



**Psychological Processes Associated with Expressed Emotion in Carers of People with
Long-Term Mental Health Difficulties**

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Introductory Chapter: Thesis Overview

Introduction

This thesis focusses on the psychological processes associated with expressed emotion (EE) in carers of people with long-term mental health difficulties.¹ It comprises two main components, a systematic review (Chapter 1) and an empirical research paper (Chapter 2), which are separated by a short bridging section and supplemented with appendices. This introductory chapter provides an overview of the thesis as a whole and situates the research reported within this thesis within a wider context. As this chapter is not intended for publication, it is presented in line with the recommendations of the American Psychological Association (APA, 2009).

Background Literature

Approximately six and a half million people in the United Kingdom (UK) provide unpaid care to others, typically family members or close friends, with this number projected to rise to nine million by 2037 (Carers UK, 2014). Of these, approximately 13% (equivalent to one in 10 people in the UK) provide care to someone with a long-term mental health difficulty, saving the UK economy an estimated 17 billion per year (Yeandle & Buckner, 2015). Caring for someone with a long-term mental health difficulty can be a challenging and emotional experience, with carers often displaying higher levels of anxiety, depression, and general psychological distress than members of the general population (Kuipers, Onwumere, & Bebbington, 2010; Perlick et al., 2007). As such, a strong moral and financial argument

¹ Throughout this thesis, the term ‘carer’ is used to refer to any person who provides informal or unpaid care to a significant other, whilst the term ‘service-user’ is used to refer to any recipient of care. Although some people who provide care may not identify with the label of ‘carer’, nor might those labelled ‘service-users’ be in receipt of services, this terminology was chosen based on the preference of those involved in the study. Furthermore, the term ‘long-term mental health difficulty’ is used where possible as an umbrella term to refer a severe and enduring mental health difficulty, present for at least 6 months, which typically impairs psychological well-being and social, occupational and/or interpersonal functioning (MIND, 2011). However, when citing previously published literature, diagnostic labels will be referred to to ensure data fidelity.

can be made for developing effective, flexible and inclusive services and interventions which support carers in their roles and safeguard their wellbeing (Department of Health, 2014).

Family interventions (FIs) are currently the main avenue of professional support recommended for carers of people with long-term mental health difficulties (American Psychiatric Association, 2004; Bucci, Berry, Barrowclough, & Haddock, 2016; Galletly, et al., 2016; National Institute for Health and Care Excellence, 2014). Their development emerged from research demonstrating the important role that family factors, specifically the family environment, plays in influencing psychological outcomes for both carers and service-users (Barrowclough & Hooley, 2003; Hooley, 2000, 2007). This began in the mid-20th century, as the notion of the ‘schizophrenogenic mother’² gained widespread popularity within the psychiatric profession (Fromm-Reichmann, 1948; Lidz, Cornelison, & Singer, 1964). Around the same time, Bateson and colleagues (1956; 1963) proposed that the communication difficulties often considered characteristic of individuals with a diagnosis of schizophrenia may actually arise as a result of ‘double bind’ communication patterns within families, rather than as a result of underlying abnormal brain pathology. To this end, Bateson and colleagues (1956) advocated that particular family constellations could be identified as aetiological factors for schizophrenia.

Developments in psychological and psychiatric theory, coupled with a changing sociocultural landscape, meant that by the mid-1970s the notion of the ‘schizophrenogenic mother’ was largely discredited. However, rather than ceasing, research into the importance of the family environment gained increasing momentum with the progression of deinstitutionalisation. To date, the most influential body of research in this area has focused upon ‘*expressed emotion*’.

² Later extended to the ‘schizophrenogenic family’

This term emerged from a series of research studies investigating the influence that the family environment had upon the relapse rates of men diagnosed with schizophrenia following their return to the community after a period of hospitalisation (Brown, Carstairs, & Topping, 1958; Brown, 1959; Brown, Monck, Carstairs, & Wing, 1962; Brown & Rutter, 1966; Brown, Birley, & Wing, 1972; Leff & Vaughn, 1985; Rutter & Brown, 1966; Vaughn & Leff, 1976a, 1976b). In a series of seminal studies, Brown and colleagues (1958; 1959) noted significantly higher relapse and re-admission rates among service-users who had returned to live either in large hostels or with their parents or wives than among those who had returned to live with their siblings or in lodgings. This finding could not be accounted for by factors such as the service-user's age or clinical presentation, leading Brown (1959) to initially conclude that "it may not always be in the schizophrenic patient's best interests for him to be returned to his family" (pp. 128).

In a series of further studies, Brown and colleagues (1962; 1966; 1972) identified four indices of family environment associated with post-discharge relapse rates: emotional over-involvement (EOI), critical comments (CC), hostility and warmth (Table 1).

Table 1

Components of Expressed Emotion

Component	Definition	Example
Emotional over-involvement	Overly self-sacrificing, overprotective or emotional statements or behaviour towards or regarding the service-user	Carers prioritise service-users' needs over their own; carers blames themselves for service-users' difficulties
Critical comments	Critical and angry character-focused statements or exchanges towards or regarding the service-user	Carers berate service-users for ignoring their advice; carers express their frustration towards service-users
Hostility	Rejecting, blaming or critical attitudes or statements towards or regarding the service-user	Carers state that service-users are 'faking' their difficulties; carers shout at service-users
Warmth	Expressions of kindness, empathy or concern towards or regarding the service-user	Carers state that service-users' behaviours are understandable in light of their difficulties or that service-users try hard to get along with others

Note: critical comments and hostility have a similar conceptual basis and often co-occur (Barrowclough & Hooley, 2003)

Brown and Rutter (1966) collectively labelled these indices ‘expressed emotion’, and subsequently developed and refined a structured interview schedule to measure relatives’ EE. To simplify their analyses, the three components most associated with relapse rates (EOI, CC and hostility) were combined to form a single index of EE, thus enabling carers to be classified as either high or low EE (Brown et al., 1972). Using this index, Brown and colleagues (1972) observed that 58% of service-users who returned to high EE relatives relapsed over a nine-month period, compared with 16% of those who returned to low EE environments. However, both low face-to-face contact and maintenance on psychotropic medication each appeared to moderate the impact of a high EE environment on relapse rates. These findings were subsequently mirrored in an independent replication study (Vaughn & Leff, 1976a, 1976b), and have since been so extensively replicated that EE is now considered an established predictor of psychosocial relapse across cultures for people with a range of mental health diagnoses, including schizophrenia, schizoaffective disorder, unipolar depression, bipolar disorder, obsessive-compulsive disorder, anorexia nervosa and bulimia nervosa (Butzlaff & Hooley, 1998).

Although EE is not pathological in itself, awareness of its predictive value led to the development of FIs, which were initially designed to reduce levels of family EE (Budd & Hughes, 1997). However, since their inception, the conceptual basis of FIs has changed to reflect the increasing service-user movement and a shift towards a recovery-focused approach to mental health care (Lobban et al., 2013). Rather than viewing EE as stable, unidirectional, binary concept, associated solely with negative clinical outcomes, current models of FIs emphasise the transactional nature of EE (Hooley & Richters, 1995). Such models typically incorporate principles from systemic family therapy and cognitive behavioural therapy (CBT), and aim to raise awareness of factors contributing to high EE, improve the familial

emotional climate and increase services users' and carers' support networks, problem-solving abilities and wellbeing, whilst reducing levels of EE (Bucci et al., 2016; Kuipers et al., 2010).

Most FI outcome studies have assessed the effectiveness of single or blended manualised FIs such as Behavioural Family Therapy (Falloon et al., 1985), multi-family groups (McFarlane, 2002) and psychoeducational workshops (Anderson, Hogarty, & Reiss, 1980) for service-users with a diagnosis of schizophrenia and their relatives. Meta-analyses and systematic reviews have led to wide acceptance that FIs result in decreased relapse rates and hospital admissions and improve service-users' general functioning, psychological wellbeing and adherence to psychotropic medication (Bucci et al., 2016; Falloon, 2003; Pharoah, Mari, Rathbone, & Wong, 2010). Furthermore, the effects of relatively brief FIs are maintained over substantial follow-up periods (Bucci et al., 2016; Falloon, 2003; Pharoah et al., 2010). Similar positive outcomes have been reported for service-users with a range of mental health difficulties (Carr, 2009; Falloon, 2003; Fiorillo et al., 2015). However, the impact of FIs on carers, together with the mechanism of action by which they operate, is less clear (Gracio, Goncalves, & Leff, 2016), partly because service-user outcomes are generally the primary target against which treatment effectiveness is evaluated (Lobban et al., 2013). Furthermore, there exist a number of organisational, psychological and practical barriers to the dissemination and implementation of FIs within routine clinical practice, which include:

...the demand for psychological therapies outweighing the ability to deliver interventions, a shortage of trained clinicians, lack of support for training resulting in low confidence, underdeveloped methods for ensuring therapist competence, individualistic models of care in health services whereby clinician caseloads are measured by individuals seen (not accounting for family members) (...) fear in service users and family members about the process of FI resulting in reluctance to

engage (...) [and a lack of] clear theoretical model underlying FI.” (Bucci et al., 2016, pp. 65)

In an attempt to both increase the precision of FIs and improve their deliverability within the NHS, increasing research attention has focused on exploring the psychological processes associated with EE (Barrowclough & Hooley, 2003). The majority of such research has investigated the utility of an attribution-based framework (Barrowclough & Hooley, 2003; Kuipers et al., 2010). Drawing from Weiner’s (1985) theory of attribution, emotion and behaviour, Barrowclough and Hooley’s (2003) attributional model postulates that EE results from carers’ appraisals of, and beliefs about, the controllability, stability and internality/externality of service-users’ mental health difficulties, rather than the specific symptomatology displayed. Specifically, the model hypothesises that carers are more likely to display CC/hostility if they attribute illness-related behaviours to factors controllable by, internal to and stable within the service-user. This model has received empirical support, particularly regarding the hypothesised associations between attributions and CC/hostility (Barrowclough & Hooley 2003). However, inconsistent findings regarding the relationship between carers’ attributions and their EOI suggest that it does not adequately account for the psychological processes underlying EOI (Barrowclough & Hooley, 2003).

More recently, attention has turned to exploring the developmental and interpersonal nature of EE. Recognition that EE may reflect a means of coping with social identity threat generated by external negative societal stereotypes associated with caring for someone with mental health difficulties has led to attention being paid to the potential influence of guilt and shame on carers’ EE (Burbach, 2013; Weisman de Mamani, 2010). Simultaneously, EE has begun to be seen as a developmentally-based process of adaptation to, and coping with, illness-based separation and loss. This has led to increasing recognition of the potential

application of attachment theory, and the related theory of mentalisation, to understanding individual differences in carers' EE (Patterson, 2013; Patterson, Birchwood, & Cochrane, 2005). Although research in this area is scant, it is likely that the study of such variables may provide important insight into the theoretical underpinnings of EE, which may aid clinicians when developing, refining and implementing interventions to support both carers and service-users (Bucci et al., 2016). The research reported in this thesis therefore aims to contribute to furthering current understandings of the mechanisms underpinning EE by investigating the associations between carers' EE and their: a) guilt and shame (Chapter 1); and b) attachment and mentalisation (Chapter 2).

Thesis Structure

Chapter 1: Guilt, Shame and Expressed Emotion in Carers of People with Long-Term Mental Health Difficulties: A Systematic Review

Chapter 1 is a systematic literature review, which uses transparent and rigorous methodology to appraise and synthesise the findings of empirical research investigating the relationship(s) between guilt, shame and EE in carers of people with long-term mental health difficulties. It is intended for publication in the journal *Psychiatry Research*, and therefore conforms to the requirements for presentation outlined by this journal (Appendix A).

Bridging Section

The bridging section outlines the rationale for the empirical study reported in Chapter 2, by expanding on the points made in Chapter 1 and introducing the theoretical framework underpinning the empirical research reported in Chapter 2: attachment theory and the related theory of mentalisation. This section is not intended for publication and therefore is presented in line with the recommendations of the APA (2009).

Chapter 2: Attachment, Mentalisation and Expressed Emotion in Carers of People with Long-Term Mental Health Difficulties

Chapter 2 reports a quantitative, exploratory, cross-sectional study using self-report measures, which aims to explore the associations between attachment, mentalisation and EE in carers of people with long-term mental health difficulties. It is intended for publication in the journal *Family Process* and therefore conforms to its presentation requirements (Appendix B).

Appendices

Finally, the appendices contain additional materials, which supplement and validate the contents of the main thesis body and enable a more comprehensive understanding of the findings.

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**Chapter 1: Guilt, Shame and Expressed Emotion in Carers of People with Long-Term
Mental Health Difficulties: A Systematic Review³**

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³ To be submitted to Psychiatry Research (Appendix A)

Abstract

Expressed emotion (EE) is a global index of familial emotional climate, which is usually defined in terms of its primary components: emotional over-involvement (EOI) and critical comments (CC)/hostility. The presence of guilt and shame among family carers of people with long-term mental health difficulties has been observed, and there is a strong theoretical rationale for hypothesising that carers' guilt and shame may be differentially associated with their EOI and CC/hostility respectively. This systematic review is the first to investigate the magnitude of these theorised associations. Relevant literature was identified by supplementing electronic searches (conducted in May 2016 across Medline, CINAHL, Embase, PsycINFO and ProQuest) with iterative hand searches. Ten papers, reporting data from eight studies, were included. Risk of bias was assessed using a standardised checklist. Relevant data were extracted and synthesised narratively. Emotional over-involvement was positively associated with both guilt and shame, whereas CC/hostility was positively associated with shame. The strength of associations varied depending on whether or not guilt and shame were assessed within the context of the caring relationship. Based on these data, an argument can be made for the refinement, development and evaluation of systemic and individual interventions designed to target carers' guilt and shame. However, more research is needed to clarify both the strength of these associations and their direction of effect before firm conclusions can be drawn regarding the impact of carers' guilt and shame on their EE.

Key words: emotional over-involvement; critical comments; hostility; family interventions; systemic practice; clinical psychology.

Highlights

- Guilt and shame were positively associated with emotional over-involvement
- Shame was associated with critical comments and hostility
- Associations were stronger when care-specific guilt and shame were assessed
- Carers' guilt and shame may be targets for therapeutic intervention
- Further research exploring these relationships is recommended

1. Introduction

Expressed emotion (EE) is a global index of familial emotional climate, which encompasses family carers' attitudes, emotions and behaviours towards the person(s) to whom they provide care (Barrowclough and Hooley, 2003). Expressed emotion is usually defined in terms of its primary components: emotional over-involvement (EOI), critical comments (CC), and hostility (Barrowclough and Hooley, 2003). The term 'EOI' refers to overly self-sacrificing and/or intrusive behaviours and exaggerated emotional responses. Hostility and CC have a similar conceptual basis and often co-occur (Barrowclough and Hooley, 2003). As such, the term 'CC/hostility' is commonly used within the EE literature to refer to critical behaviour, character-focused statements and/or the presence or demonstration of negative attitudes towards service-users, including negative comments regarding their traits or personality (Barrowclough and Hooley, 2003).

Whilst not pathological in itself, EE is a robust predictor of prognosis across various psychiatric diagnoses, largely irrespective of culture or ethnicity (Butzlaff and Hooley, 1998; Weintraub et al., 2016; Weisman de Mamani et al., 2009). The negative association between EE, particularly EOI, and the mental health and well-being of carers is also widely noted (Brietborde et al., 2010; Jenkins and Karno, 1992). To this end, family interventions (FIs) have been developed to target and reduce aspects of EE whilst increasing carer support and raising awareness of factors contributing to EE (Pharoah et al., 2010). However, despite being recommended by clinical practice guidelines worldwide (American Psychiatric Association, 2004; Galletly et al., 2016; National Institute for Health and Care Excellence, 2014), FIs are poorly understood at the process level (Gracio et al., 2016). Furthermore, there exist a

number of organisational, psychological and practical barriers to the dissemination and implementation of FIs within routine clinical practice (Bucci et al., 2016).

In an attempt to increase the precision and deliverability of current interventions, increasing research attention has focused on exploring both the psychological processes associated with EE and their mechanism of action (Barrowclough and Hooley, 2003). Cognitive approaches to understanding individual differences in carers' EE have mostly explored the utility of an attribution-based framework primarily focused on carers' attributions regarding the person affected by mental health difficulties (Barrowclough and Hooley, 2003; Kuipers et al., 2010). However, the attributions that carers make about their *own* roles in the development or maintenance of the illness are also likely to be of importance, as are the emotional states associated with such attributions (Jenkins and Karno, 1992; Robins and Schriber, 2009). This systematic review focuses on two such emotional states: guilt and shame.

Guilt and shame are self-evaluative emotions with distinct behavioural, affective and cognitive profiles (Tangney and Dearing, 2002; Tracy and Robins, 2006). Central to this distinction is the importance of the role of the self. Guilt reflects a judgement about one's behaviour or actions, resulting from the perception that a specific, transient and changeable aspect of one's behaviour has had a negative or undesirable effect upon another ('I did this bad thing'; Robins and Schriber, 2009). Guilt is hypothesised to facilitate empathy and drive prosocial and reparative behaviours as a means of ameliorating feelings of responsibility for others' distress (Tangney and Tracy, 2012). To this end, guilt is often considered an adaptive emotion. However, guilt can become maladaptive when individuals develop an exaggerated or distorted sense of guilt for events that occur out of their control, or

when reparation is not possible for a behaviour (Tangney and Tracy, 2012). As such, guilt may be an important factor to consider with respect to the development and maintenance of EOI. Carers experiencing guilt may engage in help-giving behaviours driven by a desire to make amends for an illness or specific challenging behaviours or difficulties for which they feel responsible (Hatfield, 1981). However, although initially adaptive and reparative, these behaviours may become maladaptive if they are perceived by carers to be ineffective or if carers assume disproportionate levels of responsibility for service-users' difficulties or behaviours (Tangney and Tracy, 2012). To this end, guilt may both lead to, and maintain, EOI behaviours. However, guilt is unlikely to be associated with CC/hostility as these behaviours serve no reparative function (Tangney and Tracy, 2012).

In contrast to guilt, shame reflects an enduring and stable judgement about oneself or one's character, arising as a result of negative self-evaluation and/or real or perceived negative evaluation from others ('I did this bad thing'; Robins and Schriber, 2009). In keeping with this differentiation, shame is often considered to be a maladaptive emotion, as individuals often defend against the painful feelings of shame by externalising blame onto others in the form of defensive criticism, hostility and aggression (Brown, 2004; Tracy and Robins, 2006). Shame may therefore be an important consideration with respect to CC/hostility, as it may drive carers to engage in defensive, regulatory anger-driven behaviours (Jenkins and Karno, 1992). However, shame is less likely to be associated with EOI, given that the negative global self-attributions that characterise shame do not generally prompt reparative behaviour (Tangney and Tracy, 2012).

If empirical evidence supports the theorised links between guilt and shame and components of EE, then they may represent potential targets for intervention (Gilbert

and Irons, 2005). However, no systematic examination and synthesis of the current evidence-base regarding the relationships between the constructs has been conducted. This review aimed to address this gap by using systematic review methodology to examine the associations among guilt, shame, EOI and CC/hostility. Specifically, it was theorised that EOI would be positively associated with guilt but not shame, whilst CC/hostility would be positively associated with shame but not guilt.

2. Methods

2.1 Search strategy

The conduct and reporting of this review adheres to the general principles recommended by the Centre for Reviews and Dissemination (CRD, 2009) and the Meta-Analysis of Observational Studies in Epidemiology (MOOSE) guidelines (Stroup et al., 2000). After several scoping searches, five electronic databases (Medline, CINAHL, Scopus, PsycINFO and ProQuest) were searched for relevant published and unpublished literature from their inception until October 2015. Searches were devised in collaboration with an information specialist and contained no language restrictions or methodological search filters that would limit results to specific study designs. Table 2 details the search syntax used for each database. Conference proceedings, the authors' own files were then examined for additional relevant literature, followed by the reference lists of both included full-text studies and recent systematic reviews concerning the psychological factors associated with EE (Anastasiadou et al., 2014; Jansen, Gleeson and Cotton, 2015). Finally, corresponding authors of included papers were contacted for information regarding studies in progress and unpublished research (Appendix C). Searches were repeated in May 2016 to identify any relevant new publications.

