Understanding Expressed Emotion mechanisms:
An investigation of behavioural control, attributions and distress in relatives of people with psychosis

A thesis submitted to the University of Manchester for the degree of Doctor of Philosophy in the Faculty of Medical and Human Sciences

2013

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List of abbreviations

ANCOVA: Analysis of Covariance
ANOVA: Analysis of Variance
BC: Behavioural control
CC: Critical Comments
CFI: Camberwell Family Interview
CRN: Clinical Research Network
CI: Confidence Interval
CMHT: Community Mental Health Team
CSO: Clinical Studies Officer
DSM: Diagnostic and Statistical Manual of Mental Disorders
EE: Expressed Emotion
EIS: Early Intervention Services
EMA: Ecological Momentary Assessment
EOI: Emotional Overinvolvement
ESM: Experience Sampling Methodology
ESMc: Experience Sampling Methodology Computerised
ESMp: Experience Sampling Methodology Paper-and-Pencil
EP: Episode Psychosis
ESP: Experience Sampling Program
FCT: Fundação para a Ciência e Tecnologia
GHQ: General Health Questionnaire
HEE: High Expressed Emotion
ICC: Intraclass Correlation
ICD: International Classification of Diseases
LA: Lagged Analyses
LACS: Leeds Attributional Coding System
LEE: Low Expressed Emotion
MA: Momentary Analyses
MHRN: Mental Health Research Network
NHS: National Health Service
NICE: National Institute for Health and Clinical Excellence
NIHR: National Institute for Health Research
NOS: Not Otherwise Specified
PA: Proximal Analyses
PALM: Psychosis: Assessment of Life in the Moment
PANSS: Positive and Negative Syndrome Scale
Abstract

The University of Manchester
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A thesis submitted to the University of Manchester for the degree of Doctor of Philosophy in the Faculty of Medical and Human Sciences in December 2013
Thesis title: Understanding Expressed Emotion mechanisms: An investigation of behavioural control, attributions and distress in relatives of people with psychosis

Research indicates that certain family environments can impact negatively on psychosis. Expressed Emotion (EE) in relatives is a reliable measure of the individual’s interpersonal family environment that has been shown to predict relapse. However, the factors contributing to the development of EE in this condition and the mechanisms by which EE leads to relapse are still poorly understood. Relatives’ control attributions and behaviours have been linked to EE, and controlling behaviours have been found to be predictive of relapse. This thesis investigated the role of behavioural control, controllability and self-blame attributions in high- and low-EE relatives of individuals with psychosis, and explored the impact of these cognitions and behavioural responses on patient’s symptom outcomes and on relative’s distress. The first empirical study (Study 1) utilised a cross-sectional design to compare types of behavioural control attempts (direct influencing vs. buffering) in high-EE-critical/hostile and high-EE-overinvolved relatives of patients with recent-onset psychosis; and examined whether behavioural control attempts and controllability attributions differed for the high- and low-EE relatives. The links between relatives’ behavioural control and patient relapse were also explored. Results confirmed that types of behaviours (direct influencing and buffering) were associated with different sets of beliefs (about controllability) and with different types of EE (criticism and EOI). However, EE, controllability attributions, nor behavioural control predicted patient relapse. Study 2 used a cross-sectional design to explore the links between self-blame attributions and distress, and self-blame attributions and behavioural control in recent-onset relatives. Results showed that self-blame attributions predicted relatives’ controlling behaviours towards the patient. Relatives who blame themselves did so for not overseeing their family member’s mental health problems properly or for perceiving themselves generally as poor carers. However, self-blame was not predictive of distress. The final empirical study (Study 3) examined temporal associations between contact with high/low EE relatives, behavioural control, affect and symptom experiences in the daily life of patient-relative dyads experiencing psychosis, using experience sampling methodology. Findings revealed that contact with high/low-EE relatives per se did not impact on patient’s symptom experiences or affect, but behaviourally controlling interactions did, suggesting that the measure of behavioural interactions rather than the EE status of the relative may be more sensitive to momentary fluctuations in patients’ symptoms. Momentary self-reports of relatives’ behavioural responses were also linked with their negative affect. This thesis evidenced that relatives’ controllability and self-blame attributions and behavioural control are associated in significant and meaningful ways with psychosis experiences and can impact both patient and relative outcomes, shedding some light into the EE mechanisms that relate to relapse and to the development of EE responses in relatives. However, more work is needed to further understand how these mechanisms operate, particularly in high-EE-overinvolved or low-EE relatives, in order to increase our knowledge about relapse prevention. The findings highlighted that the concept of behavioural control should be considered in future clinical work with families experiencing psychosis.
Declaration

Data

Data for Study 1 and 2 were collected as part of the ‘Relatives/carers’ Adaptation to Recent Onset Psychosis’ (RAP; REC: 05/Q1301/80) project prior to the commencement of the current programme of work and were then subject to analysis (alongside new behavioural control, self-blame and controllability attributions data gathering and coding) which was conducted by the candidate. The data used for Study 3 were collected alongside another PhD student, Samantha Hartley, although each student was independently responsible for designing their own study, for developing their measurement tools and, as different data were used, for conducting independent analyses.

Alternative thesis format

The current thesis has been submitted in alternative format, and consists of three empirical papers. Some of the sections have been or will be soon published in peer-reviewed journals, in order to disseminate of the work conducted. Study 1 has been published in Social Psychiatry and Psychiatric Epidemiology; Study 2 will be submitted to Psychological Medicine; and Study 3 is currently under review for the British Journal of Psychiatry. To aid cross-referencing, all section numberings are presented in a consistent format and all references are provided in the APA 6th style format throughout.

Write-up, collaborators and authorship

The author was first and foremost responsible for the development and writing of the thesis. The PhD supervisors, Professors Christine Barrowclough and Alison Wearden, guided the development of ideas for the research projects and the research methodology;
both supervisors also supported the writing process of the papers included in this thesis by commenting on final drafts and were, therefore, acknowledged as co-authors on all of the papers.

Additional co-authors were: another PhD student (Samantha Hartley) who was a co-investigator in the PALM project (Study 3) and who also assisted the content analysis in Study 2; and a biostatistician form the University of Manchester (Dr. Richard Emsley) who supported the multilevel modelling analyses in Study 3 and commented on the final draft of this paper.
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Acknowledgments

I would like to express my utmost gratitude to my supervisors Christine Barrowclough and Alison Wearden for their continued encouragement and support throughout the PhD. I also would like to thank my co-investigator on Study 3, Sam for being such a good colleague and becoming a close friend. Thank you also to Richard Emsley for the “stats-friendly” advice, and Garry Byrne for the IT support. I am also grateful to Katherine Berry for her valuable advice and friendship.

Thanks are also due to the RAP research team, particularly Gary Lee and Sophie Jeffrey, without their contributions this work would have taken forever to complete. I am particularly grateful to Becky Band for all the EE discussions, and for her lovely encouragement and enthusiasm particularly during the write-up process. I also would like to acknowledge my dedicated volunteers, namely Katie Chow, Amy Degnan, Faye Plummer, Michaela Bloom, Christopher Reeve-Mates and Alexandra Spooner, for their assistance transcribing and coding research material; their help and input was pivotal in developing the new coding manuals. I am also grateful to all the families who volunteered to take part and gave their time willingly. The PhD was funded by the doctoral grant from the Fundação para a Ciência e Tecnologia (FCT) Portugal (SFRH/BD/37569/2007).

On a personal level I would like to thank my husband Erwin for sticking by me throughout the ups and downs of this journey, and for his patience, encouragement and cheerfulness; without his help and loving support this PhD would not have been possible. Thank you also to my two adorable sons, Vasco and Diogo, who made me smile everyday and made persevering possible. I would also like to thank my parents for their love and support. Finally, to Kate Evans for kindly reading and commenting on the thesis, and still finding it interesting.
Chapter 1: Introduction

1.1. Overview of the thesis

The current thesis is concerned with the interpersonal environment of families experiencing psychosis. Specifically, this study will investigate the role of behavioural control, controllability and self-blame attributions in high- and low-Expressed Emotion (EE) relatives, and explore the impact of these beliefs and behavioural responses on patients’ symptom outcomes and relatives’ distress.

Prior to outlining the aims and hypotheses of the study in greater detail, this introductory chapter will provide a summary of the relevant background literature that supported the development of the study hypotheses and the design of the empirical studies. It begins with a brief description of psychosis, followed by an overview of the EE construct and its associations with outcome. Next, the reasons for the importance of studying EE mechanisms in psychosis will be provided, outlining the particular mechanisms that will be the focus of this thesis. Contemporary theories of the EE construct will then be covered, outlining reasons for studying attributions and behavioural control in psychosis. This will be followed by a brief description of the role of distress. The introductory section will conclude by presenting a model, which tries to explain how these variables (EE, attributions, and behavioural control) might influence patient outcomes. Finally, the aims of the thesis will be outlined.

The present thesis focuses on psychosis. Patients included in the studies reported here had a variety of diagnoses, including schizophrenia, first episode-psychosis, psychotic spectrum diagnoses (such as schizophreniform disorder, delusional disorder), and schizoaffective disorder. While patients with psychosis may have been given a variety of diagnoses, the term psychosis is often preferred to the use of specific diagnostic
categories (like schizophrenia) because it is argued that psychosis is better understood in terms of its constituent symptoms rather than in terms of diagnostic categories (Bentall, 2010). Therefore, in this thesis, the term psychosis will be used, except where citing published studies that used a different term, in which case the terminology used in the published research will be used. Furthermore, throughout this thesis the term ‘relative’ is used to refer to family members, carers or significant others of people experiencing psychosis. The term ‘patient’ is used to refer to service users experiencing psychosis. A decision was made to use the terms “relative” and “patient” instead of alternative terms, because these are the standard terminology used within the EE literature.

1.2. Psychosis

1.2.1. Psychosis overview

‘Psychosis’ is a broad term used to describe a group of abnormal experiences, usually called psychotic experiences, which include hallucinations, delusions and disorganised speech. Although psychosis is often taken as synonymous with schizophrenia, the terms should be distinguished. Schizophrenia is a psychotic condition characterised by disturbances in thinking (cognition), emotional responsiveness and behaviour. Schizophrenia symptoms are usually divided into: positive symptoms, involving hallucinations, delusions (including paranoia), disorganised speech and behaviour; negative symptoms, encompassing affective flattening, reduction in spontaneous speech (allogia), and lack of motivation (avolition), usually reflected in social withdrawal and self-neglect; and cognitive symptoms, which include difficulties in focusing or paying attention, memory and executive functioning. To meet diagnostic criteria according to the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013), schizophrenia characteristic disturbances must last for at least 6 months and include at least 1 month of active-phase symptoms comprising two or more
of the following: hallucinations, delusions, disorganised speech, grossly disorganised or catatonic behaviour or negative symptoms. Although psychosis experiences are mostly associated with the diagnosis of schizophrenia, they can also be found in other mental or physical conditions, such as depression, bipolar disorder, schizoaffective disorder, anxiety disorder, brain damage, and substance abuse.

It is estimated that schizophrenia affects on average 4.5 per 1000 of the adult population and that the risk of developing the condition over one's lifetime averages 0.7% (Tandon, Keshavan and Nasrallah, 2008). The early onset of the condition, usually occurring between 15 and 30 years-old, and its chronic course, with ongoing impact on functioning and recurrent relapses, makes it a particularly impairing condition both for patients and their relatives (Lavretsky, 2008). The early stages of the condition can be considerably challenging as they are often linked with diagnostic and treatment problems (Addington and Addington, 2008). As noted above, psychotic symptoms are evident in a range of conditions making diagnosis a rather difficult task. Furthermore, prodromal symptoms can be undetected or attributed to other conditions. This uncertainty around the diagnosis can therefore have serious implications, including inappropriate or delayed treatment (Addington and Addington, 2008).

The condition impacts not only the individuals with the diagnosis but also those who support and look after them, which in many cases are their relatives. In fact, levels of psychological distress ranging from 30% to 60% as measured by the General Health questionnaire (GHQ) have been reported in family members of people with long-term psychosis (Barrowclough, Tarrier and Johnston, 1996; Lobban et al., 2013; Oldridge and Hughes, 1992; Schene, Tessler and Gamache, 1994; Winefield and Harvey, 1993). Although lower levels of distress (12% of 36 relatives) have been reported in relatives
of first-episode psychosis patients in one study (Tennakoon et al., 2000), most studies suggest that this population is significantly distressed as a result of having a family member with a diagnosis of schizophrenia (Addington et al., 2003; Addington, McCleery and Addington, 2005; Barrowclough et al., 2014; Gibbons et al., 1984; The Scottish Schizophrenia Research Group, 1987). This population is also at a higher risk of distress when compared to relatives of patients who have a more established condition (Martens and Addington, 2001). Increased distress in relatives is not only likely to affect their psychological and physical well-being, but also the way they respond and support the patient, hence has the potential to impact on their outcome.

1.2.2. Psychosis and social environment

Accepted models of psychosis generally recognise that genetic and environmental stress factors play a role in the aetiology of the condition. (Nuechterlein and Dawson, 1984; Zubin and Spring, 1977). Zubin and Spring’s (1977) stress-vulnerability model suggests that each individual has a certain vulnerability to psychosis and that the likelihood of developing a psychopathological episode results from the interaction between environmental factors and an underlying vulnerability to the condition, possibly associated with genetic inheritance; when the stress exceeds the individual’s vulnerability threshold, psychiatric symptoms are likely to emerge. Environmental factors implicated in influencing the course of the condition include exposure to trauma, urban environments, or to cannabis (Van Os and Kapur, 2009). Another key factor that may play a role in triggering or maintaining the condition is the individual’s social environment. Its importance came to light in the late 1950s when relapse rates were found to be higher when patients diagnosed with schizophrenia returned to live with their relatives (parents or spouses) rather than living on their own (Brown, Carstairs and Topping, 1958); this lead to the development and measurement of the construct of EE,
and to research demonstrating the role of EE as an important psycho-social-environmental stressor in the course of the illness.

Prior to EE, theories including the psychoanalytical model of the schizophrenogenic mother (Fromm-Reichmann, 1948), the double bind theory of schizophrenia (Bateson et al., 1956), the model of problematic familial communication (Lidz, Fleck and Cornelison, 1965) and the Laing and Esterson’s antipsychiatry ‘scapegoat’ formulations (Laing and Esterson, 1970) were central in explaining the aetiology of schizophrenia. Such theories considered the immediate family, particularly the mother, determinant to the cause of the condition (Neill, 1990). EE research promoted some movement away from these parental blaming models, conceptualising EE as a normal response to a stressful situation, being therefore less stigmatizing and clinically more useful. It became apparent that high-EE responses in relatives of patients with psychosis were associated with a higher perceived burden of care (Kuipers and Raune, 2000; Raune, Kuipers and Bebbington, 2004; Scazufca and Kuipers, 1996), and that caring for a family member with psychosis was demanding, long-lasting and associated with increased levels of distress (Martens and Addington, 2001; Oldridge and Hughes, 1992). The following sections provide an overview of the EE construct, its association with relapse and its mechanisms.

1.3. Expresses Emotion (EE)

1.3.1. EE overview

EE is a well-validated multi-component measure of the family emotional environment of individuals with mental or physical health conditions that examines the expression of any critical, hostile and emotionally overinvolved attitudes by a family member towards the individual with the condition. Conventionally EE is measured using the Camberwell
Family Interview (CFI; Leff and Vaughn, 1985; Vaughn and Leff, 1976), which can take up to two hours to administer, but an alternative briefer method of rating EE, which has shown to correlate well with the CFI based measure, is the Five-Minute Speech Sample (FMSS, Magana et al., 1986). The components that are measured from the CFI are criticism, hostility, emotional overinvolvement (EOI), warmth and positive remarks. However, relatives are categorised as high or low in EE based exclusively on the ratings of criticism, hostility and EOI, which are the scales shown to most accurately predict outcome (Brown, Birley and Wing, 1972; Hooley, 2007). Scores above threshold on one or more of these scales determine the ‘high-EE’ status in relatives. ‘Chapter 2: Methodology’ will provide a more detailed examination of the EE measure.

1.3.2. EE and relapse in psychosis

Research studies undertaken over the last decades have consistently shown that high-EE is a highly reliable predictor of psychiatric relapse, not only among samples diagnosed with schizophrenia (Butzlaff and Hooley, 1998), but also among people with other mental health problems (Butzlaff and Hooley, 1998; Wearden et al., 2000). There is consistent evidence to suggest that, at least in a period of up to 2 years, following hospital discharge, patients with a diagnosis of schizophrenia who return to live with critical, hostile or overinvolved family members (that is, high in EE) are more likely to have a poor clinical outcome; further evidence suggests that the impact of high-EE may be observed over longer periods of time (Cechnicki et al., 2013).

However, the predictive value of EE is less consistent in recent-onset samples. Some prospective studies with recent-onset populations have found significant associations between high-EE or criticism/hostility and relapse (Barrelet et al., 1990; Huguelet, Binyet et al., 1995; Leff et al., 1990; Leff et al., 1987; Neuchterlein et al., 1986;
Nuechterlein et al., 2006; Nuechterlein, Snyder and Mintz, 1992; Strachan et al., 1989), while others indicated that EE and its components fail to predict relapse in this population (Macmillan et al., 1986; Stirling et al., 1991, 1993). These mixed findings may be explained by methodological problems such as inadequate power due to the small sample sizes, use of mixed samples, variability in the measurement of EE, and inconsistency in the criteria used to define and assess relapse. Another possible argument for the lack of association between EE and relapse in some of these recent-onset studies (e.g. Stirling et al., 1991; Stirling et al., 1993) relates to the developmental nature of EE, suggesting that this association is less likely to be manifested in early stages of the condition; or that EE failed to predict relapse in these cases because relatives’ attitudes towards the patient were not contaminated by the experience of repeated relapses (Bachmann et al., 2002).

Despite the mixed findings, a recent systematic review and meta-analysis of first episode psychosis longitudinal studies indicates that EE, namely relatives’ criticism, is significantly predictive of outcome in recent-onset samples (Alvarez-Jimenez et al., 2012). However, as suggested by Hooley and Richters (1995), the strength of the EE-relapse association seems to increase as the chronicity of the psychosis within the sample increases. Support for this idea is found in Butzlaff and Hooley’s (1998) meta-analysis, which showed that EE was a stronger predictor of relapse in patients who have been ill longer. As suggested by these authors, this may be explained by the fact that, with a progressive exposure to the condition, patients become more sensitive to EE. Or it might be that the continuous experience of repeated relapses also has an impact on relatives’ levels of criticism. Furthermore, studies of early onset schizophrenia have found much weaker effects for the predictive effects of EE (Birchwood, 1992; Kuipers and Raune, 2000). Hence, while generally EE is a good predictor of relapse, irrespective
of patient illness chronicity (Bachmann et al., 2002) and severity (Heikkila et al., 2002), the robustness of this effect in recent-onset families requires further investigation.

1.3.3. Limitations of the EE construct

Despite the robustness of the EE construct in predicting relapse in psychosis and other conditions (Butzlaff and Hooley, 1998; Wearden et al., 2000), this construct is not without its critiques. As previously mentioned, typically relatives are categorised as high and low-EE based solely on the ratings of criticism, hostility and EOI. The dichotomization of relatives into high or low-EE (as opposed to using continuous measures of EE) restricts the range of the statistical analyses, and deflects attention from the low-EE group; which may lead to the inaccurate assumption that low-EE relatives usually do not experience or experience less difficulties and distress (Hooley, 2007; Kuipers and Bebbington, 1988). Furthermore, the categorical approach of EE and its strong link with poor clinical outcome provides the potential for labeling relatives as having “good/bad” attitudes towards the patient, increasing the chance of stigma (Phillips et al., 2002), and often restricting interventions to the high-EE groups (Kuipers and Bebbington, 1988).

The dichotomous nature of EE also incurs in the loss of information regarding the relative and the family environment: high and low-EE categorisations detaches relatives from being understood within a continuum, providing a stereotyped account of their behaviours and attitudes (Hatfield, 1987); and often neglects the protective role that warmth may play in the family (Lee, Barrowclough and Lobban, 2013).

1.3.4. Importance of understanding EE mechanisms in psychosis

Although there is strong evidence demonstrating that high-EE levels in family members
are a reliable predictor of subsequent relapse in patients with psychosis (Butzlaff and Hooley, 1998), the factors contributing to the origin and development of EE in this condition and the mechanisms by which EE leads to relapse are still poorly understood. The current thesis aims to shed light on two types of EE mechanisms: one relates to why EE impacts on relapse, conceptualising EE as a form of stressor (EE relapse mechanisms), and the other relates to what leads to the development of EE in relatives (EE development mechanisms). Investigating EE mechanisms is crucial because it may inform us about the predictors of relapse, and thus be a route to increasing our knowledge of relapse prevention. Furthermore, it may help us identify more suitable evidence-based treatments, allowing patients and families to be supported in a more effective and timely manner.

It is also important to note that factors contributing to the development of EE and factors explaining the association between EE and relapse in early stages of the psychosis and later in the course of the condition may be different. Understanding EE mechanisms in early psychosis is also particularly important because there is an indication that the early phase of psychosis is a ‘critical period’ with major implications on the subsequent outcome (Birchwood, Todd and Jackson, 1998). Investigating these mechanisms at an early phase of psychosis may enhance our understanding of how family reactions are formed and developed; and it may also allow comparisons between early and chronic stages of the condition. In spite of this, family based clinical interventions in psychosis have been mainly tailored for individuals with more longstanding problems. Hence, research on EE with family members in the initial phase of the psychosis should be carried out as early as possible in order to inform and promote clinical and family interventions that are more appropriate for the needs of this specific population. This, as argued by Addington et al. (2003), could also improve the
long term quality of the family relationships, which play an important role in the environment of individuals with mental health problems.

1.4. EE and its impact on patients: understanding the relapse mechanism

As previously mentioned, high-EE can be conceptualised as a form of stress for the patient. Research data highlights that high-EE relatives tend to interact more negatively towards the patient when compared with their low-EE counterparts, as they tend to: talk more and listen less (Kuipers et al., 1983); be more critical, disagree more and show less accepting behaviour (Miklowitz et al., 1984); and reciprocate negatively (Hahlweg et al., 1989). In the light of the diathesis-stress model of EE (Hooley and Gotlib, 2000), it is reasonable to consider that interactions with high-EE relatives, such as those described above, may be experienced as highly stressful by someone who has an underlying vulnerability to psychosis. In fact, Brown, Birley and Wing (1972) hypothesised that high levels of EE might provide too much stress for patients vulnerable to schizophrenia. As already noted, when the stress exceeds the individual’s vulnerability threshold, symptom exacerbation is likely to occur, possibly evolving into a relapse (Zubin and Spring, 1977). Psycho-physiological research has given empirical support to this idea, providing evidence that the presence of high-EE relatives is more autonomically arousing for patients than the presence of low-EE relatives (see Tarrier and Tupin, 1992, for review of studies). Thus, it seems that some kinds of interpersonal environments, as a form of stressor, may play an important role in the psychosis.

In addition, the ways in which relatives respond to patients diagnosed with schizophrenia impacts on outcome (Butzlaff and Hooley, 1998). EE literature suggests that more extreme forms of social control may be the mechanism by which EE transmits stress, conferring vulnerability to relapse (Greenley, 1986). There is evidence that high-
EE relatives are more inclined to attempt to control the patient and the patient’s behaviours (Hooley and Campbell, 2002; Peterson and Docherty, 2004); they tend to make direct suggestions, check the patient’s behaviour or, in more extreme cases, apply coercion when interacting with the patient. Such controlling behaviours per se would not be expected to be pathogenic as they may be part of our everyday behavioural repertoire. However, from the vulnerability-stress perspective, it is possible that experiencing relatives’ attempts at behavioural control, particularly if they are frequent or more forceful, may act as an important stressor for individuals with psychosis, maybe constituting an important risk factor for clinical outcome. In fact, there is one study showing that high levels of behavioural control on the part of relatives significantly predict relapse in patients with a diagnosis of schizophrenia (Hooley and Campbell, 2002), but further research is warranted to corroborate this finding.

Nowadays it is widely acknowledged that the progress and outcome for individuals with psychosis is liable to be influenced by their experiences in interpersonal environments. However, it is less clear how the stressors of living in a high-EE environment and experiencing behavioural control attempts may have an impact on the person who is vulnerable to develop psychosis. Furthermore, EE has been mainly researched with artificial or laboratory settings, but not in the home environment where we assume that high EE-related attitudes are expressed and behaviours occur. One way to capture these spontaneous interactions as they naturally occur is to use the experience-sampling method (ESM), which will be described in detail in Chapter 2.

1.5. Mechanisms underlying the development of EE: The study of attributions

1.5.1. Why are attributions important and how do they link with EE

As discussed in earlier sections, EE has been widely researched over the last decades,
but the mechanisms underlying the development of EE are still poorly understood. One of the most researched areas that has contributed to elucidate this matter is the study of relatives’ attributions. Attributions are beliefs about causality, they are an expression of the way people naturally think about the relationship between an event and a cause (Munton et al., 1999). Weiner (1980) attributional theory proposes that the person’s causal attributions about an event influence their emotional and behavioural responses to it. Munton et al. (1999) further suggested that uncovering what people believe about events and their causes is a very useful way into understanding and predicting behaviour. Thus, considering that people behave in accordance with their beliefs, understanding their beliefs may help us to understand what causes them to behave the way they do.

Leff and Vaughn (1985) noted that the beliefs that low and high-EE relatives hold about the condition were different: low-EE relatives were able to have a rational understanding of the patient’s problems and to recognise that symptoms were legitimate, whereas high-EE critical relatives made few allowances for the condition or for the patients’ known deficits. In terms of conceptualising high-EE attitudes, Greenley (1986) and Hooley (Hooley, 1985; 1987) independently proposed that high-EE attitudes reflected relatives’ attempts to control events by restoring or changing the patient’s behaviour. While Greenley’s (1986) conceptualisation only focused on attributions regarding whether or not the patient was ill, Hooley’s (Hooley, 1985; 1987) attribution model of EE considered wider differences in relatives’ beliefs and focused on the idea of volition and control. Hooley’s model (1987) conceptualised relatives’ attributions about the causes of problematic behaviours in patients with mental health problems in terms of the criticism component of EE, that is, Hooley proposed a symptom controllability framework to explain relatives’ high levels of critical EE. Central to
Hooley’s controllability model is the idea that “high-EE attitudes develop when symptoms are perceived by family members as being to some degree controllable by patients” (Hooley, 1987; p.190). According to this controllability model of EE, patient behaviours that were undesirable and perceived by relatives to be potentially able to be changed were considered to be likely targets for criticism.

