sizes, which impacted our evaluation. Most studies (14/16) looked at parent and dyad level processes. These studies examined diverse family risk factors: parent mental health problems, parenting stress, parent expressed emotion (criticism and emotional over-involvement), authoritarian parenting behaviours, and parent-child conflict; as well as diverse family protective

factors: parent involvement, positive aspects of the parent-child relationship (such as warmth, praise, and closeness), authoritative parenting behaviours, and marital adjustment. The emphasis on risk and protective factors represents a shift from deficit-based conceptualisations of ASD to a view of family processes as mechanisms of positive and negative outcomes for AC. However, the heterogeneity of family processes measured across the reviewed studies makes it difficult to compare findings on their relative strength.

Parenting stress was amongst the most frequently measured risk factor for emotional and behavioural difficulties at the parent level. Three of four studies on this reported significant associations with later difficulties across early and middle childhood, when adjusting for ASD severity, ID, and functional skills. Just one of these studies reported an effect size, with large effect (Osborne et al., 2008). Simonoff et al. (2013) reported non-significant associations; however, this study focused on adolescence, suggesting that autistic adolescents may contribute to parenting stress rather than be influenced by it. However, an explanation for the lack of significance reported here may be the much longer follow-up period, which raises the possibility that the effects of parenting stress decrease over time. Taken together, these findings are more robust compared to cross-sectional evidence on the impact of parenting stress on outcomes AC (Yorke et al., 2018).

Several studies examined the parent-child relationship using the *PAI* (Bengtson & Schrader, 1982). The *PAI* measures relationship quality based on affection, fairness, trust, and respect. Like studies on parenting stress, these yielded relatively robust findings in the context of impact on AC, with all four studies reporting significant correlations (with moderate to large effect sizes), and two of these reporting predictive effects when adjusting for individual child factors including ID and sex (Smith et al., 2008; Woodman et al., 2015).

There was more mixed evidence on parent expressed emotion as a risk factor, particularly parent criticism. Studies on criticism that included younger age AC reported significant correlations with later difficulties. However, studies focusing across adolescence and early adulthood found weak and non-significant effects of criticism when adjusting for ID. This suggests that AC may be responded to by parent criticism in childhood and adolescence, while the reverse may occur across later adolescence and into adulthood, perhaps suggesting a long-term effect from adolescence. Nevertheless, study design may also be a key factor here in that the effects of criticism from adolescence into early adulthood may be diluted when used as a predictor of developmental outcomes at a univariate level, as in the study by Woodman et al. (2016). Furthermore, the only study to examine parent expressed emotion (combined levels of emotional over-involvement and criticism) found that this



had non-significant effects on outcomes for AC (Greenberg et al., 2006). This finding contrasts with general population studies which posit parent expressed emotion as a risk factor for emotional and behavioural difficulties in childhood (Peris & Miklowitz, 2015).

The role of positive aspects of the parent-child relationship, particularly parent warmth and parent praise, as protective factors were also unclear. Inconsistent findings for parent warmth are surprising, given similarities in follow-up times, measured confounders, and child age ranges (Hickey et al., 2020; Smith et al., 2008). Turning to praise, Woodman et al. (2015) found that this had protective effects across later adolescence, but the effect size was weaker than that for ID, whereas Smith et al. (2008) found non-significant effects when adjusting for ID in younger aged AC. Thus, it is possible that the significant findings reported by Woodman et al. (2015) were either moderated or mediated by ID. Alternatively, these findings could mean that parent praise operates as a protective factor only for older age AC.

Studies examining parent mental health problems as a risk factor yielded the least robust findings. A systematic review by Yorke et al. (2018) found relatively consistent evidence that this predicted emotional and behavioural difficulties in AC with a range of effect sizes. However, these studies were primarily cross-sectional in design, and most did not account for the potential impact of ID. In our review, prospective findings were weak. Several studies found that parent mental health problems were positively correlated with later difficulties, with primarily small effect sizes. The same studies found no predictive effects of parent mental health, while the remaining studies found non-significant correlations. Notably, all studies found that individual child and structural family factors (such as ID and SES) predicted later difficulties (with mostly moderate to large effect sizes); however, just one of these studies adjusted for confounders (Baker et al., 2011a). This may lead to misestimation of the predictive effects of parent mental health problems in the other studies.

Studies examining the impact of family-level factors were scarcer ( $n = 3$ ). These refer to the family's functioning as a single interactive and interdependent unit (Bowen, 1978). Baker et al. (2011a) found that family adaptability acted as protective factor, predicting fewer difficulties in AC across adolescence. Notably, family adaptability had stronger effects than parent mental health and the parent-child relationship, suggesting that family level factors may be more critical to outcomes for AC across adolescence than some parent-level factors. Similar findings were reported by Szatmari et al. (2021), who found that family functioning (measured using the *McMaster Family Assessment Device* (Epstein et al., 1983) operated as a protective factor for emotional and behavioural difficulties across mid childhood. The final

study reported weak findings regarding household chaos as a risk factor (Midouhas et al., 2013). This is surprising given that structure and routine are important for AC, and these families often struggle with maintaining routine (McAuliffe et al., 2019; Midouhas et al., 2013). Nevertheless, it is worth noting that the risk of household chaos may be mediated or moderated by protective factors at other levels, such as those previously discussed, which are not measured in this study.

## Research Gaps and Recommendations for Future Research

There were several limitations across the reviewed studies. First, no study sampled sufficient females to test robustly for sex effects. Research is needed to examine whether the effects of family processes on AC differ based on sex. Similarly, most studies included AC with wide age ranges, making developmentally sensitive effects difficult to discern, including those that occur from different family and child transitions. As such, research should include AC of smaller age ranges, particularly across early and middle childhood, where emotional and behavioural difficulties are often greater (Gray et al., 2012) and when families can experience significant distress as they navigate support systems (e.g., Gray, 2002).

The studies that examined some positive aspects of the parent-child relationship and parent mental health yielded mixed findings. Importantly, some of these studies did not adjust for potential confounders, despite reporting predictive effects of other individual and social-environmental factors such as ID and family SES. Research should consider the potential moderating or mediating effects of these factors, to provide a more comprehensive understanding of the predictive impact of family processes on outcomes for AC across time.

The studies that examined family adaptability and positive emotional aspects of the parent-child relationship (praise, positivity, and warmth) included only older age children and adolescents. As younger AC can experience more profound difficulties (Gray et al., 2012), cohort research is needed to track changes in difficulties over time, allowing for examination of potential time-ordered effects of family processes as well as identification of the mechanisms through which these effects may exist. This may be critical for preventing the onset of diagnosable psychiatric conditions in later childhood and adolescence.

Just two studies (Greenlee et al., 2021b; Hickey et al., 2020) examined paternal functioning; however, the experiences and functioning of fathers are likely to implicate outcomes for AC (Lashewicz et al., 2019). Similarly, no study examined the impact of the dyadic AC-sibling relationship, despite research identifying high levels of conflict and low levels of warmth in this relationship (Hastings & Petalas, 2014). Empirical attention

is warranted, to provide a more contextualised view of the impact of dyadic processes on AC.

Protective factors including the parent-child relationship and positive parenting such as praise and warmth can modify the impact of a risk factor associated with outcomes for AC. Empirical research is needed to identify risk and protective factors across multiple levels of the bioecology model (Bronfenbrenner, 2005), including those at the individual child (including clinical factors like ASD severity and ID), family, and broader contextual levels, including the chrono-system. A few of the reviewed studies examined the indirect and moderator effects of some family processes such as parent involvement (e.g., Baker et al., 2011a; Midouhas et al., 2013); however, a more encompassing approach is needed to consider family processes across the parent, dyadic and family levels. To do this, research should move from the risk factor and outcome model to incorporate the dynamic interactions of risk and protective factors across these levels, as well as at levels external to the family. For instance, research shows that AC are at higher risk for unmet support needs compared to children with other developmental conditions (Chiri & Warfield, 2012) and families often report poor quality relationships with professionals, which can contribute to poor family outcomes (Hsiao, 2013). Moreover, the studies in our review report mixed evidence on the impact of SES on outcomes for AC (e.g., Hickey et al., 2020; Stringer et al., 2020); however, the potential family mechanisms through which these effects may exist are unclear and thus warrant investigation (see Conger et al. (2010) for a review of evidence on the relationship between SES, family processes, and individual development). Research is also needed to address how family management strategies and AC mutually influence one another, to provide a more contextualized understanding of family adaptation and how it impacts the child and family.

Turning to aspects of methodological design, all but one study included only parent-report measures of child outcomes and all studies relied on single sources of information, primarily from parents. Parent-report measures can include respondent bias but can also demonstrate good reliability (Daniels et al., 2012). The use of multiple informants including teacher-proxy and, where possible, self-report measures should be used in research to ensure minimal information bias (Najman et al., 2001). Moreover, future research should strive to utilise mixed-method designs, including naturalistic observation, to provide a more coherent approach to studying family processes (Dishion & Granic, 2004). Family mealtime observation has been used effectively in studies of adjustment in other paediatric populations (Hammons & Fiese, 2010). Future research should also include a power analysis to determine the smallest sample size suitable to detect the effect of a given analytic method at the desired level of significance (Kraemer & Blasey, 2015). Lastly, research that develops core outcome sets for AC will be important to allow for more sensitive, reliable, and valid comparisons across and between studies.

## Clinical Implications

While etiological theories that posit ASD the result of parenting have long been discredited (Kanner, 1949), our review findings suggest that, with the appropriate supports, families may be able to take proactive measures to promote positive outcomes for AC.