Table 2: Search syntax

Database	Syntax
Medline and PsycINFO	(Expressed Emotion/ OR Hostility/ OR (critic* or hostile* or ((emotion* adj3 (express* or over-involv*)) or (critic* adj2 comment*))).tw.)) AND (Caregivers/ or Family/ OR (carer* or caregive* or famil* or relative* or relation* or caring).tw.) AND (Guilt/ OR Shame/ OR ((shame* or guilt* or self-blame*) OR ((self-conscious* or selfconscious or "self conscious") adj2 emotion) OR ((shame* or guilt*) adj2 pron*) OR (shame-pron* or guilt-pron*))).tw.)
CINAHL	(Expressed Emotion/ OR Hostility/ OR (critic* or hostile* or ((emotion* n3 (express* or over-involv*)) or (critic* n2 comment*))).tw.)) AND (Caregivers/ or Family/ OR (carer* or caregive* or famil* or relative* or relation* or caring).tw.) AND (Guilt/ OR Shame/ OR ((shame* or guilt* or self-blame*) OR ((self-conscious* or selfconscious or "self conscious") n2 emotion) OR ((shame* or guilt*) n2 pron*) OR (shame-pron* or guilt-pron*))).tw.)
Scopus	(Expressed Emotion/ OR Hostility/ OR (critic* or hostile* or ((emotion* w/3 (express* or over-involv*)) or (critic* w/2 comment*))).tw.)) AND (Caregivers/ or Family/ OR (carer* or caregive* or famil* or relative* or relation* or caring).tw.) AND (Guilt/ OR Shame/ OR ((shame* or guilt* or self-blame*) OR ((self-conscious* or selfconscious or "self conscious") w/2 emotion) OR ((shame* or guilt*) w/2 pron*) OR (shame-pron* or guilt-pron*))).tw.)
ProQuest Dissertations and Theses	Ab,ti((emotion* NEAR/3 (express* OR over-involv*)) OR (critic* NEAR/2 comment*)) AND (carer* OR caregiver* OR family* OR relative* OR relation* OR caring) AND ((sham* OR guil* OR self-blame*) OR ((self-conscious* OR selfconscious OR "self conscious") NEAR/2 emotion) OR ((shame* OR guilt*) NEAR/2 pron*) OR (shame-pron* OR guilt-pron*))

2.2 Study selection

Identified studies' titles and abstracts were simultaneously screened to assess their relevance to the review. Full-text copies of potentially relevant studies were then examined. Screening at both stages was done independently by the author (MGC) and a reviewer independent to the study (JWR). Disagreement or uncertainty was resolved through consensus and the views of the wider research team were consulted where necessary. Studies were included if they: a) were published in English; b) reported data from family carers aged 18 years or over who provided care to relatives aged 18 years or over with long-term mental health difficulties; and c) reported quantitative data sufficient for computation of effect size(s) regarding the relationship(s) between guilt and/or shame and EOI and/or CC/hostility. The term 'long-term mental health difficulty' was defined as any non-organic mental health difficulty of ≥ 6 months' duration (Barrowclough et al., 1998); specific diagnoses were not used as inclusion/exclusion criteria as EE is associated with outcome across a range of mental health difficulties (Butzlaff & Hooley, 1998).

2.3 Assessment of risk of bias

Risk of bias in included studies was independently assessed by MGC and JWR using a tool adapted from the Agency for Healthcare Research and Quality (Appendix D; Taylor et al., 2015; Williams et al., 2010). This tool allows for risk of bias to be assessed in nine specific areas, thus enabling comparability of specific issues across included papers (Jüni et al., 1999). Disagreement or uncertainty was resolved through consensus and/or arbitration by the author's supervisor (PJT). In line with CRD (2009) guidance, no study was excluded based on the findings of the assessment of risk of bias.

2.4 Data extraction and analysis

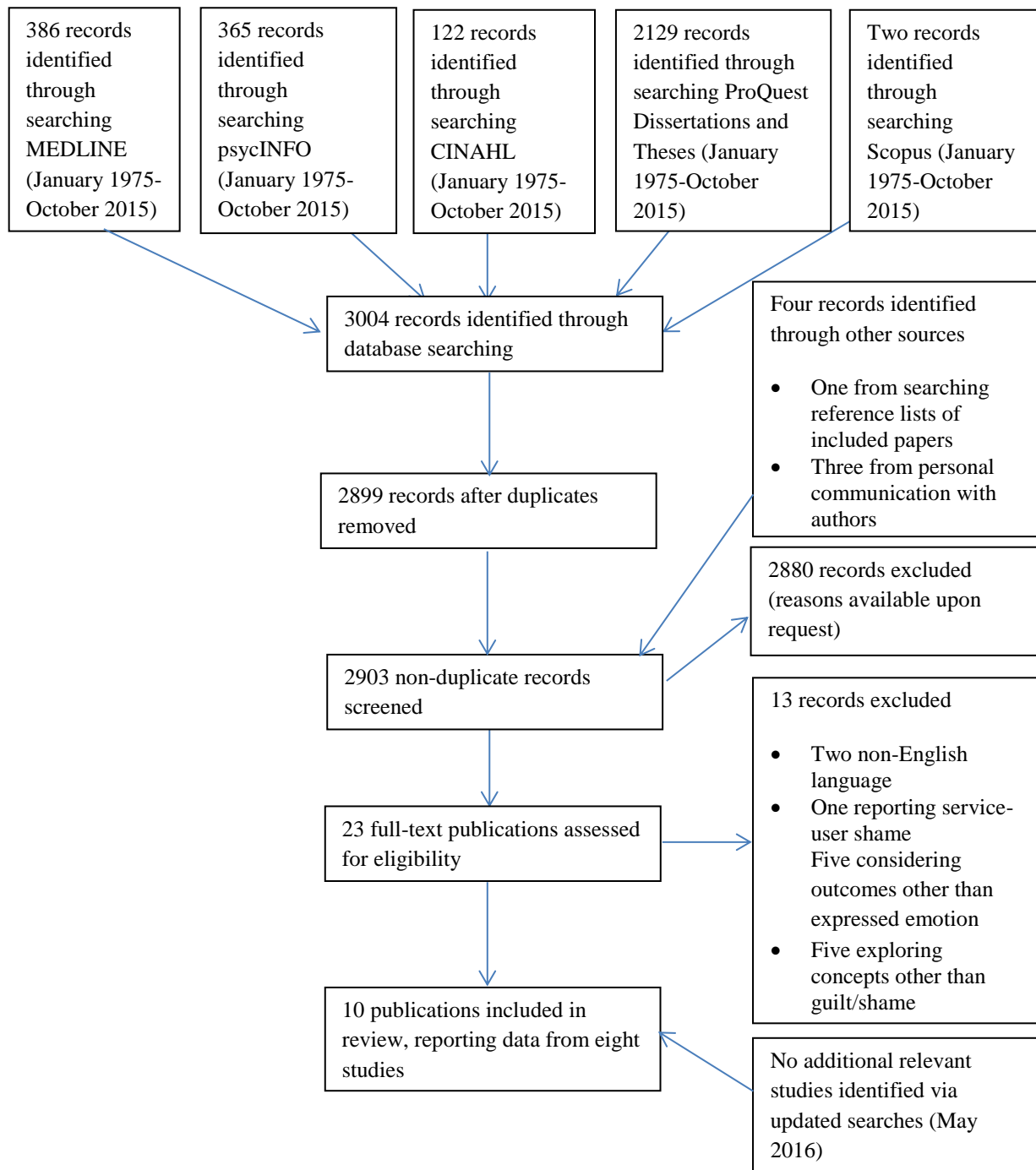
Relevant demographic, methodological and summary data were extracted using a standardised data extraction form by MGC and independently checked for accuracy by JWR. Disagreement or uncertainty was resolved through consensus and the views of the wider research team were consulted where necessary. Authors were contacted, where relevant, regarding missing and/or unclear data. Data from studies presented in multiple publications were extracted and reported as a single study with all relevant publications listed. Where studies reported multiple analyses, only data from: a) bivariate analyses examining relationships between guilt and/or shame and EOI and/or CC/hostility; and/or b) multivariate analyses in which the effects of other variables on the aforementioned associations were controlled for, were extracted. In the latter case, only data from the most complex models were extracted. Individual study data, including quality assessment, were subsequently organised into structured tables and analysed narratively. Heterogeneity in study methodology precluded meta-analysis.

3. Results

3.1 Number of studies identified and included

The search strategy identified 3004 unique records, from which 10 publications, reporting data from eight studies, were identified for inclusion (Bentsen et al., 1998; Brookfield, 2008; Keith, 2011; McMurrich, 2008; McMurrich and Johnson, 2009; Messham, 2014; Peterson and Docherty, 2004; Wasserman, 2010; Wasserman et al., 2012; Weisman de Mamani, 2010). The flow of information from identification to inclusion of studies is summarised in Figure 1 (Moher et al., 2009).

Figure 1: Flow-chart of included studies



3.2 Characteristics of included studies

The main characteristics of the included studies are displayed in Table 3. All studies were conducted in developed countries and employed a cross-sectional design. Studies reported data from 483 participants caring for 410 service-users. Participants were primarily female and middle-aged, and provided an average of 42.60 hours of care per week; mean duration of caregiving was reported by two studies (Keith, 2011; Messham, 2014), with values ranging from 14.00 to 15.16 years. Service-users' characteristics ranged across studies and are outlined in Table 3.

Table 3: Main characteristics of included studies

Study characteristics				Carer characteristics						SU characteristics	
Author	Design	Location	Sampling method	n	Female, n (%)	Age, mean (SD)	Ethnicity, n (%)	Weekly contact (hours), mean (SD)	% living with SU	Relation to SU, n (%)	Diagnosis, n (%)
Bentsen et al. (1998)	Cross-sectional	Norway	Consecutive sampling	69	37 (53.63)	56.5 (n/s)	n/s	26 (20.4)	71.0	Mother: 34 (49.28), father: 29 (42.03), spouse/partner; sibling: each 3 (4.34)	Schizophrenia: 32 (68.09); schizoaffective disorder/schizophreniform disorder/BD: <i>n</i> n/s ^c
Brookfield (2008)	Cross-sectional	UK	Convenience sampling	58	46 (79.31)	58 (13.5)	n/s	56 (n/s) ^e	n/s	Mother: 28 (48.28), father: 11 (18.97), sibling: 3 (5.17), spouse/partner: 13 (22.41), daughter; son; friend: each 1 (1.72)	Schizophrenia: 30 (53.57), BD: 11 (19.64), depression: 8 (14.29); PD: 2 (3.57), OCD; PTSD; schizoaffective disorder: each 1 (1.79) ^d

Study characteristics					Carer characteristics					SU characteristics	
Author	Design	Location	Sampling method	n	Female, n (%)	Age, mean (SD)	Ethnicity, n (%)	Weekly contact (hours), mean (SD)	% living with SU	Relation to SU, n (%)	Diagnosis, n (%)
Keith (2011)	Cross-sectional	UK	Convenience sampling	60	12 (20.00)	57 (9.9)	n/s	59 (31)	n/s	Mother: 31 (51.67), spouse/ partner: 20 (33.33), father; daughter: each 2 (3.3.), sister; son: each 1 (1.67)	n/s
McMurrich (2008); McMurrich et al. (2009)	Cross-sectional	USA	Convenience sampling	42 ^f	29 (69.05)	n/s	Caucasian: 28 (73.68), Hispanic: 8 (21.05), AA: 2 (5.26) ^a	n/s	60.7	Parent: 4 (14.29), sibling: 1 (3.57), child: 15 (53.57) spouse: 8 (28.57) ^b	BD: 28 (100.00) ^b
Messham (2014)	Cross-sectional	UK	Convenience sampling	71	58 (81.69)	56 (14.2)	n/s	29.5 (31.2)	n/s	Mother: 35 (49.30), father: 6 (8.45), spouse/ partner: 13 (18.31), sibling: 9 (12.68), offspring: 7 (9.86), grandparent: 1 (1.41)	SSD: 30 (42.3), PD: 11 (15.5), BD: 10 (14.1), anxiety: 9 (12.7), depression: 16 (22.5), OCD; PTSD: each 2 (2.8), n/s: 3 (4.2) ^e

Study characteristics					Carer characteristics					SU characteristics	
Author	Design	Location	Sampling method	n	Female, n (%)	Age, mean (SD)	Ethnicity, n (%)	Weekly contact (hours), mean (SD)	% living with SU	Relation to SU, n (%)	Diagnosis, n (%)
Peterson & Docherty (2004)	Cross-sectional	USA	n/s	54	27 (50.00)	61.8 (7.8)	Caucasian: n/s (78)	n/s	n/s	Mother; father: each 27 (50.00)	Schizophrenia: 27 (100.00) ^h
Wasserman (2010); Wasserman et al. (2012)	Cross-sectional	USA	Convenience sampling	72	51 (70.83)	53.4 (14.2)	Hispanic: 37 (51.39), Caucasian: 21 (29.17), AA: 13 (18.06), other: 1 (1.39)	n/s	n/s	Mother: 34 (47.22), partner/spouse; sibling: each 9 (12.50), father: 7 (9.72), friend: 5 (6.94), offspring: 3 (4.17), aunt/uncle; cousin: each 2 (2.78), grandparent: 1 (1.39)	SSD: 72 (100.00)
Weisman de Mamani (2010)	Cross-sectional	USA	Consecutive sampling	57	40 (70.18)	54.3 (14.3)	Caucasian: 20 (35.09), Hispanic: 21 (36.84), AA: 16 (28.07)	n/s	n/s	n/s	SSD: 57 (100.00)

Note: data reported to two decimal places where possible; ^a n = 38; ^b n = 28; ^c n = 47; ^d n = 56; ^e n = 55; ^f although 42 participants were recruited, only 38 returned complete datasets for analysis; ^g n > 71 as some participants recorded more than one diagnosis per service-user; ^h n = 27; AA = African American; BD = bi-polar disorder; n/s = not stated; OCD = obsessive compulsive disorder; PD = personality disorder; PTSD = post-traumatic stress disorder; SD = standard deviation; SSD = schizophrenia spectrum disorders; SU = service-user; UK = United Kingdom; USA = United States of America.

3.3 Assessment of guilt and shame

Guilt and shame were measured in different ways (Table 4). Four studies (Bentsen et al., 1998; Brookfield, 2008; McMurrich, 2008; McMurrich and Johnson, 2009; Weisman de Mamani, 2010) assessed a trait-like proneness to experiencing guilt or shame irrespective of a particular context or trigger. The remainder (Keith, 2011; Messham, 2014; Peterson and Docherty, 2004; Wasserman, 2010; Wasserman et al., 2012) assessed contextualised care-specific guilt and/or shame (i.e. guilt and/or shame in direct response to caring for someone with a mental health difficulty). An overview of measures used, together with their psychometric properties, is provided in Appendix E. Although participants' average levels of guilt and shame varied between studies (Table 4), the majority of studies did not report normative data for a carer sample, making further interpretation difficult. Correlations between guilt and shame were reported in five studies, $r = .51$ to $.67$ (Brookfield, 2008; Keith, 2011; McMurrich, 2008; McMurrich and Johnson, 2009; Messham, 2014; Wasserman, 2010; Wasserman et al., 2012).

3.4 Assessment of EOI and CC/hostility

All studies considered EOI and/or CC/hostility as outcome variables (Table 4). Broadly, there was a bifurcation in how EOI and CC/hostility were measured. Five studies (Bentsen et al., 1998; McMurrich, 2008; McMurrich and Johnson, 2009; Peterson and Docherty, 2004; Wasserman, 2010; Wasserman et al., 2012; Weisman de Mamani, 2010) assessed EE using coding schemes such as the Camberwell Family Interview (CFI; Vaughn and Leff, 1976), abbreviated CFI (Mueser et al., 1992) or the Five Minute Speech Sample (FMSS; Magaña et al., 1986), in which frequency of utterances deemed to be of a crucial, hostile or emotionally-over involved nature are determined from carers' speech samples. The remainder (Brookfield, 2008; Keith, 2011; Messham, 2014) used the self-report Family Questionnaire (FQ; Weidemann et al., 2002), in which participants' levels of EOI and

CC/hostility are quantified based on carers' responses to a range of care-related statements. An overview of measures used, together with their psychometric properties, is outlined in Appendix F. As with guilt and shame, participants' average levels of EOI and CC/hostility differed between studies. Six studies explored gender differences in participants' EOI and CC/hostility scores; females' EOI scores were higher than males' in three studies (Brookfield, 2008; Peterson and Docherty, 2004; Wasserman, 2010; Wasserman et al., 2012), whilst the remainder noted no difference in scores based on participants' gender (Keith, 2011; Messham, 2013; Weisman de Mamani, 2010).

Table 4: Predictor and outcome variables

Study	Predictor variable(s)	Method of assessing shame/guilt	Main findings: shame/guilt	Outcome variable(s)	Method of assessing EE	Main findings: EE
Bentsen et al. (1998)	Guilt-proneness	RMGI ^a	<ul style="list-style-type: none"> Hostility-guilt subscale: $M = 3.5$ ($SD\ 0.8$) Guilty conscience subscale: $M = 2.9$ ($SD\ 0.7$) 	EOI; CC; hostility	Abbreviated CFI	<ul style="list-style-type: none"> High CC: $n = 16$ (23.19%) Hostile: $n = 10$ (14.49%) High EOI: $n = 40$ (57.97%) High EOI and CC: $n = 9$ (13.04%) High EOI and hostility: $n = 5$ (7.25%)^c
Brookfield (2008)	Guilt and shame-proneness	TOSCA-3S	<ul style="list-style-type: none"> Shame-proneness subscale: $M = 33.8$ ($SD\ 8.0$, range 18-50) Guilt-proneness subscale: $M = 46.8$ ($SD\ 5.2$; range 30-55) 	EOI; CC/hostility	FQ	<ul style="list-style-type: none"> Low EE: $n = 16$ (27.59%) High EE: $n = 42$ (72.41%) <ul style="list-style-type: none"> High CC/hostility only: $n = 7$ (16.67%) High EOI only: $n = 5$ (11.91%) High CC/hostility and high EOI: $n = 30$ (71.43%) Total EE scale: $M = 54.2$ ($SD\ 8.4$; range 31-67) CC subscale: $M = 25.2$ ($SD\ 5.5$, range 12-27) EOI subscale: $M = 29.0$ ($SD\ 5.1$; range 17-39)

Study	Predictor variable(s)	Method of assessing shame/guilt	Main findings: shame/guilt	Outcome variable(s)	Method of assessing EE	Main findings: EE
Keith (2011)	Guilt- and shame-proneness Care-specific guilt and shame	TOSCA-3S CARES	TOSCA-3S: <ul style="list-style-type: none"> Shame-proneness subscale: $M = 34.1$ (SD 8.2, range 12-47) Guilt-proneness subscale: $M = 47.6$ (SD 4.3, range 37-55) CARES: <ul style="list-style-type: none"> Care-specific shame subscale: $M = 31.1$ (SD 7.4, range 16-46) Care-specific guilt subscale: $M = 38.3$ (SD 8.7, range 13-54) 	EOI	FQ	<ul style="list-style-type: none"> Low EE: $n = 11$ (18.33%) High EE: $n = 49$ (81.67%) <ul style="list-style-type: none"> High CC/hostility only: $n = 2$ (4.08%) High EOI only: $n = 17$ (34.70%) High CC/hostility and high EOI: $n = 30$ (61.23%) Total EE scale: $M = 54.4$ (SD 9.4, range 36-71) CC subscale: $M = 24.3$ (SD 6.6, range 11-37) EOI subscale: $M = 30.0$ (SD 4.7, range 18-37) CC: $M = 0.4$ (SD 0.8)
McMurrich (2008); McMurrich et al. (2009)	Guilt and shame-proneness	TOSCA-3	<ul style="list-style-type: none"> Shame-proneness subscale: $M = 43.3$ (SD 10.0) Guilt-proneness subscale: $M = 64.8$ (SD 6.7) 	Number of CC	FMSS	<ul style="list-style-type: none"> CC: $M = 0.4$ (SD 0.8)

Study	Predictor variable(s)	Method of assessing shame/guilt	Main findings: shame/guilt	Outcome variable(s)	Method of assessing EE	Main findings: EE
Messham (2014)	Care-specific guilt and shame	TOSCA-3S ^b CARES-R	TOSCA-3S: <ul style="list-style-type: none"> Shame-proneness subscale: $M = 34.1$ ($SD 6.9$, range 20-49) Guilt-proneness subscale: $M = 46.5$ ($SD 4.5$, range 27-55) CARES-R: <ul style="list-style-type: none"> Care-specific shame subscale: $M = 42.2$ ($SD 15.1$, range 19-79) Care-specific guilt subscale: $M = 47.6$ ($SD 13.7$, range 21-77) 	EOI; CC/hostility	FQ	<ul style="list-style-type: none"> Low EE: $n = 6$ (8.45%) High EE: $n = 65$ (91.55%) <ul style="list-style-type: none"> High CC/hostility only: $n = 9$ (13.85%) High EOI only: $n = 10$ (15.38%) High CC/hostility and high EOI: $n = 46$ (70.80%) CC subscale: $M = 26.1$ ($SD 6.2$, range 10-38) EOI subscale: $M = 29.7$ ($SD 5.0$, range 19-40)
Peterson & Docherty (2004)	Care-specific guilt	CFI	<ul style="list-style-type: none"> Self-blame statements, $M = 1.2$ ($SD 0.6$) 	EOI; CC/hostility	CFI	<ul style="list-style-type: none"> Low EE: $n = 30$ (55.67%) High EE: $n = 24$ (44.54%) <ul style="list-style-type: none"> High CC/hostility only: $n = 14$ (58.33%) High EOI only: $n = 5$ (20.83%) High CC/hostility and high EOI: $n = 5$ (20.83%) CC subscale: $M = 5.1$ ($SD 4.7$) EOI subscale: $M = 1.9$ ($SD 1.3$)

Study	Predictor variable(s)	Method of assessing shame/guilt	Main findings: shame/guilt	Outcome variable(s)	Method of assessing EE	Main findings: EE
Wasserman (2010); Wasserman et al. (2012)	Care-specific guilt and shame	SESS	<ul style="list-style-type: none"> Care-specific shame subscale, $M = 2.2$ (SD 1.9) Care-specific guilt subscale, $M = 1.8$ (SD 1.5) 	EOI; CC/hostility	FMSS	<ul style="list-style-type: none"> Low EE: $n = 49$ (68.10%), High EE: $n = 19$ (26.39%)^d <ul style="list-style-type: none"> High CC/hostility: $n = 8$ (47.37%) High EOI: $n = 11$ (57.90%) were high EOI^e
Weisman de Mamani (2010)	Guilt and shame-proneness	TOSCA	<ul style="list-style-type: none"> Shame-proneness subscale, $M = 46.3$ (SD 11.9) Guilt-proneness subscale, $M = 62.0$ (SD 6.9) 	EOI; CC/hostility	CFI	<ul style="list-style-type: none"> Low EE: $n = 38$ (66.67%) High EE: $n = 19$ (33.33%) CC subscale: $M = 3.8$ (SD 3.8) EOI subscale: $M = 1.9$ (SD 1.1)

Note: data reported to two significant figures where possible; ^a the hostility-guilt and guilty-conscience subscales used only; ^b TOSCA-3S data not considered in further analyses; ^c proportion classified as high EE not stated; ^d data only available for 68 carers; ^e number designated as high CC/hostility and high EOI not stated; CARES = Caring and Related Emotions Scale (Keith, 2011); CARES-R = Caring and Related Emotions Scale- Revised (Messham, 2014); CC = critical comments; CFI = Camberwell Family Interview (Vaughn and Leff, 1976); EE = expressed emotion; EOI = emotional over-involvement; FMSS = Five Minute Speech Sample (Magaña et al., 1986); FQ = Family Questionnaire (Weidermann et al., 2002); M = mean; RMGI = Revised Mosher Guilt Inventory (Mosher, 1998); SESS = Self-Directed Emotions for Schizophrenia Scale (Weisman de Mamani et al., 2007); SD = standard deviation; TOSCA = Test of Self-Conscious Affect (Tangney et al., 1989); TOSCA-3 = Test of Self-Conscious Affect- Version 3 (Tangney et al., 2000a); TOSCA-3S = Test of Self-Conscious Affect Version 3- short form (Tangney et al., 2000b).