In light of Hooley’s proposition, Brewin (1988) argued that the EE concept fits well within Weiner’s (1985) theory of attribution, emotion and behaviour, which suggests that attributional appraisals of events influence our behavioural and emotional responses. According to Weiner (1985), certain emotions may arise due to causal attributions that people make about events in their lives, that is feelings arise from how an event is construed or evaluated. There are three main dimensions underlying the organisation of causal thinking, which are locus, controllability and stability, with globality and intentionality also being considered possible causal properties (Weiner, 1985). Weiner (1985) proposes that specific causal dimensions are related to positive and negative affects: for example, anger is linked to the ascription of a negative, self-related outcome or event to factors controllable by others; pity to factors uncontrollable by others; and guilt with feelings of personal responsibility. Weiner further argued that many behavioural responses to an event are initiated following a causal attribution for it (Weiner, 1980). In terms of caring for someone with mental health difficulties, it is reasonable to assume that relatives will regard this situation as both personally relevant and bad (Barrowclough and Hooley, 2003); suggesting that relatives’ beliefs may provide a useful explanatory framework to understand how they feel and behave toward a family member experiencing psychosis.
1.5.2. Attributions and EE: the state of the art

The contribution of attributions to EE has been widely researched and is well documented in a review by Barrowclough and Hooley (Barrowclough and Hooley, 2003). Findings from this review consistently highlight that high and low-EE relatives differ in terms of their attributions: high-EE relatives, particularly critical ones, attribute more control to patients for their symptoms and problems, that is, they are more likely to hold the patient responsible for their difficulties; while high-EOI (in the absence of criticism) relatives show an attributional style similar to the low-EE relatives.

Building on this review, further studies examining the relationship between EE and attributions in psychosis have continued to provide empirical support for the attributional model of EE. For instance, Yang et al. (2004) found that high-EE relatives of patients with a diagnosis of schizophrenia in China suggested more intentional (controllable) and idiosyncratic (personal) causes for behaviours than did low-EE relatives. Similarly, for Anglo-American families more attributions of control were associated with more criticism and less warmth, and criticism was an important risk factor for these families, as corroborated by previous EE-relapse studies (Lopez et al., 2004). In line with these findings, Grice and colleagues (Grice et al., 2009) examined relatives’ attributions for both negative and positive illness-related events and found that low-EE relatives made significantly more attributions about positive events, and fewer about negative events than high-EE relatives. According to the authors, this was because criticism, but not EOI, was strongly associated with responsibility attributions for negative events, while EOI, but not criticism, was inversely associated with responsibility attributions for positive events. Further research examining associations between EE and attributions in informal carers of recent-onset psychosis patients (Mcnab, Haslam and Burnett, 2007) and in formal psychosis carers (Berry,
Barrowclough and Haddock, 2011; Berry et al., 2012) further confirmed that high-EE carers, particularly critical and hostile, tend to perceive the patient as having more control over their condition and symptoms.

Summarising, relatives do spontaneously generate causal attributions that are reflected in what they say about their patients, and the attributions dimensions that are most related to critical or hostile family attitudes involve internality, controllability, and perceived idiosyncrasy with respect to the patient’s condition or behaviour. Although there is a large body of empirical work on the relationship between EE and attributions in relatives of people with more long-term psychosis, there is rather less evidence regarding relatives’ attributions in recent-onset samples. Furthermore, one important critique that can be pointed out to the attributional model of EE is that it does not provide much information about high-EOI or low-EE relatives’ attributions.

1.5.3. Attributions, EE, and behavioural control linkage

As alluded to in the previous section, one way in which high-EE relatives differ from low-EE relatives is in their underlying beliefs about the patient’s problems and difficulties. High-critical-EE relatives are more prone to believe that their ill family members can make more effort to control their symptoms and problem behaviours, thus the relatives make more attributions of control (Barrowclough and Hooley, 2003). One recent study by Hooley and Campbell (2002) built on this finding by demonstrating that controllability attributions in high-EE relatives were significantly associated with their actual attempts to control the patient, both in schizophrenia and depression. Furthermore, during the 9-month follow-up period, behavioural control was a significantly better predictor of relapse for the schizophrenia group than relatives’ attributions of control (Hooley and Campbell, 2002); suggesting that behavioural
control may be a more proximal measure of the relapse process (Barrowclough and Hooley, 2003). However, this evidence is limited to one study and has not been investigated in relatives of people who recently experienced the onset of the psychosis.

It has been previously highlighted that one limitation of Hooley’s (1987) attributional model of EE is that does not provide much information about the attributional style of high-EE overinvolved relatives. Barrowclough and colleagues (1994) found that high-EOI relatives, similar to low-EE relatives, were more likely to attribute the patient’s problems and difficulties to uncontrollable causes, whereas high-critical and/or hostile relatives tended to believe that, at least to some extent, the patient’s problems were still within the patient’s volitional control. Furthermore, in this study attributions were more predictive of relapse than EE and its components, which lead the authors to conclude that these causal attributions would mediate the association between EE and relapse. Hence, dependent on these beliefs, high-EE-EOI relatives would respond more as a buffer by taking control and doing things for the patient, thus evidencing more intruding and self-sacrificing attitudes; and in contrast high-EE-critical and/or hostile relatives would attempt to persuade or coerce the patient to make more effort to recover, making more use of criticism (Barrowclough et al., 1994). These findings suggest that different beliefs associated with criticism and EOI are related to different types of behavioural control attempts in relatives. This is an interesting development within the EE literature, but to date no published studies have examined how high-EE critical and overinvolved relatives may differ in terms of their behavioural styles.

In conclusion, controlling behaviour and attributions about the extent to which patients are able to make more effort to control their symptoms and problem behaviours seem to be an important characteristic of high-EE households. High-EE critical or hostile
relatives attribute greater control to the patient over his/her condition, whereas high-EE overinvolved or low-EE relatives attribute less control and implicate the illness as a causal explanation for the patient’s condition (Barrowclough et al., 1994). Furthermore, attributions of control correlate significantly with attempts to control the patient, and the latter have been linked with increased risk for relapse in schizophrenia (Hooley and Campbell, 2002). Controllability beliefs and behaviours have not been examined in relatives of people with recent-onset psychosis, and different types of behavioural control attempts have not been examined in a recent-onset sample, but there is evidence to suggest that these factors could be relevant to further understand EE mechanisms.

1.5.4. The role of self-blame attributions in distress and behavioural control

Relatives play a key role in the recovery of patients experiencing psychosis and there is evidence to suggest that both early-stage (Addington et al., 2003; Gibbons et al., 1984; The Scottish Schizophrenia Research Group, 1987) and more long-term (Barrowclough et al., 1996; Gibbons et al., 1984; Oldridge and Hughes, 1992; Schene, Van Wijngaarden and Koeter, 1998) carers experience considerable levels of distress and difficulties in their caregiving role. Different patient’s characteristics have been found to impact on relatives’ distress, namely difficult behaviours (such as moodiness, unpredictability, irritability), negative symptoms (Tennakoon et al., 2000; Tennakoon et al., 2001), younger age or having ongoing difficulties (Addington et al., 2003). However, evidence suggests that it is the way that relatives’ perceive their situation that has the greatest impact on their own psychological distress and well-being; and this seems to be the case both for recent-onset relatives (Addington et al., 2003; Addington et al., 2005; Barrowclough et al., 2014; Onwumere et al., 2008) and relatives of people with more established psychosis (Barrowclough et al., 2001; Fortune, Smith and Garvey, 2005; Lobban, Barrowclough and Jones, 2005; Onwumere et al., 2008).
In terms of appraisals, Barrowclough, Tarrier and Johnston (1996) investigated the levels of distress in 60 relatives of patients with a diagnosis of schizophrenia and found that distress was particularly associated with attributions of blame: if relatives attributed the cause of the patient’s condition to be internal to themselves by at least partial self-blame (where the cause is attributed to factors both internal and external to the relative), they experienced higher distress levels than non self-blaming relatives; and self-blame was also the best predictor of relatives’ distress. However, in this study the majority of the patients (65%) had experienced at least one previous episode of schizophrenia, emphasizing the relevance of studying relatives’ self-blame attributions in association with distress in families with patients with recent-onset psychosis. Other empirical studies with relatives of people with more established psychosis have also found associations between relatives’ self-blame and their distress levels (Bentsen et al., 1996; Boye, Bentsen and Malt, 2002; Fortune et al., 2005). However, to our knowledge this link has not been established in a recent-onset sample.

Relatives’ self-blame seems to have important implications not only for their psychological distress, but also for the way that relatives respond to the patient experiencing psychosis. Wasserman et al. (2012) found that higher levels of self-blame about having a family member with schizophrenia predicted relatives’ high-EE attitudes. As noted in previous sections, high-EE relatives tend to engage in more controlling behaviours towards the patient than low-EE relatives; and controlling behaviours have been found to be associated with relatives’ attributions of control, that is believing that the patient can make more effort to control their own symptoms and problems (Hooley and Campbell, 2002). Furthermore, it has been suggested that guilt, a common derivate of self-blame, promotes interpersonal engagement and reparation for
the wrongdoing (Baumeister, Stillwell and Heatherton, 1994; Tangney, 1995; Tangney and Dearing, 2002). It might be that, alongside the controllability beliefs, relatives who blame themselves for their family member’s illness may also more often try to engage in attempts control the patient’s behaviour and symptoms in order to repair or control the situation. This fits well with Weiner’s proposition that perceptions of uncontrollability may be more associated with greater help-giving (Weiner, 1980).

Furthermore, it has been argued that self-blame about having a family member with psychosis may be maladaptive (Dost and Yagmurlu, 2008; Silfver, 2007). Possibly if relatives perceive their reparative behavioural attempts to be unsuccessful in controlling the patient’s symptoms or behaviours and no improvement on the part of the patient is seen, this may intensify the levels of distress in relatives as well as their blaming cognitions triggering more extreme attempts to control the patient’s behaviour. For a more vulnerable patient these attempts may be experienced as a stressor having the potential to influence outcome (Zubin and Spring, 1977). In sum, although relatives’ self-blaming cognitions may have important implications for themselves as well as for the patient, little is know about how these cognitions may impact on the way that relatives respond to a close family member who recently experienced the onset of the psychosis. This may contribute to further our understanding of how EE mechanisms operate.

1.6. Distress and EE in families experiencing psychosis

As referred to in preceding sections, high-EE is not only associated with increased levels of stress in patients, but also high-EE relatives tend to experience more distress in their caring role than do low-EE relatives (Barrowclough and Parle, 1997). There is inconsistent evidence as to whether patient factors such age, poor social functioning,
symptoms or symptom severity relate to relative’s distress (e.g. Addington et al., 2003; Raune et al., 2004). One demographic characteristic that has been found to be associated with caregiving distress severity is close contact between the patient and the relative (Scanzufca and Kuipers, 1996; Schene et al., 1998), suggesting that when relatives are around the ill family member more, they tend to experience greater levels of distress. Remarkably, few studies have looked at the association between distress and EE when relatives are in actual contact with the patient, i.e. in the context of daily life. This may be mostly due to the methodological difficulties of observing daily interactions between family members in their naturalistic environment. To date most of the EE research has mainly focused on relatives’ behaviours and attitudes toward the patient in laboratory contexts, showing that patients get more aroused and feel “stressed” when interacting with their relatives (Cutting, Aakre and Docherty, 2006; Tarrier and Tupin, 1992). For instance, Cutting and colleagues (2006) asked patients with diagnoses of schizophrenia and schizoaffective disorder to rate the degree to which they perceived their relatives to be critical, protective and overinvolved in their lives, and how “stressed” they tended to feel when they were in their presence; the authors found that patients reported feeling more stressed when interacting with high-EE relatives compared to low-EE relatives. Similarly, Tarrier and Tupin (1992) reviewed studies that have measured psychophysiological activity in patients with a schizophrenia diagnosis while in the presence of their relatives and consistently found that the presence (i.e., face-to-face contact) of high-EE relatives is more autonomically arousing for patients than the presence of low-EE individuals. Interestingly, there is rather less research showing how being in the presence of the individuals experiencing psychosis might impact on relatives’ distress and affect.
1.7. Proposing a model of attributions, behavioural control and distress to explain the EE-relapse mechanism

The research and theory reviewed above may be usefully integrated into a proposed model that links EE, attributions, behavioural control and distress in an attempt to explain how these variables may have an impact on patient’s relapse in psychosis. Figure 1 summarises the main steps of this model, the components of which are described below.

When facing patient’s symptoms or the onset of the psychosis, relatives may hold different beliefs about the cause of the problems. High-EE-critical relatives tend to attribute the patient’s problem behaviours as internal to and controllable by the patient, indicating that they believe that the patient can do more to deal with their own problems; thus, they will more likely try to influence the patient directly through their own actions by using coercive attempts in order to restore the patient’s previous levels of functioning (Barrowclough et al., 1994). If these attempts prove to be ineffective and no change is seen on the part of the patient, this may intensify the levels of distress in relatives triggering more extreme attempts to control the patient’s behaviour (for instance, by issuing ultimatums or taking over the patient), and likely triggering more targets of criticism (Barrowclough et al., 1994). This would happen through a negative feedback cycle whereby attempts aggravate patient’s stress.

On the other hand, high-EE-EOI relatives tend to hold the belief that the patient’s problems are less likely to be within the patient’s control and have an external cause, such as chance or faith; thus, they will be more likely to influence the patient by taking control and doing things for the patient, as such acting as a buffer (Barrowclough et al., 1994). Once again, if these well-intentioned attempts are unsuccessful and no
improvement is seen on the part of the patient, higher levels of distress may be experienced by relatives eliciting more severe behavioural control attempts (for example, impingement of the patient’s free-will); and likely triggering more intrusive behaviours (Barrowclough et al., 1994). This would operate via a negative feedback cycle whereby stronger attempts exacerbate the patient’s stress.

Barrowclough et al. (1994) proposed that relatives with marked emotional overinvolvement tended to have an attributional style similar to those seen in low-EE relatives, attributing patient’s problems to external and uncontrollable causes. However, low-EE relatives seem to differ from high-EE-EOI and –critical relatives in the way that they are likely to respond towards the patient, resorting to lower behavioural control attempts (Barrowclough and Hooley, 2003).

Self-blame attributions have been linked with distress in relatives of people with psychosis (Barrowclough et al., 1996; Bentsen et al., 1996; Boye et al., 2002; Fortune et al., 2005), and with high-EE responses (Wasserman et al., 2012). It has also been argued that self-blame motivates interpersonal engagement and reparative behaviours (Baumeister et al., 1994; Tangney, 1995; Tangney and Dearing, 2002). If relatives tend to hold the belief that (at least in part) they are to blame for the patient’s problems, that is if they attribute the patient’s problems to causes (wholly or partially) internal to themselves (i.e. self-blame); they will be more likely to engage in reparative behaviours to amend the current situation, possibly by taking over or doing things for the patient. Once again, if these reparative attempts prove to be ineffective to improve the ‘wrongdoing’ higher levels of distress may be experienced by relatives, eliciting more extreme attempts at behavioural control and triggering more intruding or overinvolved responses. This again would operate via a negative feedback cycle whereby stronger
attempts exacerbate the patient’s stress. Therefore, distress operates as a potential mediator of the attribution-behaviour link, being predicted by maladaptive coping on the part of the relatives.

This line of reasoning is consistent with Barrowclough and Hooley’s (2003) suggestion that criticism and EOI might be inherently different and that the ways relatives attempt to exert control may be also different. This suggests that critical and overinvolved relatives may hold different beliefs about the patient’s problem behaviour and that their attempts to exert control may also follow different pathways (Barrowclough and Hooley, 2003). Furthermore, though different, these two responses reflect relatives’ attempts at behavioural control; and higher levels of behavioural control have been strongly associated with relapse (Hooley and Campbell, 2002). Although these responses reflect only a well-intentioned attempt to cope with a stressful situation, they may be experienced as highly stressful by more vulnerable patients, predicting a poor subsequent outcome (Greenley, 1986; Zubin and Spring, 1977).
Figure 1: A model linking EE, attributions, behavioural control and distress in an attempt to explain the relapse mechanism in psychosis

Legend: $BC =$ behavioural control, $HEE =$ high expressed emotion, $CC =$ critical comments, $EOI =$ emotional overinvolvement, $LEE =$ low expressed emotion

1.8. Thesis aims

The literature reviewed within this chapter has provided a rationale for investigating the links between EE, attributions, behavioural control and distress in patient-relative dyads experiencing psychosis. It has been argued that relatives’ beliefs about the condition and behaviours toward the patient are pivotal in enhancing our understanding about EE-mechanisms, particularly those related to relapse and to the development of EE attitudes in relatives. However, there is currently limited research investigating beliefs and behavioural responses in relatives of people who recently experienced the onset of the psychosis, suggesting that further research is required to elucidate how EE mechanisms
operate in the early stages of the condition. Furthermore, the lack of naturalistic observations of EE and spontaneous behaviour on the part of the family members has also been highlighted. Momentary research techniques are particularly suitable to investigate family environments as they provide reliable and valid data on individual’s patterns of behaviour, thoughts and feelings within the context and flow of daily life, allowing therefore a better understanding of EE mechanism within a naturalistic setting. The overall aims of the thesis are to investigate the way relatives understand and attempt to manage psychosis in a close family member, and to explore the impact of these attempts to manage behaviours on both the patient and the relative, considering patients and relatives within a system of mutual influence. This will allow an understanding of the EE-relapse mechanism within a dynamic interactional framework. The aims of each empirical study will be outlined in turn below.

The first empirical study will examine controllability attributions and behavioural control in association with EE in relatives of people with recent-onset psychosis. In line with the proposed model, the EE components of criticism/hostility and EOI will be examined in association with different types of behavioural control (termed ‘direct influencing’ and ‘buffering’). In addition, the analyses will seek to uncover the links between relatives’ behavioural control, controllability attributions and patient relapse in this recent-onset sample.

The second empirical study will focus on self-blaming beliefs in association with distress and behavioural control in a sample of relatives of people with recent-onset psychosis. This will help clarify whether these attributions may play a role in relatives’ distress and behavioural responses. In addition, this study will explore the extent and nature of self-blame in this recent-onset relatives sample.
The final empirical study will use momentary repeated assessment to investigate whether contact with high-EE relatives, and relatives’ behavioural control attempts, are related to patients’ symptoms and affect in both patients and relatives. This will allow an understanding of the EE-relapse mechanism considering patients and relatives within a system of mutual influence.
Chapter 2: Methodology

After providing an overview of the three empirical studies that comprise this thesis (referred hereafter as Study 1, 2 and 3), the present chapter will first describe the general methodological considerations common to all the studies regarding sample size, recruitment procedures, inclusion criteria, ethical considerations and measurements. This will be followed by a detailed review and discussion of the specific methodological aspects related to each empirical study. Although methodology information is provided in the papers prepared for publication for the individual studies which are contained in subsequent chapters, the inclusion of this section in the current chapter allows a more in depth discussion of additional relevant information, such as the development of the behavioural control and attributions measures (Study 1 and 2) and the use of the experience sampling method with dyads (Study 3).

2.1. Overview of the empirical studies

As described in Chapter 1 the broad aims of the thesis were to investigate the role of behavioural control, controllability and self-blame attributions in high- and low-Expressed Emotion (EE) relatives of individuals with psychosis, and to explore the impact of these beliefs and behavioural responses on patients’ symptom outcomes and relatives’ distress. To this end three empirical studies were conducted, which will be presented in the succeeding chapters. These studies will be presented in a published format (where applicable) or in a format suitable for submission in a peer-reviewed journal.

The data presented in this thesis was obtained from two larger projects: the Relatives/carers’ Adaptation to Recent Onset Psychosis (RAP; REC: 05/Q1301/80) project, and the Psychosis: Assessment of Life in the Moment (PALM; REC nº:
10/H1015/51) project. The data obtained from the RAP project contributed to the first and second empirical studies presented in this thesis; and the data collected as part of the PALM project contributed to the third empirical study included in this thesis. Therefore, to aid clarity and cross-referencing, each of the empirical studies presented in the thesis will be numbered, and referred as such hereafter, as follows:

**Study 1**: Expressed Emotion, types of behavioural control and controllability attributions in relatives of people with recent-onset psychosis. A cross-sectional secondary analysis of baseline data (alongside new behavioural control and controllability attributions data gathering and coding conducted by the author), comparing types of behavioural control attempts (direct influencing vs. buffering) in high-EE-critical/hostile and high-EE-overinvolved relatives of patients with recent-onset psychosis; and examining whether behavioural control attempts and controllability attributions differed for the high- and low-EE relatives. In addition, this study explores the links between relatives’ behavioural control and patient relapse.

**Study 2**: Self-blame attributions in relatives of people with recent-onset psychosis: associations with relatives’ distress and behavioural control. A cross-sectional secondary analysis of baseline data (along with new behavioural control and self-blame attributions data gathering and coding conducted by the author), exploring links between self-blame attributions and psychological distress in relatives of people with recent-onset psychosis, and the association between self-blame attributions and behavioural control in this recent-onset relatives sample.

**Study 3**: Expressed Emotion and behavioural control in the daily life of patient-relative dyads experiencing psychosis. This study examined the temporal associations of
behavioural control, affect and symptoms experiences in the daily life of patients with psychosis living in high- and low-EE environments using prospective experience sampling design.

2.2. General methodological considerations

2.2.1. Sample size

Sample size calculations were used to estimate the minimum sample size required for the empirical studies reported in Chapters 3, 4 and 5 as described below.

For Studies 1 and 2 power calculations were carried out to establish with 80% probability the number of participants required to obtain a result significant at the conventional 0.05 level (Cohen, 1992). Both studies required the development of measures to assess behavioural control and attributions, but these were not fully developed by the time at which both studies were designed. Therefore the power calculations for Studies 1 and 2 were based on previous research work.

Study 1 hypothesised an association between controllability attributions and behavioural control in high and low-EE recent-onset relatives. The statistical plan to test the main hypotheses involved bivariate (for continuous variables) and comparative (for dichotomous variables) analyses. Thus two power calculations were performed using the statistical power analysis program G*Power (Version 3.0.4 for Mac; Faul et al., 2007). One previous study examined control attributions and behavioural control in high/low-EE relatives of people with schizophrenia and found a correlation of 0.37 between the two main variables (Hooley and Campbell, 2002). It was estimated that with a power of 0.8 and a level of 0.05 a sample of 55 would be required to detect this effect. For the comparative two-tailed analyses a sample of 80 relatives would be
required to detect an effect size of 0.66 between the high- and low-EE groups with 80% power assuming the conventional level of significance of 0.05.

Study 2 explored links between self-blame attributions, behavioural control and psychological distress in recent-onset relatives. The statistical method planned to explore these links involved regression analyses with a known number of predictor variables. However, this number was not possible to anticipate, because the inclusion of predictors in the final analysis relies on preliminary analyses ascertaining significant associations with the outcome variable. With an expected medium effect size based on previous similar research examining self-blame in relatives of people with psychosis (Barrowclough et al., 1996; Fortune et al., 2005), it was estimated that with a power of 0.8 and a level of significance 0.05 a sample of 80 relatives would allow a robust regression with up to 8 predictors (using the conservative estimate of 10 participants for each predictor variable) in the regression model (Miles and Shevlin, 2001).

Study 3 investigated the temporal associations between affect, symptoms (patients only) and behavioural control in interactions with high- and low-EE patient-relative dyads using experience sampling methodology (ESM). Data collected using ESM have a hierarchical structure, that is, participant observations (level 1) are nested on each day (level 2), which in turn is nested on each participant (level 3). The multilevel structure of the data tends to compromise the sample size calculations in ESM studies (Kimhy et al., 2012; Snijders, 2005); traditional power calculations are not appropriate because they do not account for such data hierarchies. Previous ESM research studies have used samples of around 30 participants (see Oorschot et al., 2009 for review of studies). Based on such convention, Study 3 had therefore a recruitment target of 40 dyads (patient-relative) of participants, assuming some attrition or non-adherence.
2.2.2. Recruitment

All studies included in this thesis recruited participants as patient-relative dyads. Studies 1 and 2 recruited dyads from Early Intervention Services (EIS) across six primary care trusts in the North West of England, UK, over a period of 20 months between August 2005 and August 2008. The author was not involved in the recruitment for Studies 1 and 2, because recruitment has ceased by the time the author joined the project; therefore both studies involved secondary analysis of data already collected. As noted above, recruitment took place within a larger project (RAP; Barrowclough et al., 2014; Lee et al., 2013), which had approval from the local research ethics committee. Participants were recruited as dyads composed of patients recently diagnosed with first episode psychosis and a key relative/carer with whom they had at least 10 hours of weekly contact. Relatives were assessed at baseline and followed-up at 6 and 12 months after the patient’s first admission. Research assistants informed staff members from the EIS teams about the study, who subsequently identified patients who fulfilled the eligibility criteria and referred them to the project. Research assistants provided participants interested in taking part with the study information sheet and visited them to conduct the required assessments. Potential participants were given a minimum of 24 hours between considering taking part in the study and obtaining informed consent.

Participants in Study 3 were recruited by the author to the PALM project, alongside another PhD student examining worry and rumination in people experiencing psychosis (Hartley, Haddock et al., 2013). Combined data collection allowed for the same sample to be recruited collecting different data simultaneously. Recruitment occurred between January 2011 and March 2012 across five primary care trusts in the North West of England, UK. Ethical approval was obtained from the North West 12 National Health Service (NHS) Research Ethics Committee, the local research and development offices
and from the University of Manchester research ethics committee. Abiding by the NHS recruitment procedure, participants were recruited via NHS staff from community mental health teams and early intervention services. The author attended regular NHS clinical staff team meetings to give information about the project in the form of oral presentations, leaflets and posters. Care coordinators and other staff members were asked to identify and approach potentially eligible participants on the behalf of the author, passing on the information provided about the study. Patients who were interested in learning more about the study either contacted the author directly or gave verbal consent to be approached by the author, who in turn contacted them by telephone, giving more information about the project and agreeing to post the study information sheets (Appendix 1 and 2). Patients who wished to take part in pairs were also invited to share the study information with a relative/carer with whom they had at least 10 hours of weekly contact. During the initial phone contact a further phone contact was arranged to confirm reception of the study information sheets, giving potential participants the opportunity to ask further questions and, if they remained interested in taking part, to schedule the author’s first visit. For patients who expressed an interest in taking part, care coordinators obtained their verbal permission for relevant information to be passed on, including that pertaining to risk. Prior to the first visit, the author carried out a thorough risk assessment with the care coordinator, ensuring safety to make a home visit. The project was divided into three visits: an initial pre-ESM visit to obtain informed consents and to screen for eligibility criteria; an ESM phase visit where participants were briefed on the sampling methodology procedure (Appendix 3); and a final post-ESM visit to debrief participants on the sampling methodology and to conduct the questionnaires and interviews. A window of at least 24 hours was given between informing the participant about the study/providing the participant’s information sheet and obtaining their written informed consent.
Additionally, for Study 3 the author secured adoption by the Mental Health Research Network (MHRN; UKCRN ID 9481) by demonstrating the appropriateness of the study in terms of funding source, external peer review and patient involvement. MHRN provided recruitment support for Study 3 through the Clinical Study Officers, who worked on behalf of the study to arrange presentations for the clinical teams and distribute the study advertisement materials.