In general, interventions for emotional and behavioural difficulties in AC are behavioural based, such as applied behaviour analysis, and often incorporate the family as a mediator of the intervention. Nevertheless, the findings of our review suggest that interventions that target family processes may also be important for AC. Two recent systematic reviews provide promising evidence for the importance of parent-focused interventions (such as cognitive-behavioural and psychoeducational interventions) for supporting psychological functioning and parenting behaviour in parents of AC (Frantz et al., 2018; Tarver et al., 2019). However, neither of these reviews examined the potential effects of parent-focused interventions on well-being outcomes for AC. Research is needed on this, particularly for interventions that target parenting behaviour and parenting stress. Similarly, given the protective impact of family level factors including adaptability, family system interventions may also benefit outcomes for AC. Systemic family interventions have been found to promote better outcomes for other populations including individuals with Schizophrenia (Claxton et al., 2017). Moreover, professionals, including clinical and educational psychologists and paediatricians, should be equipped with the training and tools to assess family processes when presented with AC with or at risk for emotional and behavioural difficulties.

In line with Bronfenbrenner (2005), identification of risk and protective factors across multiple levels will be important to (1) define the scope and type of challenges experienced by families of AC, (2) determine strategies for equipping families and professionals with skills, and (3) develop sustainable systems of care for families. This may provide a useful framework to redesign service systems that emphasise co-ordination and continuity across service providers and settings (including healthcare and education), that are built around the needs of the family and child. Moreover, understanding broad level factors can inform systemic and socioeconomic interventions and policies that promote positive outcomes for the family and child.

## Conclusion

This systematic review underscores the importance of psychological processes relating to the family for determining the longitudinal well-being of AC. Progression in this research area should come from well-powered and sex balanced samples as well as mixed-method designs. Furthermore, examining outcomes for AC within a multisystem framework will be important to inform sustainable systems of care for these children and their families.

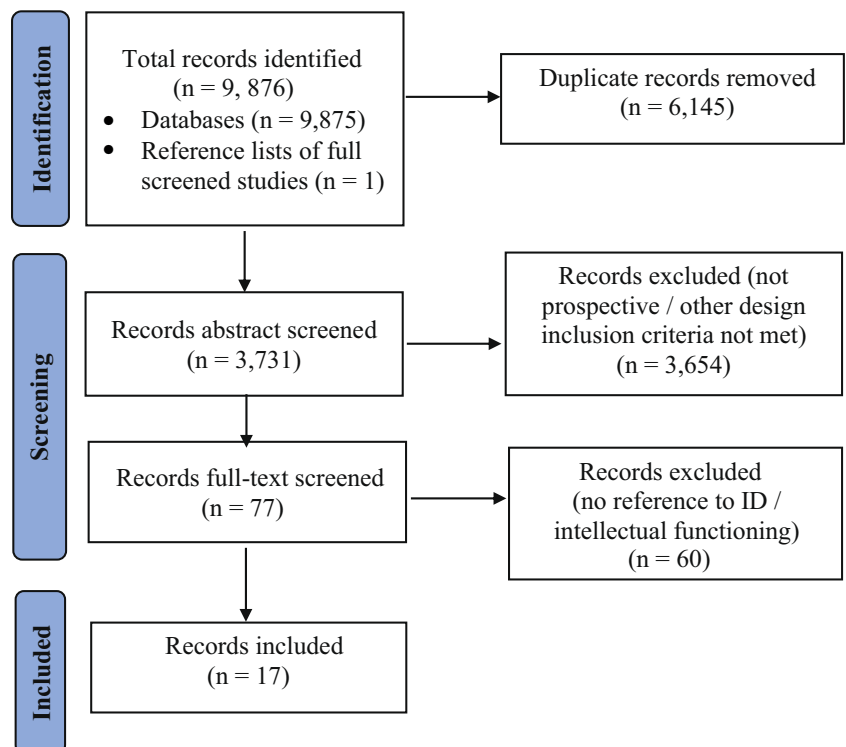
## Appendix 1

**Table 1** Boolean search terms

Predictor	parent* OR maternal OR mother OR paternal OR father OR sibling OR “family factor*” OR “family predictor*” OR “family characteristic*” OR “family process*” OR “family system*” OR “family environ*” OR “family context” OR “family functioning”
Population (i)	autism OR autistic OR “autistic disorder” OR “autism spectrum disorder”
Population (ii)	child* OR adolescen* OR teenage* OR youth
Outcome	psychological* OR well-being OR adjustment OR “mental health” OR emotion* OR behav* OR psychiatric* OR psychopatholog* OR internaliz* OR externaliz* OR internalis* OR externalis* OR psychiatric
Design	longitudinal OR prospective* OR follow-up OR wave OR time

## Appendix 2

**Fig. 1** Review flow chart



# Appendix 3

**Table 2** NIH quality assessment scores

	Baker et al. (2011b)	Baker et al. (2011a)	Flouri et al. (2015)	Greenberg et al. (2006)	Greenlee et al. (2021a)	Greenlee et al. (2021b)	Hickey et al. (2020)	Midouhas et al. (2013)	Osborne et al. (2008)	Osborne and Reed (2009)	Osborne and Reed (2009)	Simonoff et al. (2013)	Smith et al. (2008)	Stringer et al. (2020)	Szatmari et al. (2021)	Woodman et al. (2015)	Woodman et al. (2016)
1. Was the research question or objective in this paper clearly stated?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2. Was the study population clearly specified and defined?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3. Was the participation rate of eligible persons at least 50%?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study pre-specified and applied uniformly to all participants?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5. Was a sample size justification or power description provided?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Table 2 (continued)

	Baker et al. (2011b)	Baker et al. (2011a)	Flouri et al. (2015)	Greenberg et al. (2006)	Greenlee et al. (2021a)	Hickey et al. (2020)	Midouhas et al. (2013)	Osborne et al. (2008)	Osborne and Reed (2009)	Osborne and Reed (2009)	Simonoff et al. (2013)	Smith et al. (2008)	Stringer et al. (2020)	Szatmari et al. (2021)	Woodman et al. (2015)	Woodman et al. (2016)
6. For the analyses in this paper, were the exposures (family process predictors) of interest measured prior to the outcomes being measured?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7. Was the timeframe sufficient so that once could reasonably expect to see an association between exposure and outcome if it existed?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8. For predictors that can vary in amount or level, did the study examine different levels of the exposure as related to the outcomes?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9. Were the predictor measures clearly defined, valid, reliable, and implemented consistently across all study participants?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10. Were the predictor(s) assessed more than once over time?	1	0	0	1	0	1	0	0	0	0	0	1	0	0	1	0

Table 2 (continued)

	Baker et al. (2011b)	Baker et al. (2011a)	Flouri et al. (2015)	Greenberg et al. (2006)	Greenlee et al. (2021a)	Hickey et al. (2020)	Midouhas et al. (2013)	Osborne et al. (2008)	Osborne and Reed (2009)	Osborne and Reed (2009)	Simonoff et al. (2013)	Smith et al. (2008)	Stringer et al. (2020)	Szatmari et al. (2021)	Woodman et al. (2015)	Woodman et al. (2016)
11. Were the outcome measures clearly defined, valid, reliable, and implemented consistently across participants?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13. Was loss to follow-up after baseline 20% or less?	1	1	1	0 (unclear)	0	1	1	0 (unclear)	1	1	1	1	1	0	0	0
14. Were key potential confounding variables measured and adjusted statistically (or examined as an independent predictor)?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<i>Total score</i>	12	11	11	12	10	11	11	10	11	11	11	12	11	10	11	10

Appendix 4

Table 3 Summary of studies included for review

Author (year), Country of Origin	Type of analysis, Sample size, % male, mean baseline age (Respondent)	Time frame between family and child measures	Family measures of interest	Child measures of interest (including for intellectual functioning, where available)	Synthesis of the association between family processes and later well-being	Synthesis of the association between other factors and later well-being (as available)
Baker et al. (2011b) USA	Secondary (Seltzer et al., 2003) $n=118$ 77%; 19.77 years $\pm$ SD 6.72 (wave 2 of Seltzer et al.) (parent)	4 waves spanning 7 years. 18, 38 and 83 months from baseline	FMSS	SIB-R (General Maladaptive Index); WRIT VABS	MAT criticism at wave 2 correlated with <i>SIB-R</i> scores at waves 3 ( $r = .21, p < .05$ ) and 4 ( $r = .22, p < .05$ ) but not at wave 5. Wave 3 criticism negatively correlated with <i>SIB-R</i> scores at wave 4 ( $r = .33, p < .01$ ), but not at wave 5. Wave 4 criticism positively correlated with <i>SIB-R</i> scores at wave 5 ( $r = .32, p < .01$ ). Changes in criticism predicted changes in <i>SIB-R</i> scores over time ( $\beta = .78, p < .01$ ) and <i>SIB-R</i> scores at the study end ( $\beta = -.58, p < .05$ )	ID (measured at wave 2) correlated with <i>SIB-R</i> scores at waves 3 ( $d = .21, p < .05$ ), 4 ( $d = .4, p < .001$ ), and 5 ( $d = .32, p < .01$ ). ID predicted the trajectory of <i>SIB-R</i> scores ( $\beta = .37, p = .05$ ) and <i>SIB-R</i> scores at the study end ( $\beta = .42, p < .001$ ). Age and sex were unrelated to later <i>SIB-R</i> scores
Baker et al. (2011a) USA	Secondary (Seltzer et al., 2003) $n=149$ 74%; 14.77 years $\pm$ SD 1.89 (wave 1 Seltzer et al.) (parent)	2 waves separated by 36 months	PAI FACES II (adaptability scale)	SIB-R (General Maladaptive Index) WRIT	Family adaptability ( $r = -.20, p < .05$ ), the quality of the mother-child relationship ( $r = -.23, p < .01$ ) and MAT depression ( $r = .26, p < .01$ ) correlated with later <i>SIB-R</i> scores. Family adaptability predicted decline in <i>SIB-R</i> scores, adjusting for ID ( $\beta = -.17, p < .01$ ). Neither MAT depression, nor the quality of the mother-child relationship predicted change in <i>SIB-R</i> scores over time	ID correlated with later <i>SIB-R</i> scores ( $d = .29, p < .01$ ). <i>SIB-R</i> scores at baseline predicted change in <i>SIB-R</i> scores over time ( $\beta = .68, p < .001$ ). Age, family income, number of children in the family and marital status were not associated with later <i>SIB-R</i> scores
Flouri et al. (2015) USA	Secondary (MCS) $n=209$ 83%; 3 years (parent)	3 waves (waves 2, 3 & 4 of the MCS) at ages 3, 5 and 7 years	CPRS CTS KS	SDQ (emotional; conduct) BSRA-R BAS	Mother-child conflict (measured at baseline) predicted growth in conduct problems across ages 3-7 years ( $\beta = .024, SE = .008, p < .05$ ). Harsh discipline parenting (measured at baseline) predicted conduct problems at age 5, but not the trajectory of <i>SDQ</i> scores across ages. Mother-child closeness (measured at baseline) did not predict <i>SDQ</i> scores across ages	Intellectual functioning (measured across ages) predicted decline in emotional problems. ADHD predicted growth in conduct problems ( $\beta = .289, p < .05$ ). Low SES and peer problems (measured at baseline) predicted conduct problems at age 5, but not the trajectory of either problem. Low SES was only concurrently related to emotional problems