3.3 Results of assessment of risk of bias

The results of the assessment of risk of bias are presented in Table 5. The most common methodological limitations related to study design, selection/description of participants, assessment of guilt and shame, blinding of assessors and appropriateness of statistical analyses, including justification of sample sizes. First, the cross-sectional nature of the included studies made it impossible to determine the direction of effect with regards to the association between variables. Second, demographic data for both carers and service-users were commonly under-reported, and most studies recruited carers from mental health settings and/or specialist carer support agencies, thus introducing a potential selection bias in that these samples reflected a subset of carers who were in receipt of services. Third, several studies assessed shame and/or guilt using measures with questionable or unknown psychometric data and poor discriminant validity. Furthermore, three of the eight studies used the self-report FQ, which may be more susceptible to self-report bias than coding schemes (van Humbeek et al., 2002). Fourth, the majority of studies either failed to recruit enough participants to meet the requirements of their own *a priori* sample size calculations or failed to justify their sample size in terms of power, which may have potentially resulted in inflated Type I error rates. Finally, most studies did not control for either potentially confounding demographic variables (e.g. amount of weekly care provision) or the potential covariance between guilt and shame (Tangney and Dearing, 2002) in statistical analyses looking at predictors and correlates of EOI and CC/hostility.

Table 5: Assessment of risk of bias

Author(s)	Unbiased selection of cohort?	Sample size calculation?	Adequate description of cohort?	Validated method for assessing guilt/shame?	Validated method for assessing EE?	Outcome assessors blind to predictor variables?	Missing data minimal?	Confounders controlled for?	Appropriate analyses?
Bentsen et al. (1998)	Partially	n/s	Yes	Partially	Partially	n/s	n/s	Yes	Partially
Brookfield (2008)	Partially	Partially	Yes	Yes	Yes	n/a	Yes	No	Partially
Keith (2011)	Partially	Partially	Partially	Partially	Yes	n/a	Yes	No	Partially
McMurrich (2008); McMurrich et al. (2009)	Partially	Partially	Partially	Yes	Yes	n/s	Yes	No	Partially
Messham (2014)	Partially	Yes	Partially	Partially	Yes	n/a	Yes	Yes	Partially
Peterson & Docherty (2004)	Partially	n/s	Yes	No	Yes	Yes	n/a	No	Partially
Wasserman (2010); Wasserman et al. (2012)	Yes	n/s	Partially	No	Yes	n/s	n/s	Partially	Partially
Weisman de Mamani (2010)	Partially	n/s	Yes	Partially	Yes	n/s	n/s	No	Partially

Note: EE = expressed emotion; n/s = not stated; n/a = not applicable

3.4 Main findings: EOI

3.4.1 Association between EOI and guilt

Six studies examined the association between EOI and guilt (Bentsen et al., 1998; Brookfield, 2008; Keith, 2011; Messham, 2014; Peterson and Docherty, 2004; Weisman de Mamani, 2010). Collectively, data indicated mixed support for the theorised positive association between the constructs (Table 6). However, the effects of measurement approaches on these relationships were noted.

Moderate to large positive associations ($r = .45$ to $.55$; Cohen, 1988) were found between EOI and *care-specific guilt* when the former was assessed using the self-report FQ (Keith, 2011; Messham, 2014). Care-specific guilt remained a significant predictor of EOI when the effects of shame and service-users' diagnoses were controlled for, although the strength of the association lessened slightly (Keith, 2011; Messham, 2014). However, divergent findings emerged regarding the association between care-specific guilt and EOI when EOI was assessed using coding schemes such as the CFI or the FMSS. Peterson and Docherty (2004) noted a small negative association between the constructs ($r = -.22$), whilst Wasserman et al. (2010; 2012) found care-specific guilt not to predict EOI after controlling for hours of weekly contact and service-users' primary language and gender. However, it is important to note the relatively limited range of CC/hostility scores between and within participants in both studies, which may have influenced the findings.

Irrespective of approach taken to assess EOI, no association was noted between EOI and *guilt-proneness*, even after controlling for the effects of variables such as emotional empathy (Brookfield, 2008) and shame-proneness (Weisman de Mamani, 2010). The only exception to this was Bentsen et al. (1998), who found a positive association between EOI and guilt-proneness (using the guilty-conscience subscale of the RMGI), after controlling for

the effects of demographic variables such as service-users' diagnoses and carers' ages. However, the credibility of these data are unclear, given that the guilty-conscience subscale of the RMGI has moderate construct validity and poor 'sex-specific' criterion validity, and contains items which also measure shame (Bentsen et al., 1998). Furthermore, the researchers did not adjust for the effects of multiple testing, which may have increased the risk of Type I errors (Kline, 1999).

3.4.2 Association between EOI and shame

Four studies considered the association between EOI and shame (Table 6; Brookfield, 2008; Keith, 2011; Messham, 2014; Weisman de Mamani, 2010). Medium to large positive associations ($r = .35$ to $.59$; Cohen, 1988) were noted between EOI and shame in three studies (Brookfield, 2008; Keith, 2011; Messham, 2014). Effect sizes were, on average, larger across studies using measures of care-specific shame than across studies using measures of shame-proneness. Shame remained a significant predictor of EOI when additional variables were controlled for, including guilt, emotional empathy and service-users' diagnoses (Brookfield, 2008; Keith, 2011; Messham, 2014), indicating that 'guilt-free' shame may be an important factor to consider with respect to EOI. Only one study's findings diverged from those above; Weisman de Mamani (2010) found a moderate *negative* association between EOI and shame-proneness ($r = -.34$), which persisted after controlling for the effects of guilt-proneness ($r = -.31$). However, this divergence may be due to the low internal reliability of the shame scale used in this study (Cronbach's $\alpha = .59$) and limited number and proportion ($n = 19$; 33.3%) of participants classed as high EOI in this study compared with the others.

Table 6: Main findings (EOI)

Predictor variable	Author	Method of assessing EOI	Bivariate analyses		Multivariate analyses		
			Statistical analysis	Effect size	Statistical analysis	Control variables	Effect size
Guilt-proneness	Bentsen et al. (1998)	Coding scheme		n/s	Logistic regression	'Standard control variables' ^c	<i>OR</i> = 29.0*** n/s but not statistically significant ^b
	Brookfield (2008)	Self-report measure	Pearson's correlation	<i>r</i> = .21	Multiple linear regression	Emotional empathy	β = .35*
	Keith (2011)	Self-report measure	Pearson's correlation	<i>r</i> = .08		n/s	
	Weisman de Mamani (2010)	Coding scheme	Pearson's correlation	<i>r</i> = -.16	Partial correlation	Shame-proneness	<i>r</i> = .07
Care-specific guilt	Keith (2011)	Self-report measure	Pearson's correlation	<i>r</i> = .55**	Multiple linear regression	Care-specific shame	β = .15*
	Messham (2014)	Self-report measure	Pearson's correlation	<i>r</i> = .45**	Hierarchical multiple regression	Diagnosis; care-specific shame	β = .12
	Peterson & Docherty (2004)	Coding scheme	<i>t</i> -test ^d	<i>r</i> = -.22*		n/s	
	Wasserman (2010); Wasserman et al. (2012)	Coding scheme		n/s	Block-entry binary logistic regression	Weekly contact; SU language; SU gender	n/s but not statistically significant

Predictor variable	Author	Method of assessing EOI	Bivariate analyses		Multivariate analyses		
			Statistical analysis	Effect size	Statistical analysis	Control variables	Effect size
Shame-proneness	Brookfield (2008)	Self-report measure	Pearson's correlation	$r = .39^{**}$	Multiple linear regression	Emotional empathy; guilt-proneness	$\beta = .35^*$
	Keith (2011)	Self-report measure	Pearson's correlation	$r = .35^{**}$		n/s	
	Weisman de Mamani (2010)	Coding scheme	Pearson's correlation	$r = -.34^*$	Partial correlation	Guilt-proneness	$r = -.31^{**}$
Care-specific shame	Keith (2011)	Self-report measure	Pearson's correlation	$r = .59^{**}$	Multiple linear regression	Care-specific guilt	$\beta = .41^{**}$
	Messham (2014)	Self-report measure	Pearson's correlation	$r = .51^{**}$	Multiple linear regression	Diagnosis; care-specific guilt	$\beta = .41^{**}$

Note: ^a hostility-guilt subscale; ^b guilty-conscience subscale; ^c i.e. kind of relative, relatives' socio-economic status, service-users' gender, illness duration, amount of face-to-face contact between carer and service-user, Positive and Negative Syndrome Scale components; ^d values calculated from *t*-values; n/s = not stated; OR = odds ratio; SU = service-user; * $p < .05$; ** $p < .01$

3.5 Main findings: CC/hostility

3.5.1 Association between CC/hostility and guilt

Six studies explored the association between CC/hostility and guilt (Table 7; Bentsen et al., 1998; Brookfield, 2008; McMurrich, 2008; McMurrich and Johnson, 2009; Messham, 2014; Peterson and Docherty, 2004; Weisman de Mamani, 2010). Five studies reported limited to no association between the constructs (Brookfield, 2008; McMurrich, 2008; McMurrich and Johnson, 2009; Messham, 2014; Peterson and Docherty, 2004; Weisman de Mamani, 2010), even when the effects of variables such as carers' mental health and shame were controlled for (McMurrich, 2008; McMurrich and Johnson, 2009; Weisman de Mamani, 2010). Findings were consistent across studies using measures of care-specific guilt and those using measures of guilt-proneness (Table 7). The only exception to these data was reported by Bentsen et al. (1998), who found that guilt-proneness significantly predicted CC when the effects of carers' mental health were controlled for. However, the aforementioned methodological and analytical limitations associated with this study have implications for the weight that should be placed on Bentsen et al.'s (1998) data.

3.5.2 Association between CC/hostility and shame

Five studies explored the association between CC/hostility and shame (Table 7; Brookfield, 2008; McMurrich, 2008; McMurrich and Johnson, 2009; Messham, 2014; Wasserman, 2010; Wasserman et al., 2012; Weisman de Mamani, 2010). Small to moderate positive associations ($r = .26$ to $.45$; Cohen, 1988) were noted between the constructs when the self-report FQ was used to assess CC/hostility (Brookfield, 2008; Messham, 2014), which persisted when controlling for the effects of care-specific guilt (Messham, 2014). Effect sizes were greater when measures of care-related shame were used rather than measures of shame-

proneness. Conversely, no associations were observed when CC/hostility was coded using the CFI or FMSS, even after controlling for the effects of carer-specific variables including relationship with the service-user and levels of depression and guilt (McMurrich, 2008; McMurrich and Johnson, 2009; Wasserman, 2010; Wasserman et al., 2012; Weisman de Mamani, 2010). However, it is possible that the heterogeneity in findings may be in part due to these studies' small sample sizes and limited range of outcome data (McMurrich, 2008; McMurrich and Johnson, 2009; Wasserman, 2010; Wasserman et al., 2012), together with their frequent use of the (relatively insensitive) FMSS (van Humbeek et al., 2002).

Table 7: Main findings (CC/hostility)

Predictor variable	Author	Method of assessing CC/hostility	Bivariate analyses		Multivariate analyses		
			Statistical analysis	Effect size	Statistical analysis	Control variables	Effect size
Guilt-proneness	Bentsen et al. (1998) ^a	Coding scheme	Logistic regression	Hostility: $OR = .40^c$	Logistic regression	‘Standard control variables’ ^d	n/s but not statistically significant
			Logistic regression	CC: n/s	Logistic regression	Carers’ mental health	$OR = .10^{**}$
	Bentsen et al. (1998) ^b	Coding scheme	Logistic regression	Hostility: n/s but not statistically significant		n/a	
			Logistic regression	CC: n/s but not statistically significant	Logistic regression	‘Standard control variables’ ^d	n/s but not statistically significant
	Brookfield (2008)	Self-report measure	Pearson’s correlation	n/s but not statistically significant		n/s	
	McMurrich (2008); McMurrich et al. (2009)	Coding scheme	Pearson’s correlation	$r = .17$	Multiple linear regression	Depression; shame-proneness	$\beta = .01$
	Weisman de Mamani (2010)	Coding scheme	Pearson’s correlation	$r = -.02$	Partial correlation	Shame-proneness	$r = .03$
Care-specific guilt	Messham (2014)	Self-report measure	Pearson’s correlation	$r = .29^*$	Multiple linear regression	Care-specific shame	$\beta = .01$
	Peterson & Docherty (2004)	Coding scheme	<i>t</i> -test ^e	$r = .06$		n/s	

Predictor variable	Author	Method of assessing CC/hostility	Bivariate analyses		Multivariate analyses		
			Statistical analysis	Effect size	Statistical analysis	Control variables	Effect size
Shame-proneness	Brookfield (2008)	Self-report measure	Pearson's correlation	$r = .26^*$			n/s
	McMurrich (2008); McMurrich et al. (2009)	Coding scheme	Pearson's correlation	$r = .21$	Multiple linear regression	Depression; guilt-proneness	$\beta = .01$
	Weisman de Mamani (2010)	Coding scheme	Pearson's correlation	$r = -.11$	Partial correlation	Guilt-proneness	$r = -.10$
Care-specific shame	Messham (2014)	Self-report measure	Pearson's correlation	$r = .45^{**}$	Multiple linear regression	Care-specific guilt	$\beta = .44^{**}$
	Wasserman (2010); Wasserman et al. (2012)	Coding scheme		n/s	Block-entry binary logistic regression	Type of relative	n/s but not statistically significant

^a hostility-guilt subscale; ^b guilty-conscience subscale; ^c Revised Mosher Guilt Inventory scores dichotomised for analysis; ^d i.e. kind of relative, relatives' socio-economic status, gender of service-user, illness duration, amount of face-to-face contact between carer and service-user, Positive and Negative Syndrome Scale components; ^e values calculated from t-values; CC = critical comments; n/s = not stated; OR = odds ratio; * $p < .05$; ** $p < .01$

4. Discussion

This systematic review investigated the magnitude of the associations between guilt and shame and components of EE in carers of people with long-term mental health difficulties. Narrative synthesis of included studies largely supported hypotheses that EOI would be positively associated with guilt, whilst CC/hostility would be positively associated with shame but not guilt. However, the hypothesis that there would be no association between EOI and shame was not supported.

Turning first to EOI. Guilt was hypothesised to be positively associated with EOI, given its theorised role in motivating reparative behaviours in an attempt to ameliorate feelings of personal responsibility (Tracy and Robins, 2006). At the broadest level, when guilt was treated as a unidimensional construct, there was only minimal support for the hypothesised positive association between guilt and EOI. However, a strong positive association was found between the constructs when measures of care-specific guilt were used, which persisted when the effects of shame were controlled for. Collectively, these data lend support for the notion that, in order for guilt to have a salient impact on EOI, it must be associated directly with caring for and/or having a relative with mental health difficulties (Myers, 2010). However, the cross-sectional nature of included studies meant that it was not possible to determine whether guilt is a consequence or cause of emotionally over-involved behaviour (Hatfield, 1981).

The positive association between care-specific guilt and EOI is perhaps unsurprising, given that guilt is context-specific (i.e. dependent on a specific event or behaviour for which an individual makes reparation; Gilbert, 1998; Tangney and Dearing, 2002). However, the finding that shame was also related to EOI was unexpected. Strong positive associations were noted between the constructs, irrespective of whether measures assessed shame-proneness or care-specific shame. These associations persisted after partialling for the effects of guilt,

indicating that the observed associations between shame and EOI were not merely reflective of the shared variance between shame and guilt. This finding is of particular importance as it suggests that both the trait-like aspect of shame-proneness *and* guilt and shame specifically related to caring for someone with mental health difficulties may collectively be important factors to consider with respect to EOI, and to a roughly equal extent. Although this finding is surprising, it is possible that caring for someone with a mental health difficulty may evoke feelings of vicarious shame (i.e. shame resulting from construing the behaviour of a significant other as reflective of oneself), particularly if carers appraise public and professional discourses around mental health and caring as stigmatising, blaming, marginalising or shameful (Jenkins and Karno, 1992; Schulze, 2007). Carers experiencing vicarious shame may subsequently engage in help-giving behaviours, which, in the absence of significant change in service-users' presentations, may develop into emotionally over-involved behaviours (Lickel et al., 2007). However, the cross-sectional nature of included studies meant that it was not possible to support or refute the notion that carers may engage in emotionally over-involved behaviours to alleviate feelings of vicarious shame (Gilbert, 1998; Hatfield, 1981).

Turning next to CC/hostility. The theorised positive relationship between shame and CC/hostility was supported when CC/hostility was assessed using self-report measures but not when coding schemes were used. Although these findings may reflect common method variance, these data tentatively support the hypothesis that shame may drive carers to engage in defensive, regulatory anger-driven behaviours focused specifically on behaviours and symptoms which are shame-eliciting (Jenkins and Karno, 1992). Furthermore, they suggest that both shame-proneness *and* shame specifically related to caring for a relative with a mental health difficulty may each be important factors to consider with respect to

CC/hostility. However, the divergence in findings between studies using coding schemes and those using self-report measures warrants further investigation.

In contrast to shame, guilt was not theorised to be related to CC/hostility due to its hypothesised function in promoting reparative behaviours (Tangney and Dearing, 2002). This was supported by the reviewed literature. The consistency in findings irrespective of the measurement approaches adopted by individual studies indicates the robustness of these findings, and militates against considering guilt as an important factor with respect to CC/hostility (Hatfield, 1981).