To supplement the recruitment strategies adjacent routes were sought, namely, liaison with voluntary sector groups (e.g. Rethink Manchester Carers in Action, Hearing Voices Network) and ‘cross-recruitment’ from similar ongoing projects within the same institution. The former involved the author contacting the independent patient and carer group leaders and joining the group’s meeting to present the study and distribute the advertising materials. Whenever potential participants were identified, care coordinators were always contacted following the self-referral, and potential participants were only permitted to enter the study if they were in touch with the NHS mental health services for which study approval was granted. This ensured that inclusion criteria, such as diagnosis, could be met and that safety information could be passed on and put into practice effectively. ‘Cross-recruitment’ involved participants providing consent for their information to be passed on to similar projects that targeted the same population. This approach helps reduce the recruitment pressure on the clinical teams and enables access to interested and eligible participants more rapidly. However, this may introduce some sample selection bias issues therefore this approach should only be used as an add-on strategy, as was the case for Study 3. Once potential participants expressed interest in taking part, care coordinators were always contacted and the procedure described above was followed.
All recruitment strategies described above adhered to the ethical guidelines for NHS recruitment procedures, which requires participants’ recruitment via the clinical teams. Understandably this procedure is in place to guarantee that potential participants are not overloaded with research or inappropriately approached by researchers. However, this incurs potential problems: 1) only a small proportion of potentially eligible participants will be given the opportunity to get involved in the study (see Study 3 sample recruitment flow diagram in Appendix 4); 2) often participant referrals will be influenced by the clinical teams’ views, introducing the potential for sample selection bias; 3) liaison with the clinical teams can be lengthy, slowing the recruitment pace.

2.2.3. Patient and relative involvement

Service user and carer involvement in mental health research is a relatively new approach that has been recommended by the UK Department of Health (Department of Health, 1999, 2002). The direct participation of service users and carers in the research process has several benefits, namely: 1) empowerment of their own illness and need for care expertise; 2) potential to increase the understanding of mental illness, 3) possibility of developing alternative approaches to mental health and illness (Tait and Lester, 2005). Study 3 had patient and carer involvement. Anonymous consultants (1 ex-service user, 1 carer, 1 MHRN service user and the MHRN suggested ‘FACTOR’ carer group) with experience of psychosis reviewed the participant information sheets and the items used as part of the experience sampling methodology. The feedback provided led to minor changes in the ESM items wording, such as adding ‘support worker’ to the list of people that participants could be in the company of; and in the participant information sheets, which included adding more detail about the aims of the study and examples of the ESM questions that would be delivered.
2.2.4. Inclusion and exclusion criteria

Inclusion and exclusion criteria were imposed for all studies to ensure eligibility and appropriateness of the samples. All studies recruited patient-relative dyads, therefore, patients and their relatives were included in all studies if they met the following inclusion criteria: the relative or carer had at least 10 hours of weekly contact with the patient (where there was more than one relative, then the person with the most significant care role was selected); patients were in current contact with mental health services; and had no evidence of primary organic disorder implicated in the aetiology of the psychotic symptoms; both participants were required to have sufficient comprehension of English to complete the assessments and be able to provide informed consent.

In addition, as noted above participants included in Studies 1 and 2 were selected from the RAP project and were eligible for inclusion in both studies if recordings from Camberwell Family Interviews (CFI) were available, since these interviews were the source of the new data collection for studies 1 and 2. For the RAP study, patients were required to: be aged over 16; have a clinical diagnosis of psychosis (as determined by the EIS); and to be under EIS for no longer than 12 months. In Study 3 patients were also required to: be aged between 18-65; have an ICD-10 (World Health Organisation, 1992) diagnosis of schizophrenia, schizophreniform/schizoaffective disorder, delusional/psychotic disorder (not otherwise specified); and to be experiencing persecutory delusions and/or auditory hallucinations as evidenced by the Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein and Opler, 1987) to ensure that these psychotic experiences were evident and therefore could be captured during the momentary ESM assessments. Those with a score of 3 or more on the delusions (P1, with content of a persecutory nature) or hallucinations (P3; with auditory hallucinations)
subscales were included.

2.2.5. Ethical considerations

2.2.5.1. Approvals

The empirical studies reported in this thesis were approved by the National Research Ethics Services, specifically by the Preston, Chorley and South Ribble NHS Research Ethics Committee for Studies 1 and 2, and by the NHS North West 12 Research Ethics Committee – Liverpool Central, Lancaster and Preston for Study 3. Favourable approval for these studies was also secured from the relevant Trust Research and Development offices (Bolton, Salford, Trafford, Mersey Care, Pennine Care and Lancashire Care NHS Trusts for Study 1 and 2; and Manchester Mental Health and Social, Greater Manchester West, 5 Boroughs Partnership, Cheshire and Wirral Partnership and Lancashire Care NHS Trusts for Study 3), and from the Research Governance office from the University of Manchester.

2.2.5.2. Recruitment process and safety practices

The recruitment process operated in conjunction with the health services and with the care coordinators team. The care coordinator and/or a key worker were the first port of call, and then they sought verbal permission from potential participants for the researcher to approach them and for a risk assessment to be carried out. Particularly in Study 3, prior to the first participants’ visit, the author conducted a thorough risk assessment at which information regarding environmental risk, self-neglect, self-harm, harm to others and relapse was elicited. In the event of any past history of harm or violence, participants were seen in services or in their homes by an accompanied researcher, if this was considered advisable by the care coordinator. Furthermore, in accordance with the University lone worker policy, safety telephone checks with a
nominated member of the staff at base were adopted, to ensure safety throughout the home/service visits.

Both patients and relatives taking part in all studies were given the study information sheet, which outlined the research aims and what participation would involve, before providing informed consent. Between receiving the study information sheet and providing written informed consent participants were given at least 24 hours to consider taking part in the project. All participants were made aware that participation was voluntary and that they could withdraw at any time without the standard of care that they receive being affected. For Study 3, participants who were screened and found ineligible to take part were informed of the reasons for this, debriefed and thanked for their participation.

2.2.5.3. Participant distress

In Study 3 the author was aware of and sensitive to the participants’ distress levels. Breaks during visits were allowed and the opportunity to reschedule or split assessments into two visits was offered if any sign of distress was noticeable. Participants were given the opportunity to discuss any concerns after each assessment and they were advised that support from one of the clinical psychologists assisting the project was available should it be needed. They were also reminded to contact the care team if they wished to. The participants’ attention was drawn to the study information sheet, which provided information about the researcher’s contact details and other ways of seeking support if participants became distressed after the assessments visits.

Furthermore, a check-up phone call with participants was undertaken in the first day of the ESM procedure, to ensure feasibility and to address any arising concerns. Additional
optional telephone contacts during the ESM week were offered to participants. ESM involves tracking mood, experiences and activities at multiple unpredictable times throughout the day, thus there is potential for the participant to feel intruded upon or distressed. Whenever participants expressed any negative psychological impact from completing the ESM assessments, they were given an opportunity to discuss these and the option to opt-out, and where appropriate the clinical team was informed. Participants were also advised to contact the researcher if they wished to return the sampling equipment before the end of the ESM phase or if they suspected the sampling equipment to be faulty.

2.2.5.4. Participant confidentiality

All data provided by patients and relatives in the empirical studies were treated with strict confidence and in accordance with the Data Protection Act (1998) with respect to data collection, storage and destruction. Nevertheless, prior to participating in the studies and before each assessment visit, patients were informed that confidentiality would need to be broken and details disclosed to the care team if any suspicion of risk of harm to others or themselves arose, but this would be discussed with the patient in the first instance. All data collected were anonymised; any audio recordings were stored on a password-protected computer external drive or as CDs and direct quotes were used anonymously. A unique identification code number was assigned to each participant and their details were stored separately to the data collected. All data were stored in a locked filling cabinet in the principal investigator’s office in line with the University’s guidelines.

For Study 3 extra confidentiality procedures were implemented. Since this study involved patient-relative dyads completing the sampling method in a synchronised
fashion, the researcher chose to use electronic diaries instead of paper-pencil ones. The use of a palm-top computer ensured that participants could give their responses in privacy preventing other people (including the other participant) from viewing the inputted responses.

2.2.5.5. Participant burden

For Study 3 it was recognised that the ESM procedure can put a considerable burden on participants in terms of their time and effort (Scollon, Kim-Prieto and Diener, 2003). Although the burden created by the study design can be justified by the potential benefits of the validity of data, the author was aware that the burdensome nature of this technique could significantly increase the difficulty of recruitment. For this reason the author secured funding from the University of Manchester’s Clinical & Health Psychology Research Group to offer participants a token of appreciation for their time and effort. The study sought pairs of participants, but if patients were eligible they were allowed to take part without a relative being involved. Participants who entered the ESM phase received high street shopping vouchers as a token of appreciation for taking part, regardless of whether or not all assessments were completed. Dyads received £15 in high street shopping vouchers to share, but if participants took part in the project without a relative being involved, they were given £7 in vouchers.

Additionally, during the design of Study 3 other strategies were implemented to minimise the burdensome and time-consuming nature of the ESM procedure. Following previous ESM research recommendations (Palmier-Claus et al., 2010), an effort was made to keep the number and length of the ESM items to a minimum; furthermore, the novel items included were specifically related to the research hypothesis. All items were also piloted before starting the study to test their feasibility and to identify potential
wording ambiguities, this ensured that the items were relevant and reflected genuinely momentary experiences which participants would identify.

2.2.6. Measures

The following section provides an overview of the key measures used in one or more of the empirical studies included in this thesis. Further details regarding these assessments can be found in the individual studies’ manuscripts described in the subsequent chapters. Novel measures of behavioural control, controllability and self-blame attributions were also developed for the purpose of each study, therefore they will be described in the subsequent ‘specific methodology considerations’ section corresponding to each empirical study. A sample copy of these assessments can also be found in the Appendices section.

2.2.6.1. Patient and relative measures

2.2.6.1.1. Socio-demographic information form

Relevant socio-demographic information was gathered from participants in order to describe the patient and relative samples. This information was already available for Studies 1 and 2, but for Study 3 two forms were created: one for patients/relatives and an additional one for the description of relatives by patients (see Appendix 5 for the different versions). The latter form was developed in order to collect basic demographic information about the relative whenever the relative refused to take part or when patients did not consent for their relatives to be approached to take part in the study. This enabled relatives’ demographic data to be collected consistently so that the sample could be described more accurately. Information ascertained from participants was: gender; age; highest level of education; employment status; occupation; marital status; living arrangements; accommodation; and ethnicity. This information was collected
upon obtaining informed consent from participants.

2.2.6.2. Patient’s measures

2.2.6.2.1. Positive and Negative Syndrome Scales

The Positive and Negative Syndrome Scales (PANSS; Kay et al., 1987) is a measure of psychotic symptomatology and general psychopathology (e.g., somatic concern, anxiety, depression). This semi-structured 30-item interview includes three subscales (positive, negative and general symptoms) and a total scale derived by the summation of the three subscales. All items are scored on a 7-point Likert scale (0, absent - 7, extreme), reflecting increasing levels of severity. The individual items and scales have demonstrated good psychometric properties (Kay, Opler and Lindenmayer, 1988). The PANSS scales were used in Study 1 to control for patient symptoms, and in Study 3 as a baseline-screening tool for psychotic symptomatology. The PANSS individual items P1-Delusions and P3-Hallucinatory behaviour were also used in Study 3 to ensure evidence of at least a mild level of current psychotic experiences; this maximised the chance of capturing these experiences during the momentary assessments. P1 assesses the presence of unfounded, unrealistic, and idiosyncratic beliefs; and P3 assesses verbal reporting or behaviour indicating perceptions that are not generated by external stimuli, including auditory, visual, olfactory, gustatory or tactile perceptions. For the purpose of Study 3 only perceptions classed as auditory and beliefs with content of persecutory nature were relevant. The author conducted the PANSS assessments used in Study 3; the ones used in Study 1 were undertaken within the RAP project. Further details on this as well as on interrater reliability for each study can be found in the individual manuscripts (Chapters 3, 4 and 5).
2.2.6.2.2. The Structured Clinical Interview

The Structured Clinical Interview (SCID-CV, First et al., 1996) is a semi-structured diagnostic patient interview divided into modules (mood episodes, psychotic symptoms, psychotic disorders, mood disorders, substance use, and anxiety and other disorders). The substance use module assesses substance and alcohol abuse in the 3 months preceding the assessment. To meet criteria for drug or alcohol abuse participants needed to fulfill at least one of four criteria (failure to fulfill major obligations at work, school or home; use in dangerous contexts; recurrent illegality; and recurrent interpersonal problems). Dichotomous (present/absent) ratings were drawn from the RAP project and adopted in Study 1 to control for patient drug use.

2.2.6.2.3. Relapse Index

Relapse was assessed using a relapse index (Barrowclough et al., 2010; Barrowclough et al., 1999; Lee et al., 2013). Relapse data was collected by research assistants blind to the study hypotheses, who screened patients’ medical notes for either a hospitalisation due to psychotic symptom increase or an exacerbation of positive symptoms lasting more than two weeks and requiring a change in management (e.g. readmission into hospital or increase in anti-psychotic medication or in frequency of appointments with the clinical team). This criterion has been used in previous studies with patients with psychosis (Barrowclough et al., 2010; Barrowclough et al., 1999; Lee et al., 2013) and was therefore adopted in Study 1. The presence or absence of a patient’s relapse within the first 6 months after baseline was used in Study 1 as a relapse index outcome measure. Further details regarding this measure and reliability results can be found in the individual manuscript (Chapter 3).
2.2.6.3. Relative’s measures

2.2.6.3.1. Camberwell Family Interview

The Camberwell Family Interview (Leff and Vaughn, 1985; Vaughn and Leff, 1976) was used in all studies included in this thesis to assess relatives’:

a) EE (Studies 1 and 3);

b) behavioural control (Studies 1 and 2);

c) controllability attributions (Study 1 and 2); and

d) self-blame attributions (Study 2).

EE data used in Study 1 was obtained as part of the RAP project, and EE data used in Study 3 was collected and determined by the author. For Studies 1 and 2, the author developed novel measures derived from the CFI; these are described in the next ‘specific methodological considerations’ section for each study.

This semi-structured, audio-recorded interview is the gold standard for obtaining EE ratings. It is conducted individually with a key relative (typically a parent or spouse) and takes around 1 hour to be administered, covering the relative’s perception of the patient’s psychiatric history, symptom behaviours, and role functioning as well as the relative’s subjective attitudes and feelings toward the patient and the illness. EE ratings are made on five scales for each relative: critical comments (frequency count); hostility (0, no hostility – 3, hostility as both generalisation and rejection); emotional overinvolvement (EOI; 0, none – 5, marked EOI); warmth (0, no warmth – 5, high warmth); and positive remarks (frequency count). Criticism is rated on content alone or in the vocal aspects of the speech (pitch, speed and inflection), whenever relatives make an unfavourable comment conveying explicitly that they dislike or disapprove the patient’s behaviour or personality; hostility comprises remarks which criticise the patient as a person and/or indicate rejection of the patient; and EOI reflects an overprotective, excessively devoted or self-sacrificing style towards the patient. EE coding categorises relatives either as high or low in EE. The standard conventions for
EE cut-off scores were used to categorise relatives as high-EE, that is, six or more critical comments, any hostility (a score of 1 or more on the hostility scale), or a rating equal or greater than 3 for EOI. The individual EE criticism and EOI scales were also examined as continuous variables as consistent with previous studies (Onwumere et al., 2009). EE categorisations and levels of criticism and EOI were used in Studies 1 and 3. Interrater reliability and descriptive information of the EE categorisations and scales are reported in the individual studies chapters.

To administer the CFI in Study 3 the author was required to attend the EE training course provided by Dr. Christine Vaughn in the University of London between March-April 2008. After successful training the author became a certified EE rater and the reliability results for the 10 interviews assessed during the course are as follows: critical comments (0.82), EOI (0.80), hostility (1.00), overall EE (1.00), warmth (0.87), and positive remarks (0.96); the average across the four key EE assessments was 0.905. The standard EE interview script was followed, but because English is not the author’s first language minor adjustments had been made. These included adding to the script more examples of probing questions and colloquial vocabulary that relatives might use, such as ‘bickering’, ‘lashing out’, ‘going to the pictures’, ‘get on her/his case’ or ‘leave him/her to his/her own devices’. This aided the author to promote a conversational interviewing style and to build rapport with the interviewee.

2.2.6.3.2. General Health Questionnaire – 28

The General Health Questionnaire – 28 (GHQ-28, Goldberg and Hillier, 1979) is a screening measure of emotional distress and possible psychiatric morbidity. This self-report questionnaire is divided into four 7-item subscales: somatic symptoms (items 1-7), anxiety/insomnia (items 8-14), social dysfunction (items 15-21), and severe
depression (items 22-28). Each item has four possible responses (Not at all/More so than usual, No more than usual/Same as usual, Rather more than usual/Rather less than usual, and Much more than usual/Much less than usual). The customary GHQ-28 scoring uses either a continuous or a binary scoring method. In the former, each item is scored in a 4-point Likert scale (0-1-2-3), with a total possible score ranging from 0 to 84; a total score of 23/24 is the threshold for the presence of distress. In the latter, a bimodel scale (0-0-1-1) is used and any score above 4 indicates the presence of distress or ‘caseness’. Its validity has been demonstrated (Goldberg et al., 1997) and it has been widely used in studies of psychological morbidity with cares of people with schizophrenia (Barrowclough et al., 1996; Budd, Oles and Hughes, 1998; Mccreadie et al., 1989; Oldridge and Hughes, 1992; Scazufca and Kuipers, 1999). The continuous GHQ-28 scoring was used in Study 2 as an outcome measure of relatives’ distress.

2.3. Specific methodological considerations

2.3.1. Study 1: Expressed Emotion, types of behavioural control and controllability attributions in relatives of people with recent-onset psychosis.

Study 1 involved the assessment of levels of behavioural control and controllability attributions in recent-onset relatives. The key aim of this study was to elucidate in a recent-onset sample the extent to which high-EE relatives exhibit controlling behaviours and beliefs, and whether criticism and EOI were respectively associated with two types of behavioural control termed ‘direct influencing’ and ‘buffering’. To facilitate this, a method of coding types of behavioural control was needed. Furthermore, previous research examining the role of behavioural control and controllability attributions in relatives of people with psychosis had not been undertaken with a sample of recent-onset relatives. Measures of behavioural control and controllability attributions were therefore adapted for this specific population. The following sections describe the
development and coding process of these new measures, the ‘Adapted Controllability Attributions’ measure and the ‘Types of Behavioural Control’ measure.

2.3.1.1. Adapted Controllability Attributions measure

For Studies 1 and 2 a new manual for coding the relative’s controllability attributions was developed by adapting the Weisman et al.’s (1993) guidelines, and incorporating aspects of additional coding systems (Barrowclough, 1991; Brewin et al., 1991; Hooley and Campbell, 2002). However, a number of amendments have been made and new features introduced in order to combine, clarify and operationalise the previous instructions and guidelines. The subsequent sections describe the development of the manual and of the coding procedure. The manual is reproduced in Appendix 6.

2.3.1.1. Development of the Adapted Controllability Attributions manual

2.3.1.1.1. Background and rationale

The Adapted Controllability Attributions manual describes the criteria for coding attributional statements made by relatives during the CFI. The most common method of assessing spontaneous attributions extracted from transcripts uses the Leeds Attributional Coding System (LACS; Munton et al., 1999; Stratton et al., 1986). The LACS defines an attribution as “any answer to the question why” (Munton et al., 1999) and an attributional statement as “a statement that explains or explores the reasons or causes for a particular event or class of events” (Brewin et al., 1991). The LACS assesses 5 dimensions of causality: internal-external (within the person versus within the environment, that is, outside the person); stable-unstable (constant versus transient); controllable-uncontrollable (the person can versus cannot control the outcome); personal-universal (idiosyncratic versus ubiquitous and generally occurring); global-specific (numerous outcomes versus one). Each dimension of causality is scored using
binary ratings and an average for each dimension that reflects the proportion of causes rated as internal, stable, controllable, personal and global.

In contrast to the LACS, Weisman and colleagues developed an attributions measure focusing exclusively on the dimension of controllability, which assesses attributions of control on the basis of analyses of natural speech (Weisman et al., 1993). According to the authors, an attributional statement is defined as any “implied perceptions of the patient’s capacity or lack of capacity to control his/her disorder”. This includes perceptions of control over individual symptoms, as well as perceptions about the patient’s control over schizophrenia as a whole” (p. 603, Weisman et al., 1993). Relatives’ controllability statements are extracted from CFI recordings and weighted to assign a global rating of controllability using a 5-point Likert scale (1, no perceived control – 5, perceived control over all aspects of the disorder). The Weisman method has been found to have a good interrater agreement in all studies that have used this measure (e.g., Hooley and Campbell, 2002; Lopez et al., 2004; Lopez et al., 1999; Weisman et al., 2000; Weisman, Okazaki et al., 1998).

For the present manual both described methods of assessing attributions have been considered. The advantages and disadvantages of using both measures have been compared and the main justifications for deciding on the Weisman type measure are presented next. Although both measures have been shown to differentiate high- and low-EE relatives with regard with their attributions of control, the Weisman method has multiple advantages: it is easier to code; it is less time consuming; it gives a global rating within a continuum, instead of binary ratings; it considers all relevant individual statements pertaining to the relatives’ perceptions, instead of considering only attributional statements; and it has been used in previous studies which have looked at
attributions of control and behavioural control. The main disadvantages of choosing the
Weisman method instead of the LACS are that the remaining four dimensions of
causality (stable-unstable; global-specific; internal-external; personal-universal) are not
assessed, and that it is not possible to examine relatives’ perceptions of their own causal
role in patient’s problems.

As noted above, Study 1 compares attributions of control and behavioural responses
from low- and high-EE recent-onset psychosis relatives. A previous study by Hooley
and Campbell (2002) employed the Weisman method to compare these correlates in a
sample of EE relatives of people with schizophrenia. To enable comparisons with this
work a decision was therefore made to use the Weisman method, and the rating manual
produced by Weisman and colleagues was acquired from the author. The Weisman
manual’s criteria for coding controllability attributions were adopted in entirety for the
present manual, but some amendments have been made. These will be summarised in
the following section.

2.3.1.1.2. Adaptations of the manual

The current manual followed the Weisman’s coding system (Weisman et al., 1993).
Given that this system only provides general guidelines, considerable work was done to
clarify and operationalise the existing manual. The main changes introduced in the
current manual aimed to improve the coding instructions by making them more specific,
and aimed to provide a more objective and systematic coding procedure of both
statement and global ratings.

Incorporating aspects of other coding systems (Barrowclough, 1991; Brewin et al.,
1991), the first change introduced in the current manual concerned the definition of
controllability statements. In the Weisman’s manual a statement of control implied relatives’ perception of the patient’s capacity (or lack of it) to control (or have controlled) the illness, symptoms or any undesirable behaviours or characteristics of the patient. In the current manual it was decided that two further specifications should be added to this definition to make it more precise. The first of these concerned specifying which kind of explanations given by relatives would be sufficient to constitute an attributional statement. This specification was introduced because often relatives provide explanations without causal connectives (e.g. because, so, that’s why, due to, therefore), that is, instead of saying ‘I think she became ill because she was using drugs’ often relatives may say ‘being bullied at school and using drugs I think might have all contributed for the start of it’ or ‘when he was very ill he was using it’. Such suggestions about the causes of the event or juxtaposition of an event with causal material can still be considered for coding provided there are clear criteria available. Therefore in the current manual, following aspects of the Brewin et al. and Barrowclough et al.’s coding systems (Barrowclough, 1991; Brewin et al., 1991), it was specified that given, explored or inferred explanations or reasons perceived by the relative to be causing the event would be considered in defining an attributional statement, and clear guidelines and examples were added to the manual.

The second additional specification to the definition of controllability statements was based upon the Hooley and Campbell (2002) guidelines for rating attributions of control. In their definition particular attention was paid to perceptions that suggested either that the patient was capable of doing more or that he/she was not making enough effort to improve the illness, symptoms or behaviours. These perceptions of control without an exceptional effort were also adopted in the definition included in the current manual. Hooley and Campbell also considered statements indicating that the illness
and/or the patient’s behaviours (including behaviours which may be symptoms) were influenced by factors outside (for example, a side effect of the medication) the patient’s control, or were a direct result of the illness itself. These were also included in the current manual as references for lack of control. Further amendments to the current manual included adding specific definitions and examples for references to the illness, symptoms and problem behaviours, and to any undesirable characteristic of the patient or situation in the patient’s life. To aid the coding system detailed criteria about the controllability attributional statements that ought to be excluded were also listed in the manual.

As noted above, in accordance with the original Weisman’s instructions, ratings of controllability attributions were made on a 5-point global rating scale. This 5-point scale has been adopted for the present manual to rate controllability attributions. However, based on the Hooley and Campbell (2002) instructions, an additional step of rating each statement individually as not, mildly, or highly controlling prior to assigning a global rating to each relative was added. This additional step was not made in Weisman’s manual, and it was introduced in the current manual because it provided more anchor points for assigning the overall rating to the relative. This increased the accuracy of the global rating and facilitated the decision-making process of assigning the global controllability rating, increasing interrater reliability.

Accordingly, prior to assigning a global rating for controllability, each statement was first rated individually and categorised as no, mild/mixed or high in perceived patient control. Statements rated as not controlling indicated that the relative held the belief that the patient could not control any aspect of the reported symptom or problem behaviour or believed that the cause was outside the patient’s control (e.g. genetic inheritance).
Mild statements implied that the relative believed that the patient had some degree of control over the reported symptom or problem behaviour, but factors outside the patient’s control also played an important part; or indicated that the relative questioned the legitimacy of the patient’s symptoms or problem behaviours. Statements rated as high denoted that the relative believed that the patient could control the symptom or problem behaviour being described. Specific examples of the explanations usually given for each individual category were added in the current manual along with special guidelines for coding past attributional statements.

The following section describes the criteria for coding controllability statements and the adjustments made to improve this coding system.

2.3.1.1.3. Coding procedure

Following the Weisman global coding procedure, all controllability attributional statements were taken into account to assign each relative with a global controllability rating made on 5-point Likert scale (1, no perceived control – 5, perceived control over virtually all aspects of the disorder). This scale assessment aimed to provide global perception of the extent to which relatives believed that their family members could control their symptoms and problem behaviours. Similarly to the Weisman guidelines, the current manual specified that the global rating should consider the intensity and context of the individual statements, and should not merely equate the number of controllability statements against the number of non-controllability statements. However, one further specification was made in the current manual in this respect: the global rating should also consider the precedence of the events reported in each statement, that is, the most recent or current events should take precedence compared to past or non-current events. This modification was introduced to allow more current
beliefs to be captured increasing the accuracy of the assessment.

According to the Weisman guidelines, relatives who clearly perceived the patient as genuinely ill never received a rating greater than 3, irrespective of additional evidence of perceived control over some aspects of the illness. Similar to Lopez et al. (Lopez et al., 1999), in the current manual this guideline was slightly elaborated: relatives who provided statements which indicated that they perceived their family member to have genuine mental health difficulties, or his/her behaviour resulted from the psychosis (e.g. “when she gets the voices she can’t do anything”) never received a rating greater than 3, unless they also provide evidence to the contrary. Thus if relatives made other statements during the interview suggesting controllability (e.g. “she probably could do a bit more around the house if she tried” or “if she took the meds the voices would be a bit better”), coders were permitted to deviate from this rule. The same coding guideline and judgement was applied for relatives who clearly implicated God's will or fate as the primary reason for the patient's disorder and symptomatic behaviour.