Table 3 (continued)

Author (year), Country of Origin	Type of analysis, Sample size, % male, mean baseline age (Respondent)	Time frame between family and child measures	Family measures of interest	Child measures of interest (including for intellectual functioning, where available)	Synthesis of the association between family processes and later well-being	Synthesis of the association between other factors and later well-being (as available)
Greenberg et al. (2006) USA	Secondary (Seltzer et al., 2003) $n=149$ 76%; 19.9 years $\pm$ SD 7.84 (wave 2 of Seltzer et al.) (parent)	2 waves separated by 18 months	FMSS	SIB-R (asocial; externalizing); WRIT	MAT Total FMSS scores correlated with later internalizing ( $r=.27, p<.001$ ), externalizing ( $r=.28, p<.001$ ) and asocial ( $r=.33, p<.001$ ) scores. MAT criticism positively correlated with later internalizing ( $r=.31, p<.001$ ), externalizing ( $r=.36, p<.001$ ) and asocial ( $r=.31, p<.001$ ) scores. MAT emotional over involvement correlated with later asocial scores ( $r=.16, p<.05$ ) only. Total FMSS scores predicted externalizing ( $\beta=-.21, p<.001$ ), internalizing ( $\beta=-.18, p<.001$ ) and asocial ( $\beta=.27, p<.001$ ) scores across time. MAT criticism predicted internalizing ( $\beta=.27, p<.001$ ) and asocial ( $\beta=.22, p<.001$ ) scores, but not externalizing scores. MAT over involvement did not predict later SIB-R scores. These adjusted for ID and sex	ID correlated with later internalizing ( $r=.18, p<.05$ ), externalizing ( $r=.18, p<.05$ ), and asocial ( $r=.23, p<.01$ ) scores. Age negatively correlated with later externalizing scores ( $r=-.16, p<.05$ ). Restricted and repetitive behaviours positively correlated with later internalizing ( $r=.27, p<.001$ ) and externalizing scores ( $r=.27, p<.001$ ). Social reciprocity positively correlated with later internalizing ( $r=.39, p<.001$ ) and externalizing scores ( $r=.24, p<.01$ ). Non-verbal communication did not correlate with later SIB-R scores. Controlling for ID on the effects of total FMSS scores, ID predicted later externalizing ( $\beta=-.10, p<.05$ ) and asocial scores ( $\beta=.15, p<.01$ ). Controlling for ID on the effects of criticism and over involvement, ID predicted later externalizing ( $\beta=.11, p<.05$ ; $\beta=.12, p<.05$ ) and asocial ( $\beta=.15, p<.01$ ; $\beta=.18, p<.001$ ) scores. Sex was unrelated to later SIB-R scores



Table 3 (continued)

Author (year), Country of Origin	Type of analysis, Sample size, % male, mean baseline age (Respondent)	Time frame between family and child measures	Family measures of interest	Child measures of interest (including for intellectual functioning, where available)	Synthesis of the association between family processes and later well-being	Synthesis of the association between other factors and later well-being (as available)
Greenlee et al. (2021b) USA	$n=188$ 86%, 5–12 years (parent)	Secondary 4 waves spanning 4 years, with each separated by 12 months	PAI CESD-R DCI	CBCL-DP (total scores of anxiety; depression; aggression; attention)	<p>Mother-child relationship quality (measured only at baseline) negatively correlated with <i>CBC-DP</i> scores at waves 2 (<math>r=-.71, p&lt;.01</math>), 3 (<math>r=-.41, p&lt;.01</math>), and 4 (<math>r=-.40, p&lt;.01</math>). Father-child relationship quality (measured only at baseline) negatively correlated with <i>CBC-DP</i> scores at waves 2 (<math>r=-.36, p&lt;.01</math>), 3 (<math>r=-.36, p&lt;.01</math>), and 4 (<math>r=-.33, p&lt;.01</math>). MAT dyadic coping (measured only at baseline) did not correlate with later <i>CBC-DP</i> scores. PAT dyadic coping correlated with <i>CBC-DP</i> scores at wave 3 (<math>r=.16, p&lt;.05</math>). MAT depression (measured only at baseline) correlated with <i>CBC-DP</i> scores at waves 2 (<math>r=.20, p&lt;.05</math>), 3 (<math>r=.27, p&lt;.01</math>), and 4 (<math>r=.21, p&lt;.01</math>). Lower MAT depression [<math>t(153)=2.243, p=.03, 95\% \text{ C.I.}=(0.099, 1.574)</math>] and dyadic coping [<math>t(153)=-2.951, p=.004, 95\% \text{ C.I.}=(-.1915, -.379)</math>] predicted declines in <i>CBC-DP</i> scores across ages. Parent-child relationship quality only concurrently predicted <i>CBC-DP</i> scores. PAT depression did not predict <i>CBC-DP</i> scores across ages</p>	<p>Social and communication impairment (measured only at baseline) correlated with <i>CBC-DP</i> scores at waves 2 (<math>r=.48, p&lt;.01</math>), 3 (<math>r=.48, p&lt;.01</math>), and 4 (<math>r=.49, p&lt;.01</math>). Restricted and repetitive behaviours (measured at baseline) correlated with <i>CBC-DP</i> scores at waves 2 (<math>r=.52, p&lt;.01</math>), 3 (<math>r=.51, p&lt;.01</math>), and 4 (<math>r=.49, p&lt;.01</math>), and predicted declines over time [<math>t(153)=4.427, p&lt;.001, 95\% \text{ C.I.}=(4.425, 11.558)</math>]. Higher <i>CBC-DP</i> scores at baseline were associated with less decline in scores. Age, sex, ID, household income, parent age, and race were not associated with <i>CBC-DP</i> scores over time</p>

Table 3 (continued)

Author (year), Country of Origin	Type of analysis, Sample size, % male, mean baseline age (Respondent)	Time frame between family and child measures	Family measures of interest	Child measures of interest (including for intellectual functioning, where available)	Synthesis of the association between family processes and later well-being	Synthesis of the association between other factors and later well-being (as available)
Greenlee et al. (2021a) USA	$n=188$ 86%, 5–12 years (parent)	Secondary 3 waves spanning 2 years, 12 months and 24 months from baseline	CSI; PSDQ	CBCL (internalizing; externalizing)	MAT and PAT marital satisfaction (measured only at baseline) negatively correlated with internalizing (MAT: $r = -.20$ , $p < .05$ ; PAT: $r = -.25$ , $p < .01$ ) and externalizing (MAT: $r = -.25$ , $p < .01$ ; PAT: $r = -.18$ , $p < .05$ ) problems (measured only at wave 3). MAT authoritative parenting (measured only at wave 2) correlated with externalizing problems only ( $r = .22$ , $p < .05$ ). PAT authoritative parenting correlated with externalizing ( $r = .30$ , $p < .01$ ) and internalizing problems ( $r = .23$ , $p < .01$ ). Authoritarian parenting (measured only at wave 2) correlated with externalizing (MAT: $r = .31$ , $p < .01$ ; PAT: $r = .47$ , $p < .01$ ) and internalizing problems (MAT: $r = .28$ , $p < .01$ ; PAT: $r = .26$ , $p < .01$ ). Permissive parenting (measured only at wave 2) correlated with externalizing (MAT: $r = .20$ , $p < .01$ ; PAT: $r = .40$ , $p < .01$ ) and internalizing problems (MAT: $r = .24$ , $p < .01$ ; PAT: $r = .37$ , $p < .01$ ). MAT marital satisfaction predicted fewer internalizing problems ( $\beta = -.0138$ , $SE = .007$ ) and externalizing problems ( $\beta = -.0120$ , $SE = .007$ ) through the use of authoritarian parenting. PAT marital satisfaction predicted fewer internalizing problems through the use of authoritarian parenting ( $\beta = -.0165$ , $SE = .010$ ). Neither authoritative nor permissive parenting predicted later CBCL scores. These adjusted for CBCL scores and ASD severity at baseline	ASD severity correlated with later internalizing ( $r = .25$ , $p < .01$ ) and externalizing problems ( $r = .39$ , $p < .01$ ). Age correlated with later externalizing problems ( $r = .18$ , $p < .05$ ). Sex, ID, parent education, marital relationship length, and parent age were unrelated to later CBCL scores

Table 3 (continued)

