School of Psychology
Ysgol Seicoleg

A Systematic Review of Parental Expressed Emotion and Child Behavioural and Emotional Outcomes in Autistic Spectrum Disorder and an Empirical Study of Impact of an Attachment- and Trauma-Informed Training Intervention for Social Care Professionals

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Preface

The Five Minute Speech Sample (FMSS) is a method of assessing a range of attitudes and perspectives an individual holds about another, by exploring the way they speak about them. The FMSS requires someone to speak about another person and their relationship to them for five minutes without interruption. The speech is then coding using different coding systems for the attitudes or perspectives of interest. One of the most commonly used coding system is that of expressed emotion, which describes the level of criticism, warmth and emotional overinvolvement the individual displays in the tone and content of their speech. While this was initially used to evaluate the level of expressed emotion (EE) parents exhibited towards their children, it has since been used in many other contexts, including the exploration of professionals' attitudes towards individuals they work with. With the expansion of contexts in which the FMSS has been used, alternative coding systems have been developed including autism-specific and preschool-specific coding systems for EE. Additional coding systems have also been developed for other areas of interest such as reflective functioning (RF), which describes an individuals' ability to understand another person's behaviour in the context of their mental state and to consider the relationship to their own mental state.

Over recent years the FMSS has been used to understand the relationship between parents, caregivers, and professionals' attitudes towards young people and the emotional and behavioural outcomes for young people, and preliminary research suggests that levels of EE and RF can be altered by psychoeducation and therapy interventions. This thesis explored aimed to expand the FMSS literature by systematically reviewing the literature around the relationship between parental EE and child behavioural and emotional outcomes in Autism Spectrum Disorder (ASD), and empirically testing the impact of an attachment-

and trauma-informed training intervention for social work professionals on their attitudes towards the young people they work with.

The aim of the systematic review was to identify and synthesise the current literature exploring relationships between parental EE measured by the FMSS and child behavioural and emotional outcomes in child and adolescents with ASD, whilst considering additional factors that may be related to these outcomes. Eight eligible papers were identified and synthesised. The review found that increased parental criticism was often related to increased behavioural problems in children and adolescents, and showed some evidence of increased criticism predicting increased behaviour problems. Increased parental warmth was mostly found to be related to lower levels of behaviour problems, and showed some evidence of predicting lower behaviour problems. One study showed evidence towards these relationships occurring in both directions, with higher levels of child behaviour problems predicting higher criticism and lower warmth. While most studies explored mothers' EE, there was also some evidence towards fathers' level of warmth being related to child outcomes. Additional variables of parental stress, parental depressive symptoms, maternal educational level, and family cohesion were also found to be related to child outcomes. Several different coding systems were used across studies which produced variable outcomes, therefore it may be beneficial for a consistent approach to coding to be used in future research. The findings suggest parental EE plays an important role in child behavioural and emotional outcomes and could be the focus of future interventions.

The aim of the empirical paper was to evaluate the impact of an attachment- and trauma-informed training package for social work professionals on their EE and RF using the FMSS alongside the impact upon their attitudes relating to trauma-informed care (ARTIC) and their knowledge, confidence and worries about using trauma-informed approaches. A

new FMSS coding system was developed to assess their ability to take an attachment-informed stance, which showed good code-recode and inter-rater reliability. A non-randomised waitlist control trial design was utilised. One group of social work professionals received two days of training, while another group remained on a waiting-list to receive training. Both groups completed FMSS interviews and questionnaires roughly two weeks apart, with the training group completing the measures before and after their training. Increases in knowledge, confidence, EE warmth and ARTIC scores were found for the training group from pre- to post-training. Significant increases across time were also found for RF and attachment-informed stance but these were not significantly different across the two groups. These findings suggest that while training may improve professionals' attitudes towards, and their knowledge and confidence in, trauma-informed care, these changes may not translate to differences in the way they speak about young people other than increasing the warmth of their tone.

Parental Expressed Emotion and Child Emotional and Behavioural Outcomes in Autistic Spectrum Disorder: A Systematic Review

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Abstract

Growing interest in the links between parent-child relationships and child behavioural and emotional presentations in families of children with autistic spectrum disorder (ASD) has led to an increased use of the Five Minute Speech Sample (FMSS) measure of parental expressed emotion (EE) in autism research. This review focuses on studies exploring the relationships between parental EE and behavioural and emotional outcomes in children with ASD. Electronic searches of six databases and grey literature wielded eight studies that met eligibility criteria. Study designs were a mixture of cross-sectional and longitudinal and quality of studies was variable. Parental criticism was largely positively related to, and showed some association to, child behavioural and emotional problems. Warmth was mostly negatively related to, and showed some association to, child behavioural and emotional problems. Preliminary evidence from one study suggests bidirectional relationship for both criticism and warmth with child behavioural and emotional problems and that paternal, as well as maternal, warmth has a significant relationship in these outcomes. Analysis of additional EE components produced variable results, however parental stress and depressive symptoms were consistently related to child behavioural and emotional problems, and preliminary evidence suggests a possible role of maternal education level and family cohesion. Outcomes were variable across FMSS coding systems and greater consistency in their application is needed in future research. The current findings suggest that parental EE has an important relationship with child behavioural and emotional problems and future intervention efforts may benefit from aiming to reduced EE in order to improve child outcomes.

Keywords: Expressed Emotion; Behaviour; Autism; Parent-Child Relationships

Introduction

It is well-established that parent-child interactions have a significant impact on child well-being and functioning throughout their childhood, adolescence and later life (McLeod et al., 2007; Masten & Tellegen, 2012). More recently, a growing body of evidence suggests that it is not only the interaction the parent has with their child, but the attitudes they hold towards their child, such as their expressed emotion when speaking about their child, that can have this lasting impact (Peris & Miklowitz, 2015). Parental expressed emotion (EE) was originally measured through the use of the Camberwell Family Interview (Leff & Vaughn, 1985) however this approach was often time-consuming, therefore alternative methods of measuring EE were developed including self-report measures such as the Family Attitudes Scale (Kavanagh et al., 1997), and briefer interview methods such as the Five Minute Speech Sample (FMSS). The FMSS was originally designed as a brief method of assessing EE in parents of adult children with mental health conditions (Magaña et al., 1986), however, in recent years it has been used to explore EE in a range of family relationships (Sher-Censor, 2015). The FMSS offers a valid alternative method to lengthy observations of parent-child interactions as scores on the FMSS have been found to be associated with parental behaviours and emotions observed in actual parent-child interactions (Weston et al., 2017). Parents are asked to talk about their child and their relationship for five minutes and their responses are coded for a range of dimensions of interest. The most commonly used coding system is Magaña-Amato's (1993) Expressed Emotion system, which explores parents' criticism, hostility, warmth, positive comments, and emotional over-involvement.

High parental EE has been linked to a range of child difficulties, such as behavioural and emotional problems and impairments of executive functioning, in typically developing children (Baker et al., 2000; Blum & Ribner, 2022) and increased symptoms in children with

mental health conditions, such as depression and anorexia nervosa (Kim Park et al., 2008; Duclos et al., 2014) and physical health conditions such as epilepsy (Bressi et al., 2007). A growing body of research is evidencing the impact of parental EE on child behavioural and emotional outcomes in children and adolescents with and without mental health and neurodevelopmental conditions and a recent meta-analytic review of 42 studies found a small but significant relationship between maternal criticism and child internalising and externalising problems (Rea et al, 2020), however this review did not differentiate between typically and atypically developing young people.

Children and adolescents with neurodevelopmental conditions may have greater vulnerability to parental EE, as they are more likely to have impairments in executive functioning impacting their ability to regulate their behaviour, and their parents are more likely to adopt permissive or authoritarian parenting styles (Hutchison et al., 2016). When exploring parental EE using the FMSS, Peris and Hinshaw (2003) found that, in school-aged children with ADHD, expressions of aggression were associated with high parental EE, particularly in families which displayed high levels of criticism towards the child. Similar findings were made by Greenberg et al (2012) where high levels of parental criticism were related to high levels of externalising behaviours in individuals with Fragile X syndrome, suggesting that parental EE may impact child externalising behaviours across neurodevelopmental conditions.

Families of children with Autistic Spectrum Disorder (ASD) may be particularly vulnerable to these difficulties as around 1 in 2 children with ASD have co-occurring emotional and behavioural problems (McStay et al., 2014), and their parents are at risk for higher levels of parenting stress (Estes et al., 2013) and lower psychological wellbeing (Cohrs and Leslie, 2017). Given that, in typically developing children, high levels of parenting stress

and low parental psychological wellbeing has been associated with critical parenting behaviours (Mackler et al. 2015), it is likely that similar associations may occur in families of children with ASD.

Recent research has begun to explore the links between parental EE, as measured by the FMSS, and the behavioural and emotional presentation of individuals with ASD, with similar patterns of associations being observed as those identified in prior research with other population groups. Woodman et al. (2015) explored the trajectory of change in behavioural and emotional problems of adolescents and adults with ASD across 8.5 years and found that problems tended to either improve or remain stable over time as young people transition into adulthood. When exploring FMSS EE components, the quality of mother-child relationship was a significant predictor of behavioural and emotional presentation, with higher maternal praise predicting fewer asocial and total maladaptive behaviours at the end of the 8.5 year period. Increases in maternal praise across the course of the study were also found to be associated with reduced externalising and total maladaptive behaviours. Follow-up research supported these findings, with a similar pattern of association occurring whereby mothers who made more positive remarks or displayed higher warmth were significantly more likely to have children who followed a positive trajectory of improvement in behavioural and emotional presentation as they transitioned into adulthood, however the impact of maternal criticism on the child's trajectory was inconsistent across studies (Woodman et al., 2016a, 2016b).

Romero-Gonzalez et al (2018) conducted a systematic review drawing upon eleven studies which explored the relationship between parental expressed emotion and psychopathology in individuals with ASD. Of these eleven studies, nine utilised the FMSS, whilst two studies used a self-report questionnaire measure of parental expressed emotion.

Their review concluded, contrary to prior studies, that high levels of EE and criticism, rather than low parental warmth, were associated with externalising behaviour problems in individuals with ASD. The results of three longitudinal studies included within the review suggested a contrary trajectory to previous studies, revealing a pattern of high levels of criticism and EE predicting subsequent increases in behavioural and emotional problems, whilst finding little evidence of a longitudinal impact of warmth on behavioural and emotional outcomes. The findings of this review are somewhat limited as four of the included studies drew their data from the same target sample of a larger longitudinal study (Seltzer et al, 2003), whilst another two included studies drew from non-independent samples. Despite the differences in evidence regarding specific EE components parental EE has been shown to be reliably associated with behavioural and emotional problems in individuals with ASD.

A consistent limitation across these studies exploring the relationship between parental expressed emotion and behavioural and emotional presentations of individuals with ASD, is the wide age range of the participants involved, with many focusing on both adolescent and adult children. Evidence suggests that behavioural and emotional problems decrease as individuals with ASD age (Stringer et al., 2020), therefore the inclusion of adults in the sample may increase heterogeneity of scores and may limit what conclusions can be made about supporting individuals during the critical developmental period of childhood and adolescence. It would be beneficial to understand the relationship between parental EE and child behavioural and emotional problems specifically during childhood and adolescence in order to consider what interventions may be suitable during this period.

The current review aims to explore the current literature regarding relationships between parental expressed emotion, as measured by the Five Minute Speech Sample, and behavioural and emotional outcomes of children and adolescents with a diagnosis of ASD.

Methods

Search Strategy

This review has been informed by the PRISMA guidelines for reporting systematic reviews (Page et al., 2021). The protocol has been published on PROSPERO (ID: CRD42022315911). A systematic search of articles published prior to 26th April 2022 was conducted across six electronic databases (PubMed, PsycINFO, Scopus, ERIC, ASSIA, and Web of Science). The search terms were limited to variations of 3 key words ("expressed emotion" or "five minute speech sample" and "autism spectrum disorder") to ensure all relevant papers were identified (Appendix 2). The following search terms were mapped to subject headings and keyword terms located in the title, abstract, or key concepts: "expressed emotion" OR "five minute speech sample" OR "5 minute speech sample" OR "FMSS" AND "autis*" OR "aspergers" OR "ASD". The search strategies were reviewed by an experienced subject librarian.

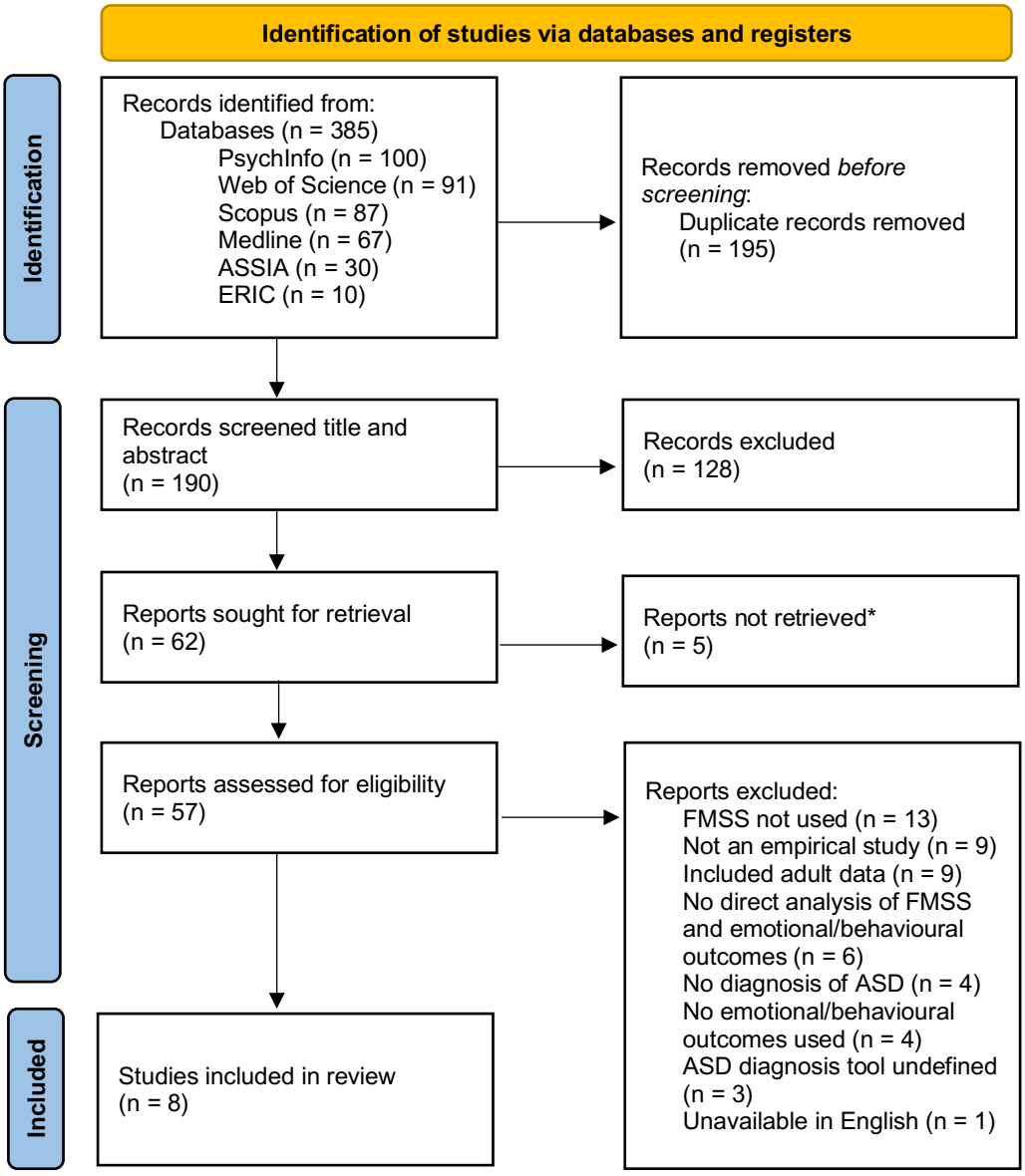
Citation Searching

Backward and forward citation searching was undertaken. Reference lists of all included articles were manually screened to identify potential additional studies. Forward citation searching was conducted by searching each included article via Google Scholar and manually screening articles which has cited the included study. This search was initially conducted on 3rd July 2022 and was re-run on 21st April 2023, no additional eligible literature was identified.

Grey/Unpublished Literature

Attempts were made to obtain any grey or unpublished literature by contacting prominent authors who have published research into outcomes of parent-child relationships and presentation of ASD. None of the contacted authors were able to provide any grey or unpublished literature.

Figure 1: *PRISMA Flow Diagram of the Screening Process*



* reports not retrieved are abstracts of proceedings from annual meetings and symposiums and therefore do not have full-text papers to retrieve

Inclusion and Exclusion Criteria

Articles were screened utilising the same inclusion and exclusion criteria at each stage of the screening process (Appendix 3). Any articles which could not clearly be identified as included or excluded at the title and abstract stage were included within the full-text screening stage to ensure no potential articles were missed.

Articles were included if they fit the following criteria: (a) their participants were parent-child dyads where the child was under the age of 18 and had a diagnosis of ASD; (b) the diagnosis had been established using the ADOS, ADOS-2 or ADI-R; (c) the FMSS was used to measure parental expressed emotion; (d) the child's emotional or behavioural presentation was measured; (e) a direct analysis was conducted into the relationship between parental expressed emotion and the child's behavioural or emotional presentation. No restrictions were placed on the measures of child emotional or behavioural measures. Unpublished dissertations were included as long as they were clearly empirical in their approach. Studies published in languages other than English were excluded. Whilst other validated tools for the assessment and diagnosis of ASD exist, and clinical diagnoses can be made by qualified clinicians without the use of these tools, for the purpose of this review it was considered more rigorous to limit this to the use of only current 'gold standard' tools of the ADOS, ADOS-2, and ADI-R.