2.3.1.1.4. Reliability

Study 1 investigated the relationship between controllability attributions and behavioural control attempts, and both assessments were derived from the relatives’ CFIs. During the design of this study it was established that the author would perform the behavioural control codings. Therefore, to ensure independence of the ratings, an independent blind coder was trained by the author, and performed all the controllability attributions codings. The CFI recordings and ratings from the sample of relatives of patients with schizophrenia included in the Hooley and Campbell (2002) US study were used for practice and “gold standard” purposes. Before training others, the author established reliability with the US researchers. The author rated the interviews blind to
the US ratings and to the relatives’ EE status. The Adapted Controllability Attributions manual developed by the author was used for training purposes. During the training period weekly meetings were arranged between the author and the independent coder to review and discuss the ratings. The coder presented evidence for each rating in these meetings, and in cases of discrepancies a consensus was usually reached by discussing the evidence and by listening to part of the interview to support a given rating. Further reliability training details and interrater reliability results can be found in the individual Study 1 manuscript (Chapter 3).

2.3.1.2. Types of Behavioural Control measure

The Types of Behavioural Control measure was developed and used in Study 1 to assess predominant types of behavioural control attempts in relatives of people with recent-onset psychosis, based on the Hooley and Campbell (2002) guidelines. The stages involved in the development of this manual and the coding procedure are next described and the manual is reproduced in the Appendix 7.

2.3.1.2.1. Development of the Types of Behavioural Control manual

2.3.1.2.1.1. Background and rationale

The first stage in the development of the Types of Behavioural Control manual involved identifying and obtaining previous measures of behavioural control used to assess behavioural control attempts in relatives of people with psychosis. Two previous studies that have developed measures of behavioural control were identified: the Hooley and Campbell (2002) study and the Peterson and Docherty (2004) study. Following the Weisman et al.’s (1993) method of rating attributions of perceived patient controllability, Hooley and Campbell developed a new coding criteria to assess relative’s behavioural control attempts towards a family member with psychosis.
Peterson and Docherty developed a behavioural control measure for parents with children with a diagnosis of schizophrenia. Both manuals used in these studies were obtained from authors. None of these measures distinguished types of behavioural control attempts, therefore there was a need to adapt the exiting manuals.

In the Hooley and Campbell’s instructions all statements (extracted from the CFI) that indicate attempts (made/being made) by the relative to influence or control the patient or the patient’s behaviour are first individually rated as mildly, moderately or highly controlling; and then considering the frequency and intensity of the behaviour all statements are taken into account to assign a global rating of the relative’s exertion of control on a 5-point Likert scale (1, virtually no attempts to influence or change the patient’s behaviour - 5, frequent, highly controlling attempts to change the patient’s behaviour). In this coding system each behavioural control statement is regarded as mildly controlling if it implies a suggestion or a polite request; if the statement indicates a more pronounced attempt to influence the patient, it is coded as moderately controlling; and if the statement suggests the use of force by the relative, marked impingement of the patient’s free will or the issuing of an ultimatum, it is coded as highly controlling. Peterson and Docherty also used a global rating scale to assess relatives’ control attempts toward the patient, in conjunction with a frequency count assessment. In their coding system all statements (extracted from the CFI) that indicated attempts (whether successful or not) to control the patient’s behaviours were rated in two ways: using a statement number count, and assigning a global control rating to each relative using a 5-point Likert scale (1, not at all controlling - 5, extremely controlling).

As previously mentioned, Study 1 aimed to explore links between behavioural responses and beliefs in a sample of recent-onset relatives, and to identify predominant
types of controlling behaviours in these relatives. In a previous study, Hooley and Campbell (2002) also examined associations between controlling behaviours and cognitions in a sample with more longstanding psychosis using a measure of behavioural control originally created by these authors, which has shown to reliably measure controlling behaviours. To keep consistency and to enable comparisons of methods and results with this work a decision was therefore made to develop the Types of Behavioural Control measure in line with the Hooley and Campbell assessment. Furthermore, their coding system captures the degree and frequency of the behavioural attempts, but most importantly the quality of these attempts within a continuum, which gives more scope for developing a measure aimed to differentiate types of behaviour control. The current manual was developed to assess specific types of behavioural control; for those above stated reasons, the manual was derived from the Hooley and Campbell’s original instructions. However considerable improvements and new specifications were introduced, which will be outlined in the subsequent section. These modifications were deemed important to allow assessing different types of behavioural control attempts.

2.3.1.2.1.2. Adaptations and novel measures

The most important changes to the Hooley and Campbell’s coding system were that the new manual instructions were elaborated and adapted to assess behavioural control in relatives of people with recent-onset psychosis, and that new specifications to assess the ‘direct influencing’ and ‘buffering’ types of behavioural control attempts were developed. This was deemed important for the purpose of examining whether different behavioural attempts were linked to the criticism and EOI component of EE. Further changes were also made to improve the Hooley and Campbell rating and coding system, by making criteria more specific and objective, and by providing clearer rating and
coding instructions, allowing increasing interrater reliability and facilitating the coding procedure. Therefore, the second stage in the development of the manual involved making considerable amendments to the coding system; these are described below along with the main methodological issues encountered.

The Hooley and Campbell system was originally created to assess controlling behaviours in relatives of people with diagnoses of schizophrenia and depression, and their instructions gave only few examples related to a sample of people with longstanding illness. Study 1 aimed to assess behavioural control attempts in relatives of people with a recent-onset psychosis diagnose, therefore in the new manual examples specific to recent-onset psychosis were included. Most examples were extracted from the CFI recordings. Whenever suitable examples from these recordings were not possible to find, fictional ones were given.

The Types of Behavioural Control measure intended to quantify and categorise qualitative data regarding behavioural control attempts. One limitation of the original Hooley and Campbell rating system was that the coding of individual statements into mild, moderate and high was little specified and only general pointers were given. To overcome this limitation an attempt to improve accuracy was made by developing more specific definitions for each category and by allocating specific anchor points to each type and degree (intensity) of behavioural control. Some of the new moderate anchor points included in the manual were: ‘command/order to engage in/elicit a behaviour (including yelling and shouting)’, ‘persistent reminders’, ‘doing things for the patient that the patient did not ask for exactly’. Further examples and definitions are provided in the ‘Behavioural control individual statement ratings’ table inside the manual (Appendix 7).
Throughout the interviews included in Study 1 relatives recurrently reported engaging in persistent behavioural attempts, but often the information provided about the frequency and permanency of the behavioural attempt lacked specificity. For instance, relatives frequently stated that they engaged in certain behaviours ‘sometimes’ or ‘a couple of times’, but the exact number of these attempts were often unknown. Therefore, in the manual the frequency of the behavioural attempts was incorporated into the degree definition: if the behavioural control attempt was reported to be occasionally exercised (that is, once or twice a week) it was categorised as mild; if the behavioural control attempt was frequently engaged in (that is, more than 3 times per week) it was, at least, categorised as moderate. This instruction, which was not made in the Hooley and Campbell guidelines, was added to the new manual by stating that the frequency (if reported by the relative) of all behaviours reported to be exercised more than once ought to be recorded.

As noted above, an important addition to the new manual was the assessment of relative’s types of behavioural control attempts taking into account the intensity and frequency of the behaviour. The goal was to find a gradient of patterns of behavioural control attempts by combining the degree, frequency and type of the attempt, since some behaviours that relatives use may confer stress to a patient more vulnerable to symptomatic relapse. To achieve this aim each individual behavioural control statement was rated either as a ‘direct influencing’ or as a ‘buffering’ type of behavioural control attempt; in each case the frequency (occasionally or frequently exercised) and the degree of the behaviour (not applicable, mild, moderate or high) was also taken into account. Definitions for each type of behavioural control attempt were developed and anchor points were produced to enable the rating of the degree and frequency of each
behaviour type (for examples and definitions refer to the ‘Behavioural Control Statement Ratings’ table inside the manual in the Appendix 7).

Another issue that was considered in the development of the new manual was the reported tense used to describe the behavioural control attempts. In the Hooley and Campbell instructions the tense of the statements being coded was not taken into account. For instance, the relative could be speaking about ongoing current behavioural control attempts, or about behavioural control attempts that took place in the past. As with the Hooley and Campbell instructions, in the new manual statements made by relatives to influence or control the patient or the patient’s behaviour were extracted from the CFI. These statements refer to relatives’ experiences of living with a family member who has a mental health problem, considering the last 3 months prior to the hospitalisation or relapse event. However, often there is a considerable time gap between the first onset of the illness and the first contact with the mental health services. For this reason, usually it is difficult to assess how far in the past relatives’ behavioural control attempts occurred, how permanent they were and whether or not they are currently being used. To address this issue, in the new manual the focus of the behaviour control attempts was restricted to current and recent past behaviours. Thus, it was established that only current or recent past (referring to the last 3 months) behavioural control attempts would be considered, unless there was clear evidence or it was obviously implied from what was said that the past attempts were still currently being used.

2.3.1.2.1.3. Coding procedure

Consistent with the Hooley and Campbell coding system, the global rating of relative’s controlling behaviour made on a 5-point Likert global scale was maintained in the new
manual. This scale was kept to provide an “overall” impression of the relatives’
controlling behaviours and involved a general judgment about the degree, type and
frequency of behavioural control attempts, taking into consideration the interview as a
whole and the content of all statements. In addition, supplementary measures of
relatives’ two types of behavioural control - ‘direct influencing’ and ‘buffering’ – were
developed and a proportional score for each type of behavioural control was derived.
The coding procedure for the two types of behavioural control was incorporated in the
new manual. Following extraction from the CFI each behavioural control statement was
coded as:

• Direct influencing, buffering or both
• Not applicable/mild/moderately/highly direct influencing
• Not applicable/mildly/moderately/highly buffering

All statements were taken into account and three measures were derived:

• A proportional score for direct influencing
• A proportional score for buffering
• A global behavioural control score rated on a 5-point scale (1, ‘minimally
  behaviour controlling’ to 5, ‘highly behaviour controlling’)

The direct influencing and buffering proportional scores indicated the relative’s
predominant types of behavioural control, and the global score provided an overall
impression of the relative’s behavioural control. Further details about the coding process
and proportional scores calculation can be found in the individual manuscript (Chapter
3).

A number of additional factors were taken into account in making decisions regarding
behavioural control coding: (1) in accordance with the Hooley and Campbell guidelines,
all statements regarding relative’s attempts to have the patient admitted to hospital
during an acute episode of psychosis were not considered for the purposes of rating, because during the hospitalisation process it might be arguable that behavioural control attempts on the part of the relatives are required; (2) all statements regarding relative’s attempts clearly aimed at preventing the patient from self-harming or harming others were only rated when enough information indicating clearly that the attempts to prevent harm to others or self were inappropriate or unnecessary (i.e. the relative exaggerates the threat); (3) consistent with Hooley and Campbell, relatives who made even one statement clearly indicating high control receive at least a rating of 3, even if no other statements suggesting attempts to influence or control the patient were made. In the new manual it was also established that all reported conversations/comments with or about the patient about the illness, symptoms or general behaviour, or any positive or negative voiced opinions were only considered if a specific example was given or if a behavioural control attempt was clearly implied.

2.3.1.2.1.4. Reliability

The author performed all the coding for behavioural control. Similarly to the procedure described above for controllability attributions, recordings and rating materials from the Hooley and Campbell’s (2002) US study were used for practice and “gold standard” purposes. The author was blind to the US ratings. An independent blind coder was trained to evaluate and establish the reliability for the new Types of Behavioural Control measure. Interrater reliability of this measure is reported in manuscript 1 (Chapter 3).

2.3.1.2.1.5. CFI ratings overlap

To assess the independence of the three sets of measures derived from the CFI, the overlap between critical comments, controllability attributions and behavioural control
(direct influencing and buffering) was examined upon completion of all the ratings. All passages containing critical comments, controllability attributions, and behavioural control statements were obtained from the CFI and compared against each other. Statements rated as evidence (that is, same material extracted and rated) for critical comments, controllability attributions and behavioural control statements were coded as 1 (true overlap); statements rated as evidence for only one of the measures were coded as 0 (no overlap). The proportion of overlap between critical comments, ‘direct influencing’ behavioural control and controllability attributions was calculated by dividing the sum of total ‘direct influencing’ statements and of total controllability attributions coded as true overlaps by the total number of critical comments. The same procedure was followed to obtain the proportion of overlap between critical comments, controllability attributions and ‘buffering’ behavioural control. It was found that the overlap between critical comments, controllability attributions and ‘direct influencing’ behavioural control exceeded 33.3% only in six interviews; and that the overlap between critical comments, controllability attributions and ‘buffering’ behavioural control exceeded 33.3% only in two interviews.

2.3.2. Study 2: Self-blame attributions in relatives of people with recent-onset psychosis: associations with relatives’ distress and behavioural control.

Study 2 examined the links between self-blame attributions and distress, and the relationship between self-blaming attributions and behavioural control attempts in a sample of relatives of individuals with recent-onset psychosis. For this reason a novel measure for assessing self-blame attributions in this population was developed. The subsequent sections detail the development and coding procedure of the ‘Self-blame Attributions measure’.
2.3.2.1. Self-blame Attributions measure

For Study 2 a new manual for coding self-blame attributions in relatives was elaborated. The structure of the coding system was similar to the Weisman et al.’s (1993) and Hooley and Campbell’s (2002) coding systems although the content was different. Some aspects from other coding systems were also included (Barrowclough, 1991; Brewin et al., 1991). The full manual is provided in Appendix 8.

2.3.2.1.1. Development of the Self-Blame Attributions manual

2.3.2.1.1.1. Background and rationale

The Self-blame Attributions manual describes the criteria for extracting and coding attributional statements assessed from CFIs conducted with relatives of individuals experiencing a recent-onset of the psychosis. To develop this manual the author sought relevant prior literature describing self-blame measures that have been used to assess these attributions in carers of individuals suffering from a clinical condition. Self-blame attributions have been mainly studied among carers of people with physical disability (such as diabetes or genetic syndromes) or a mental health illness (such as eating disorders or Alzheimer’s disease); and there is some variability in the way that these attributions have been measured. The two most common quantitative approaches used to assess self-blame attributions among these carers have been self-report rating scales (e.g., Pagel, Becker and Coppel, 1985; Tennen, Affleck and Gershman, 1986); and content coding elicited from semi-structured interviews using different coding systems, such as categorical coding (e.g., Affleck et al., 1982; Affleck et al., 1985) or Likert-type rating scales (e.g. Besharat, Eisler and Dare, 2001).

In carers of people with psychosis, considerably fewer self-blame attributions measures have been found. Blaming cognitions in these carers have been mainly assessed in
quantitative studies in three ways: using self-report items that present hypothetical scenes involving self-blame and are rated in Likert scales (e.g. Bentsen et al., 1998; Boye et al., 2002; Weisman De Mamani, 2010); using self-report items that directly ask about self-blame and are rated on Likert scales (e.g. Lobban et al., 2005; Wasserman et al., 2012); or eliciting spontaneous self-blame statements from semi-structured interviews with carers, which are independently coded using different coding systems (Barrowclough et al., 1996; Peterson and Docherty, 2004). Eliciting spontaneous attributional statements from interviews was considered the most suitable method for Study 2 because of the convenience sampling and because carers’ beliefs can be assessed without their responses being led by the researcher’s pre-determined questions, thus overcoming the potential for self-serving or social desirability biases (Barrowclough and Hooley, 2003).

Barrowclough et al. (1996) and Peterson and Docherty (2004) studies have both extracted self-blame attributions from CFI recordings with relatives of individuals diagnosed with schizophrenia, but they have used different coding procedures to assess these attributions. Barrowclough and colleagues (1996) used the Leeds Attributional Coding System (LACS). As previously described, the LACS assess five causal dimensions, but in Barrowclough’s study, self-blame assessment focused on the ‘internality’ dimension (did the relative attribute the event to causes internal or external to him/herself). In their assessment the authors distinguished between a) self-blame statements, in which the relative attributes the cause of the patient’s problems to factors wholly internal to themselves; and b) partial self-blame statements, where the relative attributes the cause of the patient’s problems to factors partially internal to themselves; and a proportional score was used for coding self-blame attributions. In contrast, Peterson and Docherty (2004) coded self-blame attributions using a 5-point Likert scale
(ranging from not self-attributing to extremely self-attributing) using a manual developed by the authors, which was obtained by the author. In many aspects this method resembled the one developed by Weisman et al. (1993) described above.

Thus, for the purpose of Study 2 both the LACS and the Weisman methods were considered. The reasons for choosing the Weisman approach over the LACS in Study 2 were similar to the ones presented above for the Adapted Controllability Attributions manual. The main reasons were that the Weisman method provided a quicker and easier coding system, and the global rating assignment was made within a continuum considering all relevant statements. In addition, Study 2 sought to examine the nature of relatives’ self-blaming beliefs by exploring reasons that relatives give for the onset and exacerbation of their family member’s psychosis. The Weisman method was therefore deemed more suitable for this purpose because it enables a wider scope of beliefs to be included and allows for more fine-grained analysis of relatives’ accounts.

Another important consideration made during the development of the current manual was the definition of self-blame. Research studies assessing carers’ self-blame attributions have relied on slightly different definitions of this construct. Therefore, a review of the empirical studies assessing self-blame in carers of people with mental health conditions was conducted, looking for variability in the definition of self-blame. The findings from this review, presented in the following section, informed the operationalisation process of the self-blame construct in the current manual.

**2.3.2.1.2. Operationalisation of self-blame attributions**

Most studies examining self-blame in relatives of people with psychosis have conceptualised this construct within a causal attributional framework, in which blame
about the negative event (including illness onset or exacerbation; negative behaviours, feelings or characteristics about the patient; current or past situations in the patient’s life; or generally about having a family member with psychosis) is attributed to factors internal to the relative (Barrowclough et al., 1996; Bentsen et al., 1998; Boye et al., 2002; Peterson and Docherty, 2004; Wasserman et al., 2012). Some of these studies have also utilised the terms blame and responsibility interchangeably. For example, in the Peterson and Docherty (2004) study self-blaming statements were defined as beliefs that ‘clearly indicate that the parent feels he/she may be at least partially responsible for the child’s development of schizophrenia’, that is statements in which parents attribute the development (the cause) of their child’s illness to themselves. Self-blame has also been conceptualised in some of these studies as being akin to guilt (Bentsen et al., 1998; Wasserman et al., 2012). As such self-blame or guilt results from explaining a negative outcome for other people by causes controllable by oneself, or more specifically for holding oneself responsible for these events.

Although inconsistencies have been encountered in the definitions of self-blame outlined above, they have been taken into account to operationalise self-blame in the current study. In the current manual self-blame was defined as a statement that comprises one or more given, explored or inferred explanations or causes for the occurrence of a certain negative event, which conveys the carer’s belief (or at least partial belief) that their behaviour/ action/ role/ character (or omission of) contributed, at least partially, to the negative event. The negative event referred to a reported outcome, behaviour or situation that was directly associated with the patient under discussion, including references to: illness (onset or exacerbation); symptoms or related problem behaviours; or any undesirable characteristic of the patient or in the patient’s life. Furthermore, self-blame statements included any utterance in which relatives
implied that they could have done something to prevent or avoid the illness outcome occurring. This last part of the definition was included since a significant proportion of self-blame may be attributed to an individual’s self-implicating perceptions of avoidability (Davis et al., 1996). The next section explains the criteria for extracting and coding self-blame statements, and for assigning a global rating of relatives’ perceived self-blame on a 4-point scale.

2.3.2.1.3. Coding procedure

Self-blame attributions were assessed from the CFI and measured relatives’ current and past beliefs that, at least partially, they played a role in or could have prevented/avoided the development of the illness and its associated problems. Past beliefs were considered because they often imply continuity to the present (e.g., “I have often thought if it is something that I have done in the past that has made him like this”). Past self-blame statements were only excluded if they explicitly stated a changed current belief (e.g. “I used to feel guilty, but I don’t anymore”).

As noted above, the coding system of the self-blame attributions measure used in Study 2 was based upon the Weisman (1993) coding procedure for rating attributions of control. According to their guidelines, global ratings of controllability were made on a 5-point Likert scale. However, in the current manual this scale was not adopted. Self-blame attributions were rated on a 4-point Likert scale instead because the content found for self-blame attributions did not enable very fine distinctions to be made between degrees of self-blame expressed by relatives. Additionally, for self-blame attributions it was deemed important to rate each individual statement (as mildly, moderately, or highly self-blaming) prior to assigning a global rating to each relative. Adding this middle-rating step provided more anchor points for assigning a global
rating and increased the accuracy of relatives’ self-blame global ratings.

Hence, prior to assigning a global rating for perceived self-blame, each statement was first rated as mild, moderate or high in perceived self-blame. Mild statements indicated that relatives contemplated or questioned the possibility of whether or not their own behaviour contributed to (at least in part) or could have prevented the patient’s illness and associated problems, but only for transitory moments and without attributing any real self-blame. Such statements usually implied a desire for having done something different regarding the patient’s illness and related problems. Statements rated as moderate indicated that relatives held contradictory (ambivalent) beliefs about whether or not their own behaviour contributed to (at least partially) or could have prevented the patient’s illness and related problems. These statements often implied relatives’ questioning whether or not they could have done something differently concerning the patient’s illness and associated problems. Statements rated as high explicitly indicated that relatives believed with a significant degree of conviction (but not necessarily an absolute belief) that their own behaviour and/or character contributed to or could have prevented the development of the patient’s illness and related problems. Complete conviction was not required, thus some doubt could still be present. High-perceived self-blame statements generally implied the regret for not doing something differently or for not being aware earlier about the patient’s illness and associated problems.

For this study, exclusively for statements categorised as high in self-blame, a further distinction was made between specific and global self-blame: a) if the relative attributed the blame in question to a specific event/incident (e.g. “It’s all my fault that we had that argument yesterday”) this statement was categorised as specific; b) if the relative attributed the blame in question to a more general event/incident (e.g. “It’s all my fault -
I feel I made him dependent on me’), this statement was categorised as global. This distinction was made for the purpose of establishing a threshold for assigning a global rating of four, which is explained below.

Once each individual statement was rated, all statements were considered in order to assign a global rating on a 4-point scale (1, ‘no perceived self-blame’ to 4, ‘a lot of perceived self-blame’). The degree of conviction of statements made was taken into account in assigning the global rating of perceived self-blame. Relatives who receive a global rating of one reported no self-blame statements or held the belief that they had not contributed or could not have avoided or prevented the patient’s illness and related problems. Global ratings of four indicated that relatives believed to a significant degree of conviction that, at least partially, they (their own behaviour/character) contributed to or could have avoided the patient’s illness and associated problems. Furthermore, a global rating of four was always assigned to relatives who made: a) two or more specific high-perceived statements; or b) at least one global high-perceived statement.

2.3.2.1.4. Reliability

Study 2 examined the links between relatives’ self-blame attributions and behavioural control attempts. Both ratings were extracted from the CFIs conducted with these relatives. Therefore, to ensure the impartiality of both ratings, the author trained an independent blind rater to establish interrater reliability. The independent rater was blind both to the relatives’ EE status and to the research study hypotheses. A similar procedure to the one described above for controllability attributions was followed. The author developed a manual for coding self-blame attributions, which was used for training purposes. Once interrater reliability was achieved the author performed the ratings for self-blame attributions. Further interrater reliability details are described in
2.3.3. Study 3: Expressed Emotion and behavioural control in the daily life of patient-relative dyads experiencing psychosis.

The primary aim of Study 3 was to investigate within EE family environments whether momentary contact between patient-relative dyads and behavioural control attempts within the dyad were related to affect in both members of the dyad, and to patients’ symptoms. An additional aim was to examine whether patients’ momentary symptoms would be associated with increased levels of relatives’ behavioural control attempts. An experience sampling method was therefore chosen because it offers multiple advantages, namely it allows temporal links between interactional responses within the dyad, such as behavioural control responses, and subsequent affect and symptom experiences to be explored. Moreover, this methodology is particularly beneficial for investigating dyads because it allows a concomitant insight into how these responses and experiences interact in dyadic relationships as they naturally unfold in the context of daily life. The following sections provide an overview of the experience sampling method, focusing on research with dyads experiencing psychosis, and detail the specific key methodological consideration involved in the design of Study 3.

2.3.3.1. Overview of the experience sampling method (ESM)

2.3.3.1.1. What is ESM and how does it work?

Originated in the early 70’s with the work of Csikszentmihalyi and colleagues (1977), the experience sampling method (ESM), also known as ecological momentary assessment (EMA) (Stone and Shiffman, 1994), is a standardised technique of collecting quantitative data, in which individuals respond to repeated assessments about their momentary thoughts, emotions and context of experiences throughout their daily
lives within their naturalistic settings (Csikszentmihalyi and Larson, 1987).

Typically, participants receive the ESM self-report questionnaires and scales (either on a set of booklets or displayed on a palmtop or a smartphone device) and a signaling device (usually a wristwatch device, although smart phones may already have this feature incorporated), which emits signals at unpredictable times throughout the day over a short period of time (usually 6 days). After each beep, participants are instructed to stop their activity and fill in the brief ESM self-report questionnaires and scales, describing their current context, thoughts, mood and appraisals of the current situation (Myin-Germeys and Van Os, 2007). When the six days are completed, each participant is debriefed and the materials are collected for further coding.

2.3.3.1.2. Sampling strategies

Momentary assessments can use different sampling techniques to elicit participants’ responses. Three types of sampling strategies can be distinguished: continuous, event and time sampling. Continuous sampling assesses participants’ responses constantly for a brief period of time, like in video/sound ethnography studies or biotelemetry studies, which monitor vital signs, such as heart rate or skin conductance. Event sampling assesses participants’ responses whenever a pre-designated target event occurs, such as reporting after smoking a cigarette or after having a panic attack. Time sampling assesses different moments in time, which are not related to a specific event; and it can either follow a fixed or a random scheme. Fixed time sampling requires participants to provide their responses at fixed time points (e.g. weekly assessment studies; end of the day studies; hourly report studies); whereas in the random sampling participants provide their responses at ‘unpredictable’ time points when prompted by a semi-random stratified signal (that is, a signal that appears to be random to the participant, but that is
established, and therefore known by the researcher). Randomising the occurrence of beeps throughout the day minimises participant reactivity, assures concurrent and contextual validity and present a clear picture of situational and diurnal variations in experience (Devries and Delespaul, 1989).

Most ESM studies use randomised stratified sampling and this strategy was also employed in Study 3, but in a synchronised manner. That is, each member of the dyad was signaled at the same semi-random momentary time point to provide independent self-reports about their feeling, experiences, and dyadic interactions multiple times throughout the day. This approach was chosen because it allows for dyadic contact and interactions to be captured as they naturally occur within the context of participants’ daily life. This provides ecologically valid representation of these interactions, overcoming the recall bias and overestimation issues associated with traditional retrospective assessments (Ben-Zeev et al., 2012). Furthermore, synchronised sampling provides shared snapshots of the same moment, providing insight into the interplay between affect and symptom experiences, and behavioural responses within the dyad. Participants were aware of the synchronised approach, but unaware of the sampling scheme, other than that it would be ‘unpredictable’. To implement the synchronised sampling specific adjustments had to be made, these will be detailed below in the ‘specific design considerations’ section for the current study.