Author (year), Country of Origin	Type of analysis, Sample size, % male, mean baseline age (Respondent)	Time frame between family and child measures	Family measures of interest	Child measures of interest (including for intellectual functioning, where available)	Synthesis of the association between family processes and later well-being	Synthesis of the association between other factors and later well-being (as available)
Hickey et al. (2020) USA	<i>n</i> = 159 5–12 years (parent and teacher)	Secondary 3 waves spanning 2 years, 12 months and 24 months from baseline	FMSS	TRF; A binary classification for ID	MAT warmth at baseline negatively correlated with TRF scores at wave 2 ( $r = .30$ , $p < .10$ ) and wave 3 ( $r = .23$ , $p < .05$ ). There was no correlation between wave 2 MAT warmth and TRF scores at wave 3. MAT criticism at baseline correlated with TRF scores at wave 3 ( $r = .38$ , $p < .01$ ), but not at wave 2, nor was wave 2 MAT criticism correlated with wave 3 TRF scores. MAT warmth at baseline negatively predicted wave 2 TRF scores only ( $\beta = -.27$ , $p = .02$ ). There was no correlations between PAT warmth or PAT criticism and later TRF scores. Regression analyses found that parent warmth only concurrently predicted TRF scores	ID (measured at baseline) correlated with TRF scores at wave 3 ( $d = .34$ , $p < .001$ ) but not at wave 2. Teacher report ASD severity (measured at baseline) correlated with TRF scores at waves 2 and 3 ( $r = .43$ , $p < .001$ and $r = .41$ , $p < .001$ ). ASD severity at wave 2 also correlated with wave 3 TRF scores ( $r = .43$ , $p < .001$ ). Age, sex, household income and other children with a disability in the family did not correlate with later TRF scores
Midouhas et al. (2013) USA	<i>n</i> = 209 83%; 3 years (parent)	Secondary (MCS) 3 waves at ages 3 years, 5 years, and 7 years	CPRS CHAOS Involvement was measured on 5-point Likert scale	SDQ (emotional; hyperactivity; conduct; peer) BAS	MAT warmth (measured only at age 3) predicted total SDQ scores, conduct problems and hyperactivity at age 5, as well as declines in conduct ( $\beta = .020$ ; $SE = .009$ ) and peer problems ( $\beta = .028$ , $SE = .011$ ) across ages. MAT involvement (measured only at age 3) predicted greater peer problems and household chaos predicted greater conduct problems at the study start, however neither had longitudinal effects. These adjusted for sex, birthweight, intellectual functioning and MAT education	SED predicted emotional ( $\beta = .131$ , $SE = .228$ ) and conduct problems ( $\beta = .307$ , $SE = .109$ ), however this had no longitudinal effects on any SDQ score
Osborne et al. (2008) UK	<i>n</i> = 72 97%; 8.8 years (parent)	Primary 2 waves separated by 9–10 months	PCRI; QRS-F	SDQ; BAS	Limit setting negatively correlated with later SDQ scores ( $r = -.422$ , $p < .001$ ). Parenting stress correlated with later SDQ scores ( $r = .525$ , $p < .001$ ). Neither parent autonomy, communication nor involvement correlated with later SDQ scores. These controlled for ASD severity, functional ability and intellectual functioning. Limit setting—but not parenting stress—mediated the correlation between parenting stress and later SDQ scores ( $p < .001$ )	N/A

Table 3 (continued)

Author (year), Country of Origin	Type of analysis, Sample size, % male, mean baseline age (Respondent)	Time frame between family and child measures	Family measures of interest	Child measures of interest (including for intellectual functioning, where available)	Synthesis of the association between family processes and later well-being	Synthesis of the association between other factors and later well-being (as available)
Osborne and Reed (2009) UK	$n=65$ 91%; 3;4 years $\pm$ SD .75 (parent)	Primary 2 waves separated by 9–10 months	QRS-F	CRS-R (ADHD; oppositionality; hyperactivity); BAS	Parenting stress was grouped into high and low levels. There were significant effects on oppositionality ( $F(1, 60)=7.53$ , $p<0.01$ ), hyperactivity ( $F(1, 60)=4.11$ , $p<0.05$ ) and ADHD symptoms ( $F(1, 60)=4.35$ , $p<0.05$ ), adjusting for ASD severity, intellectual functioning and functional skills	N/A
Osborne and Reed (2009) UK	Secondary (Osborne et al., 2008) $n=72$ 97%; 8;8 years $\pm$ SD 3.5 (parent)	2 waves separated by 9–10 months	PSI; QRS	SDQ; DBC; BAS	Parenting stress was grouped in low and high for the <i>PSI</i> and <i>DBC</i> . There were significant effects of <i>PSI</i> scores on <i>DBC</i> scores ( $F[1, 67]=3.14$ , $p<0.05$ ) and <i>SDQ</i> scores ( $F[1, 67]=5.03$ , $p<0.05$ ), and <i>QRS</i> scores ( $F[1, 67]=3.78$ , $p<0.05$ ). <i>QRS</i> scores had no effects on <i>SDQ</i> scores. These adjusted for ASD severity, intellectual functioning and functional skills	N/A
Simonoff et al. (2013) UK	$n=81$ 93%; 12 years (parent)	Secondary (SNAP) 2 waves separated by 4 years	GHQ; PSI (parenting difficulties on hyperactivity subscale)	SDQ (conduct; emotional; hyperactivity) WISC IV	MAT mental health problems at age 12 correlated with emotional problems at age 16 ( $r=.37$ , $p<.001$ ). Parenting stress at age 12 did not correlate with <i>SDQ</i> scores at age 16	Intellectual functioning at age 12 negatively correlated with total <i>SDQ</i> scores ( $r=-.29$ , $p<.01$ ) and hyperactivity ( $r=-.32$ , $p<.01$ ) at age 16. Functional skills at age 12 negatively correlated with total <i>SDQ</i> scores ( $r=-.28$ , $p<.05$ ) and hyperactivity ( $r=-.28$ , $p<.01$ ) at age 16. Lower social class ( $r=.24$ , $p<.05$ ) and family deprivation at age 12 ( $d=.75$ ; $p<.01$ ) correlated with emotional problems at age 16. Neighbourhood deprivation at age 12 correlated with changes in total <i>SDQ</i> scores ( $r=.25$ , $p<.05$ ) and later conduct problems ( $r=.46$ , $p<.001$ ). Placement in special education at age 12 correlated with changes in conduct problems ( $d=-.48$ , $p<.05$ ). ASD severity at age 12 did not correlate with any <i>SDQ</i> scores at age 16



**Table 3** (continued)

Author (year), Country of Origin	Type of analysis, Sample size, % male, mean baseline age (Respondent)	Time frame between family and child measures	Family measures of interest	Child measures of interest (including for intellectual functioning, where available)	Synthesis of the association between family processes and later well-being	Synthesis of the association between other factors and later well-being (as available)
Smith et al. (2008) USA	n=149 76%, 19.9, ±SD 7.84 (at wave 2 of Seltzer et al., 2003) (parent)	Secondary 2 waves separated by approximately 18 months	FMSS PAI	SIB-R (internalizing; externalizing; asocial) WRIT	Mother-child relationship quality negatively predicted later externalizing ( $\beta = -.52$ , $SE = .19$ , $p < .01$ ) internalizing ( $\beta = .56$ , $SE = .19$ , $p < .01$ ) and asocial problems ( $\beta = -.45$ , $SE = .23$ , $p < .10$ ). MAT praise and warmth were unrelated to <i>SIB-R</i> scores. These controlled for sex and ID	ID predicted externalizing ( $\beta = 2.53$ , $SE = 1.22$ , $p < .10$ ) and asocial problems ( $\beta = 3.98$ , $SE = 1.54$ , $p < .10$ )—but not internalizing problems—across time. Sex was unrelated to later <i>SIB-R</i> scores
Stringer et al. (2020) UK	Secondary (waves 1, 2 and 3 of the SNAP study) n=126 84%; 10–12 years (parent)	Secondary 2 waves separated by approximately 18 months 14–15 years and 23 years	A binary classification for parent mental health problems	SDQ (conduct; emotional; hyperactivity) VABS (used as a substitute for intellectual functioning)	MAT mental health problems were unrelated to <i>SDQ</i> scores across time	ASD severity, SES and intellectual functioning were found to predict <i>SDQ</i> scores across time ( $\beta = .06$ to $\beta = 2.52$ )
Szatmari et al. (2021) USA	n=272 86%; 3;4 years (parent)	Primary 2 Waves: Wave 1 had 3 data points (mean ages 3;4, 4 & 4;5 years. Wave 2 had 2 data points (mean ages 8;7 & 10;8 years)	MFAD (General Family Functioning scale); WCQ	CBCL (internalizing; externalizing) MPR	Family functioning negatively predicted externalizing problems at follow-up ( $\beta = -1.00$ , $p = .0$ ) and growth in internalizing problems ( $\beta = -.103$ , $p = .001$ ). MAT emotion-focused coping did not predict <i>CBCL</i> score across time	Household income predicted growth in externalizing problems ( $\beta = -.80$ , $p = .03$ ). Higher <i>CBCL</i> scores at baseline predicted growth on that domain [internalizing ( $\beta = .09$ , $p < .001$ ); externalizing ( $\beta = .10$ , $p < .001$ )]. Neither language ability nor intellectual functioning predicted later <i>CBCL</i> scores
Woodman et al. (2015) USA	Secondary (waves 2, 3, 4, 7 and 8 of Seltzer et al., 2003) n=313 75%; 2;1.7 years ±SD 9;45 (at wave 2 of Seltzer et al.) (parent)	Secondary 2 waves separated by 12 to 18 months each wave separated by 8.5 years, 18 months	FMSS PAI	SIB-R (asocial; internalizing; externalizing) WRIT	Mother-child relationship quality predicted externalizing ( $\beta = -.05$ , $SE = .02$ , $p < .05$ ), asocial ( $\beta = -.04$ , $SE = .02$ , $p < .05$ ) and total <i>SIB-R</i> scores ( $\beta = -.11$ , $SE = .05$ , $p < .05$ ) at the study end. Maternal praise predicted asocial ( $\beta = -.09$ , $SE = .04$ , $p < .05$ ) and total <i>SIB-R</i> ( $\beta = -.23$ , $SE = .11$ , $p < .05$ ) scores at the study end. Neither the quality of the mother-child relationship nor MAT praise predicted the trajectory of <i>SIB-R</i> scores	ID predicted internalizing ( $\beta = .64$ , $SE = .11$ , $p < .01$ ), externalizing ( $\beta = .78$ , $SE = .13$ , $p < .01$ ), asocial ( $\beta = .38$ , $SE = .10$ , $p < .01$ ) and total <i>SIB-R</i> scores ( $\beta = 1.81$ , $SE = .26$ , $p < .01$ ) at the study end. ID predicted the trajectory of internalizing ( $\beta = .03$ , $SE = -.01$ , $p < .05$ ), externalizing ( $\beta = .03$ , $SE = .02$ , $p < .05$ ) and total <i>SIB-R</i> ( $\beta = .09$ , $SE = .03$ , $p < .01$ ) scores. Age negatively predicted externalizing ( $\beta = -.02$ , $SE = .01$ , $p < .01$ ), asocial ( $\beta = -.02$ , $p < .01$ ) and total <i>SIB-R</i> scores ( $\beta = -.05$ , $SE = .01$ , $p < .01$ ) at the study end. Sex, MAT education and residential status did not predict later <i>SIB-R</i> scores