Search Results

The initial systematic search results were exported to the reference management software EndNote 20, and following removal of duplicates, 190 articles were identified. Following screening for inclusion and exclusion criteria of title and abstracts, 62 articles remained. Of these 62 articles, if was not possible to retrieve the full-text for 5 articles, therefore 57 full-text articles were screening for inclusion and exclusion criteria. The 5

articles which were not retrieved were posters from conferences and meeting proceedings which were not published as full-text articles. 13 articles were excluded due to there being no use of the FMSS to assess parental expressed emotion. 9 articles were excluded due to not being empirical studies. 9 articles were excluded as they included data from children over the age of 18. 6 articles were excluded due to there being no direct analysis of the relationship between parental expressed emotion and child behavioural or emotional outcome measures. 4 articles were excluded due to there being no clear diagnosis of ASD. 4 articles were excluded due to there being no measurement of child behavioural or emotional presentation. 3 articles were excluded due to the method of ASD diagnosis being undefined. 1 article was excluded due to the full-text being unavailable in English. 8 articles were found to fully meet the inclusion criteria (see Figure 1 for details of the screening process).

Data Extraction

A data extraction table was developed and piloted with 2 papers to ensure the table was fit for purpose. Data extraction was completed prior to quality assessment to blind the researcher to the quality of each study and reduce bias in extraction (Boland, Cherry & Dickson, 2017).

Quality Assessment

Quality assessment of the included articles was completed using the NIH Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies (NIH, 2014; Appendix 4). This tool consists of 14 questions that can be answered “yes”, “no”, “cannot determine”, “not applicable”, or “not reported”. This tool aims to assist reviewers in focusing on concepts that are key to a study’s internal validity. Additional areas that may reflect bias within the publications are also noted by the reviewers. Overall quality scores were

determined through critical appraisal of responses on the tool, and additional areas of potential bias. The overall quality scores provide a comparison of quality between the included studies and give an indication of how each study should be weighted within the results of the narrative synthesis.

Inter-rater Reliability

A second rater was used at all stages of screening, data extraction, and quality appraisal. The second rater screened 40% of the papers for relevant titles and abstracts resulting in an inter-rater agreement level of 89.5%, k = 0.78. At the full text-article stage the second rater screened 40% of papers, resulting in an inter-rater agreement level of 100%, k = 1.00. At the data extraction stage 50% of included papers were also review by the second rater and an inter-rater agreement level of 100% was achieved, k = 1.00. Finally, 50% of included papers were also quality appraised by the second rater, with an inter-rater agreement level of 100%, k = 1.00.

Results

Study Characteristics

The eight included studies were carried out between 2010 and 2022. Five studies were cross-sectional designs, and three were a longitudinal design (Hickey et al., 2020a and 2020b; Smith et al., 2021). Six studies (75%) were conducted in the USA, one in Israel (Serur et al., 2022), and one in Australia (Smith et al., 2021). Five studies recruited participants from local schools and specialist services (62.5%), one study recruited from local service providers and community events (Baker et al., 2019), one recruited from local services and through media networks (Serur et al., 2022), one study recruited from a larger longitudinal study but did not provide further detail (Smith et al., 2021).

Participant Characteristics

The number of participants in study samples ranged from 46 to 159 children/adolescents and their caregivers. The child/adolescent participants ranged between 1 and 16 years old, with the majority of studies (62.5%) having a range of 5 years between their youngest and eldest participants. Mean ages of the children/adolescent participants ranged between 2.9 and 12.9 years old. In all included studies the majority of child/adolescent participants were male, with the proportion ranging from 63.6% to 89%. Five studies recruited one parent, with three of these studies including fathers who made up 1-5% of the study samples (Serur et al., 2022; Baker et al., 2019; Zahka, 2010), whilst three studies recruited both parents (Hickey et al., 2019, 2020a and 2020b). Six studies reported the ethnicity of participants with most of these reporting a majority of Caucasian or non-Hispanic White participants (48-85%). Only three studies reported the details of other ethnicities of participants which included African American (0.7-5%), Hispanic White (8-23%), American Indian (0.7-1%), Asian American (13%), Asian or Pacifier Islander (3%), multiple (1.2-3%), and other (13%).

Table 1: *Methodological Characteristics of Studies*

First author (year); recruitment source; location	Study aims and design	Participants	ASD diagnosis tool	FMSS Variable	Child/ adolescent emotional/ behavioural measure	Additional measures	Quality appraisal rating
Baker et al. (2019); recruited through flyers at local service providers and community events; USA	Examine associations between parental criticism and behavioural problems in children with ASD. Cross-sectional.	N = 46 children and their primary caregivers; mean age 6.48 years, range 4-11; 78% of children male, 48% Caucasian.	ADOS-2	AFMSS + FMSS-EE: criticism and warmth	Child Behaviour Checklist (CBCL)	Child IQ using Stanford-Binet 5 Abbreviated Battery IQ (ABIQ); Child ASD symptom severity using ADOS-2 comparison score	Fair
Benson et al. (2011); recruited from public and private schools, multi-system special needs programs, and autism service organisations; USA.	Examine the reliability and validity of the AFMSS and its associations with child social competence and behaviour problems. Cross-sectional.	N = 104 children and their mothers; mean age 8.6 years, range 6-9; 86% of children male, 83% Caucasian.	ADI-R	AFMSS: all components	Nosinger Child Behaviour Rating Form (NCBRF)	Mother's depression using Center for Epidemiological Studies-Depression Scale (CES-D)	Fair
Hickey et al. (2019); recruited through fliers posted at ASD clinics and in community settings, mailings to schools, and research registries; USA.	Determine how the emotional quality of family subsystems combine to create various classes of family emotional climate and to identify predictors of class membership. Cross-sectional.	N = 148 children and their caregivers, mean age 9.05 years, range 6-13 years; 86% of children male	ADOS	FMSS-EE: criticism and warmth	Child Behaviour Checklist (CBCL)		Good
Hickey et al. (2020a); recruited through mailings to schools and childcare programs, fliers posted at ASD clinics and community settings, and mailings to families in an ASD research registry; USA.	Examine the bidirectional associations between the emotional quality of parent-child relationships and severity of ASD symptoms and emotional and behavioural problems in children with ASD. Longitudinal.	N = 159 children and their caregivers, mean age 9.07 years, range 6-13 years (at Time 1), 86.2% male, 76.7% white non-Hispanic	ADOS	FMSS-EE: criticism and warmth	Child Behaviour Checklist (CBCL) – teacher form	Severity of ASD symptoms using Social Responsiveness Scale (SRS-2)	Good
Hickey et al. (2020b); recruited through mailings to school and childcare programs, fliers posted at ASD clinics and in community settings, and research registries; USA.	Examine actor and partner effects of level of parenting stress and depressive symptoms on the emotional quality of parent-child relationship in the context of child ASD. Longitudinal.	N = 150 children and their caregivers, mean age = 7.97 years, range 5-12 years, 85.7% of children male, 85% white non-Hispanic	ADOS	FMSS-EE: criticism and warmth	Child Behaviour Checklist (CBCL)	Parenting stress through the Burden Interview, parental depressive symptoms through the Centre for Epidemiological Studies Depression Scale (CES-D)	Poor
Serur et al. (2022); children with 22q11DS and iASD recruited from a specialist	Examine associations of parenting stress and parents' EE with children's behavioural problems	N = 74 children and their primary caregivers, child age 3-8 years; 22q11DS = 24,	ADI-R and ADOS-2	Preschool FMSS: criticism and	Child Behaviour Checklist	Parenting Stress Index (PSI; Hebrew version)	Poor

medical centre, TD children recruited via an advertisement in media networks; Israel.	in the context of young children with 22q11DS, compared to children with iASD and TD children. Cross sectional.	mean age = 5.98 years, 70.8% male; iASD = 28, mean age = 5.35 years, 78.6% male; TD = 23; mean age = 5.48 years, 63.6% male.		emotional over-involvement	(CBCL; Hebrew version)		
Smith et al. (2021); recruited from a larger longitudinal study of autistic children and their families; Australia.	Compare the FMSS and AFMSS and investigate their predictive value for concurrent and subsequent child internalising and externalising behaviour problems. Longitudinal.	N = 51 children and their primary caregivers; mean age = 2.9 years, range 1-3 years; 84.3% of children male.	ADOS-2	AFMSS: all components & FMSS-EE: all components	Child Behaviour Checklist (CBCL; 1.5-5 year version)	Parental psychopathology using Depression Anxiety Stress Scale (DASS); maternal education level; child autism severity from ADOS-2 Calibrated Severity Scores; child cognitive ability using the MSEL Early Learning Composite.	Good
Zahka (2010); recruited from local university centre for autism and related disabilities database, TD children recruited from local public schools; USA.	Examine the relationships of family cohesion and EE with child internalising and externalising behaviours, parental beliefs about controllability, and parental stress in sample of high functioning children with ASD and a matched comparison sample without ASD. Cross sectional.	N = 99 children and their primary caregivers; child age range 9-16, mean age 12.9 years; HFA = 56, 89% male; comparison group = 43, 87% male.	ADOS-2	FMSS: overall EE	Behaviour Assessment System for Children – Parent Rating Scales (BASC2 PRS)	Wechsler Intelligence Scale for Children (WISC-IV); family cohesion using the Cohesion scale of the Family Environment Scale (FES)	Poor

Table 2: *Analysis, Results and Main Limitations of Studies*

First author (year)	Data analysis	Relationship between parental expressed emotion and child/adolescent emotional/behavioural presentation (effect size)	Relationships between additional variables and child/adolescent behavioural/emotional outcomes (effect size)	Main limitations
Baker et al. (2019)	Correlations, hierarchical regressions, Simple slope computations	Criticism was positively correlated with externalising behaviour (r = 0.48) Warmth was negatively correlated with externalising behaviour (r = -0.36). Criticism significantly predicted externalising behaviour at all steps of a hierarchical regression model (β = 0.32-0.51)	Child IQ was not significantly related to internalising or externalising behaviour problems. Child ASD symptom severity was not significantly correlated to child internalising or externalising behaviours.	Sample size was generally appropriate for regression analyses but modest for investigating interactive effects. No comparison group of children without ASD. Child measures were measured through parent report, observational measure may reduce potential report bias. Only focused on primary care giver, rather than including both parents in two-parent households.
Benson et al. (2011)	Correlations, regressions	Overall EE and child problem behaviour were not found to be significantly correlated.	Maternal depression had significant unique predictive value for overall child problem behaviour ((β = .0337).	Construct and concurrent validity of the AFMSS were not assessed.

		Warmth was positively associated with child problem behaviour (ρ = .24), however no other individual AFMSS components were found to be significantly correlated to child problem behaviour. Overall EE was not found to significantly predict severity of child problem behaviour once other child, parent, and family factors were included in the model.		As the data was collected concurrently, the direction of effects between EE and parent, child, and family variables cannot be determined. As the measures were based on parent report, the observed associations may be artificially inflated due to shared method variance. Only maternal EE was explored. The sample consisted of most white, well-educated, and economically advantaged mothers who volunteered for the study, therefore may not be generalisable to other populations.
Hickey et al. (2019)	Phi coefficients, latent class analysis, MANOVAs	Parents who displayed high warmth and low criticism towards their child reported lower levels of child behavioural and emotional problems, whereas parents who displayed low warmth and high criticism towards their child reported higher levels of child behavioural and emotional problems (η_p^2 = 0.18 and 0.10 for mothers and fathers reports respectively).		No comparison group, therefore it is not possible to determine whether these differences may also occur in families of typically developing children, or those with children with other conditions. The families used in the sample were fairly homogeneous.
Hickey et al. (2020a)	T-tests, multiple linear regression, structural equation modelling	Significant correlations were found between: Mother warmth at baseline and child behavioural/emotional problems at baseline, 12-month follow-up and 24-month follow-up (*r* = -0.23, -0,30, -0.23 respectively); Mother warmth at 24-month follow-up and child behaviour at 24-month follow-up (*r* = -0.29); Father warmth at 24-moth follow-up and child behaviour at 24-month follow-up (*r* = -0.28); and Mother criticism at baseline and child behavioural/emotional problems at 24-month follow-up (*r* = 0.38), and between mother criticism at 24-month follow-up and child behaviour at 24-month follow-up (*r* = 0.28). Bidirectional associations were present between parental EE and child behavioural/emotional problems: Mother warmth at baseline predicted child behavioural/emotional problems at 12-month follow-up ($\beta = -0.27$). Child behavioural/emotional problems at 12-month follow-up predicted father warmth at 24-month follow-up ($\beta = -0.23$) and mother criticism at 24-month follow-up ($\beta = 0.22$). Mother warmth at 24-month follow-up ($\beta = -0.28$) and father criticism at 24-month follow-up ($\beta = 0.29$) predicted child behavioural/emotional problems at 24-month follow-up.	Child ASD symptom severity was positively correlated with child behaviour problems at baseline (*r* = .64), 12-month follow-up (*r* = .67), and 24-month follow-up (*r* = .61). Severity of ASD symptoms at Time 1 was correlated with behaviour at Time 1 (*r* = 0.64), Time 2 (*r* = 0.43), and Time 3 (*r* = 0.41), symptom severity at Time was correlated with behaviour at Time 2 (*r* = 0.67) and Time 3 (*r* = 0.43). Symptom severity at Time 3 was correlated with behaviour at Time 3 (*r* = 0.61).	Sample as fairly homogenous in race/ethnicity and socio-economic status. Time points only spanned middle-childhood. Unable to make conclusions about the longer-term directional relationships between parent-child relationships and child functioning or how these look at other developmental stage or shift over time.
Hickey et al. (2020b)	Correlations, t-tests, structural	Each parent's warmth was significantly negatively correlated with their own ratings of child behaviour problems (mother: *r* = -0.25; father: *r* = -0.26).	Mother level of parenting stress was significantly positively correlated with mother and father ratings of child behavioural problems (*r* = 0.52, 0.28 respectively).	Homogenous sample in terms of race/ethnicity and middle-upper socio-economic status.

	equation modelling	Father warmth was negatively correlated with mother rating of child behavioural problems (*r* = -0.21). Mother criticism was significantly positively correlated with mother rating of child behavioural problems (*r* = 0.28).	Father level of parenting stress was significantly positively correlated with mother and father ratings of child behavioural problems (*r* = 0.36, 0.53 respectively). Parent level of depressive symptoms was significantly positively correlated with their rating of child behavioural problems (mother: *r* = 0.31; father: *r* = 0.33).	
Serur et al. (2022)	ANOVAs, correlations, t-tests, regression analyses	Criticism was significantly positively correlated with internalising behaviour (*r* = 0.44), externalising behaviour (*r* = 0.29), and overall behaviour (*r* = 0.42), but criticism was not found to be predictive at regression analysis. EOI predicted child externalising ($\beta = 0.30$), and total behaviour problems ($\beta = 0.21$).	Parenting stress was correlated with child internalising (*r* = 0.61), externalising (*r* = 0.38), and overall (r = 0.38) behaviour problems and had significant predictive value for internalising ($\beta = 0.51$), externalising ($\beta = 0.38$), and total ($\beta = 0.38$) behaviour problems.	Families of children with 22q11DS came from lower SES backgrounds compared with families of children with iASD and TD children. PFMSS coding system was used despite not being designed for children of the sample population's age.
Smith et al. (2021)	ANOVAs, correlations, hierarchical regression	FMSS measures were found to be largely unrelated to child behaviours. AFMSS EE predicted child internalising at baseline (($\beta = 0.33$) but not follow-up, and externalising behaviours at both baseline and follow-up (($\beta = 0.28, 0.34$ respectively). AFMSS Warmth was associated with baseline internalising behaviour ($\eta_p{}^2$ = 0.14) and follow-up externalising behaviour ($\eta_p{}^2$ = 0.17). AFMSS Critical Comments was predictive of child externalising behaviours at baseline ($\beta = 0.31$). AFMSS Moderate Warmth was found to predict fewer child internalising problems at baseline ($\beta = -0.35$). AMFSS Low Warmth predicted greater externalising behaviour at follow-up ($\beta = 0.30$).	Child ASD symptom severity was positively correlated with internalising behaviours at baseline (*r* = .31), but not at follow-up or for externalising behaviour. Symptom severity had significant unique predictive value for baseline internalising behaviour ($\beta = 0.28$). Parental psychopathology was correlated with baseline externalising behaviour (*r* = .28), and follow-up internalising (*r* = .38) and externalising (*r* = .30) behaviour problems, but was only predictive of internalising behaviour at follow-up (($\beta = 0.34$). Child cognitive ability was negatively correlated to internalising behaviour at baseline (*rs* = -.33) and follow-up (*rs* = -0.32) and was predictive of internalising behaviour at follow-up (($\beta = -0.28$). Maternal education carried significant unique predictive value for baseline internalising behaviour (($\beta = -0.40$).	Relatively small sample size prevented the investigation of interacting effects in the regression models. Possibility of common-rater bias as both the FMSS/AFMSS and measures of child psychopathology were based on perceptions of the same parent.
Zahka (2010)	MANCOVAs, hierarchical regressions	Parental EE did not moderate the significant difference in externalising behaviours seen between the HFA and comparison group. Neither parental EE nor the effect of the interaction between diagnostic group and parental EE were significant in the model for internalising behaviours.	Family cohesion was found to have significant predictive value for externalising behaviours of aggression (($\beta = -0.23$) and hyperactivity ($\beta = -0.20$).	Limited variability in EE status may have reduced the possibility of detecting differences. By using only overall EE, an important difference between criticism and emotional over-involvement may have been masked. As the data was collected concurrently, the direct of effects cannot be clarified. Several analyses were approaching significance which may suggest that the sample size was not large enough to gain adequate power given the high number of analyses being conducted and the required post hoc corrections.