2.3.3.1.3. Values associated with ESM – why is ESM suitable for Study 3

ESM is a powerful technique that captures participants’ life as it is directly perceived from one moment to the next, affording a unique opportunity to examine fluctuations in cognitive and emotional phenomena, and to establish links between these psychological inner processes and the external environment. This is particularly relevant to the
objectives of Study 3, given that the primary aim of this study was to investigate how affect and symptoms experiences in dyads were associated with dyadic contact and behavioural interactions in EE family environments.

Another asset from this methodology particularly suitable for Study 3 is that ESM assesses psychological phenomena in real-time and in real-context, providing more accurate and ecologically valid snapshots of the individual’s psychological workings. This is particularly pertinent in investigating real-time-context perceptions between dyads and in examining how contextual variables, such as being around the family member or experiencing certain behavioural control attempts, relate to affect or symptom severity. ESM affords the opportunity to capture dyadic interactions as they naturally occur in the context of daily life (Janicki et al., 2006). Traditional self-report assessments are not momentary or naturalistic in nature, relying heavily on participants’ retrospective recollections, and on reports collected in artificial settings, which makes them more susceptible to biases. The prospective and real-time nature of the ESM assessments considerably diminishes the risk of memory and contextual bias. EE and behavioural control have been previously researched either retrospectively or within the constraints of an artificial lab setting, but not using momentary assessments. ESM allows for the investigation of these constructs to be carried out in the participants’ environment and as part of their everyday routines, therefore it was implemented in Study 3.

ESM has the benefit of being an inclusive assessment technique, providing not only repeated assessments of internal psychological states, but also of the individuals’ context. Thus, especially pertinent to the aims of the current study, ESM is an excellent tool to study reactivity to contextual features (Myin-Germeys and Van Os, 2007),
namely behaviourally controlling interactions and encounters with high- and low-EE relatives. On the other hand, the multiple moment-to-moment assessments allow not only for between-person investigations to be carried out, but also for the investigation of within-person processes. This is important because within-person analyses have the potential to reveal individual patterns of inner variability that would not be become apparent at the mean level of between-person analyses (Scollon et al., 2003). Furthermore, ESM allows examining the temporal order of relationships between variables (Stadler et al., 2012). This is valuable for Study 3 because it offers the possibility to determine, for instance, whether a relative’s behavioural control response is a consequence or an antecedence of the patient’s symptom experience. In addition, within-person analyses are also sensitive to differences within individuals that emerge over time and across situations, in terms of variability or intensity of behaviour and feelings (Scollon et al., 2003). Mood and symptoms are likely to vary over time in people experiencing psychosis, so ESM is advantageous, to elucidate how these variations relate to situational factors, such as being in the presence or absence of a relative or carer.

2.3.3.1.4. Challenges associated with ESM

Despite the benefits noted above, ESM also has its own pitfalls, particularly its demanding and time-consuming nature. With participants being required to complete repeated self-report questionnaires throughout the day over several days, this methodology becomes heavily reliant on the motivation and self-awareness of the participant. This can be challenging, particularly for people experiencing psychotic symptoms, who often show signs of decreased cognitive capacities (Elvevag and Goldberg, 2000; Heinrichs and Zakzanis, 1998; Schaefer et al., 2013) or diminished insight (Debowska, Grzywa and Kucharska-Pietura, 1998; Lysaker et al., 2013).
Furthermore, the effort required on the part of the participant to complete multiple assessments several times per day and to carry the devices at all times, may lead to high rates of participant attrition (Barrett and Barrett, 2001).

Even though the multiple probing that forms part of ESM provides an opportunity to gather ecologically valid momentary assessments of experience, it also has the potential to create reactivity effects. The repeated self-assessments per day about internal states and behaviours may lead to an increase in participants’ self-reflected awareness, thereby influencing the phenomena being measured (Barrett and Barrett, 2001). Another important issue is that certain types of participants, for instance those who are more motivated, agreeable or who have more altruistic reasons, may be under or over represented in ESM studies, introducing a selection bias problem (Scollon et al., 2003).

Although some pitfalls have been pointed out about this method, ESM remains a valid and reliable research tool. ESM has been employed in different research areas, including the study of psychosis, and its feasibility, validity, and reliability has been demonstrated in such patient populations (Granholm, Loh and Swendsen, 2008; Kimhy et al., 2006; Myin-Germeys, Delespaul and Devries, 2000; Myin-Germeys, Delespaul and Van Os, 2003a; Myin-Germeys et al., 2001a). Furthermore, predictors of compliance in psychotic populations have recently been explored using ESMp and ESMc (explained below) and results showed that symptom severity and demographic characteristics did not predict compliance in individuals experiencing psychosis (Hartley, Varese et al., 2013).

2.3.3.1.5. Assessment format strategies

Since ESM was first introduced, different assessment format strategies have been used
to facilitate the monitoring of daily life experience and behaviour. In its early days the participant’s mood, social context and activities were assessed using a paper-and-pencil strategy (ESMp). Participants were supplied with a signaling device, such as an electronic pager or digital wristwatch, which was pre-programmed to emit a beep at unpredictable moments of the day that prompted individuals to complete their self-reports in an ‘experience sampling form’ (Csikszentmihalyi and Larson, 1987) or a set of booklets (diaries). More recently, computerised strategies (ESMc) have been gradually taking over ESMp. ESMc uses hand-held computers, such as palmtop or personal digital assistants (PDAs), smartphones or other purpose-made devices (e.g. PsyMate), which are pre-programmed to signal participants randomly and, in response to this beep signal, participants use a touch screen to complete their self-reports.

Most ESM studies to date have been implemented using an ESMp strategy because is easily available, inexpensive, user friendly and easy to employ (Kimhy et al., 2012). However, one of the main critiques to this strategy is that compliance cannot be accurately assessed; that is, the exact items’ completion time, the order that the items have been completed and the length of time participants spent completing the items cannot be known precisely (Kimhy et al., 2012; Stone et al., 2003). Furthermore, ESMp does not allow the presentation of different questions to be based on participant’s responses to previous items (branching) and makes data input and management a laborious task (Kimhy et al., 2006). ESMc overcomes these limitations because: it is less prone to inaccurate data collection; it allows automatic data entry; it can record precise ‘time-stamps’ at the moment when the data is actually entered; it is quicker for the participant to fill in and eliminates the possibility of retrospective or advance completion; it minimises the cost and the chance of human error when managing data; and finally it facilitates the use of branching. Furthermore, the precise ‘time-stamp’
feature makes it feasible to investigate the interactions between dyads by synchronising the times of both devices. An additional benefit of ESMc is the capacity to ensure confidentiality with respect to participant responses (Kimhy et al., 2012), making it particularly suitable to study dyads.

Although ESMc is an efficient assessment tool with clear strengths over ESMp, it also has limitations: namely it is expensive; it is more likely to require technical assistance and maintenance (e.g. software installation, setup configurations, data backup, batteries); it is susceptible to damage, loss or to participant’s misuse (e.g. playing with the PDA), consequently increasing the chance of interference with data recording and collection; and finally it only allows a strict use of open-ended questions (Barrett and Barrett, 2001). The demanding and complex nature of the computerised ESM approach could also be considered as a potential drawback for participants, particularly for those experiencing psychosis. However, findings from feasibility studies suggest that ESMc can be successfully employed with individuals experiencing psychosis, and that it is a feasible and valid method for assessing mood and psychotic symptoms among this population (Granholm et al., 2008; Johnson et al., 2009; Kimhy et al., 2006).

2.3.3.1.6. Investigating social context and affect/symptoms fluctuations in psychosis using ESM

The quality of the social environment has been highlighted as an important factor in the course of psychotic disorders (Oorschot et al., 2009). Research using daily sampling methodologies has proven to be useful to explain how contextual differences (such as being alone, at home or in a public place) and specific interpersonal interactions (such as with family members, friends or strangers) may influence symptom variations among individuals experiencing psychosis. In one study by Delespaul and DeVries (1987)
patients with chronic mental illness were compared with nonpsychiatric controls to examine how daily experiences vary between these two groups and how changes in the social context impacted their mental state. Compared to controls, patients spent more time alone or at home, and in these instances they reported more pathological thought content, more daydreams and a greater tendency to drift away from thoughts about current activities. Although daydreaming increased markedly when patients were at home or alone, it shifted to a more focused thinking when they were with others or out of the house. Patients also reported feeling better away from home and among others, compared to controls. In a similar study, deVries and Delespaul (1989) compared nine patients with acute schizophrenia with seven nonpsychiatric individuals using random sampling and found that patients tend to spend more time alone than controls. Interestingly, patients felt better when they were in the company of one to three people, but they felt more ‘depressed’ when they were alone or with more than three people. These findings suggest that being in the company of a few people, rather than being alone or with many people, may serve as a protective factor for the occurrence of psychotic symptoms. However, hallucinatory symptoms seem to be an exception to this, as hallucinatory intensity tends to slightly increase if the patient is in the company of others (Delespaul, Devries and Van Os, 2002).

Further studies with more representative samples have shown that even though social engagement, particularly with few people, seems to have a protective effect against the occurrence of psychotic symptoms, this differs according to the type of social company. It has been demonstrated that being in the presence of familiar people, rather than being alone or with strangers, decreased the risk of subsequently experiencing delusions in individuals diagnosed with chronic schizophrenia (Myin-Germeys, Nicolson and Delespaul, 2001b). Similarly, Collip and colleagues (2011) found that individuals with
medium levels of trait paranoia reported increased paranoid thinking and perceived social threat when in the company of less familiar people. However, for highly paranoid individuals, social company was no longer a determinant for their paranoid experiences. Studies with at-risk nonclinical populations further showed that the type of social company influences the occurrence of subclinical psychotic experiences in daily life. Individuals at risk of trait paranoia reported higher levels of social threat in the company of less familiar people compared to being with familiar people (Collip et al., 2011). In line with this, being in the presence of unfamiliar people (as opposed to being with familiar company) increased the occurrence of unusual experiences in psychosis-prone individuals (Verdoux et al., 2003). Furthermore, psychosis proneness predicted increases in anxiety and depression scores in situations where the individuals were likely to be confronted with social encounters with people that they did not know well (Husky, Grondin and Swendsen, 2004).

On the other hand, Verdoux and colleagues (2003) found that in individuals at risk of developing psychosis, change in the social company was a stronger predictor of delusional experiences than social company per se. Specifically, compared to no change in social company, participants’ likelihood of experiencing delusions increased when they changed to being with unfamiliar individuals, and decreased by changing to the company of familiar individuals. This contrasts with the finding reported by Myin-Germeyens et al. (2001b), which did not find that change in company had any significant effect in predicting delusional moments.

These findings suggest that the variation of symptoms and affect is influenced by characteristics of the social context to an important extent. Indeed, being in the company of others, especially family members or friends, seems to be beneficial
towards preventing the occurrence of psychotic experiences, with the exception of hallucinations. However, for paranoid thinking the social context becomes independent when individuals experience severe symptoms. This highlights the utility of ESM paradigms when investigating social context and affect/symptoms experiences and the interplay between the two.

2.3.3.1.7. Utility of ESM to investigate interpersonal interactions and affect/symptoms fluctuations

Experience sampling paradigms have been usefully applied to elucidate how social company can impact on the variation of affect and symptoms in psychosis. However, less is known about the quality of these social contacts and how they may impact on affect and psychotic experiences in this population. Momentary research with bulimia suggests that not only is being with others particularly important in the variation of symptoms and mood, but also the quality of these interactions. Okon and colleagues (2003) studied 20 adolescent girls clinically diagnosed with bulimia nervosa using ESM and found that day-to-day family stressors, such as arguments or disagreements, could be important predictors of bulimic symptom variations among those girls who perceived their family environment to be more dysfunctional (that is, perceived as having high conflict and low emotional expressiveness). However, this was not found when girls perceived their family environment as more normal. This study highlights the importance of sampling daily interpersonal interactions within key relationships to elucidate how these may impact on the experience of mood and symptoms, particularly in patients with psychosis.

On the other hand, social stressors in daily life have also been shown to be key contributors to mood and symptom fluctuations in psychosis. It has been demonstrated
that small daily stressors predicted negative emotional reactions both in patients with psychosis and in their first degree relatives (Myin-Germeys et al., 2001a). Furthermore, minor stresses have also been found to be associated with intensity of psychotic experiences in patients with psychosis in state of clinical remission (Myin-Germeys, Delespaul and Van Os, 2005), and with sub-clinical psychotic experiences in persons who are genetically at risk of developing psychosis (Lataster et al., 2009; Myin-Germeys, Delespaul and Van Os, 2005; Myin-Germeys et al., 2001a). These findings promote the value of ESM and suggest that subtle disturbances in the flow of daily life contribute to the variation of mood and symptom experiences. There is rather less research using daily sampling techniques to help us understand how daily life stressors, particularly those that might occur during interactions within key relationships, may impact on mood and symptoms in patients with psychosis.

2.3.3.2. Specific design considerations for Study 3

The following sections detail specific design issues considered while planning Study 3, taking into account the methodological considerations outline above.

2.3.3.2.1. Sampling scheme

As noted above, following ESM research recommendations (Kimhy et al., 2012; Palmier-Claus et al., 2010) Study 3 employed the traditional semi-random stratified sampling strategy prompting participants 10 times per day over 6 consecutive days, including one weekend. A weekend was always included in the sampling scheme to provide a more inclusive and accurate representation of the participant’s typical weekly activity and to enable potential differences between weekday and weekend routines to be captured. Participants were aware of the number of prompts per day, but were not told the sampling scheme, other than that it would be ‘unpredictable’, with at least one
prompt occurring every 15-90 minutes. In addition, the daily sampling assessments were synchronised for both participants (patient and relative) to ensure that each member of the dyad was prompted to respond at the same time points.

Usually in mental health research the sampling scheme occurs between 7:30 and 22:30, but for Study 3 the sampling frame started at 9:00 and finished at 24:00. This adjustment was made to ensure that the sampling would occur during times at which dyads were likely to be together, taking into consideration two important aspects: some carers might work and therefore be away during typical working hours (9:00 to 17:00); on the other hand sleep disturbances are a common feature in people experiencing psychosis (Jagannath, Peirson and Foster, 2013; Monti et al., 2013) and medication side effects, such as sleepiness and slowness, also tend to be evident in this population (Monti and Monti, 2004). Thus it was expected that for some of the participants experiencing psychosis the average of sleeping and waking hours would differ from those of other populations. In spite of this, all participants were advised not to change their daily or sleeping routines to fit in the sampling scheme, as this would diminish the accuracy of the data provided.

Although participants were prompted 10 times each day, it was anticipated that some of these prompts would be missed. Therefore, to ensure representativeness of the data (Palmier-Claus et al., 2010), a cut off of 20 (out of a possible 60) valid sampling reports was imposed for each participant. Any participants who provided less then a third of the data were excluded from the analyses.

2.3.3.2.2. Assessment format

Given the ESMc strengths outlined above, a computerised assessment was adopted in
Study 3. This format was deemed more suitable than paper assessment for this dyads study due to the potential for snooping and conferring associated with paper reporting. It was considered that some of the self-report questions probed about sensitive and private topics, such as current psychotic experiences or perceptions of behavioural control attempts on the part of others, and as a consequence participant’s answers could be less accurate if there was the potential for these responses to be seen by others. Therefore, to ensure that participants confidentiality was maintained a palmtop device (Hewlett Packard; model: Tungsten E2) with ESP software (Barrett and Feldman Barrett, 2000) was chosen to deliver the ESM self-assessments.

However, to ensure that the dyads were prompted simultaneously the signaling devices had to be programmed to emit semi-random signals (beeps) at the same time. The ESP software used to programme the palm devices does not allow this option. With this software palms can only be independently pre-programmed to beep at random, not really enabling synchronisation. Therefore a digital wristwatch (Timex Iron Man) was also used to prompt completion semi-randomly.

In addition, it was thought that the wristwatch would be a more reliable signaling tool than the palm device; because it is less likely to be lost or forgotten and because it is worn on the wrist, the beeps are less likely to be missed or ignored. However, one unforeseen shortcoming from using wristwatches as a signaling tool was that for two participants in Study 3 the pitch of the beeps was inaudible and the volume was not adjustable. In these circumstances, based on a collaborative agreement between the author and the participant, a text message or a phone call was used to prompt completion.
The author programmed all watches to prompt participants using the semi-random stratified sampling schedule. Following each prompt, participants were encouraged to stop their activity and to complete the self-assessments independently in the palm. After data collection, the times on the schedule were matched with the ‘time stamps’ on the palm, which provided the times that data were originally entered on the palm by each participant. A 15-minute window between the prompt and the data entry was established to ensure the momentary validity of the data. However, participants were not aware of this time limit. This cut-off was imposed during data preparation and any entries completed outside this window were excluded from the analyses, as they were less likely to be reliable (Delespaul, 1995).

2.3.3.2.3. Dyads briefing and debriefing

It has been highlighted that participants might be deterred from using electronic devices due to concerns about their ability to successfully handle the equipment (Kimhy et al., 2012; Palmier-Claus et al., 2010). Therefore to ensure that participants were familiar and felt at ease with the palm and wristwatch, a detailed standard briefing procedure was developed and participants were independently briefed on the experience sampling method. This briefing procedure (Appendix 3) was created by the author to make certain that all participants were briefed in a standardised manner, and included a brief script and checklist with the topics that ought to be covered during this visit. The briefing visit usually took place at the participants’ home (except if participants requested otherwise or if there was any indication of risk) and the briefing was always conducted separately for each participant (patient and relative). This extra measure was taken to ensure that confidentiality between members of the dyad was established from the start and to allow participants to raise any concerns freely. The purpose of this briefing visit was to introduce the palmtop device and wristwatch to participants, to explain the ESM
questions layout and coding system (rating scales and open-ended questions) and to invite participants to have a practice trial. This ensured that all the questions were understood and that participants felt confident using the device and completing the self-report questions.

In addition, throughout this visit a number of key principles relevant to the experience sampling methodology were highlighted. These included completing the self-reports on the PALM as soon as possible after hearing beep on the watch, and providing spontaneous responses that reflected their current feelings and experiences rather than a general state appraisal. This ensured that truly momentary experiences were captured enabling a more accurate moment-to-moment assessment. Participants were informed that each time the watch emitted a beep they could either stop the beep by pressing any button on the watch; or if they did not do so or missed the beep, the watch would emit a reminder beep after 5 minutes. Hypothetical situations where participants could not be able to respond immediately (for example, if driving or attending meeting/lecture/church) were discussed, and in such circumstances participants were encouraged to respond at their earliest convenience or if a long time had passed since the beep that this opportunity should be disregarded and wait for the next beep. Furthermore, it was emphasised that the synchronised sampling would require the self-assessments to be provided independently and to be kept private. This is one of the main strengths in applying ESM with dyads, and was intended to allow capturing both participants’ perspectives of the same moment and to preserve participants confidentiality. Finally, participants were reminded of the importance of completing as many self-reports as possible without changing their usual routines. The rationale for this was to acquire psychological phenomena as it naturally unfolds in the realm of daily life, increasing the ecological validity of the data. Participants were instructed to start
filling out the ESM questions the day after the briefing session.

A debriefing visit was arranged for after the 6 days of the ESM phase to collect the devices and to conduct the remaining post-ESM phase assessments, along with a feedback questionnaire about the participants’ involvement on the ESM phase. As noted above, whenever participants did not meet the screening eligibility criteria to proceed to the ESM phase, they were informed of the reasons for this and debriefed over the telephone.

2.3.3.2.4. Item inclusion and design

The ESM items included in Study 3 were predominantly based on previous ESM diary items, but they were amended in several ways to test the study’s specific research questions. Furthermore, given that Study 3 aimed to assess participants’ dyadic contact and appraisals of the current interactions, new items had to be developed. Unlike the standard self-report questionnaire items, ESM items have to encompass the key aspects of the construct being measured in a very concise and truly momentary manner. For this reason, items ought to be thoroughly designed to ensure that they were meaningful and easily understood by participants. Following current ESM recommendations (Kimhy et al., 2012; Palmier-Claus et al., 2010), the items included in Study 3 were formulated taking into account the accuracy and clarity of the statement, favouring colloquial and familiar language. Positively and negatively worded items were included avoiding the use of extreme items. This ensured that some variability in the participants’ reports could be captured over the sampling period. Care was also taken to include statements that reflected momentary experiences rather than global retrospective recollections. Items were identified and selected in several stages. A pre-selection of appropriately worded items was first gathered from previous recordings of interviews undertaken with
carers of individuals with psychosis. These items were revised and adapted multiple
times utilising the feedback from the author’s supervisory team and, as previously
mentioned, from the anonymous service user and carers consultants. The items were
also informally piloted within the author’s supervisory group to assess the acceptability
and variability of the items; but also to verify the feasibility of the procedure, including
synchronisation between the palm and the wristwatch, appropriate wording of the items
and use of branching.

The items included in Study 3 assessed participants’ affect, symptom experiences,
dyadic contact and appraisals of the current interactions. All items were identical for
both participants (patients and relatives) except for the symptom items (absent for
relatives) and for the interaction questions, which were mirrored. For example, if the
patient was asked to rate ‘just before the beep went off he/she was nagging me’ the
relative was asked to rate ‘just before the beep went off I was nagging him/her’. The
used of mirrored items is advantageous in research with dyads as they enable capturing
reported and perceived behaviours within dyadic interactions. The items included a
series of random assessments in the moment and between moments, and were grouped
thematically to assist with ease and accuracy of completion. All items were self-rated
and took about 2 minutes to complete on each occasion. Most of them were scored on a
7-point Likert scale, raging from 1, ‘not at all’ to 7, ‘a lot’. Checkboxes were used to
assess location, main current activity and companionship, and a 7-point bipolar scale
anchored with ‘very unpleasant’ (-3), ‘neutral’ (0) and ‘very pleasant’ (3) assessed
appraisals of contact with other member of the dyad. PDAs do not allow an extensive
use of open-ended questions; therefore only one was used to probe about the most
important event that had happened since the last beep. The subsequent sections describe
in detail the items that were newly created and adapted for Study 3. All relatives’ and
patients’ ESM items are presented in Appendix 9 and 10, respectively.

2.3.3.2.5. Adapted items

2.3.3.2.5.1. Affect

Participants were asked to judge their current affect using 11 items. Of these, 10 were drawn from the positive (happy, cheerful, satisfied, relaxed) and negative (guilty, irritable, anxious, annoyed, sad, lonely) affect sub-scales reported in previous ESM studies with patients with psychosis (Devries and Delespaul, 1989; Myin-Germeys et al., 2005; Myin-Germeys et al., 2001a; Oorschot et al., 2012). One further item (excited) was included based on the anonymous consultant feedback. Adaptations to these items included a slight change in wording from ‘What was I … (just before the beep went off)’ to ‘Just before the beep went off I was…’ in order to reflect truly momentary reports. All items consistently began with this phrase. Affect items were assessed both in patients and in relatives.

2.3.3.2.5.2. Psychosis experiences

Current psychotic symptom experiences were delivered to patients only and were assessed using 9 items, which formed the ‘psychosis symptoms scale’. Previous studies have demonstrated that patients can distinguish between hearing real voices and verbal hallucinations (Delespaul et al., 2002; Romme et al., 1992), for this reason direct items probing about hallucinations were used. Based on previous psychosis studies (Delespaul et al., 2002; Devries and Delespaul, 1989; Myin-Germeys et al., 2005) the items included were ‘I was… hearing voices (that other people cannot hear); and seeing things (that other people cannot see)’. Items associated with delusions in schizophrenia (American Psychiatric Association, 2000) were also included, these were ‘I was… feeling that someone may try to cause me harm; suspicious; feeling unreal; feeling that
my thoughts are being influenced or controlled’. The following items related to psychosis in general were also included ‘I was... afraid I could lose control; unable to get rid of my thoughts; and finding it difficult to express my thoughts’. Similar to the affect items adaptations, these items included a slight wording adjustment to ‘when the beep went off I was…’ to translate momentary experiences and all items began with this phrase.

2.3.3.2.5.3. Dyadic contact

All participants (patients and relatives) were asked to report (yes/no) at each beep whether they were alone or with the other member of the dyad. To maximise the sampling opportunities participants were also asked to indicate whether they had been with the other member of the dyad since the last beep. Contact between dyad members was derived from ESM interaction studies (Janicki et al., 2006; Larson, Richards and Perry-Jenkins, 1994) and defined as any situation where they were directly spending time or doing things together, including telephone or voice/multimedia over Internet contact. The items were ‘Just before the beep went off I was with the other participant’ and ‘Since the last beep I have been with the other participant’.

2.3.3.2.6. New items

2.3.3.2.6.1. Dyadic behaviourally controlling interactions

On each occasion where participants reported momentary contact with the other member of the dyad, a set of 5 branching questions specific to behaviourally controlling interactions was presented. To guarantee that behaviourally controlling interactions were captured, participants were also asked to self-report on these 5 items at a between-beep level (that is, corresponding to the time period between the current momentary assessment and the preceding assessment). In line with previous work (Vasconcelos e
Sa, Wearden and Barrowclough, 2013) behaviourally controlling interactions items were developed to include momentary ‘direct influencing’ and ‘buffering’ behavioural attempts. ‘Direct influencing’ behaviours refer to actions attempting to directly change the patient’s behaviour, such as nagging or encouraging; ‘buffering’ attempts represent any behaviour aiming to take control or do things for the patient, and can be expressed as helping, supervising or taking over. As previously mentioned, behaviourally controlling interaction items were mirrored. For patients these types of interactions were assessed with yes/no responses to the statements ‘Just before the beep went off this person was... and Since the last beep this person has been... encouraging me; nagging me; helping me; taking control of me; keeping an eye on me’. For relatives behaviourally controlling interactions were assessed with yes/no responses to the statements ‘Just before the beep went off I was... and Since the last beep I have been... encouraging him/her; nagging him/her; helping him/her; taking control of him/her; keeping an eye on him/her’.
Chapter 3: Study 1 - Expressed Emotion, types of behavioural control and controllability attributions in relatives of people with recent-onset psychosis

The following paper was published in Social Psychiatry and Psychiatric Epidemiology in September 2013, Volume 48, Issue 9, Pages 1377-1388.
Expressed Emotion, types of behavioural control and controllability attributions in relatives of people with recent-onset psychosis

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3.1. Abstract

**Purpose.** High expressed emotion (high-EE), as compared with low-EE, relatives of patients with long-term psychosis may behave in a more controlling manner towards patients. Furthermore, higher levels of behavioural control have been associated with higher relapse rates. We investigated in a recent-onset sample, the extent to which high-EE relatives engage in controlling behaviours and attribute the patient’s illness to factors within patient’s control. Furthermore, we examined whether criticism/hostility and emotional overinvolvement (EOI) were, respectively, associated with two types of behavioural control (termed ‘direct influencing’ and ‘buffering’). We also investigated if controlling behaviours or attributions were better relapse predictors than EE.

**Method.** Measures of EE, controllability attributions and behavioural control and its subtypes (‘direct influencing’ and ‘buffering’), were derived from Camberwell Family Interviews with 80 relatives of recent-onset psychosis patients. ‘Direct influencing’ attempts denote any behaviour intending to coerce the patient; while ‘buffering’ attempts refer to any behaviour aiming to take control or do things for the patient.