Table 3 (continued)

Author (year), Country of Origin	Type of analysis, Sample size, % male, mean baseline age (Respondent)	Time frame between family and child measures	Family measures of interest	Child measures of interest (including for intellectual functioning, where available)	Synthesis of the association between family processes and later well-being	Synthesis of the association between other factors and later well-being (as available)
Woodman et al. (2016) USA	Secondary (waves 1, 2, 3, 4, 7 and 6 waves spanning 10 years, each wave separated by 12 to 18 months) $n = 364$ 74%; 21.85 years $\pm$ SD 9.42 (at wave 1 of Seltzer et al. (parent))	FMSS	SIB-R (asocial; internalizing; externalizing) WRIT and VS	Two developmental profiles (or classes) of youth were identified over 10 years. Class 1 had lower <i>SIB-R</i> scores at baseline; however, rates of change in <i>SIB-R</i> scores did not differ between classes. MAT positivity predicted class 1 membership ( $\beta = .25$ , $SE = .07$ , $p < .001$ ). MAT criticism did not predict class membership. These controlled for age, sex, ID, language ability, ASD severity and maternal education	ASD severity in early childhood ( $\beta = -.30$ , $SE = .11$ , $p < .01$ ). ID ( $\beta = -1.92$ , $SE = .35$ , $p < .001$ ), language ability in early childhood ( $\beta = .37$ , $SE = .31$ , $p < .10$ ), age ( $\beta = .08$ , $SE = .02$ , $p < .001$ ) and school inclusion (full) ( $\beta = 1.67$ , $SE = .49$ , $p < .001$ ) and (partial) ( $\beta = 1.24$ , $SE = .33$ , $p < .001$ ) predicted class 1 membership. Neither sex nor MAT education predicted class membership	

BAS British abilities scale (Elliot et al., 1996), *BSRA-R* bracken school readiness assessment-revised (Bracken, 1998), *CBCL-DP* child behaviour checklist – dysregulation profile (Althoff et al., 2010), *CESD-R* centre for epidemiologic studies depression scale (Eaton et al., 2004), *CHAOS* confusion, hubbub and order scale (Matheny et al., 1995), *CPRS* child – parent relationship scale (Pianta, 1992), *CRSR* Conners' Parent Rating Scale (Conners, 1997), *CSI* couple satisfaction index (Funk & Rogge, 2007), *CTS* conflict tactic scale (Straus & Hamby, 1997), *DBC* Developmental Behaviour Checklist (Einfield & Tonge, 2002), *DCI* dyadic coping index, (Bodenmann, 2008) *FACES II* family adaptability and cohesion scale (Olson et al., 1982), *FMSS* five minute speech sample (Magana et al., 1986), *GHQ-30* general health questionnaire (Goldberg & Muller, 1988), *ID* intellectual disability, *KS* Kessler Scale (Kessler et al., 2003), *MAT* maternal, *MCS* millennium cohort study, *MFAD* McMaster family assessment device (Byles et al., 1988), *MPR* Merrill-palmer-revised (Roit & Sampers, 2004), *N/A* not applicable, *PAI* positive affect index (Bengtson & Schrader, 1982), *PAT* paternal, *PCRf* parent – child relationship inventory (Gerard, 1994), *PSDQ* parenting styles and dimensions questionnaire (Robinson et al., 2001), *PSI* parenting stress index (Abadin, 1983), *QRS* questionnaire on resources and stress (Friedrich et al., 1983), *SDQ* Strengths and Difficulties Questionnaire (Goodman, 1997), *SIB-R* scales of independent behaviour-revised (Bruininks et al., 1996), *SNAP* special needs and autism project, *SED* socio-economic disadvantage, *TRF* teacher report form (Achenbach & Rescorla, 2001), *VABS* Vineland adaptive behaviour scale (Sparrow et al., 1993), *VS* Vineland Screener (Sparrow et al., 1993), *WCQ* ways of coping questionnaire (Vitaliano et al., 1985), *WISC III* Wechsler intelligence scale for children (Wechsler et al., 2004), *WRIT* wide range intelligence test (Glutting et al., 2000)

## Appendix 5

**Table 4** Associations between family processes and later well-being

Study (date)	Parent level factors	Dyad level factors	Family level factors
Baker et al. (2011b)	N/A	✓	N/A
Baker et al. (2011a)	✓	✓	✓
Flouri et al. (2015)	N/A	✓	N/A
Greenberg et al. (2006)	N/A	✓	N/A
Greenlee et al. (2021b)	✓	✓	N/A
Greenlee et al. (2021a)	✓	✓	N/A
Hickey et al. (2020)	N/A	✓	N/A
Midouhas et al. (2013)	N/A	✓	X
Osborne et al. (2008)	✓	✓	N/A
Osborne and Reed (2009)	✓	N/A	N/A
Osborne and Reed (2009)	✓	N/A	N/A
Simonoff et al. (2013)	✓	N/A	N/A
Smith et al. (2008)	N/A	✓	N/A
Stringer et al. (2020)	X	N/A	N/A
Szatmari et al. (2021)	X	N/A	✓
Woodman et al. (2015)	N/A	✓	N/A
Woodman et al. (2016)	N/A	✓	N/A

✓ = Family process was found to be associated with later well-being (whereby at least one significant association is reported if multivariate); X = Family process was measured but was not found to be associated with later well-being; N/A = Family process(es) was not measured

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### Declarations

**Conflicts of Interest** On behalf of all authors, the corresponding author states that there is no conflict of interest.

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## References

- Abadin, R. R. (1983). *Parenting stress index manual*. Charlottesville, VA: Pediatric Psychology Press.
- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA school-age forms & profiles*. University of Vermont, Research Center for Children, Youth, and Families.
- Althoff, R. R., Ayer, L. A., Rettew, D. C., & Hudziak, J. J. (2010). Assessment of dysregulated children using the child behavior checklist: A receiver operating characteristic curve analysis. *Psychological Assessment, 22*(3), 609–617. <https://doi.org/10.1037/a0019699>
- American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed.). American Psychiatric Association Publishing. <https://doi.org/10.1176/appi.books.9780890425787>
- Andersen, P. N., Skogli, E. W., Hovik, K. T., Egeland, J., & Øie, M. (2015). Associations among symptoms of autism, symptoms of depression and executive functions in children with high-functioning autism: A 2 year follow-up study. *Journal of Autism and Developmental Disorders, 45*(8), 2497–2507. <https://doi.org/10.1007/s10803-015-2415-8>
- Baird, G., Simonoff, E., Pickles, A., Chandler, S., Loucas, T., Meldrum, D., & Charman, T. (2006). Prevalence of disorders of the autism spectrum in a population cohort of children in South Thames: The Special Needs and Autism Project (SNAP). *The Lancet, 368*(9531), 210–215. [https://doi.org/10.1016/S0140-6736\(06\)69041-7](https://doi.org/10.1016/S0140-6736(06)69041-7)
- \*Baker, J. K., Seltzer, M. M., & Greenberg, J. S. (2011a). Longitudinal effects of adaptability on behavior problems and maternal depression in families of adolescents with autism. *Journal of Family Psychology, 25*(4), 601–609. <https://doi.org/10.1037/a0024409>
- \*Baker, J. K., Smith, L. E., Greenberg, J. S., Seltzer, M. M., & Taylor, J. L. (2011). Change in maternal criticism and behavior problems in adolescents and adults with autism across a 7-year period. *Journal of Abnormal Psychology, 120*(2), 465–475. <https://doi.org/10.1037/a0021900>
- Bengtson, V. L., & Schrader, S. S. (1982). Parent–child relationship. In D. J. Mangon, & W. A. Peterson (Eds.), *Research instruments in social gerontology* (vol. 2, pp. 115–185). Minneapolis: University of Minnesota Press.
- Bodenmann, G. (2008). *Dyadisches Coping Inventar: Testmanual* [dyadic coping inventory: Test manual]. Bern: Huber.
- Botha, M., Hanlon, J., & Williams, G. L. (2021) Does language matter? Identity-first versus person-first language use in autism research: A response to Vivanti. *Journal of Autism and Developmental Disorders, 1*–9. <https://doi.org/10.1007/s10803-020-04858-w>
- Bowen, M. (1978). *Family therapy in clinical practice*. Jason Aronson.
- Boyd, B. A., McCarty, C. H., & Sethi, C. (2014). Families of children with autism: A synthesis of family routines literature. *Journal of Occupational Science., 21*(3), 322–333. <https://doi.org/10.1080/14427591.2014.908816>
- Bracken, B. (1998). *Bracken basic concept scale revised: Examiner's manual*. London: The Psychological Corporation.
- Bronfenbrenner, U. (2005). *Making human beings human: Bioecological perspectives on human development*. Sage.
- Bruininks, R. H., Woodcock, R. W., Weatherman, R. F., & Hill, B. K. (1996). *Scales of independent behavior-revised (SIB-R)*. Itasca: Riverside Publishing.