Expressed Emotion Variables

Several different approaches currently exist to measure Expressed Emotion (EE) within Five Minute Speech Samples and have been used across the included studies. One study (Zahka, 2010) used Magana et al.'s original (1986) coding system (FMSS-EE) which rates four main components: (1) parents' Criticism, (2) Emotional Overinvolvement (EOI), (3) the quality of their Initial Statement, and (4) the quality of their Relationship. Criticism is established through a frequency count of critical statements, whilst EOI is determined from a range of subcategories including self-sacrificing/over-protective behaviour, emotional display, excessive detail, statements of attitude, and positive remarks. The quality of Initial Statement and Relationship are rated as positive, neutral, or negative. Overall EE status is determined by a combination of these four main components: High EE (Critical) would require either a high rating of EOI or (1) a negative Initial Statement, (2) a negative Relationship, and (3) at least one Criticism based on either content or tone.

Three studies (Hickey et al., 2019, 2020a and 2020b) adapted this by combining Criticism (Magana et al., 1986) and a rating of Warmth (Vaughn & Leff, 1976).
One study (Benson et al., 2011) utilised the Autism FMSS (AFMSS; Daley & Benson, 2008) coding system which includes four main components: (1) ratings of the quality of Initial Statement and (2) quality of Relationship (positive, neutral, or negative), (3) the Warmth and (4) EOI displayed (high, moderate, or low); as well as measuring a frequency count of Critical and Positive Comments. Overall EE status is determined by a combination of these components: High EE requires any of the four main components to be rated as negative/low, and there needs to be more Critical than Positive Comments; Moderate EE requires a rating of negative/low on a main component or more Critical than Positive Comments; Low EE describes all other cases. One study (Baker et al. 2019) combined

components of the AFMSS and the FMSS-EE. One study (Smith et al., 2021) compared both the FMSS-EE and the AFMSS.

One study (Serur et al., 2022) chose to use the Preschool FMSS (Daley et al., 2003), which was developed for use when speaking about a child aged between 34 and 39 months old. The Preschool FMSS has four components: Initial Statement, Relationship, Warmth and EOI, with the frequency of critical and positive comments also being recorded. However, Serur et al (2022) used only the EOI score and a continuous Criticism score derived from the sum of all negative scores (negative Initial Statement, negative Relationship, low Warmth, and more negative than positive comments).

Child Behavioural and Emotional Measures

The most commonly used measure of child/adolescent behavioural and emotional presentation across studies was the parent-report Child Behaviour Checklist (CBCL; Achenbach & Rescorla, 2001), which was used across six of the eight studies. The CBCL is comprised of a problem behaviour scale and social competence scale. Within the problem behaviour scale there are 8 subscales: anxious, depressed, somatic complaints, thought problems, attention problems, rule-breaking behaviour, and aggressive behaviour. These subscales can be organised into two higher-order factors of internalising and externalising behaviours. A total behaviour score can be calculated by summing scores on all 8 subscales. Where appropriate, adapted versions were used according to the child age or primary language (1.5-5 year old version, Smith et al., 2021; Hebrew version, Serur et al., 2022). One study (Hickey et al., 2020a) supplemented the information with the Teacher Rating Form of the CBCL. Scores were derived from the CBCL in a variety of ways, with two studies (Baker et al., 2019 and Smith et al., 2021) utilising the two higher order factors of internalising and externalising behaviours, three studies utilising the total score (Hickey et al., 2019, 202a and

2020b), and one study opting to utilise total score alongside internalising and externalising behaviour scores (Serur et al., 2022). Other outcome measures used included the Nosinger Child Behaviour Rating Form (NCBRF; Aman et al., 1996) used by Benson et al. (2019), and the Behaviour Assessment System for Children – Parent Rating Scales (BASC2 PRS; Reynolds & Kamphaus, 2004) used by Zahka (2010).

Other Variables Measured

Seven of the eight included studies included measurements of additional variables that were analysed in relation to child behavioural and emotional outcomes.

Autism Symptoms

Three studies included measures of general or specific ASD symptoms in the child participants. One study utilised the Social Responsiveness Scale (SRS-2; Constantino & Gruber, 2012) to rate the severity of ASD symptoms over the past 6 months, whilst one study used the Calibrated Severity Scores from the Autism Diagnostic Observation Schedule (ADOS-2; Lord et al., 2012). One study included a measure of child social competence through the subscale of the NCBRF.

Parental Psychopathology

Parental depression was measured in three studies through the use of a range of measures including the Centre for Epidemiological Studies-Depression Scale (CES-D; Ross & Mirowsky, 1984), and the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995). Two studies also included a variable of parenting stress, one study utilising the Parenting Stress Index (PSI; Abidin, 1990) and one study using the Burden Interview (Zarit, et al., 1980).

Family/Parent Factors

Zahka (2010) used the Cohesion scale of the Family Environment Scale (FES; Moos & Moos, 1994a) to measure family cohesion. Smith et al. (2020) included maternal education level in their analysis.

Of the 8 included studies only one (Hickey et al., 2019) assessed parental ASD through their level of broad autism phenotype, however no direct analysis of the relationship between parental ASD on child behavioural and emotional problems was conducted in this study.

Child IQ and Cognitive Ability

Two studies (Baker et al., 2019; Zahka, 2010) included a variable of child IQ measured using the Stanford-Binet 5 Abbreviated Battery IQ (ABIQ; Roid, 2003) or the Wechsler Intelligence Scale for Children (WISC-IV; Wechsler, 2003). One study (Smith et al., 2021) included a measure of child cognitive ability using the Mullen Scale of Early Learning Composite (MSEL; Mullen, 1995), while one study (Hickey et al., 2020a) included child intellectual disability status within their analysis.

Quality of Studies

Three studies were rated as 'good' quality, whilst two studies were rated as 'fair' quality, and three studies were rated as 'poor' quality. The common cause of a lower rating was the lack of reporting regarding whether FMSS raters were blinded to participant group and small effect sizes. Hickey et al. (2020b) was rated 'poor' quality as the paper did not report whether FMSS raters were blinded, did not provide sufficient information to estimate effect sizes, and did not acknowledge within their worded results or discussion section the lack of acceptable fit statistics for their models. Zahka (2010) was also rated as 'poor' quality due to a lack of clarity regarding the population sample, inclusion/exclusion criteria, and blinding of assessors. Due to the risk of bias within these two studies, the data extracted

was given less weighting when synthesised with other included studies. Serur et al. (2022) was rated as ‘poor’ due to the FMSS coding system selected being inappropriate as it is not designed for children over the age of 3.25 years while their population sample had a mean age of 5.35 years.

Table 3*: Quality appraisal of included studies*

	Baker et al. (2019)	Benson et al. (2011)	Hickey et al. (2019)	Hickey et al. (2020a)	Hickey et al. (2020b)	Serur et al. (2022)	Smith et al. (2021)	Zahka (2010)
1. Was the research question or objective in this paper clearly stated?	Y	Y	Y	Y	Y	Y	Y	Y
2. Was the study population specified and defined?	Y	Y	Y	Y	Y	Y	Y	N
3. Was the participation rate of eligible persons at least 50%?	NR	NR	NR	Y	Y	NR	NR	NR
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 prespecified and applied uniformly to all participants?	Y	Y	Y	Y	Y	Y	Y	N
5. Was a sample size justification, power description, or variance and effect estimates provided?	Y	Y	Y	Y	N	Y	Y	Y
6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?	N	N	N	Y	Y	N	Y	N
7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?	N	N	N	Y	Y	N	N	N
8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g. categories of exposure, or exposure measured as a continuous variable)?	Y	Y	Y	Y	Y	Y	Y	Y
9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?	N	Y	Y	Y	Y	Y	Y	Y
10 Was the exposure(s) assessed more than once over time?	N	N	N	Y	N	N	N	N
11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?	Y	Y	Y	Y	Y	Y	Y	Y
12. Were to outcome assessors blinded to the exposure status of participants?	Y	NR	Y	Y	NR	NR	NR	NR
13. Was loss to follow-up after baseline 20% or less?	NA	NA	NA	N	Y	NA	Y	NA
14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?	Y	Y	Y	Y	Y	Y	Y	Y
Overall Rating	Fair	Fair	Good	Good	Poor	Poor	Good	Poor
Additional Comments	Exposure measure (FMSS) was not clearly defined; medium-large effect sizes	Small effect size	Medium-large effect sizes	Small-medium effect sizes	Effect sizes not reported; models do not have adequate fit statistics; small effect sizes.	Coding system was not appropriate for sample population age. Small-medium effect sizes	Medium-large effect sizes	Specificity of population sample is unclear; unclear if inclusion and exclusion criteria were predefined; no reference to whether outcome assessors were blinded to exposure status.

Relationship Between Expressed Emotion and Child Behavioural/Emotional Outcomes

Overall EE

Of the three studies which included overall EE within their analysis only one found a significant relationship to child behavioural and emotional scores. Smith et al. (2021) found that overall EE, as measured by the AFMSS, was associated with concurrent and subsequent child internalising and externalising behaviours at baseline and follow-up, however they found no association between overall EE measured by the original FMSS (FMSS-EE) and child internalising or externalising behaviour scores. Similarly, Zahka (2010) found no significant effect of overall FMSS-EE on child internalising or externalising behaviour. In contrast to Smith et al. (2021), Benson et al. (2011) found no significant correlation between overall AFMSS EE and child behaviour scores, however they only measured overall behaviour scores and were using a primary school age population of children, whilst Smith et al. (2021) utilised a preschool age population. Therefore, whilst overall FMSS-EE showed no relationship to measures of child behaviour, the AFMSS EE displays a relationship to child behaviour scores when distinguishing between internalising and externalising within preschool aged children. However, given that only one of the three studies produced significant relationships, it may be the case that overall EE is not a particularly useful construct in understanding the impact of parental attitudes on child behavioural and emotional problems.

Criticism

Four of the five studies which included direct analysis of criticism and child behavioural and emotional presentations found significant relationships. In three studies, criticism was found to have a significant positive correlation with overall child behavioural

and emotional problems (Hickey et al., 2020a & 2020b; Serur et al., 2022), whilst two studies found positive correlations between criticism and externalising behaviour (Serur et al. 2022; Baker et al. 2019). One of these two studies (Serur et al., 2022) also found a significant positive correlation between criticism and internalising behaviour, however this was not supported by the findings of Baker et al. (2019) who found no significant correlation with internalising behaviour. Three of the studies finding significant correlations included further analysis using either hierarchical regression or structural equation modelling, with Hickey et al. (2020a) finding that maternal criticism at baseline and 24-month follow-up was associated with child overall behaviour at 24-month follow-up, and Baker et al. (2019) finding that criticism significantly was associated with child externalising behaviour. However, Serur et al., (2021) did not find criticism to have significant associative value within a regression model. In contrast to the previous four studies, Smith et al. (2021) did not find any significant correlations between child internalising or externalising behaviour at baseline or follow-up, however they were utilising a population of children at preschool-age whilst all other studies were using populations of primary school-aged children, suggesting that criticism may not have as much impact upon younger children.

Of the two studies that included separate analyses of paternal criticism and maternal criticism one found no significant correlation between paternal criticism and child behaviour scores when using a single time point (Hickey et al., 2020b), whilst one found that paternal criticism at 24-month follow-up was associated with child behavioural and emotional problems at 24-month follow-up (Hickey et al., 2020a), suggesting that mothers' expressions of criticism may have a greater initial impact on child behaviour and emotion than fathers', but if paternal criticism is prolonged it may begin to impact child behavioural and emotional problems.

One study (Hickey et al., 2020a) included an analysis of bidirectional relationships and found that child behaviour scores at 12-month follow-up was associated with maternal criticism at 24-month follow-up, suggesting that there is a reciprocal process occurring between mother and child which have significant influence upon each other's emotional and behavioural responses.

Warmth

The five studies that included direct analysis of warmth and child behaviour scores all found significant relationships. The four of the five studies found a negative association, where increased parental warmth was associated with decreased behaviour scores. Of the three studies measuring overall child behaviour scores, two found a negative correlation between FMSS-EE warmth and behaviour scores (Hickey et al., 2020a & 2020b) and in one study (Hickey et al. 2020a) this relationship was maintained across time with maternal warmth at baseline being negatively correlated with child behaviour scores at baseline, 12-month and 24-month follow-up. Maternal warmth at baseline was also found to be associated with child behaviour scores at 12-month follow-up, whilst maternal warmth at 24-month follow-up was associated with child behaviour scores at 24-month follow-up. In contrast, Benson et al. (2011) found a positive association between overall child behaviour scores and maternal warmth when measured by the AFMSS, where increased maternal warmth was associated with increased child behaviour scores.

This finding is conflicting with Baker et al. (2019) who found that warmth, as measured by the AFMSS, was negatively correlated with child externalising behaviour problems. However, warmth was not found to have significant associative value within a regression analysis and no relationship was found to internalising behaviours. Another study utilising the AFMSS (Smith et al., 2021) found further conflicting results in negative

associations between warmth and child internalising behaviour at baseline, and externalising behaviour at follow-up. These associations were maintained in regression analyses which found moderate warmth to be associated with lower child internalising behaviour at baseline, and low warmth to be associated with greater child externalising behaviours. Given these varying results across AFMSS studies, the evidence of a relationship between AFMSS warmth and child behavioural and emotional problems is currently inconclusive, however FMSS-EE maternal warmth may relate to, and be associated with, current and future child behavioural and emotional problems.

Two studies included separate analysis of paternal and maternal warmth, both finding significant relationships to paternal warmth. Hickey et al. (2020b) found a significant negative correlation between paternal warmth and child behaviour scores, while Hickey et al. (2020a) found a similar significant negative correlation between paternal warmth and child behaviour scores at 24-month follow-up, but not at baseline or 12-month follow-up. When exploring bidirectional associations, they found that child behaviour scores at 12-month follow-up was associated with paternal warmth at 24-month follow-up. These findings suggest that fathers may have an important impact on child behavioural and emotional problems through their expression of warmth towards their child, and that fathers and their children can have a reciprocal impact upon each other.

Combinations of Criticism and Warmth

Hickey et al. (2019) explored the various possible combinations of maternal and paternal warmth and criticism that may be expressed by a heterosexual parenting couple. They found that lower ratings of child behavioural and emotional problems were associated with parenting couples where both parents expressed low criticism and high warmth, when compared to couples where both parents expressed high criticism and low warmth, and

couples where the mother expressed low warmth and the father expressed low criticism. These findings further support the significant relationship between parental criticism and warmth and child behavioural and emotional presentations.

Additional EE Variables

Of the three studies measuring EOI, only one found a significant relationship. Serur et al. (2022) found EOI, as measured by the PFMSS coding system, was positively correlated with internalising, externalising, and total child behaviour scores, and that it was associated with externalising and total behaviour scores. However, the children within this sample population were older than recommended for the use of the PFMSS, therefore this finding must be taken with caution. When using the original FMSS coding system, Smith et al. (2021) found no significant association between EOI and child behavioural and emotional problems. When using the AFMSS coding system Benson et al. (2011) found a similar lack of association, whilst Smith et al. (2021) was unable to conduct an analysis due to AFMSS EOI ratings having too limited a range in scores. These findings suggest that child behavioural and emotional problems are relatively unrelated to EOI and that results may be dependent on the appropriateness of the coding system used.

Two studies (Benson et al., 2011; Smith et al., 2021) measured four additional variables: initial statement, relationship, positive comments, and critical comments. While both studies found no significant relationship between positive comments and child behaviour scores, their results were contradictory for all other variables, with Benson et al. (2011) finding no significant relationship between any AFMSS EE variables and child behavioural and emotional problems, and Smith et al., (2021) finding significant relationships to child externalising behaviour in AFMSS initial statement, relationship, and critical comments, and FMSS-EE initial statement. The AFMSS initial statement and

relationship were found to have a significant association to child externalising behaviour at follow-up, whilst AFMSS critical comments were found to have a positive correlation with externalising behaviours at both baseline and follow-up, and was associated with externalising behaviours at baseline. However, the FMSS-EE was found to have a significant association with externalising behaviour at follow-up. No significant relationships were found between internalising behaviour and initial statement, relationship, positive comments, or critical comments measured by the AFMSS or the original FMSS. These conflicting results suggest that further exploration of these four variables is needed to gain a clearer picture of their relationship to, and association with for, child behavioural and emotional problems.

Relationships Between Additional Variables and Child Behavioural/Emotional Outcomes

Autism Symptoms

Three studies included analysis exploring the relationship between child ASD symptoms and child behavioural and emotional presentations, with varying results. Hickey et al. (2020a) found significant positive correlations between child ASD symptom severity and overall child behavioural and emotional problems at baseline, 12-month follow-up and 24-month follow-up. These relationships showed stronger correlations than those found between EE components and child behavioural and emotional problems. Smith et al. (2021) found a similar significant positive correlation between symptom severity and baseline internalising behaviour and symptom severity was found to carry significant associative value for baseline internalising behaviour, however no significant associations were found to internalising behaviour at follow-up or externalising behaviour at baseline or follow-up. Within their regression analysis AFMSS-EE was found to have greater unique associative value than ASD symptom severity. Meanwhile, Baker et al. (2019) found no significant

correlations between ASD symptom severity and internalising or externalising behaviour. Given the variability in results, the impact of child autism symptoms on child behavioural and emotional problems remains unclear and may require further investigation.