**Results.** High-EE relatives perceived patients as having more control over their illness and were more inclined to attempt to control patients’ behaviour than low-EE relatives. Furthermore, high-EE-critical relatives used more direct influencing attempts, and high-EE-EOI relatives used more buffering attempts, but behavioural control was not associated with relapse in this recent-onset sample.

**Conclusions.** These findings may help us to understand the development of EE in recent-onset psychosis families. Acknowledging and integrating relatives’ attributional and behavioural patterns in designing and delivering clinical and familial early interventions should prove beneficial in meeting the needs of this specific population.
3.2. Background

Expressed emotion (EE) is a robust multi-component measure of family emotional environment, which reflects relatives’ critical, hostile and emotionally overinvolved attitudes towards a family member with mental illness (Leff and Vaughn, 1985). Typically, relatives can be designated as high-EE on the basis of high levels of criticism/hostility and/or high levels of emotional overinvolvement (EOI). Over the past three decades, research findings have consistently demonstrated that patients with a diagnosis of schizophrenia who live with family members characterised by being high in EE are more prone to relapse (Butzlaff and Hooley, 1998). There is considerable evidence that one way in which high-EE relatives differ from low-EE relatives is in their underlying beliefs about the patient’s problems and difficulties. In particular, high–critical-EE relatives are more prone to believe that their ill family members can make more effort to control their symptoms and problem behaviours (Barrowclough and Hooley, 2003), providing support for Hooley’s controllability model that proposes that “high-EE attitudes develop when symptoms are perceived by family members as being to some degree controllable by patients” (Hooley, 1987, p. 190). According to this view of EE, patients’ behaviours that are undesirable and perceived by relatives to be potentially alterable are considered to be likely targets for criticism. Support for Hooley’s proposal has been found not only in studies conducted with relatives of people with more long-term psychosis (Barrowclough et al., 1994; Barrowclough et al., 2005; Brewin et al., 1991; Weisman et al., 1993; Weisman, Nuechterlein et al., 1998; Weisman et al., 2000), but also in studies carried out with recent-onset samples (Lopez et al., 1999; Mcnab et al., 2007; Weisman, Nuechterlein et al., 1998; Weisman et al., 2000).

Hooley and Campbell (2002) demonstrated that as well as making more attributions of
control, high-EE relatives of patients with a diagnosis of schizophrenia exhibit more controlling behaviours directed towards the patients: for example, making direct suggestions, checking up on patients or, more extremely, applying coercion. There is also some suggestion in the literature that a relative’s critical stance may serve as a coping strategy to control the patient’s symptoms (Greenley, 1986; McNab et al., 2007), while their overinvolved attitudes may be driven by negative emotional states (Alvarez-Jimenez et al., 2008; McNab et al., 2007). This is consistent with Barrowclough and colleagues’ (1994) suggestion that the relatives’ beliefs might mediate different coping responses: if relatives attribute the problem behaviour to be controllable by the patient, they will tend to attempt to coerce the patient to improve the undesirable behaviour (for instance, by expressing a critical attitude; this type of behavioural control attempt is termed “direct influencing” hereafter); but if relatives hold the belief that the patient’s problems are less controllable by the patient and more due to external factors, they are more likely to act as a buffer, taking control and doing things for the patient (as seen in overinvolved attitudes and behaviours; this type of behavioural control attempt is termed “buffering”). Thus, for the purpose of this study ‘direct influencing’ attempts refer to any behaviour intending to coerce the patient; while ‘buffering’ attempts concern any behaviour aiming to take control or do things for the patient. Hence, we would expect to see a relationship between the predominant type of controllability beliefs that relatives hold (controllable vs. uncontrollable) and the predominant type of behavioural control they attempt to apply (“direct influencing” or “buffering”). Furthermore, we would also expect to see links between relatives’ critical, hostile and overinvolved attitudes and a predominant type of behavioural control that they may attempt. However, to our knowledge, these premises have yet to be tested.

Although substantial empirical work attests to the EE-relapse association, there is
inconsistent evidence as to whether attributions of control or actual behavioural control attempts are better relapse predictors than the EE measure itself. For example, Barrowclough and colleagues (1994) demonstrated that internal and controllable attributions for a patient’s behaviour made by relatives of patients with a diagnosis of schizophrenia were a better relapse predictor than the relatives’ levels of EE. In contrast, Hooley and Licht (Hooley and Licht, 1997) found that the best predictor of patient relapse was the criticism component of the EE measure. However in a subsequent study, Hooley and Campbell (2002) showed that high levels of behavioural control in family members of patients with an established diagnosis of schizophrenia were strongly associated with poor clinical outcome, but did not find a significant association between attributions of control and relapse.

Research on EE and relapse in recent-onset samples has shown rather more contradictory findings than are evident in people with more established illness. While some prospective studies reported the global status of EE to be the best relapse predictor (e.g. Huguelet, Favre et al., 1995; Neuchterlein et al., 1986; Nuechterlein et al., 1992), other studies have failed to report any association between EE and relapse (e.g. Stirling et al., 1991; Stirling et al., 1993). The present study will therefore investigate associations between controllability attributions, behavioural control and relapse in a sample of relatives of people with recent-onset psychosis.

Our principal hypothesis was that high-EE rated on the basis of high criticism and hostility would be associated with ‘direct influencing’ as a dominant type of behavioural control; and that high-EE rated on the basis of high levels of EOI would be associated with ‘buffering’ as a dominant type of behavioural control. In line with research to date with more longstanding psychosis, we expected to see that high-EE relatives of recent-
onset patients would exhibit higher levels of controllability attributions compared to low-EE relatives and that high-EE relatives of recent-onset patients would make more behavioural control attempts than low-EE relatives. We also hypothesised that there would be a significant association between controlling attributions and behaviours. Finally, we investigated whether behavioural control would be a better relapse predictor than controllability attributions or EE and its components.

3.3. Method

3.3.1. Participants

Eighty relative-patient dyads, who had participated in a study examining distress in relatives (Barrowclough et al., 2014), and for whom usable Camberwell Family Interview (CFI) recordings were available were included in the present study. Relapse data has been reported elsewhere (Lee et al., 2013). Patients and their relatives were recruited from Early Intervention Services (EIS) across six trusts in the north west of England, UK. Dyads met the following inclusion criteria: the relative or carer had at least 10 hours of weekly contact with the patient (where there was more than one relative, then the person with the most significant care role was selected); the relative was caring for a family member aged 16 or over, with a clinical diagnosis of psychosis (as determined by the EIS), who was under their services for no longer than 12 months and who had no evidence of organic psychosis; both participants had sufficient comprehension of English to complete assessments and were able to provide informed consent.
3.3.2. Measures

3.3.2.1. Relatives’ measures

3.3.2.1.1. Expressed Emotion (EE)

The Camberwell Family Interview (Leff and Vaughn, 1985; Vaughn and Leff, 1976) was used to assess relatives’ EE. This semi-structured interview obtains the relative’s reports of the patient’s psychiatric history, symptom behaviours and role functioning as well as eliciting the relative’s subjective attitudes and feelings towards the patient and the illness. EE ratings are made on five scales for each relative: critical comments, hostility, EOI, warmth and positive remarks. The standard conventions for EE cut-off scores were used to categorise relatives as high-EE: six or more critical comments, any hostility or a EOI rating greater than or equal to three. A trained graduate psychologist, who was unaware of the study hypothesis, performed all EE ratings. Interrater reliability was assessed using a second trained independent rater and a random sample of eight tapes from the current study and intraclass correlation coefficients (ICC) were > .8 on all EE scales, including 100 % agreement on EE overall status (Lee et al., 2013).

3.3.2.1.2. Controllability Attributions

Controllability attributions measured the extent to which relatives perceived patients’ behaviours/symptoms as being within patients’ control and were assessed from the CFI using a coding manual, adapted from Weisman et al.’s (1993) guidelines, and incorporating aspects of additional coding systems (Barrowclough, 1991; Brewin et al., 1991; Hooley and Campbell, 2002). Relatives’ controllability attributional statements were defined as any utterance made by the relative implying the relative’s perception of the patient’s capacity/lack of capacity to control his/her disorder/behaviours/symptoms without an exceptional effort. All controllability attributional statements were first rated
individually and categorised as no, mild/mixed or high control (see Table 1). We followed the Weisman et al. (1993) procedure, which takes into account all statements made during the CFI to assign each relative a global perceived controllability rating on a five-point scale (1, no perceived control; to 5, perceived control over virtually all aspects of the disorder).

All controllability attributional statements were extracted and rated by a coder blind to the relative’s EE status and to the study’s hypotheses. Following training the coder independently rated a random sample of eight tapes from the current study. Weighted kappa interrater reliability for global controllability scores was $k = .86$ ($SE = .24$), $p < .0002$.

Table 1

Examples of controllability attributional statements and their ratings, classified into no, mild/mixed and high control

<table>
<thead>
<tr>
<th>Rating score and rating definition</th>
<th>Rating example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No control</strong></td>
<td></td>
</tr>
<tr>
<td>Relative holds the belief that the patient cannot control any aspect of the disorder or that the cause is inevitable or outside the patient’s control.</td>
<td>“She does laugh to herself and smiles to herself, but probably she is hearing voices having a joke at her. I put that down to the illness”</td>
</tr>
<tr>
<td><strong>Mild/mixed control</strong></td>
<td></td>
</tr>
<tr>
<td>• Relative believes that the patient has some degree of control over the reported symptom or behaviour, but some control is also explained by other factors outside the patient’s control; or</td>
<td>“I think a series of events started the voices, like the car accident, losing grandparents and maybe smoking weed. Also being vulnerable has not helped”</td>
</tr>
<tr>
<td>• Relative believes that the problem behaviour or symptom has different explanations, one controllable and</td>
<td>“I don’t think she can do anything more to make the voices better, but I think she could make them more bearable by</td>
</tr>
</tbody>
</table>
other uncontrollable by the patient; or
- Relative is questioning the legitimacy of the patient’s effort to improve the reported symptom or problem behaviour

ignoring them or by keeping herself busy”
“Sometimes I wonder whether he is hearing voices or if he is putting it on to get his own way”

High control
Relative believes that the patient can control without exceptional effort, but is not making reasonable effort to improve the described symptom or related problem behaviour

“I think with the voices it is basically to do with the smoking. Until she does something about the smoking I don’t think it is going to stop”

3.3.2.1.3. Behavioural control

Behavioural control statements referred to any attempt reported by the relative to guide or control the patient or the patient’s behaviour. Following Hooley and Campbell’s (2002) procedure, relatives’ behavioural control statements were extracted from the CFI and rated using a five-point behavioural control rating scale (1, minimally behaviour controlling; to 5, highly behaviour controlling) for an overall impression of behavioural control. Additionally, for the current study new supplementary measures of relatives’ two types of behavioural control were developed - ‘direct influencing’ and ‘buffering’ – and a proportional score for each type was derived. Direct influencing behavioural statements referred to any attempt aimed at changing the patient’s behaviour. Such attempts could be as mild as a polite advice/request or an occasional reminder, through to extreme behaviours such as using intimidation or issuing ultimatums (see Table 2 for examples). Buffering behavioural statements denoted any attempt indicating that the relative acted as an agent of change, by proactively taking control or by doing things for the patient, ranging from a mild supervising or joint planning, to more intrusive actions like restricting possessions or stopping the use of items (see Table 2 for examples). A
manual for coding behavioural control and its types is available from the first author.

Following extraction, behavioural control statements were categorised as direct influencing, buffering or both; and each statement was coded as not applicable/ mildly/ moderately/ highly for direct influencing and as not applicable/ mildly /moderately/ highly for buffering (see Table 2 for coding examples). A proportional score for each type of behavioural control (direct influencing and buffering) was derived to indicate the relative’s predominant style of controlling behaviour. This was obtained by dividing the sum of all moderate and high statements for each type of behavioural control by the total number of statements rated for that particular type. In sum, three sets of behavioural control measures were generated from the CFI: a global behavioural control score, reflecting an overall impression of relative’s controlling behaviour; a direct influencing proportional score and a buffering proportional score, both reflecting the relative’s predominant types of behavioural control.

The first author performed all behavioural control extractions and ratings after achieving reliability using eight recorded interviews from the Hooley and Campbell’s (Hooley and Campbell, 2002) study. Weighted kappa intrrater reliability for global behavioural control was $k = .71$, $(SE = .23)$, $p < .0012$. A second coder blind to study hypotheses and to relative’s EE status was trained and Interrater reliability for the two coders based on eight randomly selected interviews from this study was $k = .75$, $(SE = .23)$, $p < .0004$ for the global behavioural control rating, $ICC = .86$, $p < .010$ for the direct influencing proportional score and $ICC = .97$, $p < .001$ for the buffering proportional score.
### Table 2

Examples of two types of behavioural control statements and their codings, classified into mild, moderate and severe attempts

<table>
<thead>
<tr>
<th>Mild</th>
<th>‘Direct influencing’ behavioural control</th>
<th>‘Buffering’ behavioural control</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Will you do your room?&quot; (<em>polite advice or request</em>)</td>
<td>&quot;I keep an eye on him ‘cause I could tell he was really uneasy (…)&quot;</td>
<td></td>
</tr>
<tr>
<td>“I have told him to get his prescription done every three months” (<em>occasional reminder</em>)</td>
<td>&quot;he went back upstairs and I then followed him upstairs” (<em>supervising</em>)</td>
<td></td>
</tr>
<tr>
<td>&quot;I keep an eye on him ‘cause I could tell he was really uneasy (…) he went back upstairs and I then followed him upstairs”</td>
<td>&quot;So we made a plan. I said right, if I am not in I won’t cook you anything to eat and you can do your own washing, get your own washing basket” (<em>joint planning</em>)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Moderate</th>
<th>‘Direct influencing’ behavioural control</th>
<th>‘Buffering’ behavioural control</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Well bad things do happen to people [patient] you have to learn to deal with it (…) Pull yourself together” (<em>direct instruction</em>)</td>
<td>&quot;I’ve made him get on the bus, he wouldn’t get on the bus with me at first, you know, just to show him that it’s not a dreadful thing and he has been alright” (<em>instigating activities</em>)</td>
<td></td>
</tr>
<tr>
<td>“Do you understand that you have to take responsibility for it? Are you waiting for the voices to come back to tell you to ring back for them? You know the voices are going to come back if you don’t take your medication, why do you not organise it?” (<em>confrontational assertion</em>)</td>
<td>“I’ll come home and he has done the washing up, but I’ll have to do it again because he’s just sort of thrown in the sink, and I say – thank you very much, that’s very kind of you” (<em>changing things that patient has done</em>)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>High</th>
<th>‘Direct influencing’ behavioural control</th>
<th>‘Buffering’ behavioural control</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I said to him ‘get out’, I said, ‘I’m locking this door and taking the key with me’, I said ‘don’t you ever do that again” (<em>ultimatum</em>).</td>
<td>“I’ve had to go to the bank and get control of his account a couple of months back as well as him and have joint control so I can keep an eye on it to make sure that he doesn’t get overdrawn” (<em>restricting possessions</em>)</td>
<td></td>
</tr>
<tr>
<td>“The only thing I did frightened him, I just said to him if he didn’t stop smoking that crap if he didn’t cut</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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120
down on it then I would seriously consider asking him to leave, but I wouldn’t I never do it, but I just thought it would shock him” (use of intimidation)

“We didn’t let him watch any television because we noticed if the news came up he wouldn’t shut up. It was all conspiracy theories - they’re just saying this, they’re just saying that” (stopping use of items)

3.3.2.2. Patient measures

3.3.2.2.1. Relapse index

As reported elsewhere (Lee et al., 2013), relapse data was obtained by screening patients’ medical notes from the period between baseline and the 6-month follow-up. Relapse was defined as either a hospitalisation due to psychotic symptom increase or an exacerbation of positive symptoms lasting more than 2 weeks and requiring a change in management, like an increase in antipsychotic medication or in frequency of appointments with the clinical team (Barrowclough et al., 2010; Barrowclough et al., 1999; Lee et al., 2013). Three research assistants, blind to the hypotheses of this study, collected the relapse data. They achieved good reliability on five sets of training medical case notes (all ICCs > .80) before screening the patients’ notes. In this study, the presence or absence of relapse within the first 6 months after baseline was used as a relapse index outcome measure.

3.3.2.2.2. Symptomatology

The Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987) was used to assess psychotic symptomatology and were conducted by five graduate research assistants, who achieved good interrater reliability on a set of ten training interviews and five randomly selected PANSS interviews from the current study (all ICCs > .70). The PANSS total score was used in analyses to control for patient symptoms.
3.3.2.2.3. Substance use

The Structured Clinical Interview (SCID-CV, First et al., 1996) substance use disorders module was used to screen for substance and alcohol abuse in the 3 months preceding baseline. Dichotomous measures for substance and alcohol abuse were adopted in the present study (0, no; 1, yes).

3.3.3. Statistical analysis

Statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 16.0. Preliminary analyses were undertaken to assess for potentially confounding relationships between the primary study variables (EE, behavioural control, controllability attributions and relapse) and demographic (e.g. age, gender, affiliation to patient, number of weekly contact hours between the patient and the relative, CFI length) and clinical (patient’s substance use and PANSS total scores) variables. Main analyses using independent samples t tests, analyses of covariance, multiple regression adjusting for potential confounders were conducted to test the study hypotheses. All analyses were two-tailed.

To address the possibility that measures of behavioural control (including its types), critical comments and controllability attributions taken from the CFI were confounded, the level of overlap between each of these measures and the other two was analysed. All passages containing critical comments, controllability attributions and behavioural control statements were extracted from the CFIs and compared against each other. Statements rated as evidence for all three measures were coded as one overlap; statements rated as evidence for only one of the measures were coded as zero overlap. The proportion of overlap between direct influencing behavioural control, critical
comments and controllability attributions was calculated by dividing the sum of total direct influencing statements and of total controllability attributions coded as overlaps by the total number of critical comments. The same procedure was followed to obtain the proportion of overlap between buffering behavioural control, critical comments and controllability attributions. Where more than 33% of data points from any two categories were derived from the same material, analyses were re-done without the overlapping cases.

3.4. Results

3.4.1. Descriptive results

Table 3
Descriptive information for sample (N = 80)

<table>
<thead>
<tr>
<th></th>
<th>Relatives</th>
<th></th>
<th>Patients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male/Female</td>
<td>17/63</td>
<td>21.2/78.8</td>
<td>61/19</td>
<td>76.2/23.8</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>4</td>
<td>5.0</td>
<td>64</td>
<td>80.0</td>
</tr>
<tr>
<td>Cohabitating</td>
<td>10</td>
<td>13.0</td>
<td>4</td>
<td>5.0</td>
</tr>
<tr>
<td>Married</td>
<td>47</td>
<td>59.0</td>
<td>11</td>
<td>13.8</td>
</tr>
<tr>
<td>Separated/Divorced</td>
<td>14</td>
<td>18.0</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>Widowed</td>
<td>4</td>
<td>5.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>67</td>
<td>84.8</td>
<td>71</td>
<td>89.9</td>
</tr>
<tr>
<td>Black</td>
<td>3</td>
<td>3.8</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>Asian</td>
<td>3</td>
<td>3.8</td>
<td>5</td>
<td>6.3</td>
</tr>
<tr>
<td>Mixed</td>
<td>4</td>
<td>5.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>2.5</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Occupational status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>25</td>
<td>31.6</td>
<td>65</td>
<td>81.2</td>
</tr>
<tr>
<td>Employed</td>
<td>51</td>
<td>64.6</td>
<td>15</td>
<td>18.8</td>
</tr>
<tr>
<td>Retired</td>
<td>3</td>
<td>3.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship with patient</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural mother</td>
<td>54</td>
<td>68.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural father</td>
<td>9</td>
<td>11.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step father</td>
<td>1</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other blood relative</td>
<td>3</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unrelated carer</td>
<td>1</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner</td>
<td>12</td>
<td>15.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Expressed Emotion

<table>
<thead>
<tr>
<th>Low/High</th>
<th>29/51</th>
<th>36.2/63.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>High EE (CC only)</td>
<td>12</td>
<td>15.0</td>
</tr>
<tr>
<td>High EE (hostility only)</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>High EE (EOI only)</td>
<td>18</td>
<td>22.5</td>
</tr>
<tr>
<td>High EE (CC and hostility)</td>
<td>8</td>
<td>10.0</td>
</tr>
<tr>
<td>High EE (CC and EOI)</td>
<td>6</td>
<td>7.5</td>
</tr>
<tr>
<td>High EE (hostility and EOI)</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>High EE (CC, hostility and EOI)</td>
<td>5</td>
<td>6.2</td>
</tr>
</tbody>
</table>

Diagnosis

| None¹ | 9 | 11.0 |
| 1st EP | 54 | 68.0 |
| Drug induced 1st EP | 4 | 5.0 |
| Schizophrenia | 9 | 11.0 |
| Affective Psychosis | 4 | 5.0 |

Substance use at baseline

| Present/Absent | 16/58 | 21.6/78.4 |

Relapse at 6 month FU (n=69)

| Yes/No | 18/51 | 26.1/73.9 |

Behavioural control statements

| Total | 1458 |

Controllability attrib. statements

| Total | 1671 |

<table>
<thead>
<tr>
<th>Age</th>
<th>Mean (SD)</th>
<th>Range</th>
<th>Mean (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>46 (8.9)</td>
<td>26-77</td>
<td>24 (5.8)</td>
<td>17-44</td>
<td></td>
</tr>
</tbody>
</table>

| Years in full time education | 13 (2.5) |
| Weekly contact hours with patient | 32 (19.6) | 7-84 |
| CFI length (in minutes) | 82 (21.8) |
| Critical comments | 4.8 (3.8) | 0-16 |
| EOI score | 1.9 (1.4) |
| Behavioural control statements | 18.2 (7.8) | 3-40 |
| Behavioural control score | 2.7 (1.1) |
| Controllability attributions | 20.9 (8.4) | 6-48 |
| Controllability attributions score | 2.0 (0.96) |

Note. 1. With psychotic symptoms evident and meeting inclusion criteria for early intervention services

Abbreviations: EP= episode psychosis, CC= critical comments, EOI= emotional overinvolvement, FU= follow-up, attrib.= attributions.
3.4.1.1. Patient sample

Patients’ demographic and clinical variables can be seen in Table 3. Relapse data was available for 69 and PANSS total scores for 75 of the 80 patients in the sample. Remaining relapse data was not available because the information was not adequate to make a valid rating or could not be accessed. No significant differences were found on the PANSS total score at baseline, controllability attributions, behavioural control and EE variables between the 66 cases with complete data and the 9 cases that were lost to follow-up.

3.4.1.2. Relative sample

Relative’s descriptive information is provided in Table 3.

3.4.2. Controllability attributions and relatives’ EE status

Preliminary univariate analyses showed that patient age ($r = - .23, p = .037$) and drug use ($t(73) = -2.4, p = .021$) were significantly associated with controllability attributions score. On average, relatives of patients currently using drugs ($M = 2.6, SE = .24$) had significantly higher controllability attributions scores than relatives of patients currently not using drugs ($M = 1.9, SE = .12$), $r = .27$. $T$ test showed that high-EE relatives’ controllability attributions scores were significantly higher than low-EE relatives, $t(78) = -2.87, p = .005$ (Table 4). The next analysis used ANCOVA to compare the controllability attribution scores of high versus low-EE relatives controlling for patient drug use ($F(1, 71) = 4.97, p = .029$). The difference between the high and low-EE groups in terms of their controllability attributions scores remained significant after controlling for patient drug use, $F(1, 71) = .69, p = .02, partial \eta^2 = .07$. 

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3.4.3. Global behavioural control and relatives’ EE status

Preliminary univariate analyses showed that the relatives’ gender \((t(78) = -2.7, p = .01)\), number of children \((r = .24, p = .04)\) and CFI length \((r = .37, p = .001)\) were significantly related with global behavioural control score. On average, female relatives \((M = 2.9, SE = 1.08)\) had significantly higher global behavioural control scores than male relatives \((M = 2.1, SE = .99), r = .28.\) \(T\) test revealed that high-EE relatives had significantly higher global behavioural control scores than the low-EE relatives, \(t(78) = -2.87, p = .005\) (Table 4). The subsequent analysis used ANCOVA to compare behavioural control attempts of high versus low-EE relatives while controlling for relative’s number of children \((F(1, 75) = 3.99, p = .049)\) and for CFI length. \((F(1, 75) = 12.03, p = .001)\). To avoid breaking ANCOVA assumptions the covariate relatives’ gender was dropped from this analysis as it was significantly associated with EE status, \(\chi^2(1) = 4.76, p = .045.\) Females were significantly more likely to be rated as high-EE than males and the effect size was .24. When these covariates were included in the analysis the difference in behavioural control scores between the high and low-EE groups remained significant, \(F(1, 75) = 5.99, p = .017, partial \eta^2 = .074.\)

**Table 4**

Mean controllability attributional scores, behavioural control scores, direct influencing and buffering proportional scores by high- and low-EE relatives \((N = 80)\)

<table>
<thead>
<tr>
<th></th>
<th>High EE relatives ((n = 51))</th>
<th>Low EE relatives ((n = 29))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controllability attribution score</td>
<td>2.24 ± 0.99</td>
<td>1.62 ± 0.78</td>
</tr>
<tr>
<td>Behavioural control (global score)</td>
<td>2.98 ± 1.01</td>
<td>2.28 ± 1.13</td>
</tr>
<tr>
<td>Direct influencing proportional score</td>
<td>0.13 ± 0.05</td>
<td>0.09 ± 0.05</td>
</tr>
<tr>
<td>Buffering proportional score</td>
<td>0.51 ± 0.14</td>
<td>0.37 ± 0.24</td>
</tr>
</tbody>
</table>
Direct influencing behavioural control and relatives’ EE status. The proportion of all behavioural control attempts that were classified as ‘direct influencing’ was calculated (see “Method” section for proportional score calculation). A logarithm transformation was used to improve the normality of this variable (Tabachnick and Fidell, 2005) and the transformed variable was used in all further analyses. Preliminary bivariate analyses showed that patient age ($r_s = -0.32, p = .004$) and CFI length ($r = 0.37, p = .001$) were both significantly related to the proportional direct influencing score. $T$ test showed that high-EE relatives had higher proportional direct influencing scores than low-EE relatives, this difference was highly significant, $t(78) = -3.39, p = .001$ (Table 4).

Direct influencing behavioural control and EE components. We examined whether the high-EE components (critical comments, hostility, EOI) were associated with proportional direct influencing scores. Critical comments and hostility were correlated with proportional direct influencing score and with each other; EOI was not significantly correlated with proportional direct influencing score (Table 5). A multiple regression using forced entry was conducted in order to predict proportional direct influencing scores (dependent variable) on the basis of EE components (critical comments and hostility). After step 1, with only the covariates in the equation, $R^2 = 0.16$, $F(2, 77) = 7.20, p = .001$. CFI length contributed modestly to the prediction of ‘direct influencing’ behavioural control, $\beta = 0.21, t(75) = 2.05, p = .044$. After step 2, with critical comments and hostility added to the equation, $R^2 = 0.33, F(4, 75) = 9.13, p < .001$, indicating that these variables explained a significant proportion of the ‘direct influencing’ behavioural control variance. Critical comments predicted ‘direct influencing’ as a dominant type of behavioural control attempt, $\beta = 0.56, t(75) = 4.15, p = .001$. Hostility also contributed to ‘direct influencing’ as a dominant type of behavioural
control, $\beta = -0.26$, $t(75) = -2.02$, $p = .047$.