- Byles, J., Byrne, C., Boyle, M. H., & Offord, D. R. (1988). Ontario child health study: Reliability and validity of the general functioning subscale of the McMaster family assessment device. *Family Process, 27*(1), 97–104. <https://doi.org/10.1111/j.1545-5300.1988.00097.x>
- Chaidez, V., Hansen, R. L., & Hertz-Picciotto, I. (2014). Gastrointestinal problems in children with autism, developmental delays or typical development. *Journal of Autism and Developmental Disorders, 44*(5), 1117–1127. <https://doi.org/10.1007/s10803-013-1973-x>
- Chiang, H. L., & Gau, S. S. F. (2016). Comorbid psychiatric conditions as mediators to predict later social adjustment in youths with autism spectrum disorder. *Journal of Child Psychology and Psychiatry, 57*(1), 103–111. <https://doi.org/10.1111/jcpp.12450>
- Chiri, G., & Warfield, M. E. (2012). Unmet need and problems accessing core health care services for children with autism spectrum disorder. *Maternal and Child Health Journal, 16*(5), 1081–1091. <https://doi.org/10.1007/s10995-011-0833-6>
- Claxton, M., Onwumere, J., & Fornells-Ambrojo, M. (2017). Do family interventions improve outcomes in early psychosis? A systematic review and meta-analysis. *Frontiers in Psychology, 8*, 371. <https://doi.org/10.3389/fpsyg.2017.00371>
- Collins, L. M. (2006). Analysis of longitudinal data: The integration of theoretical model, temporal design, and statistical model. *Annual Review of Psychology, 57*, 505–528. <https://doi.org/10.1146/annurev.psych.57.102904.190146>
- Conger, R. D., Conger, K. J., & Martin, M. J. (2010). Socioeconomic status, family processes, and individual development. *Journal of Marriage and Family, 72*(3), 685–704. <https://doi.org/10.1111/j.1741-3737.2010.00725.x>
- Conners, C. K. (1997). *Conners' parent rating scale*. Bloomington, MN: Pearson Assessment.
- Daniels, A. M., Rosenberg, R. E., Anderson, C., Law, J. K., Marvin, A. R., & Law, P. A. (2012). Verification of parent-report of child autism spectrum disorder diagnosis to a web-based autism registry. *Journal of Autism and Developmental Disorders, 42*(2), 257–265. <https://doi.org/10.1007/s10803-011-1236-7>
- De Bruin, E. I., Ferdinand, R. F., Meester, S., de Nijs, P. F., & Verheij, F. (2007). High rates of psychiatric comorbidity in PDD-NOS. *Journal of Autism and Developmental Disorders, 37*(5), 877–886. <https://doi.org/10.1007/s10803-006-0215-x>
- Dishion, T. J., & Granic, I. (2004). Naturalistic observation of relationship processes. In *Comprehensive Handbook of Psychological Assessment* (vol. 3, pp. 143–161). New York: Wiley.
- Dominick, K. C., Davis, N. O., Lainhart, J., Tager-Flusberg, H., & Folstein, S. (2007). Atypical behaviors in children with autism and children with a history of language impairment. *Research in Developmental Disabilities, 28*, 145–162. <https://doi.org/10.1016/j.ridd.2006.02.003>
- Drotar, D. (1997). Relating parent and family functioning to the psychological adjustment of children with chronic health conditions: What have we learned? What do we need to know? *Journal of Pediatric Psychology, 22*(2), 149–165. <https://doi.org/10.1093/jpepsy/22.2.149>
- Eaton, W. W., Smith, C., Ybarra, M., Muntaner, C., & Tien, A. (2004). Center for Epidemiologic Studies Depression Scale: Review and Revision (CESD and CESD-R). In M. E. Maruish (Ed.), *The use of psychological testing for treatment planning and outcomes assessment: Instruments for adults* (pp. 363–377). Lawrence Erlbaum Associates Publishers.
- Einfeld, S., & Tonge, B. J. (2002). *Developmental behaviour checklist*. Victoria.
- Elliot, C. D., Smith, P., & McCulloch, K. (1996). *British ability scales II* (2nd ed.). Windsor, UK: NFER-Nelson.
- Epstein, N. B., Baldwin, L. M., & Bishop, D. S. (1983). The McMaster family assessment device. *Journal of Marital and Family Therapy, 9*(2), 171–180. <https://doi.org/10.1111/j.1752-0606.1983.tb01497.x>
- \*Flouri, E., Midouhas, E., Charman, T., & Sarmadi, Z. (2015). Poverty and the growth of emotional and conduct problems in children with autism with and without comorbid ADHD. *Journal of Autism and Developmental Disorders, 45*(9), 2928–2938. <https://doi.org/10.1007/s10803-015-2456-z>
- Fombonne, E. (2009). Epidemiology of pervasive developmental disorders. *Pediatric Research, 65*(6), 591–598. <https://doi.org/10.1203/PDR.0b013e31819e7203>
- Frantz, R., Hansen, S. G., & Machalicek, W. (2018). Interventions to promote well-being in parents of children with autism: A systematic review. *Review Journal of Autism and Developmental Disorders, 5*(1), 58–77. <https://doi.org/10.1007/s40489-017-0123-3>
- Friedrich, W. N., Greenberg, M. T., & Crnic, K. (1983). A short-form of the questionnaire on resources and stress. *American Journal of Mental Deficiency, 88*(1), 41–48.
- Funk, J. L., & Rogge, R. D. (2007). Testing the rule with item response theory: Increasing precision of measurement for relationship satisfaction with the Couples Satisfaction Index. *Journal of Family Psychology, 21*(4), 572–809. <https://doi.org/10.1037/0893-3200.21.4.572>
- Gau, S. S. F., Chou, M. C., Chiang, H. L., Lee, J. C., Wong, C. C., Chou, W. J., & Wu, Y. Y. (2012). Parental adjustment, marital relationship, and family function in families of children with autism. *Research in Autism Spectrum Disorders, 6*(1), 263–270. <https://doi.org/10.1016/j.rasd.2011.05.007>
- Georgiades, S., Szatmari, P., Duku, E., Zwaigenbaum, L., Bryson, S., Roberts, W., & Volden, J. (2011). Phenotypic overlap between core diagnostic features and emotional/behavioral problems in preschool children with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 41*(10), 1321–1329. <https://doi.org/10.1007/s10803-010-1158-9>
- Gerard, A. B. (1994). *Parent-child relationship inventory (PCRI): Manual*. Los Angeles: Western Psychological Services.
- Giallo, R., Wood, C. E., Jellett, R., & Porter, R. (2013). Fatigue, wellbeing and parental self-efficacy in mothers of children with an autism spectrum disorder. *Autism, 17*(4), 465–480. <https://doi.org/10.1177/1362361311416830>
- Gilotty, L., Kenworthy, L., Sirian, L., Black, D. O., & Wagner, A. E. (2002). Adaptive skills and executive function in autism spectrum disorders. *Child Neuropsychology, 8*(4), 241–248. <https://doi.org/10.1076/chin.8.4.241.13504>
- Glutting, J., Adams, W., & Sheslow, D. (2000). *Wide range intelligence test*. Wilmington, DE: Wide Range.
- Gold, N. (1993). Depression and social adjustment in siblings of boys with autism. *Journal of Autism and Developmental Disorders, 23*(1), 147–163. <https://doi.org/10.1007/BF01066424>
- Goldberg, D., & Muller, P. (1988). *A user's guide to the general health questionnaire GHQ*. Windsor, England: NFER-Nelson.
- Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry, 38*(5), 581–586. <https://doi.org/10.1111/j.1469-7610.1997.tb01545.x>
- Gray, D. E. (2002). Ten years on: A longitudinal study of families of children with autism. *Journal of Intellectual and Developmental Disability, 27*(3), 215–222. <https://doi.org/10.1080/136682502100008639>
- Gray, K., Keating, C., Taffe, J., Brereton, A., Einfeld, S., & Tonge, B. (2012). Trajectory of behavior and emotional problems in autism. *American Journal on Intellectual and Developmental Disabilities, 117*(2), 121–133. <https://doi.org/10.1352/1944-7588-117-2.121>
- \*Greenberg, J. S., Seltzer, M. M., Hong, J., & Orsmond, G. I. (2006). Bidirectional effects of expressed emotion and behavior problems