Parental Psychopathology

Four studies explored the relationship between parental psychopathology and child behavioural and emotional presentations, with all four studies reporting significant associations. Both Serur et al. (2022) and Hickey et al. (2020b) found a positive correlation between parenting stress and child behavioural and emotional problems, and in a regression analysis Serur et al. (2022) found parenting stress to be associated with child internalising, externalising, and overall behaviour problems. Both studies found that parenting stress had stronger correlations than EE components did, and Serur et al. found parenting stress to have greater unique associative value than EE components. Similar patterns were observed in parent depressive symptoms with both Smith et al. (2021) and Hickey et al. (2020b) finding a significant positive correlation between parent depressive symptoms and child behavioural and emotional problems, and parent depressed mood being identified as having a significant association with overall child behavioural and emotional problems (Smith et al., 2021) and child internalising behaviour at follow-up (Benson et al., 2011). Within these studies parent depressive symptoms were found to have stronger correlations to, and have greater unique associative value for, child behavioural and emotional problems than AFMSS-EE. The consistency of these results suggest that parent psychopathology can play an important role in child behavioural and emotional problems and may be a worthwhile area to explore in future intervention studies aimed at behavioural and emotional problems in children with ASD.

Child IQ and Cognitive Ability

Three studies explored the relationship between child IQ/cognitive ability and their behavioural and emotional presentations. Smith et al. (2021) found that child cognitive ability was correlated with internalising behaviour at baseline and follow-up and was associated with child internalising behaviour at follow-up with greater unique associative value than AMFSS-EE. These findings were not supported by Baker et al. (2019) or Zahka (2010) both of whom found that child IQ was unrelated to internalising or externalising behaviours. These findings suggest child IQ/cognitive ability may not have a significant role in the behavioural and emotional presentations of children with ASD, however further research may be required to provide further evidence.

Family/Parent Factors

Two studies explored additional family or parent factors. Smith et al. (2021) included analysis of the role of maternal education level and found it to be associated with internalising and externalising behaviours at both baseline and follow-up, and was associated with baseline internalising behaviour with greater unique associative value than AFMSS-EE. Zahka (2010) included a measure of family cohesion and found this to be associated with child externalising behaviour of aggression and hyperactivity whilst EE was not found to be related to these outcomes. These findings suggest that there may be important elements of parent demographics and wider family dynamics that could warrant further exploration in understanding child behavioural and emotional problems.

Discussion

This review intended to address the limitations of previous systematic reviews into the relationship between parental EE and behavioural and emotional presentations of children and adolescents with ASD by synthesising results of studies utilising a ‘gold

standard' measure of ASD, only using FMSS measures of EE, and maintaining a child and adolescent age range. Seven of the eight studies found a significant relationship between one or more FMSS variables and child behaviour scores. Three additional variables showed evidence of greater associative value than EE for child behavioural and emotional outcomes.

The studies summarised within this review show consistent links between parental expressed emotion and child behavioural and emotional presentations, however the findings appear to be variable across coding systems. The AFMSS yielded more associated interactions for overall EE, but produced mixed results for parental warmth and criticism. When measured by the AFMSS, overall EE was found to be associated with internalising and externalising child behaviours in pre-school age children but not primary school-aged children, however, when measured by the FMSS-EE, these same interactions were not observed.

When measured by the FMSS-EE parental criticism was found to correlate to, and be associated with overall child behavioural and emotional problems, however when measured by the PFMSS a similar correlational relationship was found but criticism was not significantly associated with behavioural and emotional problems. Studies utilising the AFMSS produced mixed results, with one showing similar positive correlations, and significant associative value for externalising behavioural and emotional problems, whilst another showed no significant relationship, however this could be due to differences in the population samples' ages, suggesting that criticism may be a useful indicator of child behavioural and emotional outcomes across coding systems.

When measured by the adapted FMSS-EE, maternal warmth was shown to be negatively correlated with child behavioural and emotional problems, and this relationship was maintained at regression in one study, showing warmth to be associated with future

decreases in behaviour and emotion. However, the AFMSS yielded varying results of relationships between parental warmth and child behavioural and emotional problems, with differences across studies in the direction of association and associative value of warmth in regression analyses.

These differences in relationships across coding systems highlight a current issue in the use of FMSS in developmental research. Whilst significant efforts have been made to design alternative coding systems that are more appropriate for specific populations, particularly preschool age children and those with a diagnosis of ASD, there are now at least five distinct coding systems and at least two additional extended coding systems (Sher-Censor, 2015), creating a potential dilemma for researchers in selecting the most appropriate system for their investigations. This dilemma may be further complicated if a participant sample were to cross multiple characteristics, for example focusing on preschool age children with a diagnosis of ASD. In addition, there is a marked difference in researcher's approaches to utilising the FMSS measurements even within those employing the same coding system. Some researchers opt to analyse overall EE scores and each subcomponent, whilst others choose to only analyse the overall score, or only selecting specific subcomponents of interest. This variability in coding systems and approaches to selecting measurements for analysis creates substantial difficulties when synthesising findings across studies due to the significant heterogeneity across studies, which creates limitations for the review. It may be beneficial for future FMSS research to work towards developing 'gold standard' coding systems and for a unified approach to analysing measurements within these coding systems.

Despite these challenges in synthesising findings across coding systems, a consistent finding of significant relationships between maternal criticism and child behavioural and

emotional problems was identified, with evidence towards positive correlations between internalising, externalising, and overall child behaviour, and some evidence towards criticism having a significant association with child overall and externalising behaviour. These findings reflect those found in research into typically developing children (Rea et al., 2020), and individuals with ASD across a broader age range (Romero-Gonzalez et al., 2018), suggesting that the experiences of maternal criticism may have more universally adverse effects to the behavioural and emotional development of all individuals, and that a more universal theoretical framework, such as Bronfenbrenner's (1974) ecological systems theory or Bridgett et al.'s (2015) self-regulation intergenerational transmission model, may be more appropriate for understanding the impact of parental attitudes. These similarities in findings across neurodevelopmental groups and ages suggest that parenting interventions aimed at reducing maternal criticism (e.g. Gar & Hudson, 2009) may be appropriate for mothers of children with or without ASD and at varying ages.

Whilst previous research has been largely focused on the relationship between mothers and their children, two studies within this review provided interesting findings regarding the role of fathers in parent-child dynamics. Whilst no significant relationships were found for paternal criticism, paternal warmth was found to have a significant negative correlation to child behavioural and emotional problems. These findings may suggest that the combination of low maternal criticism and high paternal warmth may create a family environment which is the most protective against the development of behavioural and emotional problems. However, combinations of maternal and paternal level of EE were explored by one study (Hickey et al., 2019) which found that lower behaviour scores were associated with family environments where both parents displayed low criticism and high warmth. Given this preliminary evidence of paternal EE having an important role in child

behavioural and emotional presentations, interventions aimed at improving child behavioural and emotional problems through addressing parental EE should be making concerted efforts to include fathers of children with ASD. However, when considering the relationships identified within this review, for both mothers and fathers, we must recognise that the majority of studies utilised a cross-sectional design, therefore the existence of a bidirectional relationship between parental EE and child behavioural and emotional outcomes within these samples cannot be ruled out. In other words, the child's emotional and behavioural presentation may elicit more critical or less warm interactions from their parents. If a bidirectional relationship does exist it may be equally or more effective to provide interventions aimed at managing and reducing emotional and behavioural problems in children and adolescents with ASD.

Historically, research around parental EE has focused on the potential impact of EE on a range of psychiatric, health, and behavioural outcomes of young and adult children. However, transactional (Olson & Sameroff, 2009), attachment and social learning (Shaw and Bell, 1993) theories of child development, would suggest that the parent-child relationship is both influenced by child behaviour, and is key to shaping child behaviour and emotion across time, creating a reciprocal relationship between parental emotional expression towards the child, and the child's behaviour and emotion. It is likely that the impact of the reciprocal relationships is heightened in families of children with ASD due to increased difficulties in social-relatedness (Crowell et al., 2019). Preliminary evidence from one study within the review (Hickey et al., 2020a) lends support to these theoretical perspectives as bidirectional relationships were found between child behaviour scores and parental EE. Maternal warmth was found to be associated with future child behaviour scores, whilst child behaviour scores were found to be associated with future maternal criticism and

paternal warmth. These results suggest that such bidirectional relationship may exist and warrant further research, as well as consideration of the impact of intervention for emotional and behavioural problems in children and adolescents with ASD in reducing parental EE.

One area that remain contentious in the use of FMSS EE coding systems, is the inclusion of the emotional over-involvement (EOI) subcomponent, as many researchers argue that EOI is not associated with features of observed parent-child interactions (Sher-Censor, 2015). The findings of this review support the concerns raised within these debates, as results across studies were variable, with only the PFMSS producing significant relationships between EOI and child behavioural and emotional problems in one study, and the range of scores being too small to conduct analysis for AFMSS within the same study (Smith et al., 2021). Whilst two studies included analysis of four additional EE variables, the results were conflicting and further research would be necessary to draw any conclusions on their role in child behavioural and emotional presentations.

A range of additional child and parent variables were explored across studies which provide useful insights into potential factors that could play an added role in the development of child behavioural and emotional problems. In line with previous research (Clauser et al., 2021; Benson, 2023), parenting stress and depressive symptoms were shown to have consistent relationships with, and association with, child behavioural and emotional problems across studies. Given that these relationships were found to be stronger than those for EE, addressing parental stress and depression may be an important area for future interventions aimed at reducing child behavioural and emotional problems. Another relatively consistent finding across studies was the lack of association between child cognitive ability or IQ and their behavioural and emotional presentations, suggesting that

interventions aimed at reducing child behavioural and emotional problems may be suitable for families of children with ASD across a range of intellectual abilities. Findings relating to the severity of child ASD symptoms were variable and may need further exploration to establish a clearer picture to inform future clinical intervention efforts. Two additional variables that may warrant further investigation are maternal education level and family cohesion as both were found to have an association with for child behavioural and emotional problems, but results were limited to only one study each. Parental ASD could potentially be an important factor impacting the expression of emotion towards the child, or the child's social learning of masking strategies that impact their presentation of emotional and behavioural problems, therefore future research should consider including a variable of parental ASD and conducting a direct analysis of its relationship to both parental EE and child emotional and behavioural problems.

Several limitations must be taken into account for this review which may have impacted the outcomes and conclusions that can be drawn. Firstly, due to our stringent inclusion criteria, only 8 studies were able to be included which may have led to important results being missed from additional studies where the ADOS or ADI-R were not utilised for diagnosis. Secondly, the search terms utilised were relatively brief which may have resulted in additional relevant studies not being identified and included. Finally, the grey literature search did not include specific dissertation abstract databases which may have identified additional eligible research.

The results of this review provide promising evidence of the role of parental expressed emotion in the development of behavioural and emotional difficulties in children with ASD, and the potential bidirectional nature of this relationship, which is supported by current child development theories. Given the greater consistency of results for the

association of parental criticism, and the preliminary evidence for the importance of paternal warmth, in child behavioural and emotional outcomes, future directions for FMSS research should explore the impact of interventions designed to reduced parental criticism and increase parental warmth, as these may having promising results for reducing child behavioural and emotional problems across a range of intellectual abilities and age ranges. However, careful consideration should be given to how EE coding systems are used within this research to increase homogeneity across studies, creating more opportunities for valuable systematic and meta-analytic reviews in the future.

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Impact of an Attachment- and Trauma-Informed Training Intervention for Social Care Professionals

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Abstract

Background: The importance of trauma-informed care has recently been recognised more greatly across the United Kingdom and has led to increased efforts to provide training to staff across a range of public sectors. However, the evaluation of training interventions is often limited to outcomes of staff knowledge and confidence. **Objective**: To evaluate the impact of an attachment- and trauma-informed training intervention for social work professionals **Participants**: 29 social work professionals. **Methods:** A non-randomised waitlist control trial evaluating outcomes of professionals' expressed emotion (EE), reflective functioning (RF), and ability to take an attachment-informed stance using Five Minute Speech Samples (FMSS), alongside their attitudes towards trauma-informed care (ARTIC) and their knowledge, confidence and worries regarding trauma-informed care. A novel Attachment-Informed FMSS coding system was developed and piloted which showed good inter-rater reliability and code-recode reliability. **Results:** Significant interaction effects were found for knowledge (η_p^2 = .623, p = <.001), confidence (η_p^2 = .281, p = .003) and EE Warmth (η_p^2= .172, p = .025) with significant increases seen from pre- to post-intervention for the training group compared to the waiting-for-training group, and the training group was found to have a significant increase in ARTIC scores from pre- to post-intervention (r = .412, p = .02). Significant effects of time were found for RF and attachment-informed stance but no interaction effect was found. **Conclusions:** Findings suggest training outcomes may not have the intended effect of increasing professionals' ability to be reflective or attachment-informed but still provide positive changes in knowledge, confidence and self-reported attitudes.

Keywords: Trauma-informed; Attachment; Training; Expressed Emotion; Attitudes

Introduction

Many health and social care professionals work with traumatised young people to support their social and emotional development and manage the impact of their traumatic experiences. It is important that their work is grounded in psychological theory and evidence-based practice to ensure effective support is provided and to minimise the risk of young people being re-traumatised by services (Woodside-Jiron et al., 2019). Attachment theory and models of developmental trauma can help professionals to conceptualise the approach they take to their work with traumatised young people and their families.

Attachment theory seeks to explain the nature and function of a child's bond to their caregiver and suggests that variations in attachment styles and behaviour are a result of caregivers' sensitivity to the child's attachment cues and communication, and that attachment behaviour can be transmitted across generations (Fearon & Roisman, 2017). The theory proposes that caregiver sensitivity, responsiveness and attunement are key to providing the child with a secure base from which to explore the world which contributes to the development of personality and aspects of affect regulation (Fitton, 2012).

Models of developmental trauma suggest that children who are exposed to multiple and chronic interpersonal trauma, particularly when traumas occur in the family environment, are at risk of developing a range of functional and mental health problems including difficulties in attachment and interpersonal relationships (Kisiel et al., 2014). Looked After Children (LAC) are likely to be at greater risk of attachment difficulties as they have often experienced prolonged developmental trauma and have further repeated disruptions to attachments through living in multiple foster placements (Archer and Burnell, 2003). The implementation of trauma-informed care models in foster care and other out-of-home care settings has been shown to improve behavioural and mental health outcomes for

LAC (Bailey et al., 2019) and may be a beneficial approach to implement in the wider systems supporting LAC such as social services.

Working with individuals who have experienced disrupted attachments and complex trauma can be challenging for service providers, particularly at times when individuals display behaviours that can evoke unhelpful emotional responses in those around them, such as parents, carers, or professionals. These unhelpful reactions can at times present as non-reflective interpretations of the individuals' behaviours, which can in turn exacerbate the individuals' difficulties (Chandler, 2008). Attachment- and trauma-informed training programmes often aim to increase a person's understanding of individuals' behaviours, creating more balanced and less emotionally-driven responses from those working with the individual. However, one of the challenges in conducting research on psychologically-informed staff training interventions is finding appropriate measures that adequately capture relevant change, and studies have attempted to achieve this by measuring a range of different related constructs. Recent studies have explored staff's knowledge and confidence in trauma-informed approaches, and their attitudes towards trauma inquiry and response (Purtle, 2020). Some training programmes have also measured staff's levels of empathy (Little & Maunder, 2020) and emotional control (Rose et al., 2019) which are often linked to a secondary aim of improving the relationships between clients and services, creating a greater sense of person-centred working and compassionate care (Purtle, 2020).

Preliminary evidence for the impact of training suggests that providing attachment- and trauma-informed training to education staff in pupil referral units can increase staff's perceptions of their knowledge and confidence, whilst reducing their worries, about working in a trauma- and attachment-informed way with children and young people (Greenhalgh et al., 2020). This training was delivered by a psychology-led service and

consisted of a two-day training package exploring attachment and theory and concepts from Dyadic Developmental Psychotherapy (DDP – a therapeutic approach based on attachment theory and understanding the impact of developmental trauma), followed by six skills development sessions incorporating case formulation into practice. Whilst this research suggested a positive impact on staff's knowledge, confidence and worries regarding trauma- and attachment-informed working, the study's conclusions are limited by the lack of control group for comparison, and the lack of any clear evidence that this impact translates to a change in the relationship to, and approaches to working with, service users.

One measurable construct that has been linked to observed changes in child-adult interactions and relationships is Expressed Emotion (Weston et al., 2017), which can be defined as a caregiver's attitude towards an individual as reflected by comments made about the individual, and may include expressions of hostility or warmth towards the individual. This construct is most commonly measured using Five Minute Speech Samples (FMSS; Sher-Censor, 2015) which consist of an individual speaking for five minutes about a child or young person and their relationship with them, and is then coded for specific constructs of interest, such as Expressed Emotion, according to the relevant coding manuals. The FMSS provides advantages over other data collection approaches as it reduces response biases through the use of a general prompt to acquire open-ended responses, rather than using more directive questions which may illicit socially desirable responses.

FMSS coding of Expressed Emotion (EE) has most commonly been used in research with parents or families, however recent research has extended its use to measure professional groups including prison staff (Moore et al., 2010) and teachers (McGrath & Van Bergen, 2017). Whilst EE is the most commonly measured construct using FMSS, coding systems have been developed to measure other constructs of interest, including Reflective

Functioning (Fonagy et al., 1998). Reflective Functioning (RF) explores the ability to recognise or describe mental states such as emotions, thoughts, and beliefs, as well as the ability to relate mental states to behaviour within the self and within others. RF, as measured through the FMSS coding system, has been utilised in research exploring the impact of training for foster and adoptive parents (Bammens et al., 2015) and perceptions of mental health professionals during their professional training (Trowell et al., 2008).

Despite the recent rise in provision of attachment- and trauma-training for staff across many public sector services (Welsh Government, 2021), there is currently a lack of appropriate tools to measure the intended aims of this these training programmes, particularly staff's ability to take an attachment-informed stance in understanding the emotional and behavioural presentations of the young people they work with. The use of a FMSS coding system to identify and quantify this ability within staff could provide new opportunities to understand staff perceptions in a way which may relate more directly to their interactions with service users, and may provide a new tool in which to evaluate the impact of attachment and trauma training packages.