4.1 Methodological limitations and implications for research

Collectively, data appear to support the importance of considering carers' self-conscious emotions as potential contributors to their EE, and provide support for a shift away from considering EE as a response to symptomatology and instead toward considering the potential contribution of interpersonal and intrapsychic processes (Campbell et al., 2013). However, is it important to consider the limitations of both the review process itself and the included studies before drawing firm conclusions regarding the clinical significance or utility of these findings. With respect to the former, both published and unpublished data were searched and included in this review in an attempt to minimise the chances of missing key studies and avoid perpetuating the publication bias common to psychological research (Ferguson and Brannick, 2012). However, only citations written in English were considered for inclusion, which may have resulted in a language, selection or cultural bias. In addition, methodological heterogeneity precluded meta-analysis, which may have allowed for more in-depth analysis of pooled study data than narrative synthesis alone.

More problematic is the potential impact of the methodological limitations of included studies. First, it was not possible to determine the causal direction of the effects

noted in this review, nor examine the mechanism(s) by which constructs may be linked. Second, differences in the strength and significance of relationships were noted as a function of the measurement approaches taken to assess both guilt and shame, and EE. This likely reflects the conceptual ambiguity surrounding guilt and shame (Kim et al., 2011), but may have implications for the interpretation of the effects noted in this review. Furthermore, variation was often noticed in participants' average levels of EOI and CC/hostility, which likely influenced the comparability of samples and generalisability of findings. Finally, all studies were conducted in Western societies, using predominantly middle aged, female participants who were largely in receipt of services. Duration of caring and amount of weekly contact between carers and service-users was frequently under-reported, and gender differences in participants' EOI and CC/hostility were observed, but not controlled for, in several of the included studies. As such, the generalisability of these findings beyond the samples studied in the included papers is unclear.

Future research should attempt to address the aforementioned limitations by adopting prospective, longitudinal designs and recruiting representative samples of carers to minimise the possibility of selection bias and/or polarisation of responses. Shame and guilt should be assessed within the context of the caring relationship, ideally by using self-report measures with well-established psychometric properties within a carer population. However, researchers should be mindful that individuals are often unaware of, or unwilling to admit to, shameful feelings (Ryan, 1993), and may find it difficult to differentiate between feelings of guilt and shame (Robins et al., 2007). Robins et al. (2007) state that “nonverbal expressions, which are less under voluntary control than are self-reports, may be crucial to an accurate assessment of an individual's emotional response to a particular event” (pp. 464). As such, it is recommended that self-report measures be supplemented with paralinguistic assessment⁴

⁴ Analysis of aspects of spoken communication that do not involve words

(Tracy and Robins, 2007) to circumvent the limitations associated with the use of self-report measures and provide a more accurate evaluation of carers' self-conscious emotions.

Given the small sample sizes of the studies included in this review, researchers should ensure analyses are adequately powered and may wish to consider controlling for the effects of variables such as gender and amount of weekly contact in analyses. Examination of the psychological processes associated with the development of both EE and care-specific guilt and shame, together with reciprocal causation between the variables, would also be welcomed. This may help to provide insight into why some carers may be more susceptible to care-specific guilt and shame than others, as well as illuminating the factors that reduce vulnerability to guilt and shame (Lobban and Barrowclough, 2015). Attachment theory, and the related capacity of mentalisation, may form non-pathologising theoretical frameworks for future research, particularly given the relational nature of guilt, shame and EE (Jenkins and Karno, 1992; Tangney and Dearing, 2002).

4.2 Clinical implications

The aforementioned limitations notwithstanding, the findings of this review have potential implications for clinicians working with carers and their families. For example, therapists may wish to consider sensitively placing more emphasis on the behavioural and psychological sequela of guilt and shame when assessing, formulating and intervening to alleviate carers' and families' difficulties. Therapists may wish to incorporate principles from compassion focused therapy (CFT), an integrated psychotherapeutic approach developed to help individuals prone to experiencing shame and self-criticism to build the capacity to experience compassion, to aid with this task (Gilbert and Irons, 2005). Individual and family interventions designed to reduce carers' guilt, shame, self-blame and burden (Weisman de Mamani and Suro, 2016) and/or those that focus on the role of carers' behaviours in the process of recovery (Lobban and Barrowclough, 2015) may also provide useful starting

points for practitioners. Should the hypothesis that a reduction in guilt and shame may also result in a change in EE behaviours be correct, then targeted interventions focused, in part, upon carers' guilt and shame may have positive outcomes for both carers and service-users (Hatfield, 1981).

5. Conclusions

The findings of this review extend current understandings of the relationships between carers' EE and their guilt and shame by lending support for the importance of considering both guilt and shame as potential contributors to carers' EE. Whilst caution must be taken when generalising these findings to clinical practice, data indicate that a focus on self-conscious emotions may be beneficial when delivering effective individual and family interventions for carers with high EE. However, the methodological limitations of the included studies, coupled with the limited research available, means that more high-quality research is needed before firm conclusions can be drawn regarding the clinical significance or utility of these findings.

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Bridging Section

Chapter 1 indicates that both guilt and shame may each be important factors to consider with respect to carers' EE. However, carers are only likely to experience guilt and/or shame if they: a) value their relationship with the service-user; and b) appraise their own behaviours as potentially damaging to both the service-user and their relationship (Lewis, 2000; Mikulincer & Shaver, 2005; Tangney et al., 1992). Attachment theory, and the related theory of mentalisation, may therefore help to further current understandings of the mechanisms underpinning EE beyond those reported in Chapter 1 by providing theoretical frameworks for the study of individual differences in carers' EE (Mikulincer & Shaver, 2005). However, there is a paucity of empirical literature addressing the relationship between attachment, mentalisation and EE in carers of people with long-term mental health difficulties. The study reported in Chapter 2 is the first to address this gap by examining a mediational model suggesting that adult attachment dimensions differentially influence aspects of carers' EE through their effects on mentalisation.

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Chapter 2: Attachment, Mentalisation and Expressed Emotion in Carers of People with Long-Term Mental Health Difficulties⁵

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⁵ To be submitted to Family Process (Appendix B)

Abstract

Expressed emotion (EE) is a global index of familial emotional climate, which is comprised of emotional over-involvement (EOI) and critical comments (CC)/hostility. Although EE is an established predictor of negative outcomes for both people with long-term mental health difficulties and their family carers, its psychological underpinnings remain relatively poorly understood. This paper tested a mediational model suggesting that adult attachment dimensions differentially influence aspects of EE through their effects on mentalisation ability. Carers of people with long-term mental health difficulties ($n = 106$) completed measures of adult attachment (the Experiences in Close Relationships-Short Form questionnaire), mentalisation (the Reading the Mind in the Eyes Test and the Emotional Self-Efficacy Scale) and EE (the Family Questionnaire). Attachment avoidance and facets of mentalisation were directly and uniquely positively associated with CC/hostility, with attachment avoidance and other-directed emotional self-efficacy (one facet of mentalisation) each significantly predicting CC/hostility scores after controlling for the effects of EOI and demographic variables. However, no indirect effect from attachment avoidance to CC/hostility via mentalisation was found. Furthermore, no associations were observed between EOI, attachment anxiety and mentalisation. Although it would be premature to propose firm clinical implications based on these findings, data indicate that it may be beneficial for clinicians to consider attachment and mentalisation in their conceptualisation of carers' criticism and hostility. However, further research is needed to clarify the magnitude of these associations and their direction of effect before firm conclusions can be drawn.

Introduction

The term ‘expressed emotion’ (EE) encompasses particular attitudes, emotions and behaviours expressed by family carers towards the person(s) to whom they provide care (Barrowclough & Hooley, 2003). Key components include emotional over-involvement (EOI), critical comments (CC), and hostility (Barrowclough & Hooley, 2003). Emotional over-involvement is characterised by overly self-sacrificing and/or intrusive behaviours and exaggerated emotional responses, whereas the term ‘CC/hostility’ is commonly used to refer to critical, negative or blaming attitudes or statements towards service-users (Barrowclough & Hooley, 2003).

Although EE is a consistent and reliable predictor of relapse across a range of mental health difficulties (Butzlaff & Hooley, 1998), the psychological processes associated with EE are poorly understood (Barrowclough & Hooley, 2003). Interpersonal behaviours, such as those comprising EE, are thought to be partly determined by attachment orientations (Bowlby, 1973). Attachment theory is a theory of psychosocial development, which posits that individuals form enduring patterns of interpersonal behaviour through internalisation of interactions with their primary carer(s) in infancy (Bowlby, 1973). These patterns are represented cognitively in the form of an internal working model (IWM) of attachment, which subsequently influences behaviour in close relationships throughout the lifespan, particularly those in which an individual is required to give or receive care (Bartholomew & Shaver, 1998). Carers’ attachment may therefore aid or impede their ability to provide effective and attuned care (Diamond & Doane, 1994; Paley, Shapiro, & Worrall-Davies, 2000). Carers high on attachment anxiety (characterised by habitual preoccupation and over-involvement in close relationships combined with fear of abandonment) may engage in emotionally over-involved behaviours in an attempt to facilitate interpersonal closeness (Bartholomew & Shaver, 1998). In contrast, carers high on attachment avoidance

(characterised by difficulty in trusting others, devaluation of close relationships and avoidance of intimacy) may engage in regulatory, anger-driven behaviour such as criticism and hostility in an attempt to avoid and/or cope with the discomfort associated with the caring role (Campbell, Simpson, Kashy, & Rholes, 2001; Mikulincer et al., 2001). Attachment theory may therefore provide a theoretical framework for understanding individual differences in carers' EE (Chen, 2007).

A related yet distinct construct, which may also help to further understandings of individual differences in carers' EE, is mentalisation (Fonagy, Gergely, & Jurist, 2003). The term 'mentalisation' shares conceptual overlap with constructs such as theory of mind, emotional self-efficacy and reflective functioning (Bateman & Fonagy, 2016), and is broadly defined as the process by which an individual is able to use these representations to attend to the implicit and explicit subjective mental states and mental processes of self and others (Fonagy et al., 2003).

Mentalisation theory holds that early determinants of attachment enable the development and organisation of multiple sets of self-other representations, which subsequently serve as a heuristic for interpersonal interactions throughout the lifespan (Fonagy et al., 2003). Reflective, sensitive and attuned early caregiving (i.e. relationships low in attachment avoidance and attachment anxiety) is hypothesised to facilitate well-developed mentalisation, whilst poorly attuned or neglectful early caregiving is theorised to lead to impaired mentalisation (Bateman & Fonagy, 2016). Mentalisation is therefore also likely to be an important contributor to the development and maintenance of EE (Bateman & Fonagy, 2016). Well-developed mentalisation may help to facilitate accurate evaluation and regulation of one's own and others' thoughts, feelings and behaviours, and thus discourage emotionally over-involved, critical or hostile caregiving. In contrast, less well-developed mentalisation may contribute to high EE by limiting carers' awareness of both the amount of

support needed by the service-user *and* the impact of their behaviours on the service-user (Fonagy et al., 2003).

If attachment influences mentalisation, which subsequently influences carers' abilities to accurately evaluate and regulate their care-related behaviours (EE), then these behaviours may be more likely to be maintained, leading to potential relapse and carer stress (Barrowclough & Hooley, 2003; Hooley, 2007). Consideration of the potential effect of mentalisation on the hypothesised associations between attachment and EE may therefore have greater clinical implications than consideration of attachment alone, particularly given that mentalisation shows considerable flexibility and the potential for modulation through individualised support and therapy (Bateman & Fonagy, 2016). However, the relationships between attachment, mentalisation and components of EE in carers of people with long-term mental health difficulties have yet to be studied. This paper tested a mediational model suggesting that adult attachment dimensions differentially influence aspects of EE through their effects on mentalisation (Figure 2; Diamond & Doane, 1994; Mikulincer & Shaver, 2005; Paley, Shapiro, & Worrall-Davies, 2000). Specifically the following hypotheses were explored:

1. Attachment avoidance and attachment anxiety would be positively related to CC/hostility and EOI respectively;
2. Mentalisation would be negatively related to attachment avoidance, attachment anxiety, CC/hostility and EOI;
3. Mentalisation would partially mediate the effect of attachment anxiety and attachment avoidance on EOI and CC/hostility respectively.

present for at least six months, which impairs psychological well-being and social, occupational and/or interpersonal functioning (MIND, 2011). Specific mental health diagnoses were not used as inclusion/exclusion criteria as EE influences outcome across a range of diagnoses (Butzlaff & Hooley, 1998). Carers of people with organic mental health difficulties, such as learning disabilities, dementia or acquired brain injuries, were excluded.

The final sample comprised 106 carers. Participants were primarily White British ($n = 77$; 72.64%) and female ($n = 86$; 81.13%), with a mean age of 47.13 ($SD = 13.49$, range 22-87). Participants cared for relatives aged between 18 and 92 ($M = 42.76$, $SD = 17.64$), and had done so for an average of 11.46 years ($SD = 9.66$, range 1-45). Participants reported caring for individuals with a range of mental health difficulties, of which the most common were affective disorders ($n = 79$, 74.53%). Half of the sample ($n = 52$, 49.06%) reported caring for individuals with additional physical health, substance misuse, and/or attentional/neurological additional difficulties. Table 8 displays demographic information for the final sample.

Table 8

Demographic Data (n = 106)

Demographic Variable	<i>n</i> (%) unless otherwise stated	
	Carers	Service-users
Age (years), <i>M</i> (<i>SD</i>), range	47.13 (13.49), 22-87 ^a	42.76 (17.64), 18-92 ^b
Gender		
Male	19 (17.92)	57 (53.77)
Female	86 (81.13)	44 (41.51)
Not stated	1 (0.94)	5 (4.72)
Ethnicity		
Caucasian	94 (88.68)	96 (90.57)
South Asian	4 (3.77)	3 (2.83)
Other Asian background	1 (0.94)	2 (1.89)
Mixed background	1 (0.94)	1 (0.94)
Other	4 (3.77)	3 (2.83)
Not stated	2 (1.89)	1 (0.94)
Employment status		
Employed	63 (59.43)	22 (20.75)
Not currently in paid employment	15 (14.15)	47 (44.34)
Student	2 (1.89)	8 (7.55)
Retired	15 (14.15)	17 (16.04)
Other	10 (9.43)	8 (7.55)
Not stated	1 (0.94)	4 (3.77)
Relationship to service-user		
Partner/spouse	35 (33.02)	n/a
Parent	8 (7.55)	n/a
Child	13 (12.26)	n/a
Other	5 (4.72)	n/a
Not stated	45 (42.45)	n/a
Weekly care provision (hours)		
10-14	18 (16.98)	n/a
15-29	21 (19.81)	n/a

Demographic Variable	<i>n</i> (%) unless otherwise stated	
	Carers	Service-users
30-44	17 (16.04)	n/a
45-59	2 (1.89)	n/a
60-74	5 (4.72)	n/a
≥75	29 (27.36)	n/a
Not stated	14 (13.21)	n/a
Duration of caregiving (years), <i>M</i> (<i>SD</i>), range	11.46 (9.66), 1-45 ^c	n/a
Duration of difficulties (years), <i>M</i> (<i>SD</i>), range	n/a	12.76 (10.91). 1-50 ^d
Diagnosis, <i>n</i> (%)		
Affective disorder only	n/a	56 (52.83)
ED only	n/a	6 (5.66)
SSD only	n/a	16 (15.09)
PD only	n/a	2 (1.89)
Affective disorder and SSD	n/a	8 (7.55)
Affective disorder and PD	n/a	5 (4.72)
Affective disorder and ED	n/a	10 (9.43)
Not stated	n/a	3 (2.83)
Additional comorbid difficulties, <i>n</i> (%)	n/a	
None	n/a	48 (45.28)
Physical health difficulties	n/a	44 (41.51)
Substance misuse difficulties	n/a	1 (0.94)
Attentional/neurological difficulties	n/a	4 (3.77)
Physical health and attentional/neurological difficulties	n/a	1 (0.94)
Substance misuse and attentional/neurological difficulties	n/a	2 (1.89)
Not stated	n/a	6 (5.66)

Note: all information provided by carers. ^a *n* = 105; ^b *n* = 104; ^c *n* = 105; ^d *n* = 101; ED = eating disorders; *M* = mean; n/a = not applicable; PD = personality disorders; *SD* = standard deviation; SSD = schizophrenia spectrum disorders.

Measures and Covariates

Demographic information.

A 15-item self-report measure was used to gather relevant demographic information, including information pertaining to the nature and duration of the caring role (Appendix G).

Expressed emotion.

Expressed emotion was assessed using the 20-item Family Questionnaire (Weidermann, Rayki, Feinstein, & Hahlweg, 2002; Appendix H). This measure was chosen because it is the only self-report measure of EE with consistently comparable sensitivity and specificity to the Camberwell Family Interview (CFI), the ‘gold-standard’ measure of EE (Weidermann et al., 2002). Participants rate the extent to which they identify with a range of statements concerning the family environment (e.g., “It’s hard for us to agree on things”) using a 4-point Likert scale. Responses produce two subscale scores: EOI and CC/hostility. Each range from 0-40, with low scores representing low EOI and/or CC/hostility. Participants can also be dichotomised into high or low EOI and/or CC/hostility categories based on cut-off scores of 27 and 23 respectively. The FQ demonstrates good two-week test-retest reliability and strong internal consistency (all Cronbach’s $\alpha > .79$; Weidermann et al., 2002), with categories correlating highly with those from the CFI (Vaughn & Leff, 1976). Cronbach’s α for the EOI and CC/hostility subscales in this sample were .80 and .69 respectively.

Attachment.

Adult attachment was assessed using the 12-item Experiences in Close Relationships: Short Form (ECR-SF) questionnaire (Wei, Russell, Mallinckrodt, & Vogel, 2007; Appendix I). This measure was selected because it has favourable psychometric properties, is short in length and allows for precise and psychometrically-robust assessment of adult romantic

attachment (Bartholomew & Horowitz, 1991). Participants rate the extent to which each item describes their feelings about close relationships (e.g. “I need a lot of reassurance that I am loved by my partner”) using a 7-point Likert scale. Responses produce two subscale scores, attachment avoidance and attachment anxiety, which correspond to the two-dimensional model of adult attachment (Bartholomew & Horowitz, 1991). Each range from six to 42, with low scores indicating low attachment avoidance and/or attachment anxiety. The ECR-SF demonstrates acceptable construct validity with the original ECR, and displays good internal consistency and six-month test-retest reliability (all Cronbach’s $\alpha > .78$; Wei et al., 2007). Cronbach’s α for the attachment avoidance and attachment anxiety subscales in this sample were .74 and .73 respectively.

Mentalisation.

The Reading the Mind in the Eyes Test: Revised Version (RMET; Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001; Appendix J) and the Emotional Self-Efficacy Scale (ESES; Kirk, Schutte, & Hine, 2008; Appendix K) were selected to assess different aspects of mentalisation: theory of mind and emotional self-efficacy respectively.

The Reading the Mind in the Eyes test.

Originally developed as a tool to discriminate adults with Asperger syndrome or high-functioning autism from controls, the RMET (Baron-Cohen et al., 2001) is now widely used to assess theory of mind (the ability to conceive of and determine others’ mental states). It was chosen for use in this study because it is the only validated test of the extent to which individuals can identify external aspects of emotion in others that demonstrates no correlation with general intelligence (Newbury-Helps, 2011). Participants are presented with 36 photographs of the facial region around the eyes and are asked to choose one of four single-word descriptors of possible mental states. Scores range from zero to 36, with higher scores

indicating greater ToM ability. Variable psychometric properties have been reported for the RMET; some studies have shown uni-dimensionality with good internal consistency and test-retest reliability (Cronbach's $\alpha > .80$), whilst others have found multiple factors to underlie the construct (Olderbak et al., 2015; Vellante et al., 2013). The Cronbach's α for current sample was .58.

The Emotional Self-Efficacy Scale.

Emotional self-efficacy was assessed using the 32-item self-report ESES. This measure was chosen because it is formulated against an established model of mentalisation (emotional intelligence) and allows for reliable and valid assessment of an important facet of mentalisation: self-perceived emotional competency in relation to self and others (Dacre Pool & Qualter, 2012). Participants rate their confidence in carrying out the function described by each item on a 5-point Likert scale. When scored using Dacre Pool and Qualter's (2012) revised scoring system, responses produce four subscale scores: E1) Using and Managing One's Own Emotions; E2) Identifying and Understanding One's Own Emotions; E3) Dealing with Others' Emotions; and E4) Perceiving Others' Emotions through Body Language and Facial Expressions (Kirk et al., 2008). This four-factor structure has been supported, with each factor demonstrating good internal consistency (Cronbach's $\alpha > .80$; Dacre Pool & Qualter, 2012). Cronbach's α for the four subscales in the current sample were .92 (E1), .89 (E2), .90 (E3) and .83 (E4) respectively.