- and symptoms in adolescents and adults with autism. *American Journal on Mental Retardation*, 111(4), 229–249. [https://doi.org/10.1352/0895-8017\(2006\)111\[229:BEOEEA\]2.0.CO;2](https://doi.org/10.1352/0895-8017(2006)111[229:BEOEEA]2.0.CO;2)
- Greenlee, J. L., Winter, M. A., & Diehl, J. J. (2018). Family level processes associated with outcomes for individuals with autism spectrum disorder: A scoping review. *Research in Autism Spectrum Disorders*, 53, 41–53. <https://doi.org/10.1016/J.RASD.2018.06.002>
- \*Greenlee, J. L., Piro-Gambetti, B., Putney, J., Papp, L. M., & Hartley, S. L. (2021a). Marital satisfaction, parenting styles, and child outcomes in families of autistic children. *Family Process*, 60(3), 1–21. <https://doi.org/10.1111/famp.12708>
- \*Greenlee, J. L., Stelter, C. R., Piro-Gambetti, B., & Hartley, S. L. (2021b). Trajectories of dysregulation in children with autism spectrum disorder. *Journal of Clinical Child & Adolescent Psychology*, 50(6), 858–873. <https://doi.org/10.1080/15374416.2021.1907752>
- Hammons, A. J., & Fiese, B. (2010). Mealtime interactions in families of a child with cystic fibrosis: A meta-analysis. *Journal of Cystic Fibrosis*, 9(6), 377–384. <https://doi.org/10.1016/j.jcf.2010.07.002>
- Hastings, R. P., & Petalas, M. A. (2014). Self-reported behaviour problems and sibling relationship quality by siblings of children with autism spectrum disorder. *Child: Care, Health and Development*, 40(6), 833–839. <https://doi.org/10.1111/cch.12131>
- Hauser-Cram, P., Warfield, M. E., Shonkoff, J. P., Krauss, M. W., Upshur, C. C., & Sayer, A. (1999). Family influences on adaptive development in young children with Down syndrome. *Child Development*, 70(4), 979–989. <https://doi.org/10.1111/1467-8624.00071>
- \*Hickey, E. J., Bolt, D., Rodriguez, G., & Hartley, S. L. (2020). Bidirectional relations between parent warmth and criticism and the symptoms and behavior problems of children with autism. *Journal of Abnormal Child Psychology*, 48(6), 865–879. <https://doi.org/10.1007/s10802-020-00628-5>
- Hoffman, L., Marquis, J., Poston, D., Summers, J. A., & Turnbull, A. (2006). Assessing family outcomes: psychometric evaluation of the beach center family quality of life scale. *Journal of Marriage and Family*, 68(4), 1069–1083. <https://doi.org/10.1111/j.1741-3737.2006.00314.x>
- Holtmann, M., Bölte, S., & Poustka, F. (2007). Autism spectrum disorders: Sex differences in autistic behaviour domains and coexisting psychopathology. *Developmental Medicine & Child Neurology*, 49(5), 361–366. <https://doi.org/10.1111/j.1469-8749.2007.00361.x>
- Hsiao, Y. J. (2013). *Parental stress, family-professional partnerships, and family quality of life: families of children with autism spectrum disorder*. [Unpublished doctoral dissertation]. University of Nevada.
- Kanne, S. M., & Mazurek, M. O. (2011). Aggression in children and adolescents with ASD: Prevalence and risk factors. *Journal of Autism and Developmental Disorders*, 41, 926–937. <https://doi.org/10.1007/s10803-010-1118-4>
- Kanner, L. (1949). Problems of nosology and psychodynamics of early infantile autism. *American Journal of Orthopsychiatry*, 19(3), 416–426. <https://doi.org/10.1111/j.1939-0025.1949.tb05441.x>
- Kelly, A. B., Garnett, M. S., Attwood, T., & Peterson, C. (2008). Autism spectrum symptomatology in children: The impact of family and peer relationships. *Journal of Abnormal Child Psychology*, 36, 1069–1081. <https://doi.org/10.1007/s10802-008-9234-8>
- Kessler, R. C., Barker, P. R., Colpe, L. J., Epstein, J. F., Gfroerer, J. C., Hiripi, E., ... & Zaslavsky, A. M. (2003). Screening for serious mental illness in the general population. *Archives of General Psychiatry*, 60(2), 184–189. <https://doi.org/10.1001/archpsyc.60.2.184>
- Kraemer, H. C., & Blasey, C. (2015). *How many subjects? Statistical power analysis in research*. Sage.
- Lashewicz, B. M., Shipton, L., & Lien, K. (2019). Meta-synthesis of fathers' experiences raising children on the autism spectrum. *Journal of Intellectual Disabilities*, 23(1), 117–131. <https://doi.org/10.1177/1744629517719347>
- Lawson, R. A., Papadakis, A. A., Higginson, C. I., Barnett, J. E., Wills, M. C., Strang, J. F., ..., & Kenworthy, L. (2015). Everyday executive function impairments predict comorbid psychopathology in autism spectrum and attention deficit hyperactivity disorders. *Neuropsychology*, 29(3), 445–453. <https://doi.org/10.1037/neu0000145>
- Lerner, R. M., Schwartz, S. J., & Phelps, E. (2009). Problematics of time and timing in the longitudinal study of human development: Theoretical and methodological issues. *Human Development*, 52(1), 44–68. <https://doi.org/10.1159/000189215>
- Levisohn, P. M. (2007). The autism-epilepsy connection. *Epilepsia*, 48, 33–35. <https://doi.org/10.1111/j.1528-1167.2007.01399.x>
- Lisy, K., & Porritt, K. (2016). Narrative synthesis: Considerations and challenges. *JBIE Evidence Implementation*, 14(4), 201. <https://doi.org/10.1097/01.XEB.0000511348.97198.8c>
- Ludlow, A., Skelly, C., & Rohleder, P. (2012). Challenges faced by parents of children diagnosed with autism spectrum disorder. *Journal of Health Psychology*, 17(5), 702–711. <https://doi.org/10.1177/1359105311422955>
- Magaña, A. B., Goldstein, M. J., Karno, M., Miklowitz, D. J., Jenkins, J., & Falloon, I. R. (1986). A brief method for assessing expressed emotion in relatives of psychiatric patients. *Psychiatry Research*, 17(3), 203–212. [https://doi.org/10.1016/0165-1781\(86\)90049-1](https://doi.org/10.1016/0165-1781(86)90049-1)
- Matheny, A. P., Jr., Wachs, T. D., Ludwig, J. L., & Phillips, K. (1995). Bringing order out of chaos: Psychometric characteristics of the confusion, hubbub, and order scale. *Journal of Applied Developmental Psychology*, 16(3), 429–444. [https://doi.org/10.1016/0193-3973\(95\)90028-4](https://doi.org/10.1016/0193-3973(95)90028-4)
- Mattila, M. L., Hurtig, T., Haapsamo, H., Jussila, K., Kuusikko-Gauffin, S., Kielinen, M., ..., & Pauls, D. L. (2010). Comorbid psychiatric disorders associated with Asperger syndrome /high-functioning autism: a community-and clinic-based study. *Journal of Autism and Developmental Disorders*, 40(9), 1080–1093. <https://doi.org/10.1007/s10803-010-0958-2>
- Mazefsky, C. A., Schreiber, D. R., Olin, T. M., & Minshew, N. J. (2014). The association between emotional and behavioral problems and gastrointestinal symptoms among children with high-functioning autism. *Autism*, 18(5), 493–501. <https://doi.org/10.1177/1362361313485164>
- Mazurek, M. O., & Sohl, K. (2016). Sleep and behavioral problems in children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 46(6), 1906–1915. <https://doi.org/10.1007/s10803-016-2723-7>
- McAuliffe, T., Thomas, Y., Vaz, S., Falkmer, T., & Cordier, R. (2019). The experiences of mothers of children with autism spectrum disorder: Managing family routines and mothers' health and wellbeing. *Australian Occupational Therapy Journal*, 66(1), 68–76. <https://doi.org/10.1111/1440-1630.12524>
- McCusker, C. G., Kennedy, P. J., Anderson, J., Hicks, E. M., & Hanrahan, D. (2002). Adjustment in children with intractable epilepsy: Importance of seizure duration and family factors. *Developmental Medicine & Child Neurology*, 44(10), 681–687. <https://doi.org/10.1017/S0012162201002754>
- McKenzie, R., & Dallos, R. (2017). Autism and attachment difficulties: Overlap of symptoms, implications and innovative solutions. *Clinical Child Psychology and Psychiatry*, 22(4), 632–648. <https://doi.org/10.1177/1359104517707323>