### 3.4.4. Buffering behavioural control and relatives’ EE status

The proportion of all behavioural control attempts that were classified as ‘buffering’ was calculated (see “Method” section for proportional score calculation). A square-root transformation was used to increase the normality of this variable (Tabachnick and Fidell, 2005) and the transformed variable was used in all further analyses. Preliminary univariate analyses of potential confounding variables found that only relative’s gender ($t(78) = -2.8$, $p = .006$) was significantly related to the proportional buffering score, with females ($M = .49$, SD = .18) having higher proportional buffering scores than males ($M = .36$, SD = .23). $T$ test showed that high-EE relative’s proportional buffering scores were significantly higher than low-EE relative’s proportional buffering scores. Since Levene’s test was significant $p < .001$ homogeneity of variances was not assumed, but the between group difference was significant with the adjusted degrees of freedom, $t(39.06) = -2.89$, $p = .006$ (Table 4).

### 3.4.5. Buffering behavioural control and EE components

The next analyses examined whether the high-EE components (critical comments, hostility, EOI) were associated with proportional buffering scores. Critical comments and EOI were both significantly correlated with proportional buffering score, yet not significantly with each other (Table 5). To test which high-EE components would predict buffering, a multiple regression using forced entry was carried out with proportional buffering score as the dependent variable. The covariate relative’s gender was not entered into the regression due to its significant association with the predictor variable EOI. Both critical comments, $\beta = .22$, $t(77) = 2.06$, $p = .043$, and EOI, $\beta = .29$, $t(77) = 2.74$, $p = .008$, significantly and independently predicted proportional buffering...
scores, that is they predicted ‘buffering’ as dominant type of behavioural control attempt explaining 14 % of the variance in buffering, $R^2 = .14$, $F(2, 77) = 6.26$, $p = .003$.

### 3.4.6. Controllability attributions and behavioural control

Bivariate analysis revealed that relatives’ controllability attribution scores correlated significantly with relative’s global behavioural control scores (Table 5).

Overlap analyses showed that in only six interviews, was there substantial overlap (that is > 33 % statements rated on more than one construct) for direct influencing behavioural control, critical comments and controllability attributions; in only two interviews was there overlap for critical comments, controllability attributions and buffering behavioural control. Repeating all analyses without the cases in which there was overlap made no difference to the pattern or significance of the findings.

### 3.4.7. Controllability attributions, behavioural control, EE and clinical outcome

#### Controllability attributions and clinical outcome

Controllability attribution scores in relatives of patients who relapsed at 6-month follow-up ($M = 2.22$, $SD = 1.06$) were not significantly different from those of relatives of patients who did not relapse ($M = 2.02$, $SD = .97$); $t(67) = -.74$, $p = .46$. 
Table 5
Correlations between expressed emotion components, controllability attributions, behavioural control and its types (N = 80)

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Critical comments</td>
<td>4.84</td>
<td>3.83</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Hostility</td>
<td>.28</td>
<td>.68</td>
<td>.57**a</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. EOI</td>
<td>1.92</td>
<td>1.36</td>
<td>.06</td>
<td>.01a</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Warmth</td>
<td>3.15</td>
<td>1.18</td>
<td>-.44**</td>
<td>- .40**</td>
<td>.13</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Positive remarks</td>
<td>1.45</td>
<td>1.64</td>
<td>-.07</td>
<td>-.18a</td>
<td>-.12a</td>
<td>.44**a</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Controllability attributions</td>
<td>2.01</td>
<td>.96</td>
<td>.42**</td>
<td>.14a</td>
<td>-.04</td>
<td>-.18</td>
<td>-.08a</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Behavioural control</td>
<td>2.72</td>
<td>1.1</td>
<td>.46**</td>
<td>.27**a</td>
<td>.11</td>
<td>-.19</td>
<td>-.02a</td>
<td>.23*</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Direct influencing proportional score</td>
<td>.11</td>
<td>.05</td>
<td>.49**</td>
<td>.23**a</td>
<td>.11</td>
<td>-.07</td>
<td>.22a</td>
<td>.19</td>
<td>.66**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>9. Buffering proportional score</td>
<td>.46</td>
<td>.19</td>
<td>.24*</td>
<td>.01a</td>
<td>.30**</td>
<td>-.11</td>
<td>.06a</td>
<td>.06</td>
<td>.58**</td>
<td>.45**</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. EOI= emotional overinvolvement

*a* Spearman’s correlation

* p < .05, ** p < .01 (two-tailed)

**Behavioural control and clinical outcome**

Behavioural control scores of relatives of patients who relapsed at 6-month follow-up ($M = 2.61$, $SD = 1.04$) were not significantly different from those of relatives of patients who did not relapse ($M = 2.69$, $SD = 1.12$); $t(67) = .25, p = .80$.

**EE and clinical outcome**

Results were consistent with those previously reported with a slightly smaller sample (n = 60), which showed that only warmth was associated with relapse (Lee *et al.*, 2013).

**3.5. Discussion**

In accordance with our prediction, we found that high-EE relatives of people with
recent-onset psychosis attributed patients’ problems to factors within their control more than did low-EE relatives. Our results offer further support to Hooley’s controllability model of EE (1985; 1987) and are consistent with previous attributional findings in early psychosis, which have shown that relatives of people with a recent-onset of psychosis classified as high-EE tend to make more attributions of control (Mcnab et al., 2007; Weisman et al., 2000). As expected, we also found that the high-EE relatives tended to act in a more controlling manner towards patients (that is, they had higher global behavioural control scores) compared to low-EE relatives. This result is in concordance with previous studies conducted with relatives of patients with more established psychosis (Hooley and Campbell, 2002; Peterson and Docherty, 2004) and therefore extends this new finding to recent-onset groups.

Our novel findings concerned two types of behavioural control: ‘direct influencing’ and ‘buffering’. We found that high-EE relatives exhibited greater levels of direct influencing and buffering when compared to low-EE relatives. Furthermore, we found that high-EE critical and hostile relatives behaved in a predominantly direct influencing controlling manner towards patients and the strength of this association was greater for critical comments than for hostility. However, overinvolved relatives acted in a predominantly buffering controlling way. Although both critical comments and EOI significantly predicted buffering behavioural control, the strength of the association was greater for EOI than for criticism.

Consistent with previous research conducted with relatives of people with more long-term psychosis (Hooley and Campbell, 2002), in the present study relatives’ controllability attributions were significantly and positively correlated with their controlling behaviours (global score). This suggests that high-EE relatives of people
with recent-onset psychosis perceive patients as having more control over their behaviours and symptoms; and also attempt to a greater extent to control the patient’s behaviour. Taken together, our results suggest that relatives’ attributional beliefs and behaviours develop and are interrelated in expected ways at an early stage in the course of psychosis. Family members who believe that the patient is capable of making more effort to overcome their symptoms and behaviours will be more likely to have a critical attitude as well as to use more persuasive attempts to restore the patient’s functioning to a desired state. On the other hand, relatives who hold the belief that the patient’s symptoms and undesirable behaviours are less likely to be controllable by the patient will tend to exhibit a more overinvolved attitude and will more often proactively take control and do things for the patient. It is also worth noting that in this recent-onset sample women were more likely to be rated as high-EE, suggesting that gender differences within the EE construct warrants further investigation.

Preceding research is inconsistent as to whether controllability attributions are a better predictor of relapse than EE and its components (Barrowclough and Hooley, 2003); and evidence that behavioural control is predictive of relapse in schizophrenia is limited to only one previous study (Hooley and Campbell, 2002). The current study did not find relapse to be associated either with controllability attributions nor behavioural control. Our results may suggest that the link between relatives’ beliefs, behavioural responses and relapse is not evident in recent-onset samples. Additionally, in this study high-EE did not relate to relapse, but warmth did. Although there is an increasing body of evidence suggesting that EE is significantly predictive of outcome in samples with more established psychosis, this relationship is less well established in recent-onset samples. Lee et al. (2013) study highlights the importance of warmth in early stages of the psychosis. In fact the protective effects of warmth associated with optimal levels of
family involvement seem to be already relevant in predicting improvement in functioning in patients at risk for psychosis (Schlosser et al., 2010), suggesting that future research should place focus on understanding the antecedents of warmth and on the resilience and protective aspects and behaviours that characterise low-EE environments. Our data indicates that high-EE relatives believe that patients are more in control of their symptoms and that high-EE relatives engage more in controlling behaviours, suggesting that, at least in the early stage of the psychosis, higher levels of controlling beliefs and behaviours do not yet have a detrimental impact on clinical outcome. Possibly, controlling beliefs and behaviours may arise in response to cumulative difficulties of living with a family member with psychosis, especially after experiencing repeated relapses. However, it may be also possible that with a cumulative exposure to the illness, patients become more sensitive to EE (Butzlaff and Hooley, 1998). Relatives’ beliefs and behavioural responses may similarly have a cumulative effect as the illness progresses.

3.5.1. Limitations

It should be noted that ratings for EE, behavioural control and controllability attributions were extracted from the same source, the CFI, introducing the danger of cross contamination of the ratings. However, we assessed the independence of the three sets of measures and re-ran the analyses without the cases where overlap was present and results remained the same. Although we assessed the independence of the three sets of measures and re-ran the analyses without the cases where overlap was present and results remained the same, if available a separate questionnaire assessment of the two types of behavioural control (for example an appropriate coping measure) would further validate the results.
In this study, controllability attributions, behaviours and EE related to each other in expected ways, although none of them predicted relapse in this sample. This limitation might be related to how relapse was assessed. Contrary to other studies (Barrowclough et al., 1994; Hooley and Campbell, 2002) where relapse was monitored continuously within the follow-up period, in our study relapse was assessed only at baseline and follow-up time points and retrospectively rather than prospectively, potentially reducing the ability to detect outcome fluctuations. On the other hand, consistent with what has been suggested in recent-onset literature (Gleeson, 2004), other factors, like medication non-adherence (Robinson et al., 1999) or significant life events (Ventura et al., 1989), which were not accounted for in these analyses, may be more proximal/predominant relapse predictors than controlling beliefs and behaviours.

The generalisability of the present study is limited by the fairly homogenous sample of relatives, who were mainly white British and mothers and predominantly female. In addition it should also be noted that the study design does not allow us to make any directional and causal conclusions about EE, controllability attributions and behavioural control.

3.5.2. Implications

Despite these caveats our study contributes to further understanding the correlates of EE within the context of recent-onset psychosis. Specifically, we have established the links between criticism and direct influencing behaviours; and between overinvolved attitudes and buffering behavioural control. These novel findings suggest that overinvolved and critical relatives behave in different ways, which is in line with previous evidence that critical and overinvolved attitudes have different predictors in the early course of the psychosis and different interventions seem appropriate (Alvarez-
Jimenez et al., 2008; Kuipers, Onwumere and Bebbington, 2010). Identifying relatives’
behavioural patterns from early on seems particularly relevant to understanding the
extent to which their day-to-day behaviours may be impacting on patient’s well being. It
is important to recognise that in everyday life, people often attempt to exert control over
the behaviour of others, but for more vulnerable patients relatives’ behavioural control
attempts, especially if frequent or forceful, may cause further difficulties. Acknowledging and integrating relatives’ attributional and behavioural styles in
designing and delivering clinical and familial early interventions should prove
beneficial in meeting the needs of this specific population.

Caring for a family member with psychosis poses day-to-day challenges and requires
numerous adjustments on the part of relatives, especially during the first-onset of the
illness. Accommodating to this sudden life change often leaves relatives unsettled,
while desperate to help. Thus, acknowledging relatives’ supporting role and helping
them to develop balanced attitudes, beliefs and behavioural patterns may prove
advantageous at an early stage.

3.6. Acknowledgments

We wish to thank Prof. Hooley for kindly providing the supporting materials from the
(Hooley and Campbell, 2002) study, including the guidelines for rating behavioural
control; as well as Dr. Weisman for making available the attributions manual. In
addition we would like to thank Katie Chow for rating controllability attributions, Amy
Degnan for acting as an interrater for behavioural control and Dr. Katherine Berry for
her input during this process. We also would like to acknowledge the RAP research
team, particularly Dr. Gary Lee for providing the EE and relapse data and Sophie
Jeffery. We are very grateful for the statistical advice provided by Julie Morris.
3.7. Conflicts of interest

All authors have declared that they have no conflicts of interest.

3.8. Role of funding source

The present study was funded and supported by a doctoral grant from the Fundação para a Ciência e Tecnologia (FCT), Portugal (SFRH/BD/37569/2007). The RAP research work was financed with a UK grant from Merseyside Mental Health NHS Trust. None of the above mentioned funding sources had any further contribution to the collection, analysis and interpretation of the data; in the writing of the manuscript and the submission for publication.
Chapter 4: Study 2 - Self-blame attributions in relatives of people with recent-onset psychosis: associations with relatives’ distress and behavioural control

The following paper will be submitted to *Psychological Medicine*
Self-blame attributions in relatives of people with recent-onset psychosis: associations with relatives’ distress and behavioural control

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Word count text body: 5052 words (excluding references and tables)
Word count abstract: 210 words
4.1. Abstract

**Background.** There is evidence that self-blame is an important predictor of distress and depression in relatives of people with longstanding psychosis, but there is limited research investigating the nature and correlates of self-blame in early-stage relatives. Self-blame motivates a tendency to engage with others and to repair wrongdoings; it might be that such cognitions also impact on relatives’ behaviours towards the patient. The current study explored the relationships between self-blame, distress, and also relatives’ behavioural control responses to patients in a sample of recent-onset psychosis relatives.

**Method.** Statements pertaining to self-blame and behavioural control were extracted and rated from 80 interviews with relatives, who also completed the General Health Questionnaire–28. Content analysis was used to examine the nature of self-blame attributions.

**Results.** Greater self-blame was associated with increased behavioural control attempts, and self-blame predicted relatives’ behavioural control. Self-blame was linked with distress, but did not emerge as an independent predictor in multivariate analysis. Most relatives who blamed themselves did so for not overseeing their family member’s mental health problems properly or for perceiving themselves generally as poor carers.

**Conclusion.** This study extends attributional findings related to self-blame to a population of recent-onset psychosis relatives, and highlights the possible role of blaming cognitions in promoting interpersonal engagement through behavioural control.

**Keywords:** Self-blame; Behavioural control; Attributions; Relatives; Psychosis.
4.2. Background

The role of self-blame has been highlighted as a potential correlate of distress and depression in relatives of individuals with affective and behavioural disorders (Bolton et al., 2003; Moses, 2010; White and Barrowclough, 1998). Alongside this, research with relatives of people with long-term psychosis suggests that blaming oneself for the mental health of a family member is an important predictor of relatives’ distress (Barrowclough et al., 1996; Boye et al., 2002; Fortune et al., 2005). Qualitative studies describing relatives’ experiences of caring for a family member with psychosis also identify guilt, a common derivate of self-blame, as a recurring theme (Barker, Lavender and Morant, 2001; Ferriter and Huband, 2003; Mccann, Lubman and Clark, 2011; Nystrom and Svensson, 2004; Riley et al., 2011). Empirical studies investigating the relationship between self-blame and distress in recent-onset relatives are sparse, and therefore this is the focus of the current study. We focus on early-stage relatives with the aim of identifying those factors that are associated with the development of enduring problems, such as depression and anxiety, and therefore contribute to more effective early interventions for relatives.

Self-blame is a complex construct for which there is no unequivocal definition, making it challenging to measure and interpret. Most empirical studies examining self-blame in relatives of people with psychosis have conceptualised this construct either as a personality trait, focusing on individual dispositional differences (Bentsen et al., 1998; Boye et al., 2002; Weisman De Mamani, 2010), or as a causal attribution, where blame about the negative event is attributed either to causes (wholly or partially) internal or external to the relative (Barrowclough et al., 1996; Brewin et al., 1991). Others have also viewed self-blame as a coping strategy (Fortune et al., 2005) or as an equivalent to guilt, which results from attributing patient’s negative outcomes to causes controllable
by oneself, or, more specifically, for holding oneself wholly or partially responsible for these events (Bentsen et al., 1998; Peterson and Docherty, 2004; Wasserman et al., 2012). Building upon Barrowclough et al.’s (1996) conceptualisation of partial self-blame, the present study defined self-blame as the relative’s belief that their own behaviour or role contributed to or could have prevented, at least partially, the onset or aggravation of their family member’s illness, symptoms or recurring problems.

There is also uncertainty regarding the most appropriate approach to the measurement of self-blame. In relatives of people with psychosis, assessment has focused on four areas: using self-report items that present hypothetical scenes involving self-blame, which are rated on Likert scales (Bentsen et al., 1998; Boye et al., 2002; Weisman De Mamani, 2010); using self-report items that directly ask about self-blame and are rated on Likert scales (Fortune et al., 2005; Wasserman et al., 2012); direct probing using open-ended questions to target self-blame thoughts, which are categorically coded (Moses, 2010); or eliciting spontaneous self-blame statements from semi-structured interviews with relatives, which are independently rated using different coding systems (Barrowclough et al., 1996; Brewin et al., 1991; Peterson and Docherty, 2004). The latter method might be more suitable for assessing self-blame attributions, as it provides a more naturalistic opportunity for relatives to elaborate on their own caring experiences without being led by pre-determined questions (Barrowclough and Hooley, 2003; Brewin et al., 1991). Furthermore, there is less potential for self-serving bias, social desirability or distorted self-perception to cloud the findings (Barrowclough and Hooley, 2003). For example, when confronted with statements like “At times I find I blame myself for their mental health problems” relatives may feel more inclined to answer in a manner that will be viewed favourably by others. Eliciting spontaneous personal attributional beliefs may somewhat circumvent these methodological
limitations.

To our knowledge, only three previous published studies have used this approach to assess self-blame attributions in relatives of people with established psychosis. In Peterson et al.’s (2004) study, self-blame statements were dichotomously coded each time parents expressed the belief that they were, wholly or partially, responsible for their family member’s illness (self-blame: present or not present). By contrast, in Brewin et al.’s (1991) and Barrowclough et al.’s (1996) studies, beliefs that an illness-related event was caused by factors internal to the relative were rated using a binary dimensional coding (cause: internal or external) and a proportional attributional score, based on the proportion of all attributions that were coded as internal. Both coding systems have their own limitations: the dichotomous system does not allow for the assessment of self-blame along a continuum; and the proportional score is based on a binary dimensional system that only considers statements when they contain an event linked to a cause. However, such statements might be less likely to be found in the natural discourse of relatives (Anderson, 1991; Barrowclough and Hooley, 2003). In order to include subtle explanations spontaneously given by relatives, a novel system for coding relatives’ spontaneous statements of self-blame elicited from the Camberwell Family Interview (Vaughn and Leff, 1976) was developed for the current study, based on the Weismann et al.’s (1993) method of assessing attributions of controllability. This coding system allows lesser degrees of self-blame to be captured, and includes explicit as well as implicit attributions. This approach enables a more fine-grained analysis of relatives’ attributions, allowing us to understand to what extent and for what reasons relatives blame themselves.

The reasoning attached to relatives’ self-blame varies, including ideas of passing on
“bad” genes, not seeking professional help sooner, not recognising symptoms earlier or mistaking them for normal adolescent behaviours (Reed, 2008). Some of these attributions might be more adaptive than others in terms of relatives’ well-being. Janoff-Bulman (1979) differentiated two types of self-blame: behavioural self-blame, which occurs when a negative event is blamed on specific behaviours or actions that could have been done differently, thereby providing some hope that things could be different in the future; and characterological self-blame, which occurs when a negative event is blamed on stable aspects of the self, like one’s own character, and thus less likely to be modifiable. Characterological self-blame, which may be considered to reflect more negative aspects about oneself, has been linked with distress and depressive symptoms in patients with physical conditions (Manne and Zautra, 1990; Plaufcan, Wamboldt and Holm, 2012). However, to date, it is still unclear whether recent-onset relatives blame themselves mostly for modifiable factors, such as specific behaviours like mismanaging the illness, or more for non-modifiable factors, such as personality or temperament attributes; and whether these types of self-blame attributions are differentially associated with distress. The current paper will attempt to elucidate these relationships.

Available research indicates that self-blame in relatives is important because of its association with relatives’ distress; however, it is also possible that relatives’ self-blame impacts on relatives’ responses to the person with psychosis. Previous research indicates that behavioural responses of relatives of people with recent-onset psychosis are associated with their attributions (Vasconcelos e Sa et al., 2013) – specifically that attempts at behavioural control (such as, using direct instructions, checking up on the patient or issuing ultimatums) are associated with control attributions (believing that the patient can make more effort to control their own problems). It has been suggested that self-blame induces interpersonal engagement and reparation for wrongdoing.
(Baumeister et al., 1994; Tangney, 1995; Tangney and Dearing, 2002; Wasserman et al., 2012). Through this mechanism, we might expect that blaming cognitions, alongside control attributions, would motivate attempts at behavioural control.

The present study explored the extent and nature of self-blame in relatives of people with a recent-onset of psychosis, examined its associations with psychological distress, and investigated whether different categorisations of self-blame (behavioural and characterological) were differentially associated with distress. It also tested the prediction that greater self-blame was associated with more behavioural control attempts after adjusting for the contribution of control attributions to this measure.

4.3. Method

4.3.1. Participants

Participants were relatives who participated in a larger patient-relative dyad study (Barrowclough et al., 2014), and for whom Camberwell Family Interview (CFI) recordings and distress baseline data were available. Relatives were carers of patients recruited from Early Intervention Services (EIS) across six trusts in the North West of England. Relatives met the following inclusion criteria: had at least 10 hours of weekly contact with the patient (where more than one relative was available, the person with the most significant care role was selected); caring for a family member aged 16 or over, with a clinical diagnosis of psychosis (as per EIS eligibility criteria), who at entry had been with the EIS services for no longer than 12 months, and who had no evidence of organic psychosis. All relatives had sufficient comprehension of English and were able to provide informed consent. Ethical approval was obtained from the local research ethics committee.
4.3.2. Measures

4.3.2.1. Self-blame

Self-blame attributions were defined as statements where relatives conveyed the belief that their behaviour/action/role/character (or omission of) contributed, at least partially, to the onset or exacerbation of the negative event; including any implication that they could have done something to prevent or avoid the illness outcome from occurring. Negative events referred to any reported outcome, behaviour or situation directly associated with the patient, including references to: illness, symptoms or related problem behaviours; or any undesirable characteristic of the patient or in the patient’s life. Self-blame attributions were assessed from the CFI and rated on a 4-point scale (1, no self-blame; 2, minimal self-blame; 3, moderate self-blame; 4, a lot of self-blame) using a coding manual developed by the first author, which adapted the Weisman’s (1993) guidelines and incorporated aspects of other coding systems (Barrowclough, 1991; Brewin et al., 1991; Hooley and Campbell, 2002). Prior to assigning each relative a global rating on the self-blame scale, all statements were first individually categorised as mildly, moderately or highly self-blaming (see Table 6 for definitions). In addition, highly self-blaming statements were also categorised as specific or global as follows: specific statements indicated that relatives attributed the blame in question to a specific incident (e.g. “It’s all my fault that we had that argument yesterday”); and global statements denoted that relatives believed that the blame in question was related to a more general incident (e.g. “It’s all my fault, I feel I made him dependent on me”). This distinction was made for the purpose of establishing a threshold for assigning a global rating of four, which was assigned to relatives who made: two or more specific statements or at least one global statement. Self-blame global ratings were made on the basis of all statements.
### Table 6
Examples of self-blame attributional statements and their coding, classified into mildly, moderately and highly self-blaming

<table>
<thead>
<tr>
<th>Coding score and definition</th>
<th>Coding example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mildly</strong></td>
<td></td>
</tr>
<tr>
<td>Relative contemplates or questions the possibility of whether or not his/her own behaviour and/or character, at least partially, contributed to or could have prevented the negative event; but only for transitory moments and without attributing any explicit self-blame</td>
<td>“I wonder if, when he first showed signs he was 14 or 15, you wonder if it’d been picked up then and treated then, if there’d have been more of a chance than now [for recovery]. She was saying that she hears voices and I was saying that we all do to a certain extent, but I didn’t realise to what extent she had them.”</td>
</tr>
<tr>
<td><strong>Moderately</strong></td>
<td></td>
</tr>
<tr>
<td>Relative hold contradictory (ambivalent) beliefs about whether or not his/her own behaviour and/or character, at least partially, contributed for or could have prevented the negative event.</td>
<td>“She waits until the last day and then runs out of medication. So she’s got to wait 2-4 days to get the medication, and it was quite noticeable last time. I told her to get the prescription done every 3 weeks and I don’t want to do everything for her. I want her to do things for herself. Maybe I, it’s my fault for doing everything for her anyway.” “I said why don’t you get yourself a little part time job instead of staying at home all day. He was all for it and then it just fizzled out. Maybe I’ve been too soft with him; maybe I’m over protective because he is ill.”</td>
</tr>
<tr>
<td><strong>Highly</strong></td>
<td></td>
</tr>
<tr>
<td>Relative explicitly believes (at least partial belief) that his/her own behaviour and/or character, at least partially, contributed to or could have prevented the negative event.</td>
<td>“I take the blame here, I think I actually irritate her because of what I am saying. I think I prick her consciousness.” “I feel guilty and I think that’s what I was doing, I was giving him everything he wants.”</td>
</tr>
</tbody>
</table>
The first author independently rated self-blame attributions. For reliability purposes an independent coder blind to the study hypotheses was trained in the global self-blame measure and good interrater reliability was achieved using a random sample of 9 CFI’s from the current study (k= 1.00, SE= .00, p< .006).

4.3.2.2. Behavioural and characterological self-blame

Relatives’ self-blame statements (n=117) extracted from the CFI were independently categorised (by SH) either as behavioural or characterological using coding guidelines developed by the first author. Statements were categorised as behavioural self-blame whenever a negative event was attributed to the speaker’s specific behaviours or actions. Characterological self-blame was assigned when a negative event was attributed to stable aspects of the speaker, such as their own character, personality dispositions or stable pattern of past behaviour (e.g. relational style or entrenched habits). Interrater reliability was assessed on a random sample of 17 statements from the current study. Agreement for the categorical coding was k= .68, SE= .20, p< .003. Two scales corresponding to the sum of behavioural and characterological self-blame statements made by each relative were derived. Behavioural self-blame scores ranged from 0-4 and characterological self-blame scores ranged from 0-2, with higher scores indicating more behavioural and characterological self-blame, respectively.

4.3.2.3. Distress

Relatives’ psychological distress was measured by the General Health Questionnaire–28 (GHQ-28; Goldberg and Hillier, 1979). This scale is divided into four seven-item subscales: somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression. Each item was scored on a 4-point scale (0-3) with a total possible score ranging from 0-84. A total score of 23 was the threshold for the presence of distress or
‘caseness’ (Goldberg et al., 1997). The sum of the four subscales (that is, GHQ-28 total score) was used to test the hypotheses concerned with relative’s distress.