The contribution of attachment theory to therapeutic approaches in psychological services has been well-researched and documented (Cassidy et al., 2013), however the impact of attachment- and trauma-informed training of staff in health and social care teams has not been thoroughly explored within current research literature. The current study aims to build upon previous work by Greenhalgh et al. (2020) to explore the impact of a similar training programme which has been adapted for child social workers. The current study aims to address some of the limitations of the previous research by incorporating a waiting-for-training group, and using the FMSS to measure staff's levels of EE and RF pre- and post-training. The study also aims to address a gap in the current available literature by

developing and piloting a new FMSS coding system to measure staff's ability to take an attachment-informed stance to understanding the young people they work with.

The following research questions are explored:

1) Does attachment- and trauma-informed training impact social work professionals' attitudes towards the young people they work with by changing their ability to take an attachment-informed stance to understanding the young person's presentation?
2) Does attachment- and trauma-informed training impact social work professionals' attitudes towards trauma-informed care?
3) Does attachment- and trauma-informed care have any additional impact on social work professionals by changing their level of knowledge, confidence and worries about their work, or by changing their attitudes towards the young people they work with through changing their level of expressed emotion or reflective functioning?

Methods

Design

The study employed a non-randomised waitlist control trial design due to randomisation not being possible within the confines of the service's working model.

Participants

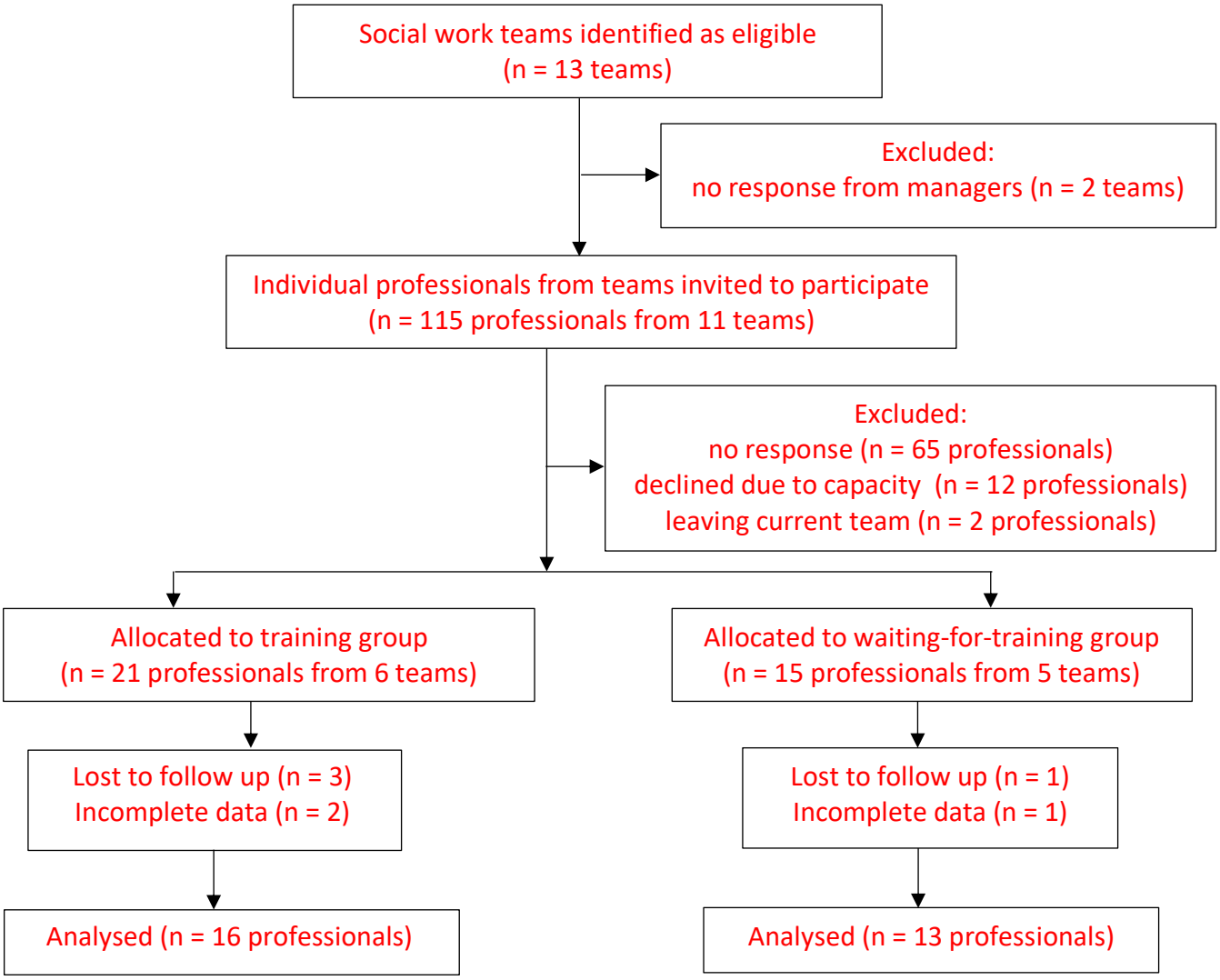
Participants were recruited from teams who had been identified for attachment- and trauma-informed training by a local NHS service. Teams were included if they met the following criteria: (1) a local authority team, (2) working with children and young people up to the age of 25, and (3) had been invited to attend the training between January 2022 and

April 2023. Recruitment was conducted through meetings with Team Managers of identified teams in which they were provided with information about the research and given an opportunity to ask questions. If the Team Manager provided consent, individual team members were emailed by the Project Lead to invite them to participate. If the participant was in a social work team who was on a waiting list to be trained after April 2023 they were allocated to the waiting-for-training group, if they were a member of a team due to be trained between January 2022 and April 2023 they were allocated to the training group. Due to multiple teams being trained in multiple training sessions across this time period and the small size of each team, the waiting-for-training and training groups were made up of multiple cohorts. All professionals approached for participation were made aware that their decision to accept or refuse participation in the research would not affect their access to the training intervention, and that the training intervention would be provided to all team members on the planned dates regardless.

115 social work professionals from 11 teams working across the local area were invited to participate in the research. Two additional teams were identified but were not involved in the research due to their Team Managers not providing a response to confirm their consent to recruit their team members.

Of the 115 professionals invited to participate, 36 agreed and completed at least one interview, however three participants did not complete the questionnaire measures at Time Point 1 or the interview at Time Point 2, two participants did not complete the interview at Time Point 2, and two participants did not complete the questionnaire measures at Time Point 2 (19.4% attrition rate). Over a 16 month recruitment period 29 participants completed all interviews and questionnaire measures at both time points and were included within the data analysis.

Figure 1: CONSORT Diagram



Procedures

Ethical approval was granted by the local Health Board Research and Development Department (Appendix 6) and the Cardiff University School of Psychology Research Ethics Committee (Appendix 7).

Teams were allocated to one of two possible conditions: training, or waiting-for-training, depending on the planned dates of training and how these fell within the data collection period. Teams scheduled to attend the training were invited to participate as part of the training group. Teams who were identified to receive the training but had yet to

schedule training dates were invited to participate as part of the waiting-for-training group. All teams within the waiting-for-training condition would receive their training on their planned dates regardless of their choice to participate in the research or not.

Participants were contacted via email and provided with a Participant Information Sheet and Confidential GDPR Consent Form. Prior to interviews and completion of questionnaire measures at both time points participants were asked to confirm that they had read the Participant Information Sheet and Confidential GDPR Consent Form, that they had been given the opportunity to ask any questions or remove themselves from the study, and that they were consenting to take part in the research. Brief interviews were conducted over the telephone and Microsoft Teams to collect Five Minute Speech Samples (FMSS) and participants were provided with a website link to complete questionnaire measures anonymously online. Interviews and questionnaires were completed at two time points. For those within the training condition: pre-training (Time Point 1) - approximately one week prior to the first training day & post-training (Time Point 2) - approximately one week after their second training day. For those within the waiting-for-training condition: Time Point 1 was the time of their first interview and Time Point 2 was approximately two weeks later. Participants were offered entry into a £50 prize draw for completion of all questionnaire measures and interviews at both time points. The prize winner was drawn through a random number generator at the end of the data collection period.

Training program

The training program was designed and delivered by a local NHS service. Training was delivered both in-person and online depending on the needs of the team. Each training package was delivered over the course of two full days and covered five main themes with the aim to improve knowledge and confidence in the use of evidence-based skills, whilst

reducing worries around working with children and young people who have experienced trauma or disrupted attachments:

1. An overview of attachment theory including its history and development
2. Psycho-education and research evidence around the impact of developmental trauma on the body and brain of developing children.
3. Applying this knowledge to understanding children's behavioural presentations
4. Supporting professional practice through the use of attachment-informed interventions and Dyadic Developmental Psychotherapy (DDP) principles
5. Promoting discussions around self-care within teams.

Ongoing support was provided to the teams following training via six Skills Development Sessions (SDS) which were delivered monthly. It was not possible within the scope of this study to include a further data collection time point to capture the impact of these SDS.

Table 1: Training program details

Theme	**Delivery**	**Resources**
What is attachment?	Didactic, group discussions, pair activities, quiz	Video clips, flipcharts, handouts
The impact of developmental trauma and disrupted attachment	Didactic, experiential exercise, quiz	Video clips
Implications of developmental trauma and disrupted attachments	Didactic, experiential exercise, quiz	Video clips
Attachment and promoting change	Didactic, group exercise, role play	Video clips
The importance of looking after yourself	Didactic, group discussions and formulations	Flipcharts

Measures

Questionnaire measures

Two questionnaire measures were collected pre- and post-training as part of the service's standard procedure. Participants within the training group completed the questionnaires at the beginning and end of their training. Participants within the waiting-for-training group were invited to complete the questionnaires prior to their first interview and following their second interview.

Knowledge, Confidence and Worries Questionnaire (KCW). The KCW was adapted by the service from a previous trauma-informed training evaluation questionnaire (Walters et al., 2016), measuring three subscales related to providing trauma- and attachment-informed care: knowledge, confidence, and worries. The adapted questionnaire (Appendix 8) consists of ten questions in the knowledge subscale, four questions in the confidence subscale, and six questions in the worries subscale, with 10-point Likert scales to rate each item ranging from 0 (strongly disagree) to 10 (strongly agree).

Attitudes Relating to Trauma-Informed Care (ARTIC-10). The ARTIC-10 (Baker et al., 2016) is a 10-item questionnaire that provides a single score of professionals' attitudes towards trauma-informed care (TIC) that has been shown to have good reliability and validity (Baker et al., 2021). This scale uses a 7-point Likert scale expressing an individual's alignment between a 'favourable' or 'unfavourable' attitude towards TIC. Higher scores indicate more alignment towards 'favourable' attitudes (Appendix 9).

Five Minute Speech Sample (FMSS)

Each professional who chose to participate in the interviews provided a FMSS (Magaña et al., 1986). This involved being given a standardised prompt to speak about a young person they worked with for five minutes without any interruption. A protocol for acquiring speech samples was developed to maintain consistency between interviews (Appendix 10). The FMSS for each participant was recorded, transcribed, and coded to measure the

variables of interest in the professional-child relationship. A sample of FMSS (86%) were also coded by two additional researchers with experience of FMSS coding and inter-reliability was calculated for each of the three coding systems used:

(1) **Expressed Emotion (EE).** The expressed emotion coding system (Caspi et al., 2004) was utilised to measure how often professionals were using Positive Comments and Negative Comments when speaking about young people, along with ratings of their Warmth and Dissatisfaction towards the young people. Using this system Positive Comments and Negative Comments are measured by frequency counts. Dissatisfaction is measured on a 6-point rating scale ranging from 0 to 5, with higher scores capturing a stronger dislike towards the young person and a greater desire for them to change. Warmth is measure on a similar 6-point rating scale from 0 to 5, with higher scores capturing greater sympathy and/or empathy towards the young person and greater enjoyment of being with them. In the present study, inter-rater reliability analysis showed a good level of agreement for Negative Comments (*ICC* = .82, *p* = <.001), and an excellent level of agreement for Positive Comments (*ICC* = .92, *p* = <.001), Warmth (*ICC* = .92, *p* = <.001) and Dissatisfaction (*ICC* = .90, *p* = <.001).

(2) **Reflective Functioning (RF).** The Reflective Functioning Five-Minute Speech Sample (RF-FMSS; Adkins & Fonagy, 2019) coding system was utilised to measure professionals' ability to recognise and describe mental states and relate these states to the behaviour of themselves and the young people they work with. The coding system uses a 6-point rating scale ranging from -1 (negative RF) to 9 (full or exceptional RF). Inter-rater reliability analysis showed a good level of agreement (*ICC* = .81, *p* = <.001).

(3) Attachment-Informed (AI). One of the intended outcomes of the training program was for professionals to be able to take a more attachment-informed stance to understanding the presentations of the young people they work with. However, there did not appear to be a measurement tool in the existing literature to capture this outcome. A novel FMSS coding system was therefore developed a piloted for use within this study (Appendix 11). The initial coding system was developed through consultation with Clinical Psychologists within the service delivering the training; views were provided on the elements of speech they would expect to be present if a professional were speaking in an attachment-informed way, and which elements may be present if they were not attachment-informed. These elements were then placed within a 5-point rating system from 0 (no attachment-informed stance) to 4 (highly attachment-informed stance), which was reviewed by clinical and academic psychologists with expertise in attachment, trauma, DDP, and use of the FMSS and feedback was incorporated into the coding system. The coding system uses a 5-point rating system ranging from 0 (no attachment-informed stance) to 4 (highly attachment-informed stance). Inter-rater reliability analysis showed a good level of agreement between raters (*ICC* = .88, *p* = <.001). Code-recode reliability analysis was also completed with coding being completed three months apart, showing good code-recode reliability (*r* = .75, *p* = <.001).

The primary outcome measures were the Attachment-Informed Stance FMSS Coding and the ARTIC-10. The secondary outcome measures were the Knowledge, Confidence and Worries Questionnaire, the Expressed Emotion FMSS Coding and the Reflective Functioning FMSS Coding.

Data Analysis Plan

An a priori power analysis was conducted using G*Power 3.1 using a medium effect size based on similar prior research (Adkins et al., 2022). A minimum sample size of 34 was required to achieve a power of .80, however due to difficulties in recruitment this target was not reached. Data analysis was completed using IBM SPSS version 27. Group demographic variables were compared using Fisher's Exact Test for categorical variables, and independent samples t-tests for continuous data. The impact of training upon professionals' attitudes towards young people through an attachment-informed stance (research question 1) was explored using a mixed ANOVA to test for within-group differences of time (pre or post), between-group differences of group (training or waiting-for-training) and the interaction between time and group. The impact of training upon professionals' attitudes towards trauma-informed care (research question 2) was explored using two Wilcoxon Signed Rank Tests to test within-group differences of time as the necessary assumptions were not met for the use of a mixed ANOVA. Finally, the impact of training upon professionals' knowledge, confidence and worries about their work, and their attitudes towards young people through reflective functioning and expressed emotion (research question 3) were explored through a series of mixed ANOVAs to test for within-group differences of time, between-group differences of group, and the interaction between time and group. Effect sizes are interpreted as small, medium, or large according to proposed guidelines (Cohen, 1988).

Results

Descriptive Statistics

Descriptive data for the training and waiting groups are available in Table 1. The two groups were matched for job roles and years in post. The waiting group had a significantly larger proportion of female participants than the training group.

Table 1*: Demographics characteristics of the sample*

	Training (*n* = 16)	Waiting (*n* = 13)	
Gender (% female)	43.8	100	Fisher's Exact Test *p* = .001
Job Role (*n*, %)			Fisher's Exact Test *p* = .625
Social Worker	7 (43.8)	7 (53.8)	
Team Manager/Leader	1 (6.3)	2 (15.4)	
Support Worker	3 (18.8)	2 (15.4)	
Senior Practitioner	3 (18.8)	0 (0)	
Other	2 (12.5)	2 (15.4)	
Years in Post (*M, SD*)	3.71(4.80)	3.34(3.07)	*t*(27) = -.242, *p* = .811

Training Intervention Outcomes

Results of statistical analysis from ANOVAs and Wilcoxon Signed Rank Tests are shown in Table 2.

EE Components

No significant main or interaction effects were found for Positive Comments, Negative Comments, or Dissatisfaction. A significant main effect of time, but not group, and a significant interaction effect were found for Warmth with large effect sizes. Follow-up tests revealed that the significant difference was attributable to the training group who displayed higher levels of warmth post-training, with a large effect size (training: $F(1,15) = 27.00$, $p = <.001$, $\eta_p^2 = .643$); waiting: $F(1,12) = 1.93$, $p = .190$, $\eta_p^2 = .138$).

Reflective Functioning

A significant main effect of time was found for Reflective Functioning, with a large effect size. Main effect of group and interaction effect were found to be non-significant.