Sampling Procedure

Ethical approval was obtained from the University of Liverpool's Research Ethics Committee (Appendix L). Potential participants were invited to read the participant information sheet (Appendices M and N) and complete a consent form (Appendix O) and the study measures either online, via the Qualtrics platform, or by completing and returning a

questionnaire pack using the stamped addressed envelope provided. Participation took approximately 20 minutes, and was voluntary. As an incentive, participants were offered entry into a prize draw for one of three £50 UK high street vouchers upon completion; contact details were stored separately from other data to protect participants' anonymity.

Advertisements containing a link to complete the study online were placed on social media and UK mental health charities' websites, Facebook pages and Twitter feeds. Twenty questionnaire packs were distributed to potential participants directly by carer support coordinators working for specialist local independent sector carer support organisations within the UK. A further ten packs were given to potential participants by the author directly, during her attendance at four monthly carer meetings in the North West of England (informal fora for carers to meet and share their experiences).

Seven questionnaire packs were returned, and a further 273 people consented to participate online ($N = 280$), of which 108 (38.57%) fulfilled the eligibility criteria. Two were excluded (one showed little variance in their responses and one participated twice), resulting in a final sample size of 106 (37.86%; Figure 3).

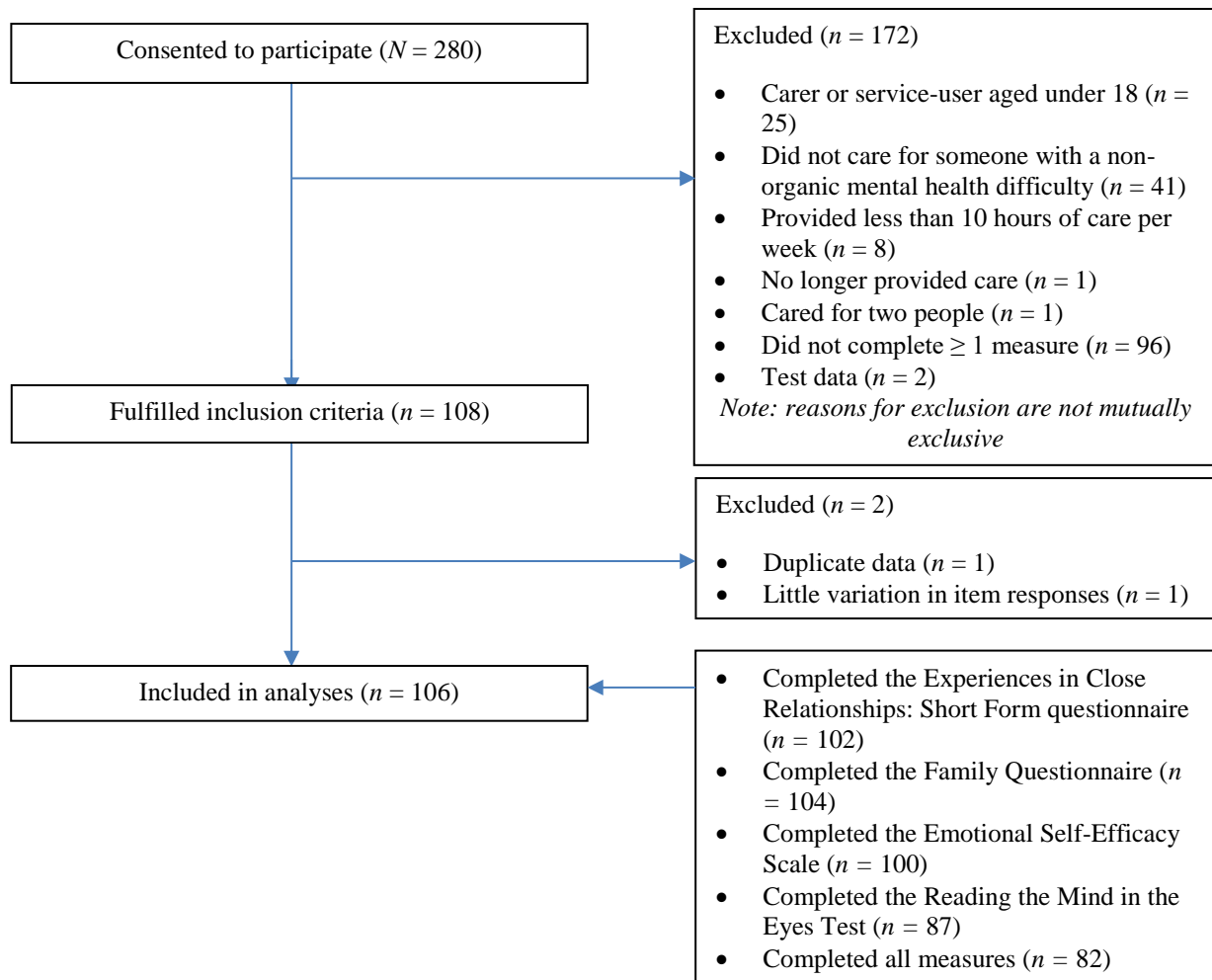


Figure 3: Flowchart of Participant Inclusion

Sample Size, Power and Precision

A priori power calculations indicated that, in order to adequately detect a medium effect size⁶ ($f^2 = .15$) with a .80 power level and a standard α level of .05 (Fritz, Morris, & Richler, 2012), a minimum of 104 participants were required for the most complex planned analysis: a multiple linear regression containing three control variables and seven predictor variables (Faul, Erdefelder, Lang, & Buchner, 2007).

⁶ No published literature had, at the time of writing, considered the relationships between attachment, mentalisation and EE. As such, given the interpersonal nature of EE, wider empirical literature pertaining to the relationships between EE and shame and guilt was consulted to provide best estimates of the anticipated effect sizes between the variables of interest (Brookfield, 2008; McMurrich & Johnson, 2009).

Results

Data Preparation

All statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS) 22.0.1 (IBM Corp, 2013). Raw data were first screened for inputting errors and summed scale scores were calculated where appropriate. Scales with more than 10% of items missing were excluded from analyses ($n = 2$). Missing data were observed between but not within measures (Appendix P); as these were missing completely at random ($\chi^2 = 238.21$, $df = 342$, $p > .05$; Little & Rubin, 1987), listwise deletion was employed throughout subsequent analyses. The fit of data within the assumptions of parametric tests was assessed using the Kolmogorov-Smirnov test; where indicative of non-normal distribution, graphical representations of distributions and values of skewness and kurtosis were also consulted (Field, 2013). Analyses indicated that the attachment anxiety subscale of the ECR-SF (D (101) = .10, $p < .01$), the RMET (D (86) = .11, $p < .01$) and the E2 (D (99) = .15, $p < .01$) and E4 (D (99) = .11, $p < .01$) subscales of the ESES were non-normally distributed. However, log transformation was not conducted as these data were felt to mirror what would normally be expected in the general population (Baron-Cohen, et al., 2001; Dacre Pool & Qualter, 2013; Weidemann, et al., 2002; Wei, et al., 2007).

Initial Data Exploration

Independent sample t -tests, Mann Whitney U tests, chi-squared tests, Analysis of Variances (ANOVAs) and correlational analyses were used as appropriate for initial data exploration, including assessment of multicollinearity between independent variables. Table 9 displays descriptive statistics and zero-order correlations for key variables.

Most participants ($n = 63$; 59.43%) fulfilled criteria for high EE (i.e. score of ≥ 27 for EOI and/or ≥ 23 for CC/hostility; Weidemann et al., 2002). Of these, eight (12.70%) fulfilled criteria for high EOI only, one (1.59%) fulfilled criteria for high CC/hostility only, and 54 (85.71%) fulfilled criteria for both high EOI and high CC/hostility. Continuous rather than categorical FQ data were used throughout subsequent analyses.

Service-users' age was significantly negatively correlated with CC/hostility ($r = -.28$, $p < .01$). Furthermore, females scored significantly higher than males on total EE ($M = 58.61$, $SD = 8.34$ and $M = 51.37$, $SD = 6.35$ respectively, $t(101) = -3.56$, $p < .01$), EOI ($M = 28.79$, $SD = 4.91$ and $M = 24.68$, $SD = 4.58$ respectively, $t(101) = -4.10$, $p < .01$) and CC/hostility ($M = 29.82$, $SD = 4.21$ and $M = 26.68$, $SD = 3.85$ respectively, $t(101) = -3.14$, $p < .01$). All Cohen's d values exceeded .80, indicating a large effect size (Cohen, 1988). No other significant differences were noted between key variables as a function of any of the demographic variables measured (all p values $> .05$).

As expected, both FQ and ESES subscale scores were significantly inter-correlated. However, no significant associations were noted between RMET scores and ESES subscale scores (all p values $> .05$).

Preliminary Hypothesis Testing

The hypothesised associations among key variables were preliminarily tested using correlational analyses (Table 9). Attachment avoidance was significantly positively correlated with total EE and CC/hostility scores, and significantly negatively correlated with RMET scores. Furthermore, CC/hostility was significantly negatively correlated with RMET scores and borderline significantly positively correlated with E3 scores ($p = .06$). Neither EOI nor attachment anxiety were significantly correlated with any other variable.

Table 9

Descriptive and Bivariate Statistics

	Variable	<i>M (SD), range</i>	1	2	3	4	5	6	7	8	9	10
1	Total EE	57.19 (8.45), 38-75	-									
2	EOI	28.00 (5.07), 17-38	.92**	-								
3	CC/hostility	29.19 (4.31), 20-38	.89**	.63**	-							
4	Attachment avoidance	19.80 (7.01), 6-40	.33**	.22	.40**	-						
5	Attachment anxiety	21.70 (7.29), 6-36	.16	.11	.17	.15	-					
6	RMET	25.09 (3.96), 13-34	-.20	-.15	-.23*	-.31**	-.02	-				
7	E1	30.42 (8.96), 10-50	-.03	-.07	.02	-.03	-.12	.03	-			
8	E2	20.56 (5.51), 6-30	.11	.11	.09	-.09	-.09	.18	.67**	-		
9	E3	27.41 (6.85), 8-40	.09	.03	.21	.04	-.10	-.05	.75**	.58**	-	
10	E4	9.88 (3.19), 3-15	.10	.02	.14	-.01	-.03	-.02	.70**	.67**	.73**	-

Note: $n = 82$ (correlational analyses); italicised values indicate Pearson's product-moment correlation coefficient; non-italicised values indicate Spearman's Rho values; * = significant at $p < .05$; ** = significant at $p < .01$; CC = critical comments; E1 = Using and managing your own emotions subscale; E2 = Identifying and understanding your own emotions subscale; E3 = Dealing with emotions in others subscale; E4 = Perceiving emotion through facial expression and body language subscale; ECR:SF = Experiences in Close Relationships: Short Form; EE = Expressed Emotion; EOI = emotional over-involvement; ESES = Emotional Self-Efficacy Scale; FQ = Family Questionnaire; M = mean; RMET = Reading the Mind in the Eyes Test.; SD = standard deviation.

Primary Hypothesis Testing

As EOI was not significantly correlated with any of the independent variables, no further analyses were conducted with EOI as an outcome variable. However, given the significant associations between CC/hostility and the independent variables noted above, a series of hierarchical multiple regression analyses were conducted to examine the hypotheses that attachment avoidance and mentalisation would each be predictive of CC/hostility scores. Given the results of the preliminary analyses, gender, EOI and service-users' age were entered as control variables into Step 1. The independent variables were then entered into Step 2 (Table 10). The fit of data within the assumptions of multiple linear regression was assessed by examining the distribution and heteroscedasticity of regression residuals (Appendix Q); no violations were identified.

The control variables collectively predicted a significant proportion (42%) of the variance in CC/hostility (Table 10; adjusted $R^2 = .42$, $F(3, 81) = 20.77$, $p < .01$, $f^2 = 0.72$). Inclusion of the independent variables accounted for a further 12% of the variance in CC/hostility (adjusted $R^2 = .54$, $F(10, 81) = 10.51$, $p < .01$, $f^2 = 1.17$), with service-users' age ($\beta = -.24$, $p < .01$), EOI ($\beta = .51$, $p < .01$), attachment avoidance ($\beta = .20$, $p < .01$) and E3 ($\beta = .28$, $p < .05$) each making significant contributions to the final model. Similar findings emerged when a trimmed model (Model 2; Table 10) was conducted; the model explained a significant proportion of the variance in CC/hostility (adjusted $R^2 = .43$, $F(4, 93) = 18.22$, $p < .01$, $f^2 = 0.75$), with EOI ($\beta = .54$, $p < .01$), attachment avoidance ($\beta = .20$, $p < .01$) and E3 ($\beta = .18$, $p < .05$) each significantly contributing. Attachment avoidance and E3 remained significant predictors of CC/hostility when the control variables were removed ($\beta = .30$, $p < .01$ and $\beta = .22$, $p < .05$, respectively), and collectively accounted for 12% of the variance in CC/hostility scores (adjusted $R^2 = .12$, $F(2, 95) = 7.33$, $p < .01$, $f^2 = 0.14$).

Table 10

Hierarchical Multiple Linear Regression Models Showing Predictors of CC/Hostility

	Variable	Cumulative			Simultaneous		
		R ²	ΔR ²	F change	B	β	95% CI for B
Model 1: Demographic Characteristics, Attachment and Mentalisation as Predictors of CC/Hostility (n = 82)^{a, b}							
Step 1	Carers' gender	.44	.42	$F(3, 81) = 20.77^{**}$	-.58	-.06	-2.18 to 1.03
	Service-users' age				-.05	-.24 ^{**}	-.09 to -.01
	EOI				.41	.51 ^{**}	.27 to .54
Step 2	Attachment anxiety	.60	.54	$F(10, 81) = 10.51^{**}$.02	.03	-.07 to .10
	Attachment avoidance				.11	.20 ^{**}	.02 to .21
	RMET				-.10	-.09	-.28 to .08
	E1				-.12	-.26	-.24 to .00
	E2				-.05	-.07	-.22 to .12
	E3				.16	.28 [*]	.01 to .32
	E4				.27	.22	-.08 to .61
Model 2: Service-Users' Age, EOI, Attachment Avoidance and Understanding Others' Emotions as Predictors of CC/Hostility (n = 94)^{b, c}							
Step 1	Service-users' age	.38	.37	$F(2, 93) = 27.74^{**}$	-.04	-.16	-.08 to .00
	EOI				.45	.54 ^{**}	.31 to .59
Step 2	Attachment avoidance	.45	.43	$F(4, 93) = 18.22^{**}$.12	.20 ^{**}	.03 to .22
	E3				.11	.18 [*]	.02 to .21

Note: * $p < .05$; ** $p < .01$; CC = critical comments; CI = confident interval; E1 = Using and managing your own emotions subscale; E2 = Identifying and understanding your own emotions subscale; E3 = Dealing with emotions in others subscale; E4 = Perceiving emotion through facial expression and body language subscale; EOI = emotional over-involvement; RMET = Reading the Mind in the Eyes Test; ^a the model's sample size reduced the power to detect a medium effect size (Cohen's $f^2 = 0.15$) with an α level of .05 to 67% (Faul et al., 2007); ^b predictor variables had variance inflation factor (VIF) factors of $> .10$ and Tolerance values of $< .10$, indicating no violation of multicollinearity assumptions; ^c one outlier was identified (standardised residual of > 3.3). However, this was not removed as it was not deemed to be significantly influencing the findings (Cook's distance > 1 ; Mahalanobis distance $<$ critical χ^2 value).

The hypothesis that different facets of mentalisation would partially mediate the effect of attachment avoidance on CC/hostility scores was then explored by following contemporary guidance for testing mediational hypotheses (Hayes, 2013). In a series of five regression models, RMET and ESES subscale scores were independently regressed on attachment avoidance to examine the size and direction of the relationship between the independent and mediator variable(s). Attachment avoidance significantly predicted both E2 and RMET scores ($\beta = -.20, p < .05$ and $\beta = -.34, p < .01$ respectively), indicative of only two possible mediation pathways.

Next, CC/hostility scores were separately regressed onto both E2 and RMET scores to examine the size and direction of the relationships between the potential mediator variables and the dependent variable. Critically, no statistically significant regression coefficient was found between CC/hostility and either E2 or RMET scores ($\beta = .10, p = .30$ and $\beta = -.18, p = .09$ respectively), indicating that the essential conditions for mediation were not satisfied.

Discussion

This study is the first known investigation of the relationships among attachment, mentalisation, EOI and CC/hostility in carers of people with long-term mental health difficulties. A key contribution of the current study is the finding that, in a carer population, both attachment avoidance and facets of mentalisation were directly, and independently, positively associated with self-reported CC/hostility. However, the hypothesis that different facets of mentalisation would partially mediate the effect of attachment avoidance on CC/hostility scores was not supported. Furthermore, data indicated no support for the hypothesised relationships between attachment anxiety, mentalisation and EOI.

Turning first to the hypothesised associations between attachment avoidance, mentalisation and CC/hostility. As predicted, avoidantly attached carers were less able to detect

external explicit aspects of others' emotional states (i.e. have less well-developed mentalisation) and were more likely to report engaging in critical or hostile caregiving behaviours than their counterparts (Fonagy, et al., 2003; Mikulincer, et al., 2001). However, the hypothesis that facets of mentalisation would be negatively associated with CC/hostility was only partially supported. As expected, a significant negative correlation was noted between RMET and CC/hostility scores. However, RMET scores did not significantly predict CC/hostility scores after controlling for the effects of EOI, gender, and service-users' age, thereby militating against considering mentalisation, as assessed using the RMET, as a significant contributor to CC/hostility. Furthermore, E3 scores significantly and independently positively predicted CC/hostility scores, indicating that carers' self-perceived competency in dealing with others' emotions is likely to be an important contributor to CC/hostility. This was not predicted, but may be a signifier of an important process, particularly given that other-directed emotional self-efficacy was not associated with either self-reported comfort with close relationships or ability to detect others' emotional states (Mikulincer & Shaver, 2005). It is plausible that this may reflect a tendency for carers high on other-directed emotional self-efficacy to inaccurately, yet confidently, assume they understand service-users' symptoms (e.g. "I understand why she is behaving in that way; I know she is staying in bed because she is lazy"). Consistent with the thesis of Barrowclough and Hooley's (2003) attributional model, this hypothesis may help to account for the observed positive associations noted between E3 scores and CC/hostility (e.g. "I'm being critical because she needs reprimanding and encouraging"). However, it must be stated that this remains conjectural at present.

Collectively, findings with respect to CC/hostility tentatively suggest that both attachment avoidance and facets of mentalisation may each be important therapeutic factors to consider with respect to CC/hostility, and to a roughly equal extent. Although there is a paucity of empirical data against which to compare these findings, data are consistent with the theses

of attachment and mentalisation theories (Bateman & Fonagy, 2016; Bowlby, 1973), and provide support for conceptualising EE, and particularly CC/hostility, as a developmental and interpersonal process. However, it would be premature to draw firm conclusions regarding the relationships between attachment, mentalisation and CC/hostility without further research, particularly in light of the null findings with respect to the hypothesised mediation pathways and the unexpected findings with respect to other-focused emotional self-efficacy.

Turning next to EOI. No associations were observed among EOI, attachment anxiety and mentalisation, thereby refuting the hypothesis that whilst anxiously attached carers may engage in emotionally over-involved strategies in order to elicit proximity, love and support from their relative (Mikulincer & Shaver, 2005), mentalisation would partially mediate this relationship by facilitating sensitive and reflective caregiving (Fonagy, et al., 2003). As participants' ECR:SF, RMET, ESES and FQ scores were broadly comparable with previously published literature (Baron-Cohen, et al., 2001; Dacre Pool & Qualter, 2013; Weidemann, et al., 2002; Wei, et al., 2007), it is unlikely, although possible, that these null findings are reflective of the participant group studied. Instead, it is possible that if associations do exist among attachment, mentalisation and EOI, then they may be more complex and nuanced that it was possible to detect using current methodology (Burbach, 2013).

Limitations and Future Research Directions

This study has several limitations that may have influenced the generalisability of findings. First, whilst comparable with other studies using a carer population (Brookfield, 2008; McMurrich & Johnson, 2009), the current sample size rendered structural equation modelling unfeasible and resulted in one regression analysis being underpowered, therefore increasing the risk of Type II errors. Second, the paucity of available relationship data limited the potential for subgroup analyses, which may have provided further clarity on the

relationships between variables. Third, the lack of conceptual clarity regarding the most effective way to operationalise and measure mentalisation means that the measures of mentalisation utilised in this study, although broad ranging, may not have fully encompassed the construct (Newbury-Helps, 2011). Furthermore, the low internal consistency of the RMET may have influenced the findings (Field, 2013). Finally, the study's cross-sectional nature meant that it was not possible to imply causality or direction from the findings, nor was it possible to explore changes in the observed variables or relationships over time.