- McStay, R. L., Trembath, D., & Dissanayake, C. (2014). Stress and family quality of life in parents of children with autism spectrum disorder: Parent gender and the double ABCX model. *Journal of Autism and Developmental Disorders*, *44*(12), 3101–3118. <https://doi.org/10.1007/s10803-014-2178-7>
- \*Midouhas, E., Yogaratnam, A., Flouri, E., & Charman, T. (2013). Psychopathology trajectories of children with autism spectrum disorder: The role of family poverty and parenting. *Journal of the American Academy of Child & Adolescent Psychiatry*, *52*(10), 1057–1065. <https://doi.org/10.1016/j.jaac.2013.07.011>
- Najman, J. M., Williams, G. M., Nikles, J., Spence, S., Bor, W., O'Callaghan, M., ..., & Shuttlesworth, G. J. (2001). Bias influencing maternal reports of child behaviour and emotional state. *Social Psychiatry and Psychiatric Epidemiology*, *36*(4), 186–194. <https://doi.org/10.1007/s001270170062>
- National Institutes of Health. (2016). *National institutes of health quality assessment tool for observational cohort and cross-sectional studies*. Retrieved September 14, 2021, from <https://www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools>
- Olson, D., Portner, J., & Bell, R. (1982). Family Adaptability and Cohesion Scale - second edition (FACES II). Minneapolis: University of Minnesota.
- \*Osborne, L. A., & Reed, P. (2009). The relationship between parenting stress and behaviour problems of children with autistic spectrum disorders. *Exceptional Children*, *76*(1), 54–73. <https://doi.org/10.1177/001440290907600103>
- \*Osborne, L. A., McHugh, L., Saunders, J., & Reed, P. (2008). The effect of parenting behaviors on subsequent child behavior problems in autistic spectrum conditions. *Research in Autism Spectrum Disorders*, *2*(2), 249–263. <https://doi.org/10.1016/j.rasd.2007.06.004>
- Otero, S. (2009). Psychopathology and psychological adjustment in children and adolescents with epilepsy. *World Journal of Pediatrics*, *5*(1), 12–17. <https://doi.org/10.1007/s12519-009-0002-9>
- Pacia, C., Holloway, J., Gunning, C., & Lee, H. (2021). A systematic review of family-mediated social communication interventions for young children with autism. *Review Journal of Autism and Developmental Disorders*, *9*(2), 208–234. <https://doi.org/10.1007/s40489-021-00249-8>
- Page, M. J., & Moher, D. (2017). Evaluations of the uptake and impact of the preferred reporting items for systematic reviews and meta-analyses (PRISMA) statement and extensions: a scoping review. *Systematic Reviews*, *6*(1), 263. <https://doi.org/10.1186/s13643-017-0663-8>
- Peris, T. S., & Miklowitz, D. J. (2015). Parental expressed emotion and youth psychopathology: New directions for an old construct. *Child Psychiatry & Human Development*, *46*(6), 863–873. <https://doi.org/10.1007/s10578-014-0526-7>
- Phetrasuwan, S., & Shandor Miles, M. (2009). Parenting stress in mothers of children with autism spectrum disorders. *Journal for Specialists in Pediatric Nursing*, *14*(3), 157–165. <https://doi.org/10.1111/j.1744-6155.2009.00188.x>
- Pianta, R. (1992). *Child parent relationship scale*. Charlottesville, VA: University of Virginia, Center for Advanced Studies on Teaching and Learning.
- Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., & Duffy, S. (2006). *Guidance on the conduct of narrative synthesis in systematic reviews. A product from the ESRC methods programme*. Lancaster: Lancaster University.
- Robinson, C. C., Mandileco, B., Frost Olsen, S., & Hart, C. H. (2001). The parenting styles and dimensions questionnaire (PSDQ). In B. F. Perlmutter, J. Touliatos, & G. W. Holden (Eds.), *Handbook of family measurement techniques, Instruments & index* (vol. 3, pp. 319–321). Sage.
- Roid, G., & Sampers, J. (2004). *Merrill–Palmer-revised scales of development*. Wood Dale: Stoelting.
- Romero-Gonzalez, M., Chandler, S., & Simonoff, E. (2018). The relationship of parental expressed emotion to co-occurring psychopathology in individuals with autism spectrum disorder: A systematic review. *Research in Developmental Disabilities*, *72*, 152–165. <https://doi.org/10.1016/j.ridd.2017.10.022>
- Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry*, *57*(3), 316–331. <https://doi.org/10.1111/j.1939-0025.1987.tb03541.x>
- Sawyer, S. M., Azzopardi, P. S., Wickremarathne, D., & Patton, G. C. (2018). The age of adolescence. *The Lancet Child & Adolescent Health*, *2*(3), 223–228. [https://doi.org/10.1016/S2352-4642\(18\)30022-1](https://doi.org/10.1016/S2352-4642(18)30022-1)
- Schleider, J. L., & Weisz, J. R. (2017). Family process and youth internalizing problems: a triadic model of etiology and intervention. *Development and Psychopathology*, *29*(1), 273–301. <https://doi.org/10.1017/S095457941600016X>
- Seltzer, M. M., Krauss, M. W., Shattuck, P. T., Orsmond, G., Swe, A., & Lord, C. (2003). The symptoms of autism spectrum disorder in adolescence and adulthood. *Journal of Autism and Developmental Disorders*, *33*(6), 565–581. <https://doi.org/10.1023/B:JADD.0000005995.02453.0b>
- Sikora, D., Moran, E., Orlich, F., Hall, T. A., Kovacs, E. A., Delahaye, J., ..., & Kuhlthau, K. (2013). The relationship between family functioning and behavior problems in children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, *7*(2), 307–315. <https://doi.org/10.1016/j.rasd.2012.09.006>
- Sim, A., Cordier, R., Vaz, S., & Falkmer, T. (2016). Relationship satisfaction in couples raising a child with autism spectrum disorder: A systematic review of the literature. *Research in Autism Spectrum Disorders*, *31*, 30–52. <https://doi.org/10.1016/j.rasd.2016.07.004>
- Simonoff, E., Pickles, A., Charman, T., Chandler, S., Loucas, T., & Baird, G. (2008). Psychiatric disorders in children with autism spectrum disorders: Prevalence, comorbidity, and associated factors in a population-derived sample. *Journal of the American Academy of Child & Adolescent Psychiatry*, *47*(8), 921–929. <https://doi.org/10.1097/CHI.0b013e318179964f>
- \*Simonoff, E., Jones, C. R., Baird, G., Pickles, A., Happé, F., & Charman, T. (2013). The persistence and stability of psychiatric problems in adolescents with autism spectrum disorders. *Journal of Child Psychology and Psychiatry*, *54*(2), 186–194. <https://doi.org/10.1111/j.1469-7610.2012.02606.x>
- \*Smith, L. E., Greenberg, J. S., Seltzer, M. M., & Hong, J. (2008). Symptoms and behavior problems of adolescents and adults with autism: Effects of mother–child relationship quality, warmth, and praise. *American Journal on Mental Retardation*, *113*(5), 387–402. <https://doi.org/10.1352/2008.113:387-402>
- Sparrow, S. S., Carter, A. S., & Cicchetti, D. V. (1993). *Vineland screener: Overview, reliability, validity, administration, and scoring*. New Haven, CT: Yale University Child Study Center.
- Stoutjesdijk, R., Scholte, E. M., & Swaab, H. (2016). Impact of family functioning on classroom problem behavior of children with emotional and behavioral disorders in special education. *Journal of Emotional and Behavioral Disorders*, *24*(4), 199–210. <https://doi.org/10.1177/1063426615587262>
- Straus, M. A., & Hamby, S. L. (1997). Measuring physical and psychological maltreatment of children with the conflict tactics scale. In G. Kaufman-Kantor, & J. L. Jasinski (Eds.), *Out of the darkness: Contemporary perspectives on family violence*. Thousand Oaks, CA: Sage.
- \*Stringer, D., Kent, R., Briskman, J., Lukito, S., Charman, T., Baird, G., ..., & Simonoff, E. (2020). Trajectories of emotional and behavioral problems from childhood to early adult life. *Autism*, *24*(4), 1011–1024. <https://doi.org/10.1177/1362361320908972>



- \*Szatmari, P., Cost, K. T., Duku, E., Bennett, T., Elsabbagh, M., Georgiades, S., ..., & Zwaigenbaum, L. (2021). Association of child and family attributes with outcomes in children with autism. *JAMA Network*, 4(3), e212530–e212530. <https://doi.org/10.1001/jamanetworkopen.2021.2530>
- Tarver, J., Palmer, M., Webb, S., Scott, S., Slonims, V., Simonoff, E., & Charman, T. (2019). Child and parent outcomes following parent interventions for child emotional and behavioral problems in autism spectrum disorders: A systematic review and meta-analysis. *Autism*, 23(7), 1630–1644. <https://doi.org/10.1177/1362361319830042>
- Teague, S. J., Newman, L. K., Tonge, B. J., & Gray, K. M. (2018). Caregiver mental health, parenting practices, and perceptions of child attachment in children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 48(8), 2642–2652. <https://doi.org/10.1007/s10803-018-3517-x>
- Vitaliano, P. P., Russo, J., Carr, J. E., Maiuro, R. D., & Becker, J. (1985). The ways of coping checklist: Revision and psychometric properties. *Multivariate Behavioral Research*, 20(1), 3–26. [https://doi.org/10.1207/s15327906mbr2001\\_1](https://doi.org/10.1207/s15327906mbr2001_1)
- Wechsler, D., Rust, J., & Golombok, S. (2004). *Wechsler intelligence scale for children—fourth UK edition (WISC-IV UK)*. London: Harcourt Assessment.
- Weiss, J. A., Ting, V., & Perry, A. (2016). Psychosocial correlates of psychiatric diagnoses and maladaptive behaviour in youth with severe developmental disability. *Journal of Intellectual Disability Research*, 60(6), 583–593. <https://doi.org/10.1111/jir.12278>
- Witwer, A. N., & Lecavalier, L. (2010). Validity of comorbid psychiatric disorders in youngsters with autism spectrum disorders. *Journal of Developmental and Physical Disabilities*, 22(4), 367–380. [https://doi.org/10.1007/s10882-010-9194-0.10.1016/S0074-7750\(07\)35001-5pwit](https://doi.org/10.1007/s10882-010-9194-0.10.1016/S0074-7750(07)35001-5pwit)
- \*Woodman, A. C., Smith, L. E., Greenberg, J. S., & Mailick, M. R. (2015). Change in autism symptoms and maladaptive behaviors in adolescence and adulthood: The role of positive family processes. *Journal of Autism and Developmental Disorders*, 45(1), 111–126. <https://doi.org/10.1007/s10803-014-2199-2>
- \*Woodman, A. C., Smith, L. E., Greenberg, J. S., & Mailick, M. R. (2016). Contextual factors predict patterns of change in functioning over 10 years among adolescents and adults with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 46(1), 176–189. <https://doi.org/10.1007/s10803-015-2561-z>
- Yorke, I., White, P., Weston, A., Rafla, M., Charman, T., & Simonoff, E. (2018). The association between emotional and behavioral problems in children with autism spectrum disorder and psychological distress in their parents: a systematic review and meta-analysis. *Journal of Autism and Developmental Disorders*, 48(10), 3393–3415. <https://doi.org/10.1007/s10803-018-3605-y>
- Zablotsky, B., Bradshaw, C. P., & Stuart, E. A. (2013). The association between mental health, stress, and coping supports in mothers of children with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 43(6), 1380–1393. <https://doi.org/10.1007/s10803-012-1693-7>

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