Table 2: *Means, Standard Deviations, ANOVA and Wilcoxon Signed Rank Test Results*

	M(*SD*)		Main effect: time			Main effect: group			Interaction effect: time x group		
	Pre-training	Post-training	*F* (1,27)	*p*	η_p^2	*F* (1,27)	*p*	η_p^2	*F* (1,27)	*p*	η_p^2
EE Positive Comments											
Training	3.75(4.34)	5.19(3.73)	2.85	.103	.096	0.01	.925	.000	0.03	.855	.001
Waiting	4.00(3.00)	5.15(3.29)									
EE Negative Comments											
Training	5.38(3.12)	4.38(2.99)	2.66	.115	.090	0.53	.475	.019	1.04	.317	.037
Waiting	5.77(3.14)	5.54(2.96)									
EE Warmth											
Training	2.50(1.26)	3.25(1.13)	20.01	<.001	.426**	0.99	.330	.035	5.61	.025	.172*
Waiting	3.15(1.07)	3.38(0.87)									
EE Dissatisfaction											
Training	2.44(1.15)	2.06(1.39)	2.77	.107	.094	0.60	.445	.022	0.49	.491	.018
Waiting	2.00(1.22)	1.85(0.99)									
Reflective Functioning											
Training	3.38(1.67)	4.88(1.71)	44.70	<.001	.623**	0.22	.647	.008	0.43	.515	.016
Waiting	3.77(1.54)	5.00(1.41)									
Attachment-Informed											
Training	1.25(0.77)	2.23(1.15)	18.44	<.001	.406**	0.13	.719	.005	1.05	.316	.037
Waiting	1.54(1.05)	2.08(0.95)									
Knowledge											
Training	5.92(1.50)	7.66(0.70)	30.76	<.001	.533**	8.48	.007	.239**	17.39	<.001	.392**
Waiting	5.40(1.31)	5.65(1.38)									
Confidence											
Training	6.13(1.71)	7.81(0.88)	23.32	<.001	.463**	8.46	.007	.238**	10.56	.003	.281**
Waiting	5.13(1.93)	5.45(1.95)									
Worry											
Training	3.94(1.43)	3.65(1.05)	0.60	.447	.022	0.27	.610	.010	3.97	.056	.128
Waiting	3.70(1.39)	4.34(1.45)									

	Md				
	Pre-training	Post-training	*z*	*p*	*r*
ARTIC					
Training	5.55	6.30	2.33	.020	.412*
Waiting	5.80	5.80	1.20	.229	.235

* $p = <.05$
** $p = <.01$

Attachment-Informed Stance

A significant main effect of time was found for Attachment-Informed Stance, with a large effect size. Main effect of group and interaction effect were found to be non-significant.

Knowledge

Significant main effects of time and group, and a significant interaction effect were found for Knowledge, with large effect sizes. Follow-up tests revealed a significant change in scores across time for the training group, but not the waiting-for-training group (training: $F(1,15) = 37.47$, $p = <.001$, $\eta_p^2 = .714$; waiting: $F(1,12) = 1.74$, $p = .212$, $\eta_p^2 = .127$), and there was a significant difference between group scores at the post-training time point, with the training group achieving higher knowledge scores post-training than the training group (pre: $F(1,27) = .930$, $p = .344$, $\eta_p^2 = .033$; post: $F(1,27) = 25.79$, $p = <.001$, $\eta_p^2 = .489$), these differences had large effect sizes.

Confidence

Significant main effects of time and group, and a significant interaction effect were found for Confidence, with large effect sizes. Follow-up tests revealed a significant change in scores across time for the training group, but not the waiting-for-training group (training: $F(1,15) = 28.92$, $p = <.001$, $\eta_p^2 = .658$; waiting: $F(1,12) = 1.67$, $p = .220$, $\eta_p^2 = .122$), and there was a significant difference between group scores at the post-training time point, with the training group achieving higher confidence scores post-training than the training group (pre: $F(1,27) = 2.21$, $p = .148$, $\eta_p^2 = .076$; post: $F(1,27) = 18.79$, $p = <.001$, $\eta_p^2 = .410$), these differences had large effect sizes.

Worry

No significant main or interaction effects were found for Worry scores.

ARTIC

A significant change in ARTIC scores was found for the training group, but not the waiting-for-training group. The training group's scores significantly increased from pre- to post-training, whilst the waiting-for-training group's scores remained stable across time.

Discussion

The impact of attachment- and trauma-informed training for social workers was evaluated by comparing FMSS and questionnaire measures pre- and post-training between a training and waiting-for-training group. Significant increases across time were found in EE Warmth, RF, Attachment-Informed Stance, Knowledge, and Confidence. Significant differences between groups were found in Knowledge and Confidence, and significant interaction effects were found in EE Warmth, Knowledge and Confidence. Significant increases in ARTIC scores from Time Point 1 to Time Point 2 were found for the training group, but not the waiting-for-training group. No significant changes were found across time, group or in any interaction in EE Positive Comments, EE Negative Comments, EE Dissatisfaction, or Worry. These findings suggest that whilst training can increase social worker professionals' knowledge and confidence in attachment- and trauma-informed principles, this may not translate to changes in their attitudes towards the young people they work with or their attitudes towards trauma-informed care.

The increases found in social work professionals' knowledge and confidence as a result of the training is in line with a number of US-based studies identified in a rapid evidence review of papers reporting on implementation of trauma-informed initiatives (Bunting et al., 2019). Although each study implemented a different training program, knowledge of trauma-informed care and confidence in implementing trauma-informed practices increased from pre- to post-training consistently across studies and were

maintained at follow-up points of three months to one year. The current study's findings are also in line with those found from trauma-informed training conducted by the local NHS service for staff in pupil referral units (Greenhalgh et al., 2020) which found significant increases in staff's knowledge of, and confidence in using, trauma-informed care which were maintained across six months of skills development sessions. Whilst it was not possible within the scope of the current research to evaluate knowledge and confidence at a follow-up point, the previous research suggests that these gains are likely to be maintained across time. Our findings of no significant change in staff levels of worry differ from those found by Greenhalgh et al. (2020) who found a significant decrease in worry from pre- to post-training, however in both our training and waiting-for-training groups the level of worry was lower at pre-training than those within Greenhalgh et al.'s sample, suggesting that social worker professionals may have a lower level of baseline worry than professionals in pupil referral units.

Significant increases in ARTIC scores from pre- to post-training for the training group are similar to those found by researchers exploring the outcomes of trauma-informed training for teachers (Kim et al., 2021) and psychiatric hospital staff (Niimura et al., 2019), suggesting that trauma-informed training can have a positive impact on professionals' attitudes towards toward informed care across job roles and professional settings. However, further research is needed to understand whether changes in attitudes relate to actual changes in professional practice and outcomes for those utilising such services.

The significant increase in professionals' reflective functioning across time, but not across groups or within an interaction, is similar to findings of a randomised controlled trial of a mentalising psychoeducational intervention aimed at foster parents (Adkins et al., 2022) which increased FMSS reflective functioning only across time. In both our findings and

those of Adkins et al. increases in mean RF-FMSS scores are seen from pre- to post-training in both the intervention and waiting groups, suggesting that reflective functioning may naturally increase through speaking about a child in the same context twice.

In regards to expressed emotion constructs, our findings show that there may be important differences in baseline levels of EE constructs in social workers, when compared to parents in previous research, with our sample of social workers displaying fewer positive comments and greater negative comments than previous parent samples (Scott et al., 2011), and higher dissatisfaction and lower warmth than previous parent samples (Narayan et al., 2015). These differences could have key implications for future research and intervention as it may be beneficial to explore the impact of social workers' expressed emotion upon the outcomes of children and young people, and potentially for increased efforts to be made to design and implement interventions that prioritise addressing social work professionals' expressed emotion.

In the absence of an existing measures the development of the Attachment-Informed FMSS coding system has provided an opportunity to explore the effectiveness of attachment- and trauma-informed training programs to increase professionals' ability to take an attachment-informed stance to relating to, and working with, the individuals who access their services. This is the first FMSS coding system developed specifically to evaluate individuals' abilities to apply attachment-informed principles whilst also taking a reflective stance to understanding individuals utilising the social care system. It goes above and beyond Reflective Functioning coding systems as it incorporates understandings of relational security from multiple sources, contextualising behaviours, and indications of feeling uncontained within the relationship. The findings of the current study suggest that professionals' ability to take an attachment-informed stance is measurable through this

FMSS coding system and that professionals can become more attachment-informed over time, opening up the potential for it to become a useful outcome measure in future research. Although within this study the Attachment Informed coding system has been applied to social care professionals and their reflections on the young people they work with, it has the potential to be applied to a range of roles and settings where the application of attachment principles is essential. Within the initial analysis the coding system has shown adequate code-recode reliability and good inter-rater reliability, suggesting that it may be a suitable tool for future research, however further validation of use with different professional roles and across professional settings may be needed to establish the appropriate breadth of use.

Due to the challenges of recruiting participants from social work teams, the achieved sample size was relatively small leading to the analysis being underpowered. This particularly creates difficulties in interpreting non-significant results within our analysis as we cannot determine whether they are a genuine result or are due to inadequate power. It is likely that recruitment challenges in research with social work professionals will persist, particularly following the lasting impact of COVID-19 and nationwide lockdowns upon the complexity of social service teams' caseloads and resources (Ofsted, 2022). However, given the important role that social work professionals play in the development of healthy and safe attachment relationships for vulnerable young people (Levenson, 2017), it may be prudent to continue making efforts to explore the impact of training interventions on outcomes relating to the relationship between professionals and the young people they work with. The study may be further limited by the non-randomisation of groups, as teams within the training group had been identified as having greater training needs and therefore may have had lower levels of knowledge and confidence or more negative attitudes at

baseline which would create greater scope for change in scores over time. It is also not possible to determine the influence of differences in proportion of male and female participants of each group on the outcomes, therefore future research should make additional efforts to have matched groups or sufficient numbers of participants from each gender to analyse the differences in scores within groups. An additional limitation of this study may have been the alignment of the training intervention to the intended outcomes and the lack of scope to evaluate outcomes following skills development sessions. The training intervention used was focused on providing attendees with education around attachment theory and how this applies to children's behavioural presentations, whilst the skills development sessions were intended to support attendees to apply this knowledge to individuals on their caseloads. Therefore, the inclusion of a third data collection point, following the skills development sessions, may have provided the necessary opportunity for these skills to be incorporated into participants' speech samples as they would have had increased occasions in which they could apply these principles to their individual caseloads. While initial evidence suggests that professionals' attitudes may be susceptible to change following psycho-education interventions (Bammens et al., 2015), this is still a considerably under-researched area and it may be possible that outcomes are dependent on the specific design and delivery of interventions or by the psychological model they are underpinned by.

In conclusion, attachment- and trauma-informed training appears to have a positive impact on social care professionals' knowledge and confidence in their work and their attitudes towards trauma-informed care, however it remains unclear whether training leads to additional intended outcomes of changes in professionals' attitudes towards the young people they work with, their reflective functioning abilities, or their abilities to take an attachment-informed stance to their work. The Attachment-Informed coding system shows

promise in its utility for measuring professionals' ability to be attachment-informed, however further validation is needed across professions and settings. Future research endeavours may be hindered by challenges in recruiting social care staff, however given the importance of their role in the lives of vulnerable young people significant efforts should be made to overcome these challenges and further our understanding of these relationships and how to improve outcomes for young people in the social service system.

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Appendices

Appendix 1: Journal of Contextual Behaviour Science - Guide for Authors

These submission guidelines are abbreviated to the relevant considerations for the submission.

JOURNAL OF CONTEXTUAL BEHAVIORAL SCIENCE

GUIDE FOR AUTHORS

Types of article

All manuscripts must clearly and explicitly be of relevance to CBS. You may find the JCBS article "Report of the ACBS Task Force on the strategies and tactics of contextual behavioral science research" helpful in assessing whether your manuscript is likely to be of interest to readers of this journal.

Articles should fall into one of six categories:

1. Empirical research (up to 6000 words)
2. Brief empirical reports (up to 3000 words)
3. Review articles (up to 10,000 words)
   Manuscripts reviewing a wide range of topics are encouraged as long as their content is directly relevant to CBS. Systematic reviews and meta-analyses are particularly welcome. For meta-analyses and systematic reviews, JCBS requires submissions follow PRISMA guidelines (http://www.prisma-statement.org/).
4. Conceptual articles (up to 6000 words)
5. Practical innovations (up to 6000 words) 6. Commentaries (up to 3000 words)
7. Registered reports (see instructions below)

Word limits exclude references, tables and figures but include the abstract

Submission checklist

You can use this list to carry out a final check of your submission before you send it to the journal for review.

Ensure that the following items are present:

One Cover Page (with author details; if has been designated as the corresponding author with contact details:
• E-mail address
• Full postal address

All necessary files have been uploaded:

Title Page (with author details):

•Include title, names, affiliations, contact information, acknowledgments

Cover Page (with author details; if applicable): Location of shared data and materials (if applicable) Justifications for deviations to author guideline requirements (e.g., word length, data sharing author's note, etc) Justifications for deviations to pre-registered analysis plan (if applicable) Clarification if the manuscript is based on previously published data (i.e., secondary analysis)

Manuscript (without author details):

• Include keywords
• All identifying author information removed
• Pre-registration identifier and location of registration (e.g., Clinicaltrials.gov NCTXXXXXX)
•Include a statement on **both** ethical approval and informed consent for research involving human subjects
• All figures (include relevant captions)
• All tables (including titles, description, footnotes)
Conflict of Interest: Authors who are on the Journal of Contextual Behavioral Science editorial board must include an editor statement acknowledging their role.
Response to Reviewers (without author details; for resubmissions)
Further considerations
• Manuscript has been 'spell checked' and 'grammar checked'
•Manuscripts should be prepared in APA style (7th edition)
• All references mentioned in the Reference List are cited in the text, and vice versa

Studies in humans and animals

If the work involves the use of human subjects, the author should ensure that the work described has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans. The manuscript should be in line with the

Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals and aim for the inclusion of representative human populations (sex, age and ethnicity) as per those recommendations. The terms sex and gender should be used correctly.

Authors should include a statement in the manuscript that informed consent was obtained for experimentation with human subjects. The privacy rights of human subjects must always be observed.

Use of inclusive language

Inclusive language acknowledges diversity, conveys respect to all people, is sensitive to differences, and promotes equal opportunities. Articles should make no assumptions about the beliefs or commitments of any reader, should contain nothing which might imply that one individual is superior to another on the grounds of race, sex, culture or any other characteristic, and should use inclusive language throughout. Authors should ensure that writing is free from bias, for instance by using 'they' instead of 'he' or 'he/she', and by making use of job titles that are free of stereotyping (e.g. 'chairperson' instead of 'chairman' and 'flight attendant' instead of 'stewardess').

Authorship

All authors should have made substantial contributions to all of the following: (1) the conception and design of the study, or acquisition of data, or analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content, (3) final approval of the version to be submitted.

Informed consent and patient details

Studies on patients or volunteers require ethics committee approval and informed consent, which should be documented in the paper. Appropriate consents, permissions and releases must be obtained where an author wishes to include case details or other personal information or images of patients and any other individuals in an Elsevier publication. Written consents must be retained by the author but copies should not be provided to the journal. Only if specifically requested by the journal in exceptional circumstances (for example if a legal issue arises) the author must provide copies of the consents or evidence that such consents have been obtained. For more information, please review the Elsevier Policy on the Use of Images or Personal Information of Patients or other Individuals. Unless you have written permission from the patient (or, where applicable, the next of kin), the personal details of any patient included in any part of the article and in any supplementary materials (including all illustrations and videos) must be removed before submission.

PREPARATION

Peer review

This journal operates a double anonymized review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then typically sent to a minimum of two independent expert reviewers to assess the scientific quality of the paper. The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final. Editors are not involved in decisions about papers which they have written themselves or have been written by family members or colleagues or which relate to products or services in which the editor has an interest. Any such submission is subject to all of the journal's usual procedures, with peer review handled independently of the relevant editor and their research groups.

Double anonymized review

This journal uses double anonymized review, which means the identities of the authors are concealed from the reviewers, and vice versa. More information is available on our website.

Essential title page information

• ***Title.*** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.
• ***Author names and affiliations.*** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.

• ***Corresponding author.*** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. This responsibility includes answering any future queries about Methodology and Materials. **Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author.**

Abstract

A concise and factual abstract is required. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.

Keywords

Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

Research Data

Reporting Standards

This journal follows reporting standards for key types of research, including clinical trials (CONSORT and its extensions) and meta-analyses (PRISMA) as outlined in the Equator website (https://www.equator-network.org/reporting-guidelines/). For randomized clinical trials, JCBS requires that submissions follow CONSORT guidelines (http://www.consort-statement.org). For meta-analyses and systematic reviews, JCBS requires submissions follow PRISMA guidelines (http://www.prisma-statement.org/). JCBS recommends that authors follow similar guidelines for other study designs such as observational studies (STROBE) and qualitative studies (SRQR), which are available at https://www.equator-network.org/reporting-guidelines/.

Artwork

Figure captions

Ensure that each illustration has a caption. Supply captions separately, not attached to the figure. A caption should comprise a brief title (**not** on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

References

Citation in text

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either

'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

Web references
As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

Reference style
Text: Citations in the text should follow the referencing style used by the American Psychological Association. You are referred to the Publication Manual of the American Psychological Association, Seventh Edition, ISBN 978-1-4338-3215-4.
List: references should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication.