Future studies may wish to militate against these limitations by recruiting large and representative samples of carers from clinical and non-clinical populations. To maximise precision and reliability, researchers may wish to consider developing and utilising care-specific measures of mentalisation, given that mentalisation is not a fixed capability but rather can vary depending on context (Bateman & Fonagy, 2016; Newbury-Helps; 2011). Researchers may also wish to explore the potential mediating role of reflective functioning, a factor within the parenting attachment relationship that has overlap with the concept of mentalisation (Katznelson, 2014).

Future research should aim to clarify the nature of the relationship(s) between attachment, mentalisation and EE, together with potential mediating and moderating factors. Of particular interest may be the potential influence of the interaction between carers' and service-users'/families' attachment, given that attachment and mentalisation are interpersonal processes (Crittenden, Dallos, & Landini, 2014). It may also be beneficial to consider the potential role of guilt and/or shame, given their relational nature and empirical links to both attachment (Mikulincer & Shaver, 2005) and EE (McMurrich & Johnson, 2009).

Conclusions

Despite its limitations, the findings of this study extend current knowledge of the associations between attachment, mentalisation and EE in carers of people with long-term mental health difficulties. Specifically, the findings that attachment avoidance and specific aspects of mentalisation may each separately influence carers' levels of criticism and hostility indicate that it may be beneficial for clinicians to consider attachment and mentalisation in their conceptualisations of carers' criticism and hostility (Byng-Hall, 2008). However, it would be premature to recommend specific FIs, such as those which explicitly take into account attachment perspectives (Crittenden, Dallos, & Landini, 2014) and mentalisation (Bateman & Fonagy, 2016), without further research to clarify the nature of the relationships between attachment, mentalisation and EE, together with their mechanisms of action.

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Appendix A

Author Guidelines (Psychiatry Research)

Title Page

The Title page should include the author byline, with names of authors on the same line(s). Superscript letters (a, b, c), not numerals, should be used to key institutional affiliation (if all authors are in the same department, the superscript letter should be omitted); an asterisk should be entered to designate the corresponding author. Underneath the byline, institutional affiliations should be listed (department, institution, city, state or province (if applicable) and country. Funding information should not be included on the title page but should instead be given following the Discussion section. In an asterisked Corresponding Author footnote at the bottom of the title page, telephone/fax numbers and e-mail address of the corresponding author should be provided; e-mail addresses, if desired, may also be provided for the co-authors (or co-corresponding author, if applicable).

Abstract

The Abstract should be 150-200 words for full-length articles and 100 words for short communications (formally known as Brief Communications), summarizing the aims of the study, the methods used, the results and the major conclusions. Do not include a summary at the end of the article. The Abstract should be a single paragraph. Do not include detailed statistics or p-values in the abstract; simply say “significant” or “non-significant”. The abstract should be followed by up to seven key words which accord with the indexing conventions of Index Medicus. Note that the keywords should not duplicate words used in the title of the article, which will be automatically indexed.

Highlights

Highlights are mandatory for this journal. They consist of a short collection of bullet points that convey the core findings of the article and should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point). See <https://www.elsevier.com/highlights> for examples.

Text

Although exceptions will be considered, manuscripts should not exceed 5000 words, and shorter manuscripts (e.g., 3000 words) are preferred. Each article should contain the following major headings: Introduction (preceded by Arabic number 1.), Methods (preceded by number 2.), Results (preceded by number 3.), Discussion (preceded by number 4.), Acknowledgment (optional section following the discussion, which should not be preceded by a numeral), and References (should not be preceded by a numeral). Subheadings should follow the numbering system used in the major heading; for example, the subheading "Subjects" within the Methods section should be flush left on a separate line and designated 2.1., the subheading "Procedures" should be designated 2.2., etc. Lower level headings, if required, should also be numbered (e.g., "2.1.1. Patients." as a lower order heading under "2.1. Subjects."). Only the first letter of the first word of each heading should be capitalized. The use of abbreviations within the text should be minimized, and each abbreviation, when introduced, must be defined and used consistently thereafter. Systeme International measurements should be used. For products or instruments (do not abbreviate) used in the research reported, provide the name, city and country of the supplier in parentheses. All tables and figures must be referred to in the text.

Abbreviations

Define abbreviations at their first occurrence in the article. Abbreviations should be defined when they first occur in the abstract, in the text, and also in tables and figure legends. Once an abbreviation has been introduced in the main body of the text, it should be used throughout.

Statistical Reporting

Statistical reporting should be complete, including at a minimum name of statistical test, test value, degrees of freedom where appropriate, and *p*-value. Italic font should be used for *n* (sample size) and statistical terms, e.g., *t*, *r*, *F*, *U*, *p*.

Footnotes

Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors can build footnotes into the text, and this feature may be used. Otherwise, please indicate the position of footnotes in the text and list the footnotes themselves separately at the end of the article. Do not include footnotes in the Reference list.

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.

Artwork

Make sure you use uniform lettering and sizing of your original artwork. Embed the used fonts if the application provides that option. Aim to use the following fonts in your illustrations: Arial, Courier, Times New Roman, Symbol, or use fonts that look similar. Number the illustrations according to their sequence in the text. Use a logical naming

convention for your artwork files. Provide captions to illustrations separately. Size the illustrations close to the desired dimensions of the published version. Submit each illustration as a separate file. If your electronic artwork is created in a Microsoft Office application (Word, PowerPoint, Excel) then please supply 'as is' in the native document format. Regardless of the application used other than Microsoft Office, when your electronic artwork is finalized, please 'Save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):

- EPS (or PDF): Vector drawings, embed all used fonts.
- TIFF (or JPEG): Color or grayscale photographs (halftones), keep to a minimum of 300 dpi.
- TIFF (or JPEG): Bitmapped (pure black & white pixels) line drawings, keep to a minimum of 1000 dpi.
- TIFF (or JPEG): Combinations bitmapped line/half-tone (color or grayscale), keep to a minimum of 500 dpi.

References

Increased discoverability of research and high quality peer review are ensured by online links to the sources cited. In order to allow us to create links to abstracting and indexing services, such as Scopus, CrossRef and PubMed, please ensure that data provided in the references are correct. Please note that incorrect surnames, journal/book titles, publication year and pagination may prevent link creation. When copying references, please be careful as they may already contain errors. Use of the DOI is encouraged. A DOI can be used to cite and link to electronic articles where an article is in-press and full citation details are not yet known, but the article is available online. A DOI is guaranteed never to change, so you can use it as a permanent link to any electronic article. An example of a citation using DOI for an

article not yet in an issue is: VanDecar J.C., Russo R.M., James D.E., Ambeh W.B., Franke M. (2003). Aseismic continuation of the Lesser Antilles slab beneath northeastern Venezuela. *Journal of Geophysical Research*, <http://dx.doi.org/10.1029/2001JB000884i>. Please note the format of such citations should be in the same style as all other references in the paper.

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: All citations in the text should refer to:

1. *Single author:* the author's name (without initials, unless there is ambiguity) and the year of publication;
2. *Two authors:* both authors' names and the year of publication;
3. *Three or more authors:* first author's name followed by 'et al.' and the year of publication.

Citations may be made directly (or parenthetically). Groups of references should be listed first alphabetically, then chronologically. Examples: 'as demonstrated (Allan, 2000a, 2000b, 1999; Allan and Jones, 1999). Kramer et al. (2010) have recently shown'

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.

Examples:

1. Reference to a journal publication: Van der Geer, J., Hanraads, J.A.J., Lupton, R.A., 2010. The art of writing a scientific article. *J. Sci. Commun.* 163, 51–59

2. Reference to a book: Strunk Jr., W., White, E.B., 2000. The Elements of Style, fourth ed. Longman, New York
3. Reference to a chapter in an edited book: Mettam, G.R., Adams, L.B., 2009. How to prepare an electronic version of your article, in: Jones, B.S., Smith, R.Z. (Eds.), Introduction to the Electronic Age. E-Publishing Inc., New York, pp. 281–304
4. Reference to a website: Cancer Research UK, 1975. Cancer statistics reports for the UK. <http://www.cancerresearchuk.org/aboutcancer/statistics/cancerstatsreport/> (accessed 13.03.03).

Supplementary Material

Supplementary material can support and enhance your scientific research. Supplementary files offer the author additional possibilities to publish supporting applications, high-resolution images, background datasets, sound clips and more. Please note that such items are published online exactly as they are submitted; there is no typesetting involved (supplementary data supplied as an Excel file or as a PowerPoint slide will appear as such online). Please submit the material together with the article and supply a concise and descriptive caption for each file. If you wish to make any changes to supplementary data during any stage of the process, then please make sure to provide an updated file, and do not annotate any corrections on a previous version. Please also make sure to switch off the 'Track Changes' option in any Microsoft Office files as these will appear in the published supplementary file(s). For more detailed instructions please visit our artwork instruction pages at <https://www.elsevier.com/artworkinstructions>.

Appendix B

Author Guidelines (Family Process)

Family Process follows the Publication Manual of the American Psychological Association (6th ed.). Additional information is available at www.apastyle.org. Specifically:

- Electronic manuscripts must be double spaced in 12-point font throughout, including the abstract and references. Pages should be numbered consecutively with the title page as page one and include abstract, text, references, and visuals.
- **Manuscripts should not exceed 30 pages or 6,000 words, including title page, abstract, text, references, tables, and figures.**
- Do not underline; use the italic font.
- A separate title/cover page must include full names of authors in order of their contribution, author affiliation and location, title, author note, byline, and grant support. Because Family Process uses a masked review system, the cover page should be used to provide identifying information about the authors. The authors' names should not appear on subsequent pages and every effort should be made in the text for the authors' identity to remain anonymous.
- Abstracts should be approximately 200-250 words in length.
- Headings must be short. Three levels of headings are used within the text, as follows:
 - Main heading: **Centered, Boldface, Uppercase and Lowercase Heading**
 - Main subhead: **Flush Left, Boldface, Uppercase and Lowercase Side Heading**
 - Minor subhead: **Indented, Boldface, lowercase paragraph heading ending with a period.**
- **Tables and Figures**—Limit the use of tables to data that correlate specifically to article content or communicate large amounts of data efficiently. All tables and figures should be

submitted on a separate page, have a separate title, and be cited within the text with placement indicated. For figures, EPS, TIFF or PDF formatting must be used. Type title, legend, and notes for figures double-spaced on a separate page. Please note that it is the policy of *Family Process* for authors to pay the full cost for the reproduction of their color artwork in print. Color figures will be reproduced at no cost to the author in the online version of the author.

Appendix C

Email to Corresponding Authors

Dear [insert corresponding author's name here]

Re: Systematic review of the relationship(s) between guilt, shame and expressed emotion

I would be very grateful if you could advise me on an aspect of a systematic review that I am currently conducting as part of my Doctorate in Clinical Psychology at the University of Liverpool. The review aims to examine the relationship(s) between guilt, shame and expressed emotion in carers of people with long-term mental health difficulties. I have completed my searches and have identified several relevant papers/theses for inclusion. Studies were included if they: a) were published in English; b) reported data from family carers aged 18 years or over who provided care to relatives aged 18 years or over with long-term mental health difficulties; and c) reported quantitative data sufficient for computation of effect size(s) regarding the relationship(s) between guilt and/or shame and EOI and/or CC/hostility. The term 'long-term mental health difficulty' was defined as any non-organic mental health difficulty of ≥ 6 months' duration (Barrowclough et al., 1998). As a published expert in this clinical area, I wonder whether you would mind having a quick read through this list and letting me know if you are aware of any pertinent articles that I may have missed during my searches and/or if you have any unpublished data relating to this topic that you would be willing to share with me? This will help me to ensure that I include all relevant data in my review. Thank you very much for your help.

Yours sincerely,

Dr Gemma Cherry, supervised by Professor Bill Sellwood, Dr Peter Taylor and Dr Stephen Brown

Included studies:

- Bentsen, H., Notland, T., Munkvold, O., Boye, B., Ulstein, G., ... & Malt, U. (1998). Guilt proneness and expressed emotion in relatives of patients with schizophrenia or related psychoses. *British Journal of Medical Psychology*, 71, 125-138.
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- Keith, S. (2011). *Emotional over-involvement and the presence of guilt in carers of service-users with psychosis* (Unpublished doctoral thesis). University of Liverpool, Liverpool, UK.
- Messham, L. (2014). *The influence of guilt/self-blame and shame on the emotional over-involvement of caregivers towards their relative with mental health difficulties* (Unpublished doctoral thesis). University of Liverpool, Liverpool, UK.
- McMurrich, S. (2008). *The role of shame-proneness, guilt-proneness and depression in EE among relatives of individuals with bipolar disorder* (Unpublished doctoral thesis). University of Miami, Ann Arbor, USA.
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- Peterson, E., & Docherty, N. (2004). Expressed emotion, attribution and control in parents of schizophrenic patients. *Psychiatry*, 67, 197-207.
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Wasserman, S., Weisman de Mamani, A., & Suro, G. (2012). Shame and guilt/self-blame as predictors of expressed emotion in family members of patients with schizophrenia.

Psychiatry Research, 196, 27-31.

Weisman de Mamani, A. (2010). Self-conscious emotions, general emotional distress and expressed emotion in family members of patients with schizophrenia. *The Journal of*

Nervous and Mental Disease, 198, 305-308.

Appendix D

Quality Assessment Tool⁷

General instructions: Grade each criterion as “Yes,” “No,” “Partially,” “Not Stated” or “Not Applicable.” Factors to consider when making an assessment are listed under each criterion. Where appropriate (particularly when assigning a “no”, “partially” or “can’t tell” score), please provide a brief rationale for your decision in parentheses in the evidence table. Criteria marked in italics are considered the most essential quality indicators for our purposes.

1. Unbiased selection of the cohort and acceptable recruitment strategy?

Factors to consider:

- Recruitment strategy:
 - Clearly described
 - Relatively free from bias (selection bias might be introduced, e.g. by recruitment via advertisement. Factors that help reduce selection bias are that inclusion/exclusion criteria are clearly described (especially regarding duration of caregiving, amount of care provided per week and diagnostic status of service-user) and that diagnostic status confirmed using structured clinical interview or diagnostic criteria (note: external validation/service-user interview is preferable to reliance on carer self-report))
- Sample is representative of the population of interest: informal carers of people with long-term mental health difficulties

⁷ Adapted from the Agency for Healthcare Research and Quality (Williams, J., Plassman, B., Burke, J., Holsinger, T., Benjamin, S., 2010. Preventing Alzheimer’s disease and cognitive decline. Evidence Report/Technology Assessment No. 193. [Prepared by the Duke Evidence-Based Practice Center under contract No.HHSA 290-2007-10066-I]. Agency for Healthcare Research and Quality, Rockville, MD)

2. Sample size calculated (where studies test for predictors/correlates of EE)?

Factors to consider:

- Did the authors report conducting a power analysis or describe some other basis for determining the adequacy of study group sizes for the primary outcome(s) of interest to us?
- Did the eventual sample size deviate by $\leq 10\%$ of the sample size suggested by the power calculation?

3. Adequate description of the cohort?

Factors to consider:

- Was the cohort is well-characterized in terms of baseline demographics?
 - Consider key demographic information such as age, gender and ethnicity.
 - Demographic information regarding care recipient is also important (e.g. age, relationship to carer, diagnosis, duration of illness etc.).

4. Validated method for ascertaining level of self-conscious emotions?

Factors to consider:

- Was the method used to ascertain level of self-conscious emotions clearly described?
(Details should be sufficient to permit replication in new studies)
- Was a valid and reliable measure used to ascertain level of self-conscious emotions? Note that measures that consist of single items of scales taken from larger measures are likely to lack content validity and reliability. Established psychometrics should be available for measures to be classified as reliable and valid.

5. **Validated method for ascertaining EE?**

Factors to consider:

- Were primary outcomes assessed using valid and reliable measures? Note that measures that consist of single items of scales taken from larger measures are likely to lack content validity and reliability. Furthermore, self-report measures tend to have lower reliability and validity than clinical interview. Gold standard tools include the Camberwell Family Interview (Vaughn & Leff, 1976) but any alternative forms of assessing EE that (a) are conceptually based on the EE construct, (b) have been validated against the Camberwell Family Interview, and (c) have predictive validity data available will be accepted as being valid and reliable measures.
- Were these measures delivered by properly trained individuals?
- Were these measures implemented consistently across all study participants?

6. **Outcome assessment blind to exposure?**

Factors to consider:

- Were the study investigators who assessed outcomes blind to participants' levels of self-conscious emotions? (Note that even in single-arm studies so degree of blinding is possible, for example using external interviewers with no knowledge of participants' clinical status).

7. **Missing data**

Factors to consider:

- If missing data is present and substantial (i.e. exceeding 20%), were steps taken to minimize bias (e.g., sensitivity analysis or imputation)?

8. Analysis controls for confounding (where studies test for predictors/correlates of EE)?

Factors to consider:

- Did the study control for likely demographic and clinical confounders? For example, using multiple regression to adjust for demographic or clinical factors likely to be correlated with predictor and outcome?

9. Analytic methods appropriate (where studies test for predictors/correlates of EE)?

Factors to consider:

- Was the kind of analysis done appropriate for the kind of outcome data (categorical, continuous, etc.)?
- Was the number of variables used in the analysis appropriate for the sample size? (The statistical techniques used must be appropriate to the data and take into account issues such as controlling for small sample size, clustering, rare outcomes, multiple comparison, and number of covariates for a given sample size).

References

Vaughn, C., & Leff, J. (1976). The measurement of expressed emotion in the families of psychiatric patients. *British Journal of Social and Clinical Psychology*, *15*, 157-165.

Appendix E

Overview of Measures Used to Assess Guilt and Shame

Table E1

Overview of Measures Used to Assess Guilt and Shame

Measure	Overview	Psychometric Properties
CARES (Keith, 2011)	<p>The CARES assesses guilt/self-blame, shame, detachment and externalisation related to the caring role. Participants rate their agreement with four statements pertaining to each of 11 scenarios on a five-point Likert scale (1 = ‘Very Unlikely’; 5 = ‘Very Likely’). Participants receive four scores upon completion of the CARES (guilt/self-blame, shame, detachment and externalization), each of which range from zero to 55. High scores reflect a greater degree of care-specific shame and guilt/self-blame etc.</p>	<ul style="list-style-type: none"> • Internal consistency: Cronbach’s $\alpha = .64, .79, .47$ and $.52$ for the care-specific shame, guilt, detachment and externalisation subscales respectively (Keith, 2011). • Two-week rest-retest reliability: $r = .62, .72, .58$ and $.67$ for the care-specific shame, guilt, detachment and externalisation subscales respectively (Keith, 2011).

Measure	Overview	Psychometric Properties
CARES-R (Messham, 2014)	The CARES-R follows a format similar to the CARES but contains an additional five scenarios. Participants receive four scores upon completion of the CARES (guilt/self-blame, shame, blame of service-user and externalization), each of which range from zero to 80. High scores reflect a greater degree of care-specific shame and guilt/self-blame etc.	<ul style="list-style-type: none"> • Internal consistency: Cronbach's $\alpha = .90, .91, .90$ and $.57$ for the shame, guilt, blame and externalisation subscales respectively (Messham, 2014). • Two-week rest-retest reliability: $r = .82, .89, .95$ and $.76$ for the shame, guilt, blame and externalisation subscales respectively (Messham, 2014). • Concurrent validity: significant associations noted among TOSCA-S and CARES guilt and shame scales ($r = .36$ and $.48$ respectively; Messham, 2014).
CFI (Vaughn & Leff, 1976)	The CFI is the 'gold-standard' measure of assessing EE, and is described in detail in Appendix F.	<ul style="list-style-type: none"> • The CFI is designed to assess EE and therefore no psychometric properties pertaining to assessment of self-blaming statements are available.

Measure	Overview	Psychometric Properties
RMGI (Mosher, 1988)	The RMGI is a 114-item self-report measure of guilt-proneness. Items are arranged in pairs of responses to a single sentence stem. Participants rate their agreement with each response using a seven-point Likert scale (0 = 'Not at all true of/for me'; 6 = 'Very true of/for me'). Participants receive three scores upon completion of the RMGI, which range from 0-300 (sex-guilt subscale), 0-252 (hostility-guilt subscale) and 0-132 (guilty-conscience subscale). High scores represent a greater degree of sex-guilt etc.	<ul style="list-style-type: none"> Internal consistency: Cronbach's $\alpha = .97, .96$ and $.92$ for the sex-guilt, hostility-guilt and guilty-conscience subscales respectively (Mosher, 1988).
SESS (Weisman de Mamani et al., 2007)	The SESS is a two-item self-report measure of care-specific shame and guilt. Participants rate the degree to which having a relative with a diagnosis of schizophrenia is a source of guilt/blameworthiness and shame to them on a seven-point Likert scale (1 = 'Not at all true'; 7 = 'Very true'). High scores indicate greater care-specific shame and/or guilt/blameworthiness.	<ul style="list-style-type: none"> None available

Measure	Overview	Psychometric Properties
TOSCA (Tangney et al., 1989)	<p>The TOSCA is a self-report measure of global negative affect. Participants rate their agreement with several statements pertaining to each of 15 common shame- and guilt-inducing scenarios on a five-point Likert scale (1 = ‘Very Unlikely’; 5 = ‘Very Likely’). Items are summed to produce indices of guilt-proneness (15 items), shame-proneness (15 items), proneness to externalisation (10 items) and proneness to detachment (10 items), together with values for alpha and beta pride (pride in oneself and one’s behaviour, respectively). Participants receive four scores upon completion of the TOSCA, which range from 15 to 75 (guilt- and shame-proneness) and 15 to 50 (proneness to externalisation and detachment). High scores reflect a greater degree of guilt- and shame-proneness etc.</p>	<ul style="list-style-type: none"> • The TOSCA has been extensively validated and demonstrates acceptable internal consistency, test-retest reliability and predictive validity (Tangney, Niedenthal, Covert, & Barlow, 1998; Tangney, Wagner & Gramdow, 1992). However, the pride subscales demonstrate considerably less favourable psychometric properties and therefore it is recommended that they be excluded from analyses (Tangney et al., 1992).

Measure	Overview	Psychometric Properties
TOSCA-3/ TOSCA3- Short Form (TOSCA3- S; Tangney et al., 2000a, 2000b)	The TOSCA-3 is a revised version of the TOSCA, comprising 11 negative and five positive scenarios, which yield indices of guilt- and shame-proneness and proneness to eternalisation and detachment. Subscale scores range from 16 to 80 (guilt- and shame-proneness and proneness to externalisation subscales) and 11 to 55 (proneness to detachment subscale). The TOSCA-3 also offers the option of a short version, comprising only of the 11 negative scenarios (TOSCA3-S; see below). Subscale scores range from 0 to 55. High scores reflect a greater degree of guilt- and shame-proneness etc.	<ul style="list-style-type: none"> • Internal consistency: Cronbach's $\alpha = .78, .77, .75, .72$ for the guilt-proneness, shame-proneness, proneness to externalisation and proneness to detachment subscales respectively (Tangney & Dearing, 2002). • Predictive validity: significant associations noted with TOSCA guilt- and shame-proneness subscales ($r = .93$ and $.94$ respectively; Tangney & Dearing, 2002).

Note: CARES = Caring and Related Emotions Scale; CARES-R = Caring and Related Emotions Scale- Revised; CFI – Camberwell Family Interview; ICC = intra-class correlation; RMGI = Revised Moshier Guilt Inventory; SESS = Self-Directed Emotions for Schizophrenia Scale; TOSCA = Test of Self-Conscious Affect

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Appendix F

Overview of Measures Used to Assess Expressed Emotion

Table F1

Overview of Measures Used to Assess Expressed Emotion

Measure	Overview	Key Psychometric Properties
CFI (Vaughn & Leff, 1976)	In a one- to two-hour semi-structured interview, the service-user's main carers (typically parents or a spouse) are separately asked questions that address the onset and development of the service-user's difficulties, their impact on family functioning and quality and nature of the relationship between carer and service-user. Interviews are audiotaped and transcripts are rated by trained raters against five scales: CC (a frequency count); hostility (a four-point Likert scale with options extending from zero to three); EOI (a six point Likert scale, with options extending from zero to five); warmth (a six point Likert scale, with options extending from zero to five); and positive remarks (a frequency count). Carers are classed as high-EE if they score \geq six for CC, \geq one for hostility and/or \geq three for EOI.	<ul style="list-style-type: none"> • 'Gold-standard' measure of EE • Demonstrates considerable construct and predictive validity (Butzlaff & Hooley, 1998)

Measure	Overview	Key Psychometric Properties
Abbreviated CFI (Mueser, Bellack & Wade, 1992)	The abbreviated CFI is administered in the same way as the CFI, but only the probe questions regarding the carer-service-user relationship are asked (i.e. “In what way does he or she get on your nerves?”). This reduces the administration time to an average of 44 minutes. Interviews are audiotaped and transcripts are rated by trained raters against three scales: CC (a frequency count); EOI (a six point Likert scale, with options extending from zero to five); and warmth (a six point Likert scale, with options extending from zero to five); ratings of hostility are not made due to their high overlap with CC ratings. Carers are classed as high-EE if they make five or more CC or score greater than three on the EOI scale.	<ul style="list-style-type: none"> Correlates highly with CFI ratings ($r = .91, .73$ and $.82$ for CC, EOI and warmth respectively; Mueser et al., 1992)
FMSS (Magaña et al., 1986)	The FMSS is a semi-structured interview schedule which was developed as a brief alternative to the CFI. Carers speak freely for five minutes about the service-user whilst being audiotaped. Quality of initial statement, quality of relationship, criticism and emotional over-involvement are assessed by trained raters. Carers are assigned high-EE: critical status if they: a) make a negative opening statement; b) receive an overall negative relationship rating, and/or; c) make one or more criticism about them, either through comment or tone. Carers are assigned high-EE: EOI status if they: a) demonstrate emotional display; b) report overly self-sacrificing, protective or non-objective behaviour towards the service-user, and/or; c) demonstrate any two of: 1) excessive praise; 2) excessive detail about the service-user’s past, or; c) a statement of attitude (e.g. “I’d do anything for her”).	<ul style="list-style-type: none"> Under-identifies high-EE (as classified by CFI) approximately 20-30% of the time (sensitivity and specificity of 75.0% and 65.2% respectively; Magaña et al., 1986)

Measure	Overview	Key Psychometric Properties
FQ (Weidermann et al., 2002)	The FQ is a 20-item self-report measure. Participants rate the extent to which they identify with a range of statements (e.g., “It’s hard for us to agree on things”) concerning the family environment using a 4-point Likert scale, with options that extend from 0 (‘Never/very rarely’) to 3 (‘Very often’). Responses produce two subscale scores: EOI and CC/hostility, with higher scores representing greater EOI and/or CC/hostility. Participants can also be dichotomised into high or low EOI and/or CC/hostility status based on cut-off scores of 27 and 23 respectively.	<ul style="list-style-type: none"> • Two week test-retest reliability: $r = .84$ and $.91$ for CC/hostility and EOI subscales respectively (Weidermann et al., 2002). • Internal consistency: Cronbach’s $\alpha = .92$ and $.79$ for CC/hostility and EOI scales respectively (Weidermann et al., 2002). Predictive validity: accuracies of 78%, 71% and 74% reported for overall CC/hostility classification, overall EOI classification and overall EE classification respectively against CFI (Weidermann et al., 2002).

Note: CC = critical comments; CFI = Camberwell Family Interview; EE = expressed emotion; EOI = emotional over-involvement; FMSS = Five Minute Speech Sample; FQ = Family Questionnaire; ICC = intra-class correlation

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Appendix G
Demographic Questionnaire

The following questions ask some demographic information about you and the person that you care for. If you do not wish to answer a question, then please leave it blank.

	Answer
1. What is your age, in years?	
2. What is your gender?	
3. What is your ethnicity?	
4. What is your current employment status?	
5. What is your relation to the person that you provide care for (e.g. wife, brother etc.)?	
6. How long have you provided care to the person identified above for, in years?	
7. How many hours per week do you care for the person identified above?	
8. How old is the person that you provide care for, in years?	
9. What is their gender?	
10. What is their ethnicity?	
11. What is their employment status?	
12. What mental health issues have they been diagnosed with, or do they experience?	
13. How long have they been diagnosed with/experienced a mental health issue, in years?	
14. Do they have any other physical or mental health difficulties?	
15. If you answered yes to question 14, then please state any additional health problems (if known)	

Appendix H
Family Questionnaire

Removed for copyright reasons

Appendix I

Experiences in Close Relationships: Short Form Questionnaire

Removed for copyright reasons

Appendix J

Reading the Mind in the Eyes Test

Removed for copyright reasons

Appendix K

Emotional Self-Efficacy Scale

Removed for copyright reasons

Appendix L

Ethical Approval



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29th August 2014

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RE: Exploring the Psychological Processes Associated with Expressed Emotion in Carers of People with Long-Term Mental Health Difficulties
Trainee: Mary Gemma Cherry
Supervisors: Bill Sellwood, Peter Taylor

Dear Gemma,

Thank you for your response to the Chair's comments of your research proposal submitted to the D.Clin.Psychol. Research Review Committee (letter dated 04/08/14).

Your amended proposal (Version 3.0, dated 04/08/14) and revised budget (Version 3.0, dated 04/08/14) have been reviewed by the Committee Chair.

Please note that the Committee acknowledges your response to the reviewer comment with regards to the addition of measures of the causes of attachment style (Reviewer 1, Comment 7: response letter dated 21/07/14, response noted as Reviewer 1, Comment 1). The trainee is advised to consider this matter carefully with their supervisors as important implications that may require further attention, particularly during the write-up phase.

I can now confirm that your amended proposal (Version 3.0, dated 04.08.14) and revised budget (Version 3.0, dated 04/08/14) meet the requirements of the Committee and has been *approved as work in progress* by the Committee Chair.

Please take this Chairs Action decision as *final* approval from the committee.

You may now progress to the next stages of your research.

I wish you well with your research project.

Dr Catrin Eames
Vice-Chair D.Clin.Psychol. Research Review Committee.

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Appendix M

Participant Information Sheet (Online Completion)



Title of Study: Expressed Emotion in Carers

You are being invited to take part in an online research study. Before you decide whether you would like to take part or not, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear, or if you would like more information. Thank you for reading this.

What is the study for?

This research is about family and close friends who care for people with long-term mental health difficulties. Research has indicated that family environment is an important factor in influencing clinical outcomes and so we want to understand more about what influences family environment, particularly how carers behave towards, and speak to, their relative or friend. We will use this research to help us to improve the care and support that we give to the relatives and close friends of people with long-term mental health difficulties.

Who is doing the study and who has approved it?

The study is being carried out by a team from the University of Liverpool. It has been approved by the University of Liverpool's Research Ethics Committee.

Why have I been chosen to take part?

You have been chosen because we think that you are involved in caring for someone who has a long-term mental health difficulty.

Am I eligible to take part?

We are inviting individuals who currently provide at least 10 hours of face-to-face care for someone living with a long term mental health difficulty and have been doing so for at least 6 months to participate. Due to the purpose of the study, we are unable to include individuals caring for someone with an organic illness, such as dementia, learning disability or traumatic/acquired brain injury. Furthermore, we can only invite individuals who are over the age of 18 and are fluent English speakers to take part for ethical reasons to do with gaining appropriate informed consent to participate.

Do I have to take part in the study?

No. It is up to you to decide whether or not to take part. If you decide to take part, then we will ask you to sign a consent form. However, you are still free to withdraw at any time without giving a reason, although it will not be possible to delete your data due to the anonymous nature of participation. A decision to withdraw, or a decision not to take part, will not affect you or your family member/friend in any way.

What will taking part involve?

If you want to take part, then we will first ask you to complete an online consent form. This is to confirm that you have checked that the study is right for you and that you are happy to participate. You will then be asked to complete a set of short online questionnaires. We estimate that these should take no longer than 20 minutes to complete in a single sitting. However, if you would like to take a break then it is important to leave your computer switched on with the questionnaire open on your screen. If you were to close the internet browser or log off the computer, then your answers so far would be lost. We will not ask for any identifying information from you. Once you have completed the questionnaires, you will have finished the study. There will be no further questionnaires or any other kind of follow up in the future. At

the end of the study, you will be given the option to enter your email address, should you wish to be entered into a prize draw to win one of three £50 high street vouchers. This information will be kept separately from your questionnaire answers, and we will ask for no other identifying information from you. Once the study closes, the draw will take place and you will be informed by email if you have won a prize.

Will there be benefits of taking part?

There are no specific benefits from taking part, besides the chance to win a high street voucher should you choose to enter the prize draw at the end. However, by taking part you will help us to further improve care and support for service-users, their families and close friends in future.

What are the possible disadvantages of taking part?

The questionnaires will take time to complete (usually about 20 minutes). They might involve answering questions about things that are upsetting to you. For example, one question that you will be asked is how much you agree with the statement that, in close relationships, “my desire to be very close sometimes scares people away”. You will also be asked questions about caring, including, for example, whether the person that you care for irritates you. However, you are free to leave the study at any time should you become upset. We will provide you with information to access additional support depending on your needs, such as the Samaritans (08457 90 90 90), the mental health charity SANE (08457 67 40 00) or the eating disorder charity BEAT (0845 634 1414). Furthermore, if any of the questions raise concerns you are advised to contact your GP for support, and/or discuss them with someone you trust.

What will happen if I want to stop taking part?

You have the right to stop answering any questionnaire at any point, without needing to give any explanation. Should you wish to do this, simply close the internet browser window

containing the questionnaires. Unfortunately, it will not be possible to remove your data from our analyses, as we will have no way of identifying which sets of answers are your own.

What if I am unhappy or there is a problem?

If you wish to complain or have any concerns about any aspect of the way you have been treated during this study, you can approach Gemma Cherry (0151 794 5856 or gcherry@liv.ac.uk). Alternatively, you can contact the Research Governance Officer (0151 794 8290 or ethics@liv.ac.uk). When contacting the Research Governance Officer, please provide details of the name or description of the study (so that it can be identified), the researcher(s) involved, and the details of the complaint you wish to make.

Will my taking part in this study be kept confidential?

Yes, it will. All responses will be anonymised, which means that no one will know your identity or which responses are yours. Any information which identifies you (for example, your contact details, should you wish to be entered into the prize draw) will be stored separately from questionnaire data. Your responses will only be viewed by the researchers involved in the study. All information collected for this research project will be kept safely and securely on a University of Liverpool password-protected computer for 10 years in a central file store in line with University of Liverpool policy for the storage of research data.

What will happen to the results of this study?

The results will form part of a Doctorate thesis in Clinical Psychology. They may also be written up for publication in academic journals. A summary of the anonymised results will also be posted on the SANE website.

Who can I contact for further information?

Dr Gemma Cherry (Trainee Clinical Psychologist) T: 0151 794 5856; E: gcherry@liverpool.ac.uk

Thank you for taking the time to read this. You should keep this information sheet for future reference

Dr Gemma Cherry, Trainee Clinical Psychologist, University of Liverpool

Professor William Sellwood, Programme Director, Lancaster University

Dr Peter Taylor, Lecturer, University of Liverpool

Dr Stephen Brown, Senior Lecturer, University of Liverpool

Appendix N

Participant Information Sheet (Pen and Paper Completion)



Title of Study: Expressed Emotion in Carers

You are being invited to take part in a research study. Before you decide whether you would like to take part or not, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear, or if you would like more information. Thank you for reading this.

What is the study for?

This research is about family and close friends who care for people with long-term mental health difficulties. Research has indicated that family environment is an important factor in influencing clinical outcomes and so we want to understand more about what influences family environment, particularly how carers behave towards, and speak to, their relative or friend. We will use this research to help us to improve the care and support that we give to the relatives and close friends of people with long-term mental health difficulties.

Who is doing the study and who has approved it?

The study is being carried out by a team from the University of Liverpool. It has been approved by the University of Liverpool's Research Ethics Committee.

Why have I been chosen to take part?

You have been chosen because we think that you are involved in caring for someone who has a long-term mental health difficulty.

Am I eligible to take part?

We are inviting individuals who currently provide at least 10 hours of face-to-face care for someone living with a long term mental health difficulty and have been doing so for at least 6 months to participate. Due to the purpose of the study, we are unable to include individuals caring for someone with an organic illness, such as dementia, learning disability or traumatic/acquired brain injury. Furthermore, we can only invite individuals who are over the age of 18 and are fluent English speakers to take part for ethical reasons to do with gaining appropriate informed consent to participate.

Do I have to take part in the study?

No. It is up to you to decide whether or not to take part. If you decide to take part then we will ask you to sign a consent form. However, you are still free to withdraw at any time without giving a reason. A decision to withdraw, or a decision not to take part, will not affect you or your family member/friend in any way.

What will taking part involve?

If you want to take part, then we will first ask you to complete a consent form. This is to confirm that you have checked that the study is right for you and that you are happy to participate. You will then be asked to complete a set of short questionnaires. We estimate that these should take no longer than 20 minutes to complete in a single sitting. You can either complete them then and there, or take them home with you to complete at home and post back to the researchers. The researchers will enter your questionnaire data onto an online database for analysis. We will not ask for any identifying information from you. Once you have

completed the questionnaires, you will have finished the study. There will be no further questionnaires or any other kind of follow up in the future. At the end of the study, you will be given the option to enter your contact details, should you wish to be entered into a prize draw to win one of three £50 high street vouchers. This information will be kept separately from your questionnaire answers, and we will ask for no other identifying information from you. Once the study closes, the draw will take place and you will be informed via the details provided if you have won a prize.

Will there be benefits of taking part?

There are no specific benefits from taking part, besides the chance to win a high street voucher should you choose to enter the prize draw at the end. However, by taking part you will help us to further improve care and support for service-users, their families and close friends in future.

What are the possible disadvantages of taking part?

The questionnaires will take time to complete (usually about 20 minutes). They might involve answering questions about things that are upsetting to you. For example, one question that you will be asked is how much you agree with the statement that, in close relationships, “my desire to be very close sometimes scares people away”. You will also be asked questions about caring, including, for example, whether the person that you care for irritates you. However, you are free to leave the study at any time should you become upset. We will provide you with information to access additional support depending on your needs, such as the Samaritans (08457 90 90 90), the mental health charity SANE (08457 67 40 00) or the eating disorder charity BEAT (0845 634 1414). Furthermore, if any of the questions raise concerns you are advised to contact your GP for support, and/or discuss them with someone you trust.

What will happen if I want to stop taking part?

You have the right to stop answering any questionnaire at any point, without needing to give any explanation. Should you wish to do this, simply tell the researcher.

What if I am unhappy or there is a problem?

If you wish to complain or have any concerns about any aspect of the way you have been treated during this study, you can approach Gemma Cherry (0151 794 5856 or gcherry@liv.ac.uk). Alternatively, you can contact the Research Governance Officer (0151 794 8290 or ethics@liv.ac.uk). When contacting the Research Governance Officer, please provide details of the name or description of the study (so that it can be identified), the researcher(s) involved, and the details of the complaint you wish to make.

Will my taking part in this study be kept confidential?

Yes, it will. All responses will be anonymised, which means that no one will know your identity or which responses are yours. Any information which identifies you (for example, your contact details, should you wish to be entered into the prize draw) will be stored separately from questionnaire data. Your responses will only be viewed by the researchers involved in the study. All information collected for this research project will be kept safely and securely on a University of Liverpool password-protected computer for 10 years in a central file store in line with University of Liverpool policy for the storage of research data.

What will happen to the results of this study?

The results will form part of a Doctorate thesis in Clinical Psychology. They may also be written up for publication in academic journals. A summary of the anonymised results will also be posted on the SANE website.

Who can I contact for further information?

Dr Gemma Cherry (Trainee Clinical Psychologist) T: 0151 794 5856; E: gcherry@liverpool.ac.uk

Thank you for taking the time to read this. You should keep this information sheet for future reference

Dr Gemma Cherry, Trainee Clinical Psychologist, University of Liverpool

Professor William Sellwood, Programme Director, Lancaster University

Dr Peter Taylor, Lecturer, University of Liverpool

Dr Stephen Brown, Senior Lecturer, University of Liverpool

Appendix O
Consent Form



Title of Study: Expressed Emotion in Carers

Researcher(s): Dr Gemma Cherry,

Professor William Sellwood

Dr Peter Taylor

Dr Stephen Brown

Please initial box

1. I confirm that I have read and have understood the information sheet for the above study.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my legal rights being affected.
3. I agree to my anonymised questionnaire data being stored at the University of Liverpool in line with their policy for the storage of research data.
4. I confirm that I fulfil the inclusion criteria outlined in the participant information sheet, including that I am aged over 18 years.
5. I agree to take part in this study

Name of participant	Date	Signature
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Name of researcher	Date	Signature
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The contact details of the lead researcher are:

Dr Gemma Cherry, Department of Clinical Psychology, 0151 7945856, gcherry@liv.ac.uk

Thank you very much for your time and cooperation

Appendix P

Additional Detail Regarding Missing Data

The majority of participants ($n = 101$, 95.28%) completed the study online via the Qualtrics platform, which did not permit missing data at an item level within measures. As such, there were missing data *across* but not *within* measures for the 106 participants included in the final sample (please see Figure 3 on page 73). Specifically:

- 102 (96.26%) participants completed the Experiences in Close Relationships Questionnaire: Short Form (ECR:SF; Wei, Russell, Mallinckrodt, & Vogel, 2007);
- 104 (98.11%) completed the Family Questionnaire (FQ; Weidemann, Rayki, Feinstein, & Hahlweg, 2002);
- 100 (94.34%) completed the Emotional Self-Efficacy Scale (ESES; Kirk, Schutte, & Hine, 2008);
- 82 (77.36%) completed the Reading the Mind in the Eyes Test (RMET; Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001).