Appendix 2: Systematic Search Strategies

1. Medline and PsychInfo
    1. expressed emotion/
    2. expressed emotion.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word]
    3. five minute speech sample.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word]
    4. 5 minute speech sample.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word]
    5. FMSS.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word]
    6. 1 or 2 or 3 or 4 or 5
    7. autism spectrum disorders/
    8. autis*.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word]
    9. aspergers.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word]
    10. asd.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word]
    11. 7 or 8 or 9 or 10
    12. 6 and 11
2. Scopus

    (TITLE-ABS-KEY ("expressed emotion" OR "five minute speech sample" OR "5 minute speech sample" OR fmss) AND TITLE-ABS-KEY (autis* OR aspergers OR asd))
3. ERIC

    ("expressed emotion" OR "five minute speech sample" OR "5 minute speech sample" OR fmss) AND (autis* OR aspergers OR asd)
4. ASSIA

    noft(("expressed emotion" OR "five minute speech sample" OR "5 minute speech sample" OR fmss) AND (autis* OR aspergers OR asd))
5. Web of Science

    (TS= ("expressed emotion" OR "five minute speech sample" OR "5 minute speech sample" OR fmss) AND TS= (autis* OR aspergers OR asd))

Appendix 3: Inclusion and Exclusion Criteria

	Include	**Exclude**
Language	Studies where the full-text is available in English	Studies where the full-text is not available in English
Participants	Studies of parent-child dyads where the child participants are under the age of 18 with a diagnosis of Autism Spectrum Disorder	Studies where the child participants are over the age of 18 at any point during the study Studies where the child participants have no diagnosis of Autism Spectrum Disorder
Diagnosis	Studies where the child participant's diagnosis has been established through the use of either the ADOS, ADOS-2 or ADI-R	Studies where the method of establishing the child participant's diagnosis is undefined or does not include the use of the ADOS, ADOS-2, or ADI-R
Study design	Cross-sectional studies Longitudinal studies Cohort studies Case control study Dissertations	Meta-analysis Systematic review Randomised control trials Case reports or studies Ideas, editorials or opinions
Measures	Studies which use Five Minute Speech Samples to measure parental Expressed Emotion Studies which use a measure of emotional/behavioural presentation of child participants	Studies which measure Expressed Emotion through questionnaire methods Studies which have no measure of emotional/behavioural presentation of child participants
Data analysis	Studies which direct analyse the relationship between parental Expressed Emotion and the child's emotional/behavioural presentation	Studies in which there is no direct analysis of parental Expressed Emotion and the child's emotional/behavioural presentation

Appendix 4: NIH Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies

Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies

Other Criteria Yes No (CD, NR, NA)*
1. Was the research question or objective in this paper clearly stated?
2. Was the study population clearly specified and defined?
3. Was the participation rate of eligible persons at least 50%?
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 prespecified and applied uniformly to all participants?
5. Was a sample size justification, power description, or variance and effect estimates provided?
6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?
7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?
8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?
9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?
10. Was the exposure(s) assessed more than once over time?
11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?
12. Were the outcome assessors blinded to the exposure status of participants?
13. Was loss to follow-up after baseline 20% or less?
14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?
Quality Rating (Good, Fair, or Poor) (see guidance)
Rater #1 initials:
Rater #2 initials:
Additional Comments (If POOR, please state why):

*CD, cannot determine; NA, not applicable; NR, not reported

Guidance for Assessing the Quality of Observational Cohort and Cross-Sectional Studies

The guidance document below is organized by question number from the tool for quality assessment of observational cohort and cross-sectional studies.

Question 1. Research question

Did the authors describe their goal in conducting this research? Is it easy to understand what they were looking to find? This issue is important for any scientific paper of any type. Higher quality scientific research explicitly defines a research question.

Questions 2 and 3. Study population

Did the authors describe the group of people from which the study participants were selected or recruited, using demographics, location, and time period? If you were to conduct this study again, would you know who to recruit, from where, and from what time period? Is the cohort population free of the outcomes of interest at the time they were recruited?

An example would be men over 40 years old with type 2 diabetes who began seeking medical care at Phoenix Good Samaritan Hospital between January 1, 1990 and December 31, 1994. In this example, the population is clearly described as: (1) who (men over 40 years old with type 2 diabetes); (2) where (Phoenix Good Samaritan Hospital); and (3) when (between January 1, 1990 and December 31, 1994). Another example is women ages 34 to 59 years of age in 1980 who were in the nursing profession and had no known coronary disease, stroke, cancer, hypercholesterolemia, or diabetes, and were recruited from the 11 most populous States, with contact information obtained from State nursing boards.

In cohort studies, it is crucial that the population at baseline is free of the outcome of interest. For example, the nurses' population above would be an appropriate group in which to study incident coronary disease. This information is usually found either in descriptions of population recruitment, definitions of variables, or inclusion/exclusion criteria.

You may need to look at prior papers on methods in order to make the assessment for this question. Those papers are usually in the reference list.

If fewer than 50% of eligible persons participated in the study, then there is concern that the study population does not adequately represent the target population. This increases the risk of bias.

Question 4. Groups recruited from the same population and uniform eligibility criteria

Were the inclusion and exclusion criteria developed prior to recruitment or selection of the study population? Were the same underlying criteria used for all of the subjects involved? This issue is related to the description of the study population, above, and you may find the information for both of these questions in the same section of the paper.

Most cohort studies begin with the selection of the cohort; participants in this cohort are then measured or evaluated to determine their exposure status. However, some cohort studies may recruit or select exposed participants in a different time or place than unexposed participants, especially retrospective cohort studies– which is when data are obtained from the past (retrospectively), but the analysis examines exposures prior to outcomes. For example, one research question could be whether diabetic men with clinical depression are at higher risk for cardiovascular disease than those without clinical depression. So, diabetic men with depression might be selected from a mental health clinic, while diabetic men without depression might be selected from an internal medicine or endocrinology clinic. This study recruits groups from different clinic populations, so this example would get a "no."

However, the women nurses described in the question above were selected based on the same inclusion/exclusion criteria, so that example would get a "yes."

Question 5. Sample size justification

Did the authors present their reasons for selecting or recruiting the number of people included or analyzed? Do they note or discuss the statistical power of the study? This question is about whether or not the study had enough participants to detect an association if one truly existed.

A paragraph in the methods section of the article may explain the sample size needed to detect a hypothesized difference in outcomes. You may also find a discussion of power in the discussion section (such as the study had 85 percent power to detect a 20 percent increase in the rate of an outcome of interest, with a 2-sided alpha of 0.05). Sometimes estimates of variance and/or estimates of effect size are given, instead of sample size calculations. In any of these cases, the answer would be "yes."

However, observational cohort studies often do not report anything about power or sample sizes because the analyses are exploratory in nature. In this case, the answer would be "no." This is not a "fatal flaw." It just may indicate that attention was not paid to whether the study was sufficiently sized to answer a prespecified question–i.e., it may have been an exploratory, hypothesis-generating study.

Question 6. Exposure assessed prior to outcome measurement

This question is important because, in order to determine whether an exposure causes an outcome, the exposure must come before the outcome.

For some prospective cohort studies, the investigator enrolls the cohort and then determines the exposure status of various members of the cohort (large epidemiological studies like Framingham used this approach). However, for other cohort studies, the cohort is selected based on its exposure status, as in the example above of depressed diabetic men (the exposure being depression). Other examples include a cohort identified by its exposure to fluoridated drinking water and then compared to a cohort living in an area without fluoridated water, or a cohort of military personnel exposed to combat in the Gulf War compared to a cohort of military personnel not deployed in a combat zone.

With either of these types of cohort studies, the cohort is followed forward in time (i.e., prospectively) to assess the outcomes that occurred in the exposed members compared to nonexposed members of the cohort. Therefore, you begin the study in the present by looking at groups that were exposed (or not) to some biological or behavioral factor, intervention, etc., and then you follow them forward in time to examine outcomes. If a cohort study is conducted properly, the answer to this question should be "yes," since the exposure status of members of the cohort was determined at the beginning of the study before the outcomes occurred.

For retrospective cohort studies, the same principal applies. The difference is that, rather than identifying a cohort in the present and following them forward in time, the investigators go back in time (i.e., retrospectively) and select a cohort based on their exposure status in the past and then follow them forward to assess the outcomes that occurred in the exposed and nonexposed cohort members. Because in retrospective cohort studies the exposure and outcomes may have already occurred (it depends on how long they follow the cohort), it is important to make sure that the exposure preceded the outcome.

Sometimes cross-sectional studies are conducted (or cross-sectional analyses of cohort-study data), where the exposures and outcomes are measured during the same timeframe. As a result, cross-sectional analyses provide weaker evidence than regular cohort studies regarding a potential causal relationship between exposures and outcomes. For cross-sectional analyses, the answer to Question 6 should be "no."

Question 7. Sufficient timeframe to see an effect

Did the study allow enough time for a sufficient number of outcomes to occur or be observed, or enough time for an exposure to have a biological effect on an outcome? In the examples given above, if clinical depression has a biological effect on increasing risk for CVD, such an effect may take years. In the other example, if higher dietary sodium increases BP, a short timeframe may be sufficient to assess its association with BP, but a longer timeframe would be needed to examine its association with heart attacks.

The issue of timeframe is important to enable meaningful analysis of the relationships between exposures and outcomes to be conducted. This often requires at least several years, especially when looking at health outcomes, but it depends on the research question and outcomes being examined.

Cross-sectional analyses allow no time to see an effect, since the exposures and outcomes are assessed at the same time, so those would get a "no" response.

Question 8. Different levels of the exposure of interest

If the exposure can be defined as a range (examples: drug dosage, amount of physical activity, amount of sodium consumed), were multiple categories of that exposure assessed? (for example, for drugs: not on the medication, on a low dose, medium dose, high dose; for dietary sodium, higher than average U.S. consumption, lower than recommended consumption, between the two). Sometimes discrete categories of exposure are not used, but instead exposures are measured as continuous variables (for example, mg/day of dietary sodium or BP values).

In any case, studying different levels of exposure (where possible) enables investigators to assess trends or dose-response relationships between exposures and outcomes–e.g., the higher the exposure, the greater the rate of the health outcome. The presence of trends or dose-response relationships lends credibility to the hypothesis of causality between exposure and outcome.

For some exposures, however, this question may not be applicable (e.g., the exposure may be a dichotomous variable like living in a rural setting versus an urban setting, or vaccinated/not vaccinated with a one-time vaccine). If there are only two possible exposures (yes/no), then this question should be given an "NA," and it should not count negatively towards the quality rating.

Question 9. Exposure measures and assessment

Were the exposure measures defined in detail? Were the tools or methods used to measure exposure accurate and reliable–for example, have they been validated or are they objective? This issue is important as it influences confidence in the reported exposures. When exposures are measured with less accuracy or validity, it is harder to see an association between exposure and outcome even if one exists. Also as important is whether the exposures were assessed in the same manner within groups and between groups; if not, bias may result.

For example, retrospective self-report of dietary salt intake is not as valid and reliable as prospectively using a standardized dietary log plus testing participants' urine for sodium content. Another example is measurement of BP, where there may be quite a difference between usual care, where clinicians measure BP however it is done in their practice setting (which can vary considerably), and use of trained BP assessors using standardized equipment (e.g., the same BP device which has been tested and calibrated) and a standardized protocol (e.g., patient is seated for 5 minutes with feet flat on the floor, BP is taken twice in each arm, and all four measurements are averaged). In each of these cases, the former would get a "no" and the latter a "yes."

Here is a final example that illustrates the point about why it is important to assess exposures consistently across all groups: If people with higher BP (exposed cohort) are seen by their providers more frequently than those without elevated BP (nonexposed group), it also increases the chances of detecting and documenting changes in health outcomes, including CVD-related events. Therefore, it may lead to the conclusion that higher BP leads to more CVD events. This may be true, but it could also be due to the fact that the subjects with higher BP were seen more often; thus, more CVD-related events were detected and documented simply because they had more encounters with the health care system. Thus, it could bias the results and lead to an erroneous conclusion.

Question 10. Repeated exposure assessment

Was the exposure for each person measured more than once during the course of the study period? Multiple measurements with the same result increase our confidence that the exposure status was correctly classified. Also, multiple measurements enable investigators to look at changes in exposure over time, for example, people who ate high dietary sodium throughout the followup period, compared to those who started out high then reduced their intake, compared to those who ate low sodium throughout. Once again, this may not be applicable in all cases. In many older studies, exposure was measured only at baseline. However, multiple exposure measurements do result in a stronger study design.

Question 11. Outcome measures

Were the outcomes defined in detail? Were the tools or methods for measuring outcomes accurate and reliable–for example, have they been validated or are they objective? This issue is important because it influences confidence in the validity of study results. Also important is whether the outcomes were assessed in the same manner within groups and between groups.

An example of an outcome measure that is objective, accurate, and reliable is death–the outcome measured with more accuracy than any other. But even with a measure as objective as death, there can be differences in the accuracy and

reliability of how death was assessed by the investigators. Did they base it on an autopsy report, death certificate, death registry, or report from a family member? Another example is a study of whether dietary fat intake is related to blood cholesterol level (cholesterol level being the outcome), and the cholesterol level is measured from fasting blood samples that are all sent to the same laboratory. These examples would get a "yes." An example of a "no" would be self-report by subjects that they had a heart attack, or self-report of how much they weigh (if body weight is the outcome of interest).

Similar to the example in Question 9, results may be biased if one group (e.g., people with high BP) is seen more frequently than another group (people with normal BP) because more frequent encounters with the health care system increases the chances of outcomes being detected and documented.

Question 12. Blinding of outcome assessors

Blinding means that outcome assessors did not know whether the participant was exposed or unexposed. It is also sometimes called "masking." The objective is to look for evidence in the article that the person(s) assessing the outcome(s) for the study (for example, examining medical records to determine the outcomes that occurred in the exposed and comparison groups) is masked to the exposure status of the participant. Sometimes the person measuring the exposure is the same person conducting the outcome assessment. In this case, the outcome assessor would most likely not be blinded to exposure status because they also took measurements of exposures. If so, make a note of that in the comments section.

As you assess this criterion, think about whether it is likely that the person(s) doing the outcome assessment would know (or be able to figure out) the exposure status of the study participants. If the answer is no, then blinding is adequate. An example of adequate blinding of the outcome assessors is to create a separate committee, whose members were not involved in the care of the patient and had no information about the study participants' exposure status. The committee would then be provided with copies of participants' medical records, which had been stripped of any potential exposure information or personally identifiable information. The committee would then review the records for prespecified outcomes according to the study protocol. If blinding was not possible, which is sometimes the case, mark "NA" and explain the potential for bias.

Question 13. Followup rate

Higher overall followup rates are always better than lower followup rates, even though higher rates are expected in shorter studies, whereas lower overall followup rates are often seen in studies of longer duration. Usually, an acceptable overall followup rate is considered 80 percent or more of participants whose exposures were measured at baseline. However, this is just a general guideline. For example, a 6-month cohort study examining the relationship between dietary sodium intake and BP level may have over 90 percent followup, but a 20-year cohort study examining effects of sodium intake on stroke may have only a 65 percent followup rate.

Question 14. Statistical analyses

Were key potential confounding variables measured and adjusted for, such as by statistical adjustment for baseline differences? Logistic regression or other regression methods are often used to account for the influence of variables not of interest.

This is a key issue in cohort studies, because statistical analyses need to control for potential confounders, in contrast to an RCT, where the randomization process controls for potential confounders. All key factors that may be associated both with the exposure of interest and the outcome–that are not of interest to the research question–should be controlled for in the analyses.

For example, in a study of the relationship between cardiorespiratory fitness and CVD events (heart attacks and strokes), the study should control for age, BP, blood cholesterol, and body weight, because all of these factors are associated both with low fitness and with CVD events. Well-done cohort studies control for multiple potential confounders.

Some general guidance for determining the overall quality rating of observational cohort and cross-sectional studies

The questions on the form are designed to help you focus on the key concepts for evaluating the internal validity of a study. They are not intended to create a list that you simply tally up to arrive at a summary judgment of quality.

Internal validity for cohort studies is the extent to which the results reported in the study can truly be attributed to the exposure being evaluated and not to flaws in the design or conduct of the study–in other words, the ability of the study to draw associative conclusions about the effects of the exposures being studied on outcomes. Any such flaws can increase the risk of bias.

Critical appraisal involves considering the risk of potential for selection bias, information bias, measurement bias, or confounding (the mixture of exposures that one cannot tease out from each other). Examples of confounding include co-interventions, differences at baseline in patient characteristics, and other issues throughout the questions above. High risk of bias translates to a rating of poor quality. Low risk of bias translates to a rating of good quality. (Thus, the greater the risk of bias, the lower the quality rating of the study.)

In addition, the more attention in the study design to issues that can help determine whether there is a causal relationship between the exposure and outcome, the higher quality the study. These include exposures occurring prior to outcomes, evaluation of a dose-response gradient, accuracy of measurement of both exposure and outcome, sufficient timeframe to see an effect, and appropriate control for confounding–all concepts reflected in the tool.

Generally, when you evaluate a study, you will not see a "fatal flaw," but you will find some risk of bias. By focusing on the concepts underlying the questions in the quality assessment tool, you should ask yourself about the potential for bias in the study you are critically appraising. For any box where you check "no" you should ask, "What is the potential risk of bias resulting from this flaw in study design or execution?" That is, does this factor cause you to doubt the results that are reported in the study or doubt the ability of the study to accurately assess an association between exposure and outcome?

The best approach is to think about the questions in the tool and how each one tells you something about the potential for bias in a study. The more you familiarize yourself with the key concepts, the more comfortable you will be with critical appraisal. Examples of studies rated good, fair, and poor are useful, but each study must be assessed on its own based on the details that are reported and consideration of the concepts for minimizing bias.

Last Updated March 2014

Appendix 5: Child Abuse & Neglect - Guide for Authors

These submission guidelines are abbreviated to the relevant considerations for the submission.

CHILD ABUSE & NEGLECT

The International Journal

GUIDE FOR AUTHORS

Types of contributions

1. **Research Article**: Child Abuse and Neglect publishes quantitative, qualitative, and mixed-method research. Particular focus will be placed on thorough and appropriate methods, strong data analysis and discussion of implications for the field.

Abstracts should follow a structured format of no more than 250 words including the following sections: Background, Objective, Participants and Setting, Methods, Results (giving specific effect sizes and their statistical significance), and Conclusions. Download the template here.

2. **Reviews**:
3. **Medical Report**:
4. **Discussion Article**:

BEFORE YOU BEGIN

Studies in humans and animals

If the work involves the use of human subjects, the author should ensure that the work described has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans. The manuscript should be in line with the Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals and aim for the inclusion of representative human populations (sex, age and ethnicity) as per those recommendations. The terms sex and gender should be used correctly.