There was no difference in demographic data or ECR:SF, FQ or ESES scores between participants who completed the RMET and those that did not, suggesting that the high percentage of missing data (22.64%) for the RMET was likely due to its positioning as the final measure. Results of Little's Missing Completely at Random (MCAR) test (Little & Rubin, 1987) supported this hypothesis by indicating that data were missing completely at random ($\chi^2 = 238.21$, $df = 342$, $p > .05$; Little & Rubin, 1987).

References

Baron-Cohen, S., Wheelwright, S., Hill, J., Raste, Y., & Plumb, I. (2001). The "Reading the Mind in the Eyes" test revised version: A study with normal adults, and adults with

- Asperger syndrome or high-functioning autism. *Journal of Child Psychology and Psychiatry*, 42, 241-251.
- Kirk, B., Schutte, N., & Hine, D. (2008). Development and preliminary validation of an emotional self-efficacy scale. *Personality and Individual Differences*, 45, 432-436.
- Little, R., & Rubin, D.(1987). *Statistical analysis with missing data*. New York: John Wiley & Sons
- Wei, M., Russell, D., Mallinckrodt, B., & Vogel, D. (2007). The Experiences in Close Relationships Scale (ECR)- Short Form: Reliability, validity, and factor structure. *Journal of Personality Assessment*, 88, 187-204.
- Weidemann, G., Rayki, O., Feinstein, E., & Hahlweg, K. (2002). The Family Questionnaire: Development and validation of a new self-report scale for assessing expressed emotion. *Psychiatry Research*, 109, 265-279.

Appendix Q

Distribution of Regression Residuals

Multiple linear regression assumes homoscedasticity and normality of distribution of regression residuals (i.e. the response variables to be normally distributed and have the same variance; Williams & Grajales, 2013). These assumptions of the two regression models reported in Chapter 2 (Models 1 and 2; p. 79) were checked by graphically examining the frequencies of their standardised residuals (Figures Q1 [p. 152] and Q2 [p. 153]), together with scatterplots of their standardised residuals against the standardised predicted values (Figures Q3 [p. 154] and Q4 [p. 155]) and normal probability-probability (P-P) plots of their regression standardised residuals (Figures Q5 [p. 156] and Q6 [p. 157]). Residuals appeared to be normally distributed and homoscedastic, as evidenced by the even spread of residuals throughout the plots and the random variation observed around zero shown in Figures Q1 to Q4. Furthermore, the straight lines shown in Figures Q5 and Q6 indicated that the residuals of the sample did not deviate markedly from those from a normal distribution. As such, it seemed reasonable to conclude that neither model violated the necessary assumptions of multiple linear regression (Williams & Grajales, 2013).

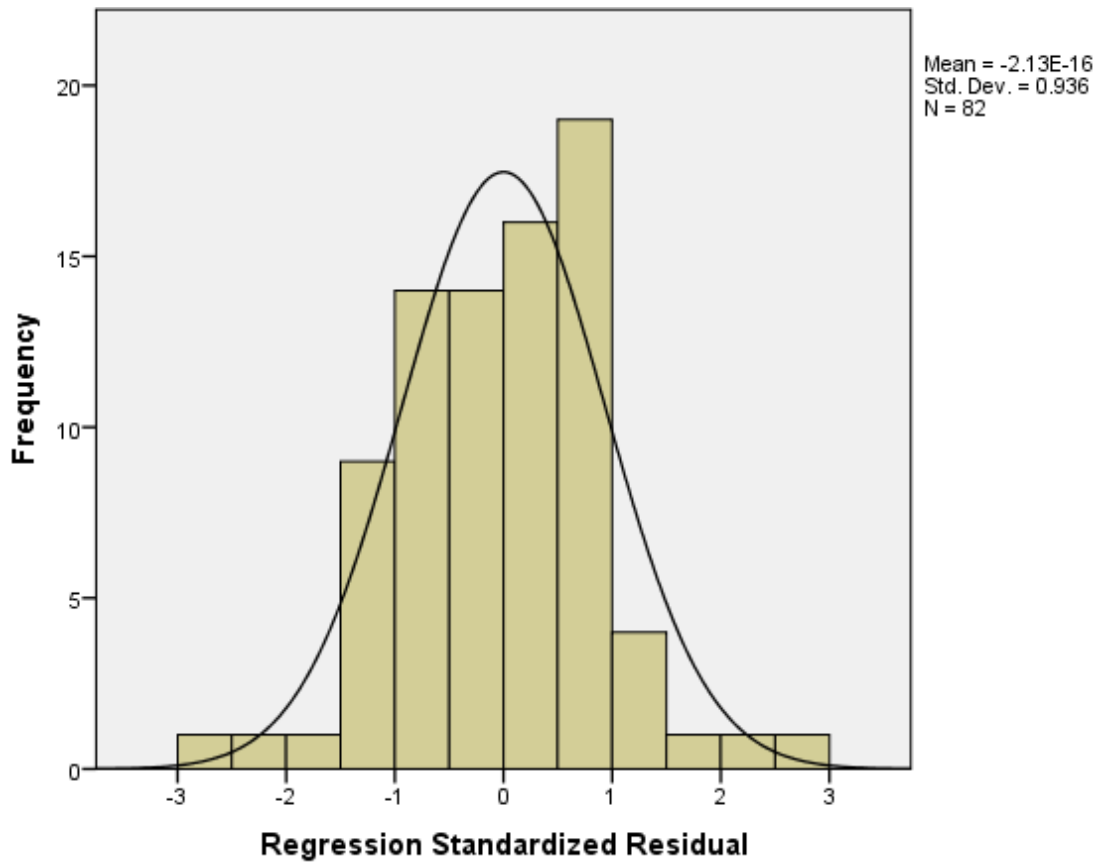


Figure Q1: Histogram of Standardised Residuals for Model 1 (Chapter 2, p. 79)

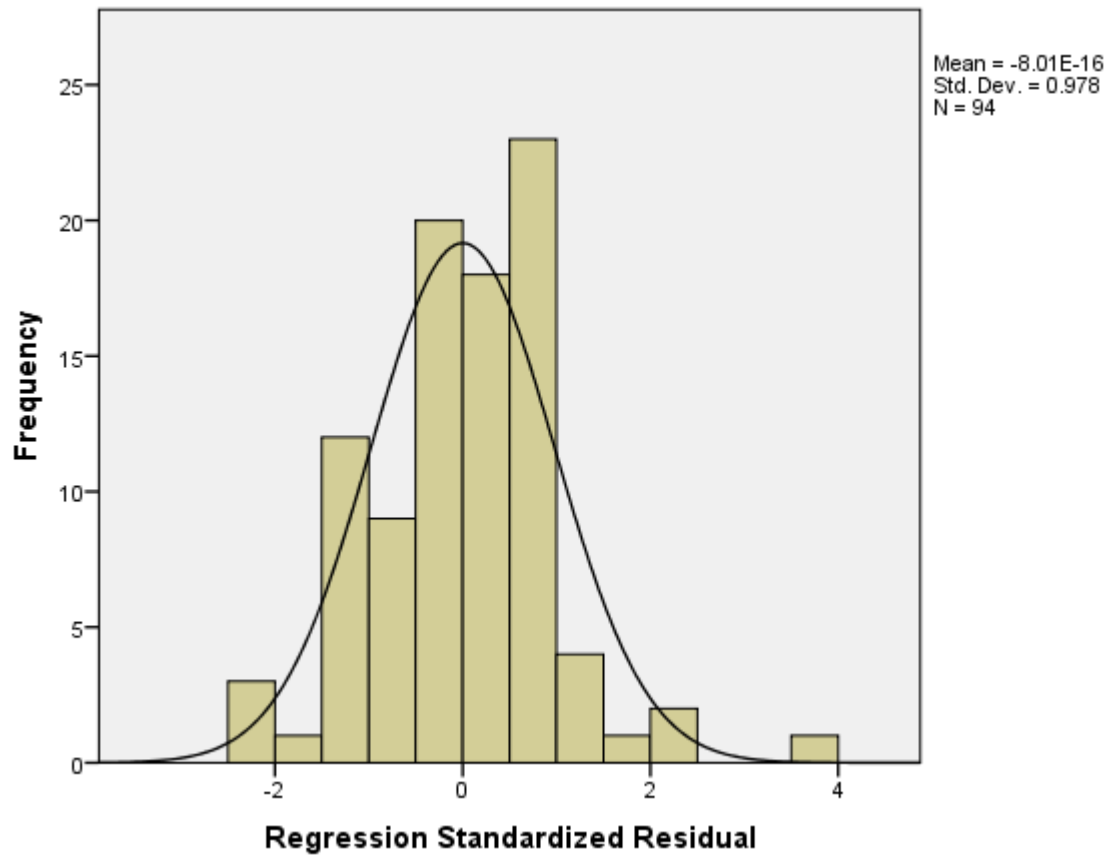


Figure Q2: Histogram of Standardised Residuals for Model 2 (Chapter 2, p. 79)

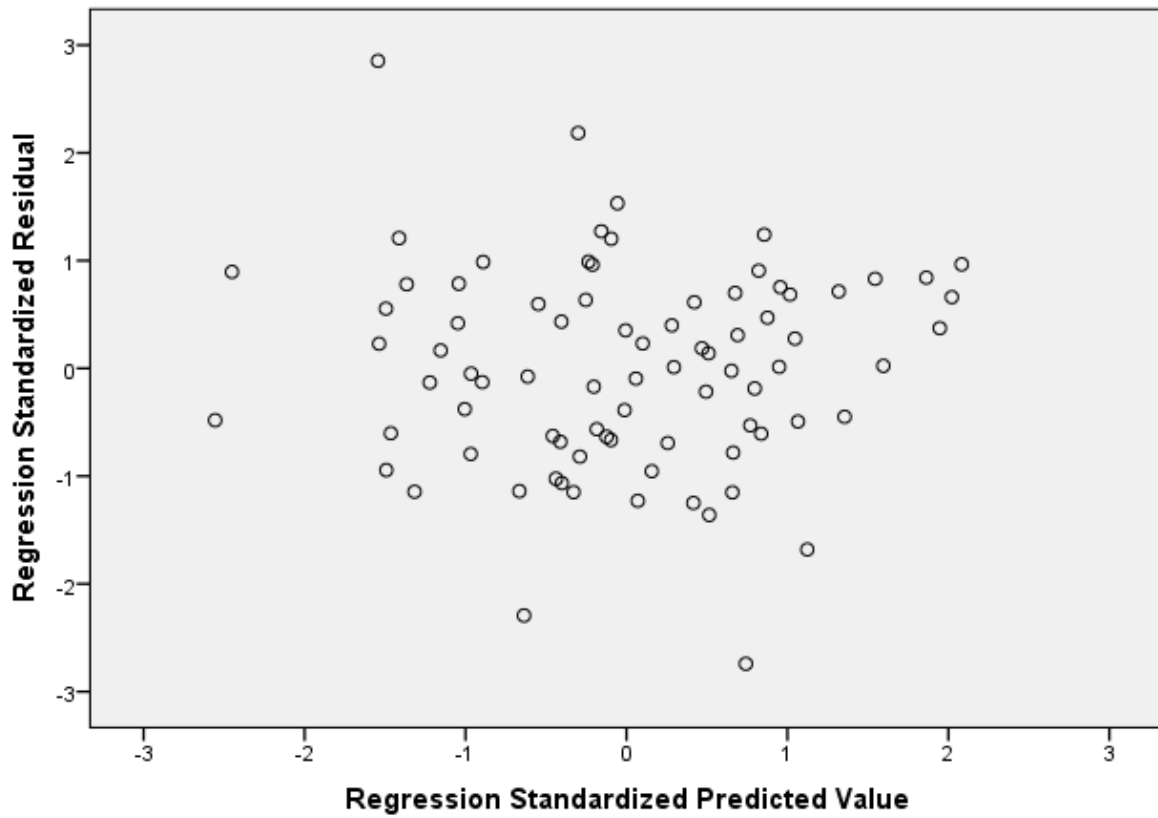


Figure Q3: Scatterplot of Regression Standardised Residuals against Standardised Predicted Values for Model 1 (Chapter 2, p. 79)

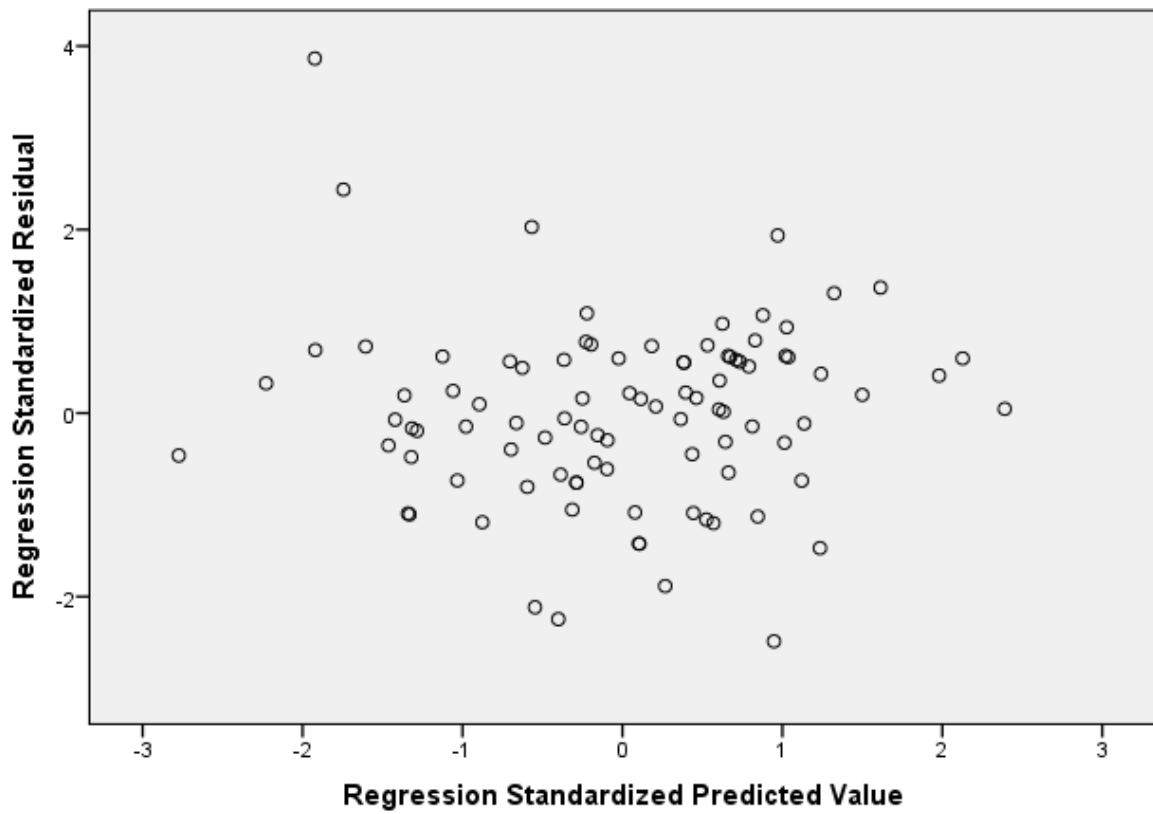


Figure Q4: Scatterplot of Regression Standardised Residuals against Standardised Predicted Values for Model 1 (Chapter 2, p. 79)

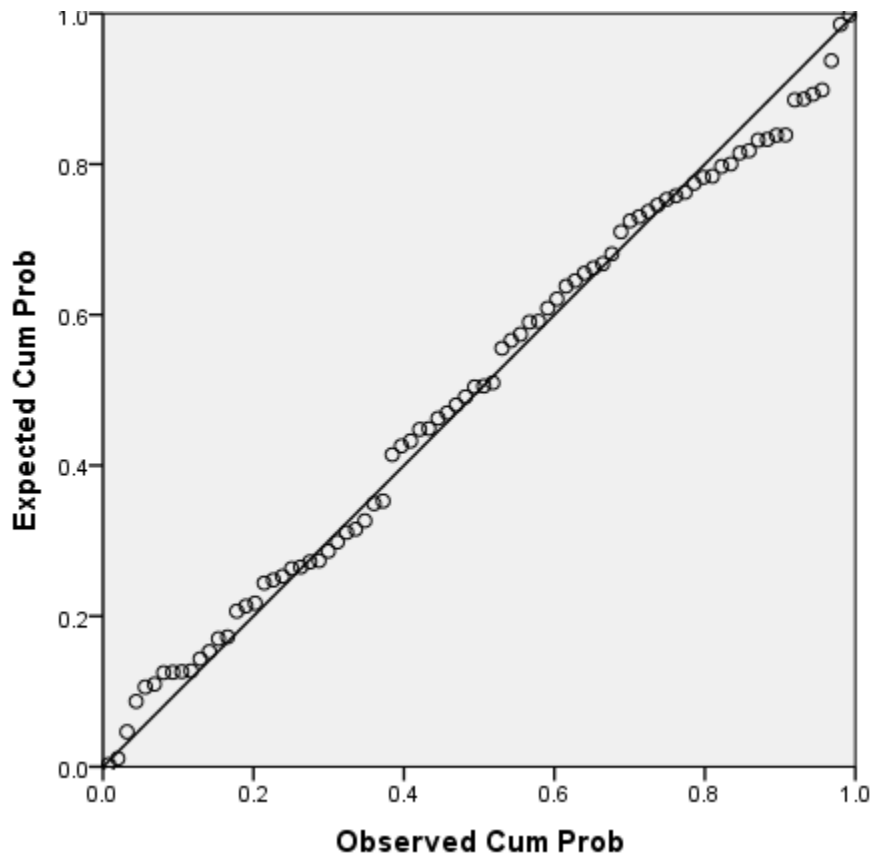


Figure Q5: Normal P-P Plot of Regression Standardised Residual for Model 1 (Chapter 2, p. 79)

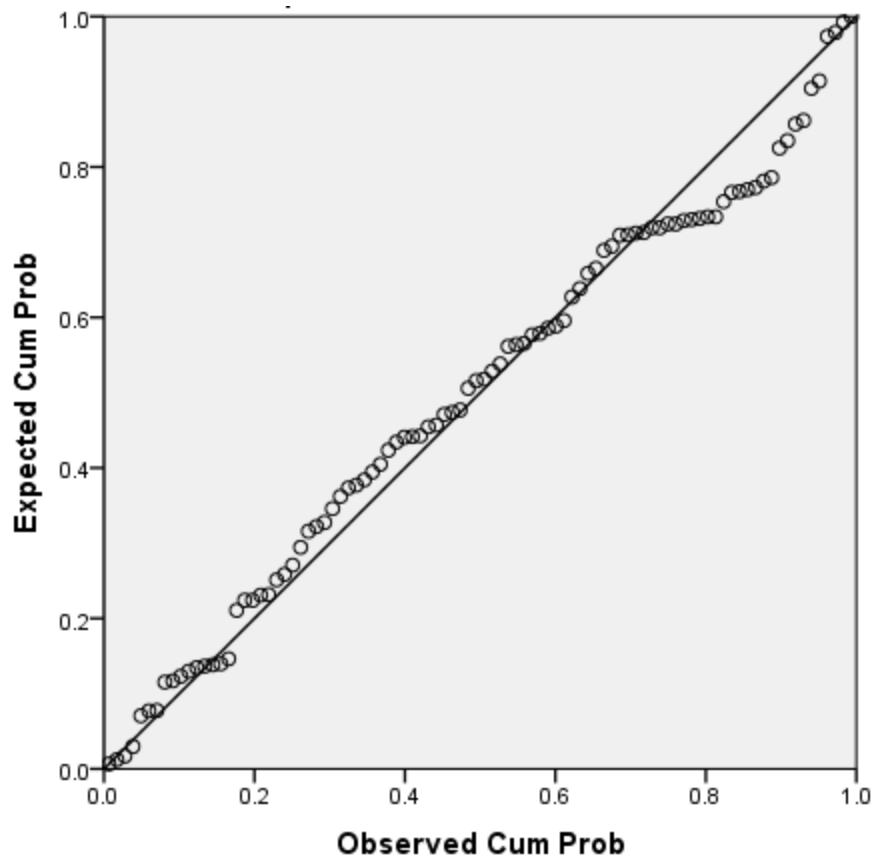


Figure Q6: Normal P-P Plot of Regression Standardised Residual for Model 2 (Chapter 2, p. 79)

References

Williams, M., & Grajales, C. (2013). Assumptions of multiple regression: Correcting two misconceptions. *Practical Assessment, Research and Evaluation, 18*, retrieved from <http://pareonline.net/getvn.asp?v=18&n=11>