Authors should include a statement in the manuscript that informed consent was obtained for experimentation with human subjects. The privacy rights of human subjects must always be observed.

Peer review

This journal operates a double anonymized review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then typically sent to a minimum of two independent expert reviewers to assess the scientific quality of the paper. The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final. Editors are not involved in decisions about papers which they have written themselves or have been written by family members or colleagues or which relate to products or services in which the editor has an interest. Any such submission is subject to all of the journal's usual procedures,

with peer review handled independently of the relevant editor and their research groups. More information on types of peer review.

Double anonymized review

This journal uses double anonymized review, which means the identities of the authors are concealed from the reviewers, and vice versa. More information is available on our website.

Length and Style of Manuscripts

Full-length manuscripts should not exceed 35 pages total (including abstract, text, references, tables, and figures), double spaced with margins of at least 1 inch on all sides and a standard font (e.g., Times New Roman) of 12 points (no smaller).

Article structure

Subdivision

Divide your article into clearly defined sections. Three levels of headings are permitted. Level one and level two headings should appear on its own separate line; level three headings should include punctuation and run in with the first line of the paragraph.

Introduction

State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Essential title page information

• ***Title.*** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.
• ***Author names and affiliations.*** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower- case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.

• ***Corresponding author.*** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. This responsibility includes answering any future queries about Methodology and Materials. **Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author.**

Abstract

Abstracts should follow a structured format of no more than 250 words including the following sections: Background, Objective, Participants and Setting, Methods, Results (giving specific effect sizes and their statistical significance), and Conclusions.

Keywords

Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

Tables

Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

References

Citation in text

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

Web references

As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

Reference style
Text: Citations in the text should follow the referencing style used by the American Psychological Association (view the APA Style Guide). You are referred to the Publication Manual of the American Psychological Association, Seventh Edition, ISBN 978-1-4338-0561-5.
List: references should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication.

Submission checklist

The following list will be useful during the final checking of an article prior to sending it to the journal for review. Please consult this Guide for Authors for further details of any item.
Ensure that the following items are present:
One author has been designated as the corresponding author with contact details:

- E-mail address
- Full postal address

• Phone numbers
All necessary files have been uploaded, and contain:
• Keywords
• All figure captions
• All tables (including title, description, footnotes)
Further considerations
• Manuscript has been 'spell-checked' and 'grammar-checked'
• References are in the correct format for this journal
• All references mentioned in the Reference list are cited in the text, and vice versa

Appendix 6: Aneurin Bevan University Health Board Research and Development Research Risk Review Panel Approval

Research and Development Department Research Risk Review Panel

(01633 656353)
ABB.R&D@wales.nhs.uk

15 February 2022. Corinne Green,

Dear Corinne,

Doctoral Programme in Clinical Psychology Cardiff University
11th Floor, Tower Building 70 Park Place
Cardiff CF10 3AT.

Title: The Impact of an Attachment Training Intervention on Professionals' Reflections on Children's Behaviours: A Five Minute Speech Sample Study
Project Lead: Corinne Green
Departmental Lead: Katherine Donnelly

R&D Reference Number: SE/1369/22

The Health Board's Research and Development Department reviewed your service evaluation on the 15th February 2022.

The Department decided that your study did not appear to pose any risk to the Health Board and agreed that your service evaluation be given a favourable opinion.

It is a requirement of this approval that on completion of your Service Evaluation you:

- provide the R&D Department with a copy of your final paper, and
- you share the findings of your evaluation with the department concerned

You are also invited to submit an abstract to the R&D Conference.

If you require a Research Honorary Contract or Letter of Access please contact the R&D Department at the above email address.

Whilst the COVID19 pandemic is ongoing it will be the responsibility of the applicant to approach the head of the appropriate department within the NHS for permission to approach members of their team to support the evaluation. Where the service is unable to help at this time the applicant should contact their university supervisor with a view to delaying or changing their proposal.

If you require any further assistance please do not hesitate to contact the Research and Development Department.

Advancing Knowledge, Enhancing Care

Yours sincerely,

Professor Sue Bale OBE,
Research and Development Director, Research Risk Review Panel Chairman

Advancing Knowledge, Enhancing Care

Appendix 7: Ethical Approval from Cardiff University School of Psychology Research Ethics Committee

From: psychethics <psychethics@cardiff.ac.uk>
Sent: Friday, January 21, 2022 12:50 PM
To: James Gregory <GregoryJ8@cardiff.ac.uk>
Cc: Corinne Green <GreenCH1@cardiff.ac.uk>; Katherine Donnelly (Aneurin Bevan UHB - CAMS - Child/Adolescent Mental Health) <katherine.donnelly@wales.nhs.uk>
Subject: Ethics Feedback - EC.19.11.12.5893R2A

Dear James,

The Ethics Committee has considered the amendment to your PG project proposal: The Impact of Attachment Training on Professionals' Reflections on Children's Behaviours: A Five Minute Speech Sample Study (EC.19.11.12.5893R2A2).

Your project proposal has received a **Favourable Opinion** based on the information described in the proforma and supporting documentation.

Conditions of the favourable opinion
The favourable opinion is subject to the following conditions being met:

- You must retain a copy of this decision letter with your Research records.
- Please note that if any changes are made to the above project then you must notify the Ethics Committee.
- Please use the EC reference number on all future correspondence.
- The Committee must be informed of any unexpected ethical issues or unexpected adverse events that arise during the research project.
- The Committee must be informed when your research project has ended. This notification should be made to psychethics@cardiff.ac.uk within three months of research project completion.

The Committee reminds you that it is your responsibility to conduct your research project to the highest ethical standards and to keep all ethical issues arising from your research project under regular review.

You are expected to comply with Cardiff University's policies, procedures and guidance at all times, including, but not limited to, its Policy on the Ethical Conduct of Research involving Human Participants, Human Material or Human Data and our Research Integrity and Governance Code of Practice.

Kind regards,
Deborah

School of Psychology Research Ethics Committee
https://cf.sharepoint.com/teams/InsidePsych/Ethics/

Cardiff University
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Ffôn: +44(0)29 208 70707
E-bost: psychethics@caerdydd.ac.uk

Appendix 8: Knowledge, Confidence and Worries Questionnaire

Please indicate your impressions of your knowledge and confidence of the following items:

1. I know about links between trauma and challenging behaviours.

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

2. I know about the functions of attachment behaviours and healthy development

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

3. I have an understanding of what might influence someone to develop specific attachment strategies

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

4. I have an understanding about the impact of developmental trauma on a child's neurological development

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

5. I have an awareness of the impact of developmental trauma and attachment difficulties on a child's long term outcomes

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

6. I would know how to recognise signs of trauma in a child.

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

7. If I suspected trauma may be linked to presenting behaviours, I would know how to ask about them.

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

8. If a child's referral indicated trauma, I would feel confident to explore this with the adults in their lives.

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

9. I often feel anxious to ask about trauma in case I upset the child/carer

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

10. I am worried about asking about trauma in case I can't deal with it.

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

11. The impact on me of hearing about traumatic experiences worries me about working with trauma (vicarious traumatisation)

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

12. I worry about opening up a 'can of worms' and not knowing how to contain it.

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

13. If a child disclosed a traumatic experience, I would feel confident in how to respond and proceed

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

14. I have a thorough understanding of the different sorts of approaches that could support a child to heal and thrive following the experience of early trauma

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

15. I feel confident that I could implement some of these approaches

0 1 2 3 4 5 6 7 8 9 10

Strongly Disagree Strongly Agree

16. I worry that I would not know when was a good time to refer to another service

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

17. I can engage in conversations about attachment with confidence

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

18. I worry that I would not have enough support or supervision to work with trauma

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

19. I recognise the importance of having an awareness of my own attachment style and trigger points when working in the context of attachment and developmental trauma

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

20. I recognise the importance of considering how to provide containment and support within my team when working within the context of attachment and developmental trauma

0 1 2 3 4 5 6 7 8 9 10
Strongly Disagree Strongly Agree

Appendix 9: ARTIC-10

Removed due to copyright. License for use within research was granted to the local NHS service.

Appendix 10: Five Minute Speech Sample Protocol

Five Minute Speech Sample Interview Protocol

The participant will be called using the telephone number they have provided, at the time agreed through initial discussions. If the participant does not answer the phone, they will be emailed requesting to arrange another time to conduct the telephone interview.

If the participant answers the phone, recite this script:
"Thank you for agreeing to be a part of this research project. My name is _____ and I am the _____ (role). I would like to record this phone call so that our interview may be accurately transcribed. Do you consent to the recording?"

If the participant does not consent to the phone call being recorded: explain to the participant that is will not be possible to accurate transcribe their interview without the recording and therefore they will be unable to participate. Thank them for their time and inform them that their information will be removed from all relevant files. Ensure their lack of consent to recording is logged.

If the participant consents, start the recording and recite this script:
May I start by just asking you to confirm that you have had a chance to read the Participant Information Sheet and Confidential GDPR Consent Form and that you are still consenting to your data being used within this research project?"

If the participant withdraws consent: thank them for their time and inform them that their information will be removed from all relevant files. Ensure their withdrawal of consent is logged.

If the participant provides consent but has not completed the Confidential GDPR Consent Form: re-send the form directly to the participant via email and ask them to complete it before proceeding with the interview.

If the participant has completed the Confidential GDPR Consent Form and is still consenting, recite this script:
"As part of this research project we require participants to repeat this telephone interview process again in approximately 1 months' time. Could we please set a date for the next interview to ensure it is scheduled proactively?"

If the participant is unable to set a date within the data collection window for the second interview: inform them that it will not be possible to partake in the research without completing a second interview within this time window. Thank them for their time and inform them that their information will be removed from all relevant files. Ensure their unavailability for data collection at time point 1 is logged.

Once a date is set for the second interview, recite this script:
"In order to link up your questionnaire data I need to ask you a few questions to create a unique code. What was the name of your first pet? What are the first two letters of the street you grew up on? What are the first two letters of your best childhood friends first name? In which month were you born?"

Once the code is established recite this script:
"I am going to ask you to speak about the child service user you struggle with the most. This needs to be a child with whom you anticipate you will be working with on a long-term basis. In order to maintain the child service user's confidentiality, I will need you to use an alias name for the child. Can you please choose an alias now and make a note of the child's real name and your chosen alias next to the date of our next interview in your diary to ensure you remember this information the next time we speak."

Once the participant has identified an alias name and noted this down, recite this script:
"I am going to ask you to speak about the service user you struggle with the most. I would like you to talk freely without my interruption. If you run out of things to say, or get stuck for more than 30 seconds, I will offer some prompts."

Ask the initial question:
"For the next five minutes I would like you to describe X to me, what is X like?"

Prompts can be used if the participant reports having nothing else to say or is silent for more than 30 seconds. Prompts must be used in this order. Repeat the list of prompts if needed.
"How would you describe X's personality or temperament?"
"What kind of person is X?"
"What is X like to work with?"
"What are X's most difficult characteristics and best features?"
"What has X been like over the past 6 months?"
"What is the relationship you have with X like?"
"How do the two of you get along?"

Once five minutes has passed, ask the participant to stop and recite this script:
"Thank you for taking the time to go through this interview process, your contribution is extremely valuable in this research. I will be back in touch close to the date of our next interview to check whether the agreed time and day is still suitable and that you are still happy to continue participating. If any problems occur that may prevent you from continuing to participate, or you need to reschedule our next interview please do not hesitate to contact myself or another member of the research team outlined on your Participant Information Sheet."

If the participant says anything of ethical or safeguarding concern during the interview or phone call: arrange an emergency research supervision session at the earliest opportunity to discuss the concerns and seek advise on how best to proceed.

Appendix 11: Attachment-Informed FMSS Coding System

Attachment-Informed Coding System

Guidelines for Rating Speech Samples

The five-minute speech sample Attachment Informed (AI) coding system is intended to explore whether professionals' language and attitude towards their service users is from an attachment-informed stance.

The professionals are asked to speak about a service user: "For the next five minute I would like you to describe X to me, what is X like?". The professionals will speak for five minute uninterrupted, unless they are significantly struggling to continue at which point they will be given prompts (e.g. "How was you describe X's personality or temperament?"). The samples will then be transcribed and coded according to the 5-point rating system (see: Overall Rating Criteria).

The following elements should be considered when rating speech samples:

'What' descriptions of behaviour:

'What' descriptions of behaviour are focused on the specific acts of the person, such as ''they destroyed their belongings'' or "they started a fight", without any links being made to the person's emotional state, the potential function of the behaviour, what the person may have been trying to communicate, or what need they may have been trying to have met by others. There may be reference to early attachment experiences and how they link to the person's behaviour.

'Why' descriptions of behaviour:

'Why' descriptions of behaviour provide a context to the acts of the person by linking them to potential functions of the behaviour, considering what the person may be trying to communicate, their internal emotional state or what need they may be trying to have met by others around them.

Relational contexts:

Relational contexts for the person may include: their experiences (both historic and current) with their primary caregiver; the impact of relationships to other key figures throughout their life; any periods of disrupted attachment to key figures in their life; significant loss, or threat of loss, of key figures throughout their life; the development of internal working models of caring.

Key figures can include: birth/foster/adoptive parents and extended family; professionals such as teachers, NHS professionals, or social care professionals; an adult who formed a part of the person's wider support system at any point in their life.

Professional's own relationship to the service user:
Professionals may highlight how they experience their relationship with the person, including any emotional responses that are evoked when working with them. They may also highlight how their relationship with the person differs from the person's previous experiences of relationships and how this may impact their presentation in a helpful or unhelpful way.

Relational security:
Professionals may make reference to ways that the person experiences (or has/has not had access to) relational security throughout their life from key figures. This may include reflections on the person's historic or current experiences with key figures including the professional themselves.
Relational security concepts that may be made reference to include: the person having a secure base; relationships being consistent and reliable; appropriate boundaries being set; empathy and/or acceptance from others.

Blaming/judgemental statements:
Blaming or judgemental statements could include: statements that suggests the person is at fault for their circumstances, for example "he put himself in this position"; use of emotive terms such as 'malicious' , 'manipulative' or 'attention-seeking'; statements locating the problem solely within the person, for example "she needs to get her act together".

Professional feeling uncontained or unsafe:
Professionals may directly state that they feel uncomfortable or unsafe working with a person, however they may also express this in more subtle ways. This may include: feeling lost with how to help the person; regularly worrying about the person outside of work; feelings of hopelessness towards the person or towards the capacity for change.

Reactivity:
The professional may display emotional reactivity while completing the speech sample. For example: the tone of their voice indicating significant stress, anxiety, or frustration regarding the person; difficulty finishing sentences or maintaining a train of thought.

Please note: Whilst these guidelines aim to provide an overview of the elements to consider, this does not constitute an exhaustive list of examples and judgement must be used on behalf of the rater to determine whether a passage meets the description.

Overall Rating Criteria

The professional is asked to speak about a service user: "For the next five minutes I would like you to describe X to me, what is X like?". The professional will speak for five minute uninterrupted, unless they are significantly struggling to continue at which point they will be given prompts ("How was you describe X's personality or temperament?", "What is X like to work with?"). The sample is transcribed and coded according to the following 5-point rating system:

0 - No attachment-informed stance

Response must show:

- Two or more examples of the use of 'what' descriptions of behaviour
- No use of 'why' descriptions of behaviour
- No consideration of relational contexts of the person's presentation
- No consideration of the impact of the professional's own relationship to person
- No evidence of understanding of the person's need for relational security
- At least one blaming or judgemental statements directed towards the person

Response may:

- Include two or more statements suggesting the professional is feeling uncontained or unsafe holding the person's case.
- Display clear reactivity within the professional

1 – Minimally attachment-informed stance

Response must show:

- No more than one example of the use of 'why' descriptions of behaviour
- Two or more examples of the use of 'what' descriptions of behaviour
- No understanding of key figures' roles in creating relational security
- No more than one link to relational contexts of the person's presentation
- No more than one example of awareness of the impact of the professional's own relationship to the person
- No more than two blaming or judgemental statements directed towards the person

Response may:

- Use no more than two statements suggesting the professional is feeling uncontained or unsafe in holding the person's case
- Display reactivity within the professional ***if*** the response also demonstrates some self-awareness of reactivity

2 - Somewhat attachment-informed stance

Response must show:

- At least one example of a 'why' description of behaviour
- No more than three examples use of 'what' descriptions of behaviour
- At least one example of links to relational contexts of the person's presentation such as:

- At least one example of awareness of the impact of the professional's own relationship to the person
- Minimal reactivity within the professional
- No more than one blaming or judgemental statement directed towards the person

Response may:

- Show one or more examples of understanding of key figures' roles in creating relational security ***but*** not link this directly to the person's behaviours or emotional state
- Use no more than one statement suggesting feelings of being uncontained or unsafe holding the person's case

3 - Moderately attachment-informed stance

Response must show:

- One or more 'why' descriptions of behaviour
- One or more examples of consideration of relational contexts of the person's presentation
- No blaming or judgemental statements directed towards the person
- One or more examples of consideration of the impact of the professional's own relationship to the person
- No examples of the professional feeling uncontained or unsafe in holding the person's case
- Show no overt reactivity within the professional

Response may:

- Show an understanding of how the person experiences relational security in their current context and who provides this (or who does not) ***and*** show an understanding of how this impacts the person's behaviour *or* emotional state.

4 - Highly attachment-informed stance

Response must show:

- Two or more examples of 'why' descriptions of behaviour
- Two or more examples of consideration of relational contexts of the person's presentation
- No blaming or judgemental statements directed towards the person
- One or more examples of consideration of the impact of the professional's own relationship to the person
- No examples of the professional feeling uncontained or unsafe in holding the person's case
- Show an understanding of how the person experiences relational security in their current context and who provides this (or who does not) ***and*** show an understanding of how this impacts the person's behaviour *and* emotional state.
- Show no overt reactivity within the professional