4.3.2.4. Behavioural control

Behavioural control statements referred to any attempt made by relatives to guide or direct the patient or the patient’s behaviour. Relative’s behavioural control statements were extracted from the CFI and rated on a 5-point scale (1, minimally behaviour controlling - 5, highly behaviour controlling) for a global impression of behavioural control using a coding manual developed by the first author. Further details of this procedure are reported elsewhere (Vasconcelos e Sa et al., 2013). High levels of interrater reliability for the global behavioural control rating were obtained (k= .75, SE= .23, p< .0004).

4.3.2.5. Controllability attributions

Controllability attributions assessed the extent to which relatives perceived patients’ behaviours/symptoms as being within patients’ control and were elicited from the CFI using a coding manual developed by the first author. Full details of this measure are reported elsewhere (Vasconcelos e Sa et al., 2013). A trained independent coder, blind to the study hypotheses, rated all controllability attributional statements using a 5-point scale (1, no perceived control – 5, perceived control over virtually all aspects of the disorder). High levels of interrater reliability for global controllability scores were obtained between both raters (k= .86, SE=.24, p< .0002).

4.3.3. Content analysis of self-blame statements

Self-blame statements were content analysed (Krippendorff, 1980) using an inductive data-driven category development approach (Elo and Kyngas, 2008; Hsieh and
Shannon, 2005). Half of the statements were first classified with keywords that captured the ‘what about’ and ‘why’ relatives blame themselves. The main self-blaming reasons were drawn together on the basis of these keywords and clustered according to their underlying themes, generating a preliminary coding scheme. The remaining statements were coded using the preliminary codes. Throughout this process codes were combined or split into subcategories, and new codes were developed if the data did not fit any of the existing ones. Content analysis went through several iterations until all themes were saturated and a final self-blame main theme-coding scheme was derived. All of the self-blame statements were then coded (by SH) using the final coding scheme. An interrater reliability check was conducted between SH and the first author, who independently allocated one theme to 17 randomly selected self-blame statements. Agreement for the main themes was $k = .70$, ($SE = .12$), $p < .000$.

4.3.4. Statistical analysis

Statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS; MAC version 20). Variables were screened for normality, and if distributions deviated significantly from acceptable limits were transformed where possible (Field, 2009); this was the case of GHQ total score and CFI length, and these transformed variables were used in all subsequent analyses. Preliminary analyses were conducted to examine potentially confounding associations between the main study variables (self-blame attributions, distress and behavioural control) and the following demographic variables: age, gender, ethnicity, occupational and relationship status, relationship with patient, level of education, living arrangements, number of children of the relative, weekly contact hours between relative and patient, CFI length, using two-tailed Pearson’s and Spearman’s correlation analyses for continuous variables and independent samples t-test, Mann-Whitney U test, or ANOVA for categorical variables.
Block-entry regression analyses were conducted to examine the independent contribution that self-blame attributions made to distress levels and to behavioural control adjusting for potential confounders.

4.4. Results

4.4.1. Sample

Relatives (N=80) descriptive information is provided in Table 7. Distress data was available for 79 relatives in the sample. Fifty-one relatives (64%) reached the threshold for ‘caseness’ levels of distress. Table 8 contains descriptive data for the main study variables.

Table 7
Descriptive information for the relative sample (N = 80)

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (Male/Female)</td>
<td>17/63</td>
<td>21.2/78.8</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>67</td>
<td>84.8</td>
</tr>
<tr>
<td>Black</td>
<td>3</td>
<td>3.8</td>
</tr>
<tr>
<td>Asian</td>
<td>3</td>
<td>3.8</td>
</tr>
<tr>
<td>Mixed</td>
<td>4</td>
<td>5.1</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>Occupational status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>25</td>
<td>31.6</td>
</tr>
<tr>
<td>Employed</td>
<td>51</td>
<td>64.6</td>
</tr>
<tr>
<td>Retired</td>
<td>3</td>
<td>3.8</td>
</tr>
<tr>
<td>Relationship status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>4</td>
<td>5.0</td>
</tr>
<tr>
<td>Cohabitating</td>
<td>10</td>
<td>13.0</td>
</tr>
<tr>
<td>Married</td>
<td>47</td>
<td>59.0</td>
</tr>
<tr>
<td>Separated/Divorced</td>
<td>14</td>
<td>18.0</td>
</tr>
<tr>
<td>Widowed</td>
<td>4</td>
<td>5.0</td>
</tr>
<tr>
<td>Relationship with patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural mother</td>
<td>54</td>
<td>68.0</td>
</tr>
<tr>
<td>Natural father</td>
<td>9</td>
<td>11.0</td>
</tr>
<tr>
<td>Step father</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Other blood relative</td>
<td>3</td>
<td>4.0</td>
</tr>
<tr>
<td>Unrelated carer</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Partner</td>
<td>12</td>
<td>15.0</td>
</tr>
</tbody>
</table>
### Table 8

Descriptives for self-blame, controllability attributions, behavioural control and distress

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-blame attributions</td>
<td>80</td>
<td>2.00*</td>
<td>1-4</td>
</tr>
<tr>
<td>(global score)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioural control</td>
<td>80</td>
<td>2.73 (1.10)</td>
<td>1-5</td>
</tr>
<tr>
<td>(global score)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controllability attributions</td>
<td>80</td>
<td>2.01 (0.96)</td>
<td>1-5</td>
</tr>
<tr>
<td>(global score)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distress (total score)</td>
<td>79</td>
<td>28.00*</td>
<td>4-67</td>
</tr>
</tbody>
</table>

*Note. *Median reported for non-normally distributed variable

#### 4.4.2. Preliminary analyses

Preliminary analyses indicated that patient age was significantly negatively associated with relatives’ distress levels ($r_s = -0.34$, $p = .002$) and controllability attributions ($r_s = -0.23$, $p = .037$). The association between patient age and relatives’ self-blame attributions scores was not significant ($r_s = -0.09$, $p = .452$). Self-blame attributions scores were significantly higher in female relatives (Mdn= 2.00) than in male relatives (Mdn= 1.00), $U = 312.50$, $z = -2.74$, $p = .006$. On average, global behavioural control scores were also significantly higher in female relatives (M= 2.89, SD= 1.08) compared to male relatives (M= 2.12, SD= .99), $t(78) = -2.66$, $p = .01$. Relatives’ number of children was also significantly associated with relative’s levels of behavioural control.
(r = 0.24, p = .04). On average, parents (M = 2.84, SD = 1.07) had significantly higher global behavioural control scores than other relatives, including partner and offspring (M = 2.25, SD = 1.13), t(78) = 1.96, p = .05. Finally, CFI length was significantly associated with self-blame attributions scores (r_s = 0.36, p = .001), behavioural control scores (r = 0.37, p = .001) and with distress levels (r = 0.24, p = .04).

4.4.3. Self-blame and distress

Spearman’s correlation showed that relatives’ self-blame attributions scores were significantly associated with their distress levels (r_s = .25, p = .03). Block-entry multiple regression was used to examine whether self-blame attributions predicted distress, adjusting for patient’s age. Patient age was entered in the first block, followed by self-blame attributions. Potential covariates of relative’s gender and length of the CFI were excluded from this analysis due to their significant association with the predictor variable. After step 1, with only patient’s age in the equation, R^2 = .105, F(1, 77) = 10.1, p = .002, results show that this covariate significantly contributed to the prediction of relative’s distress, β = -.34, t(77) = -3.18, p = .002. After step 2, with patient age and self-blame attributions added to the model (Table 8), only patient age emerged as a significant predictor of total GHQ distress total score, F(2, 76) = 6.47, p = .003, explaining 12.3% of the distress variance (adjusted R^2 = .123).
Table 9
Regression model for self-blame and distress

<table>
<thead>
<tr>
<th>Model</th>
<th>Variable</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>B</th>
<th>SE B</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>(Constant)</td>
<td>.116</td>
<td>.116</td>
<td>6.975</td>
<td>.577</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patient age</td>
<td>-.073</td>
<td>.023</td>
<td>-.073</td>
<td>.023</td>
<td>-.341*</td>
</tr>
<tr>
<td>Step 2</td>
<td>(Constant)</td>
<td>.145</td>
<td>.029</td>
<td>6.638</td>
<td>.607</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patient age</td>
<td>-.069</td>
<td>.023</td>
<td>-.069</td>
<td>.023</td>
<td>-.321**</td>
</tr>
<tr>
<td></td>
<td>Self-blame global rating</td>
<td>.182</td>
<td>.112</td>
<td>.182</td>
<td>.112</td>
<td>.173</td>
</tr>
</tbody>
</table>

*p=.002; **p=.004

4.4.4. Behavioural and characterological self-blame and distress

Bivariate analysis showed that the correlation between behavioural and characterological self-blame was statistically significant but small ($r_s=.31, p=.006$), suggesting that although related, the two constructs are conceptually different. Mann-Whitney tests were used to determine whether relatives’ GHQ caseness was differentially associated with behavioural and characterological self-blame, and no statistically significant differences were found.

4.4.5. Self-blame and behavioural control

Spearman’s correlation indicated that self-blame attributions scores were significantly correlated with behavioural control scores ($r_s=.28, p=.01$). A multiple regression using block entry was carried out to test whether self-blame attributions predicted behavioural control after adjusting for controllability attributions. Therefore, controllability attributions were entered first in the regression model along with the covariates relationship with patient and number of children of the relative, followed by self-blame attributions. The covariates relative’s gender, patient’s age and CFI’s length were excluded from the regression model due to their significant association with the
predictor variables. A significant model (Table 9) emerged after step 2, with the insertion of self-blame attributions scores in the model adjusting for controllability attributions and for the covariates, $F(4, 74) = 3.20 p = .02$.

### Table 10
Regression model for self-blame and behavioural control

<table>
<thead>
<tr>
<th>Model</th>
<th>Variable</th>
<th>R²</th>
<th>ΔR²</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td>.102</td>
<td>.102</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Constant)</td>
<td>2.235</td>
<td>.655</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship with patient</td>
<td>-.247</td>
<td>.336</td>
<td>-.091</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of children</td>
<td>.160</td>
<td>.112</td>
<td>.172</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Controllability global rating</td>
<td>.206</td>
<td>.129</td>
<td>.182</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td>.148</td>
<td>.045</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Constant)</td>
<td>2.019</td>
<td>.652</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship with patient</td>
<td>-.189</td>
<td>.331</td>
<td>-.070</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of children</td>
<td>.137</td>
<td>.110</td>
<td>.148</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Controllability global rating</td>
<td>.173</td>
<td>.128</td>
<td>.152</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self-blame global rating</td>
<td>.204</td>
<td>.103</td>
<td>.219*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p = .05

### 4.4.6. Nature of self-blame

Thirty interviews contained no self-blame statements. Content analyses were carried out for the remaining 50 interviews. Seven themes for relatives’ self-blame attributions were identified and are described below. Two relatives (3%) were not classified under any of these themes since their data did not fit the themes. Examples of quotes for each theme are provided in Table 10.
<table>
<thead>
<tr>
<th>Main theme</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ineffective oversight of mental health problems</td>
<td>“It is heartbreaking when it is your own child. I suppose you really blame yourself- ‘how the hell did you allowed them to get into this condition’”</td>
</tr>
<tr>
<td></td>
<td>“I thought she is just crying out for help. I suppose we could have done something not realising how serious it was, we could just go to A&amp;E. You feel guilty a little bit, I think I should have gone there, should have done something sooner.”</td>
</tr>
<tr>
<td>Perceptions of failure as a carer’</td>
<td>“I start feeling guilty, I should have taught him how to cook, how to iron. What sort of mother am I? I’ve got a son like this, what way did I go wrong?</td>
</tr>
<tr>
<td></td>
<td>“He tries to keep things in because is not manly. Sometimes I might be a bit demanding of him, but I don’t get it and that’s why I try and demand it”</td>
</tr>
<tr>
<td>Exhibiting inappropriate responses to symptoms/patient</td>
<td>“You blame yourself. I did get on to her quite a lot. I’d just shout”</td>
</tr>
<tr>
<td></td>
<td>“I probably triggered it [losing control] because I knocked on her door and said ‘get off that bed’ and that upset her.”</td>
</tr>
<tr>
<td>Imposing restrictions or failure to do so</td>
<td>“I kick off about it [smoking cannabis] and say ‘I’m not paying for it’ but then I feel guilty because he doesn’t do anything and he doesn’t go anywhere and I give him the money and I shouldn’t, I should be stronger and say ‘no’ I think in some ways it is like it’s his only ‘enjoyment’ and I’m stopping him from having it, even though it’s wrong and I know it’s wrong because I should discourage him and I’m encouraging him”</td>
</tr>
<tr>
<td></td>
<td>“I’ve said ‘I can’t keep bailing you out all the time’. She’s overdrawn, but still using the card. She doesn’t give me no keep. I pay for everything; it’s my own fault. I shouldn’t have started, but now it’s too late now to start taking all that.”</td>
</tr>
<tr>
<td>Coping with additional stressor(s)</td>
<td>“I noticed it [symptoms] more when we got the divorce; he blamed me for that, which it was me. I decided to get the divorce, which didn’t help.”</td>
</tr>
</tbody>
</table>
Unavailability to provide emotional support’

“Sometimes I like being needed, I like that feeling, but at other times I’d just like to be left on my own, but if I say this then I start feeling guilty afterwards because she’ll go all quiet in the chair.”

Passing “bad” genes/traits

“I am very complicated person in did and me husband is a very complicated person. We’re both sensitive and emotional and I bet [patient] got that in his genes. (…) I don’t know whether it’s that [that caused his problem].”

<table>
<thead>
<tr>
<th><strong>Ineffective oversight of mental health problems</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The most common theme reported by 29% (23/80) of the relatives was failure to oversee the patient’s mental health problems. This included expressions of failure for not crediting or not being able to notice early illness signs, or for confusing them for ‘normal’ behaviours. Reports of not knowing what to do or not acting sooner in providing care were also considered within this theme.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Perceptions of failure as a carer</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The second most common theme (26% or 21/80) involved a general assessment of the relative’s role as a carer, including perceptions about being a “bad” parent/partner, or being too demanding, or not sufficiently attentive to the patient’s needs. Perceived carer inadequacy included expressions such as ‘what kind of parent/partner am I?’ or ‘was it me?’</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Exhibiting inappropriate responses to symptoms/patient</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Some relatives (16% or 13/80) also blamed themselves for exhibiting specific negative behaviours towards the patient or illness related symptoms. This included specific current or past behavioural reactions, such as grumbling, moaning, telling off, shouting, and snapping.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Imposing restrictions or failure to do so</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Refusing certain negative behaviours or withholding patient’s wishes, such as lending</td>
</tr>
</tbody>
</table>
money, or the failure to do so, was also evident (11% or 9/80). Instances where relatives reported having to make decisions that had the potential to be resented by the patient, such as allowing the patient to be sectioned were also mentioned as sources of guilt.

**Coping with additional stressor(s)**

Coping with another stressful issue, such as a divorce, was another reason mentioned by 10% (8/80) of the relatives. Other examples of stressors reported as sources of blame included exposing the patient to a negative family environment, namely arguments or violence.

**Unavailability to provide emotional support**

A few relatives (8% or 6/80) reported that they blame themselves for being emotionally unavailable to cope with the illness or the patient. Expressions of emotional unavailability included references like ‘I do take myself away’ or ‘I don’t think I can cope with him/her’.

**Passing “bad” genes/traits**

Hereditary transmission was the least common theme (5% or 4/80) cited. It included not only references to being the genetic carrier of the illness, but also remarks about passing on “bad” personality traits or about making unwise health or choices in the past, such as using alcohol or other substances during pregnancy.

### 4.5. Discussion

The present study examined the association between self-blame attributions and distress in relatives of people with recent-onset psychosis. Results showed that greater self-blame was significantly associated with relatives’ increased distress. However, after adjusting for patient age, self-blame attributions were not predictive of relatives’ distress. As hypothesised, higher levels of self-blame were associated with more behavioural control attempts in this recent-onset sample, and self-blame predicted
relatives’ behavioural responses when adjusting for the contribution of control attributions. Content analysis revealed that some self-blame was evident in 38% of the sample, and that for these relatives the most prominent sources of blame were not overseeing their family member’s mental health problems properly and perceiving themselves as poor carers more generally.

In this sample of recent-onset relatives, we found significant positive associations between self-blame attributions and distress levels, which is consistent with previous research conducted with relatives of people with more long-term psychosis (Barrowclough et al., 1996; Fortune et al., 2005). However, in this study patient’s age was found to be the only significant, independent predictor of relatives’ distress. This finding suggests that at an early stage of the psychosis relatives are more likely experience higher levels of distress if their family member is younger, which is congruent with previous research that found younger age of the patient to be associated with greater distress in recent-onset relatives (Addington et al., 2003; Addington et al., 2005; Gibbons et al., 1984). Since the first onset of the psychosis often occurs when individuals are still in close contact with their relatives (Addington and Burnett, 2004), and most likely under their care, it is not surprising that greater strain in relatives is more likely to be observed when the patient is younger than in older adults with longstanding psychosis. In our sample the majority of the relatives were parents, namely mothers; thus, it might be that relatives become more distressed when patients are younger because they are still quite invested as a parent, possibly providing most of their child’s needs, thus believing that they ought to actively protect and advocate for their child (Moses, 2010). On the other hand, patient’s age was not significantly associated with relatives’ self-blame and the strength of this association was very small, which may explain why self-blame failed to predict distress. Furthermore, patient’s age
was not accounted for in Barrowclough et al.’s (1996) study, possibly explaining the difference in results. Nevertheless, recent-onset literature suggests that negative appraisals about the impact and consequences of the condition, and greater expectation of a chronic timeline, which were not accounted for in our analyses, are the best predictors of relatives’ psychological morbidity at this stage of the condition (Addington et al., 2003; Addington et al., 2005; Barrowclough et al., 2014).

Previous studies have found characterological self-blame to be positively associated with distress in individuals with physical illnesses (Manne and Zautra, 1990; Plaufcan et al., 2012). To our knowledge, this association has not been previously examined in a recent-onset psychosis relative sample. In the current study, neither behavioural or characterological self-blame were linked with relatives’ distress.

Our findings established links between self-blame attributions and behavioural control. Furthermore, self-blame predicted behavioural control attempts in this recent-onset relatives sample when attributions of control were adjusted, lending support to the notion that self-blame attributions might motivate some attempts to make amends through behavioural control as a form of reparation for the wrongdoing (Baumeister et al., 1994; Tangney, 1995; Tangney and Dearing, 2002; Wasserman et al., 2012). There is evidence that high-EE recent-onset relatives tend to be more behaviourally controlling towards patients then their low-EE counterparts (Vasconcelos e Sa et al., 2013), and that behavioural control predicts poor outcome in patients with more long-term psychosis (Hooley and Campbell, 2002). One recent study also found that higher levels of self-blame predicted EE in relatives of people with psychosis (Wasserman et al., 2012). Our findings demonstrated that relatives who believe, at least partially, that they played a role on the onset or maintenance of their family member’s condition may
also use more behavioural control attempts, possibly to repair behaviours or events that
they feel guilty about. This is in line with Weiner’s (1985) proposition that guilt is
experienced when a negative outcome for another person is perceived to be internal to
and controllable by oneself. For more vulnerable individuals, such reparative
behavioural attempts may be experienced as stressors having the potential to impact on
outcome. However, further investigation is warranted to elucidate how relatives’ self-
blame attributions may impact on outcome.

This study sought to explore spontaneously provided self-blame attributions for the
occurrence or aggravation of their family member’s psychosis and related problems. Of
those relatives who showed self-blame, the most common reason was blaming
themselves for not being able to detect early signs of the illness or for confusing them
with developmental behaviours. Perception of the self as an inadequate carer was the
second most frequent reason shown in relatives who provided self-blame statements.
Such explanations have been highlighted in a previous qualitative studies with carers of
individuals with mental illnesses (Barker et al., 2001; Moses, 2010). Contrary to these
studies, passing on ‘bad’ genes or temperament characteristics was the least common
theme, which suggests that genetic or biological explanations (Phelan, 2005) may be
less salient when it comes to ascribing blame in recent-onset relatives. This might be
because the illness model that relatives have might be changing over time. Possibly,
such explanations tend to become more evident after prolonged contacts with
psychiatric services or when diagnoses are stipulated and the medical/biological model
has prominence.

4.5.1. Limitations and further implications

The results should be considered in light of the limitations of the study. In the current
study controllability attributions, self-blame and behavioural control measures were all derived from the CFI, which may have inflated the correlations. Although self-blame did not overlap with controllability attributions and behavioural control measures, this bias threat was minimised by using independent raters. Furthermore, characterological and behavioural self-blame categorisations were made on the basis of self-blame statements spontaneously made by relatives during the CFI, which may have reduced the chances of detecting these constructs. Future research using larger samples of relatives and using standardised behavioural and characterological self-blame measures to complement the sampling of spontaneous attributions may allow a better understanding of the influence these constructs on relatives’ distress.

The cross-sectional nature of the study does not allow determining the direction of causality between self-blame, distress and behavioural control. Further studies with a prospective design are needed to clarify the directionality of these associations. Findings from the current content analysis provided a detailed and valuable understanding of the reasons that relatives give to blame themselves for their family member’s illness and related problems. Nevertheless, caution should be taken when considering these findings, recognising the limited generalisability beyond the current sample (Peters, 2010). Some of these reasons may contribute to relatives’ distress and increased stigma (Ferriter and Huband, 2003; Moses, 2010). Thus, the impact of these self-implicating beliefs should be tackled when delivering clinical support.

Despite these limitations this study builds on existing self-blame research with relatives of people with psychosis extending our results to a recent-onset population. Our findings provided evidence that self-blame attributions were linked with controlling behaviours in the expected ways, and that these cognitions predicted relatives’ attempts
to control the patient’s behaviour, offering further support to the attributional theory of emotion (Weiner, 1985). Furthermore, relatives’ who blamed themselves did so for perceiving themselves generally as poor carers or for not overseeing the patient’s mental health difficulties properly. These findings highlight that, at an early stage of the psychosis, relatives’ cognitive appraisals of their own role in the patient’s outcome may play an important role in understanding how relatives will respond to a family member with mental health difficulties. Behavioural control attempts on the part of relatives may be experienced as a stressor for someone vulnerable to psychosis, suggesting that relatives’ self-blame attributions and controlling behaviours should be considered when developing and delivering clinical interventions to families experiencing psychosis.

4.6. Acknowledgments

We wish to thank Prof. Hooley and Dr. Weisman for kindly providing the behavioural control rating guidelines, and the attributions manual, respectively. We also thank Faye Plummer for acting as a self-blame attributions interrater, Amy Degnan for acting as a behavioural control interrater, Katie Chow for rating controllability attributions, and the RAP research team.

4.7. Conflicts of interest

All authors have declared that they have no conflicts of interest.

4.8. Role of funding source

This study was funded by a doctoral grant from the Fundação para a Ciência e Tecnologia (FCT) Portugal (SFRH/BD/37569/2007), and completed as part of the requirement for the Doctor of Philosophy qualification of the first author. The RAP project was financed with a UK grant from Merseyside Mental Health NHS Trust. None
of these funding sources had any further contribution to the collection, analysis and interpretation of the data; neither to the writing and submission of the manuscript.
Chapter 5: Study 3 - Expressed Emotion and behavioural control in the daily life of patient-relative dyads experiencing psychosis

The following paper is currently under review for publication in *British Journal of Psychiatry*. 
Expressed Emotion and behavioural control in the daily life of patient-relative dyads experiencing psychosis

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Word count text body: 4995
Word count abstract: 144
5.1. Abstract

**Background:** Experience sampling (ESM) research suggests that contact with relatives/friends may be protective for psychotic experiences. However, Expressed Emotion (EE) research demonstrates that contact with high-EE relatives and relatives’ attempts at behavioural control can be adverse for patients.

**Aims:** To investigate whether contact with high-EE relatives, and relatives’ behavioural control attempts are related to patients’ symptoms, and affect in both patients and relatives.

**Methods:** Twenty-one patient-relative dyads completed the 6-day synchronised ESM procedure self-reporting affect, symptoms (patients only), dyad contact and behavioural control. Relatives’ EE was assessed via interview.

**Results:** Multi-level modeling showed that patients’ perceptions of relatives taking control and helping were associated with increased patient negative affect and symptoms. Relatives’ self-reports of nagging, taking control and keeping an eye on the patient were related to fluctuations in relatives’ affect.

**Conclusions:** Momentary behavioural control within dyads experiencing psychosis can impact on their affect/symptoms.

**Declaration of interest:** None.

**Keywords:** experience sampling methodology; ESM; ecological momentary assessment; expressed emotion; psychosis; behavioural control
5.2. Background

‘Real world’ momentary assessments have been used to investigate the impact of social contact on the experience of psychotic symptoms in individuals at risk of and experiencing psychosis (Collip et al., 2011; Myin-Germeys et al., 2001b; Verdoux et al., 2003). Momentary assessments, often-called experience sampling method (ESM; Csikszentmihalyi and Larson, 1987), involve participants completing brief self-reports about their thoughts, affect and activities when prompted by random beeps that occur throughout the day. Some ESM studies suggest that being in the company of familiar others, especially family members or friends, may have a protective effect for the development and occurrence of psychotic experiences. For example, Myin-Germeys (2001b) used ESM to examine the social company of individuals diagnosed with chronic schizophrenia, and found that being in the presence of familiar acquaintances, rather than being alone or with strangers, decreased the risk of subsequently experiencing delusions. Verdoux (2003) extended this finding to a non-clinical population by showing that individuals with high vulnerability for developing psychosis were at a lower risk of unusual experiences when in the presence of family members or friends. Similarly, Collip (2011) found that individuals at risk or with medium levels of trait paranoia reported increased paranoid thinking in less-familiar company.

On the other hand, research focusing on Expressed Emotion (EE) demonstrates that certain family environments can negatively impact on patients’ psychotic experiences. Relative’s EE is usually measured via the Camberwell Family Interview (Vaughn and Leff, 1976), and relatives are categorised as high- or low- in EE on the basis of their critical comments, hostility and emotional overinvolvement (EOI) ratings. Well replicated research findings indicate that being in family environments where at least one member is assessed as having high-EE can negatively impact on patients’ psychotic
experiences (Hooley, 2010).

Face-to-face contact with high-EE relatives has been consistently associated with increased risk of psychotic relapse (Butzlaff and Hooley, 1998). Similarly, psychophysiological research has demonstrated that the presence of high-EE relatives is more autonomically arousing for patients than the presence of low-EE relatives (Tarrier and Tupin, 1992). On the other hand, warmth in low-EE relatives can serve as a protective factor for patient outcomes (Bebbington and Kuipers, 1994; Ivanovic, Vuletic and Bebbington, 1994). To date, however, it is still unclear what aspects of family interactions impact positively or negatively on symptoms in patients with psychosis. Some EE studies have attempted to examine interactions between patients with psychosis and their relatives (Hahlweg et al., 1989), using videotaped family interaction problem solving tasks in laboratory settings. For example, Hahlweg (1989) investigated whether patient-relative interactions were related to relatives’ EE status, measured by the CFI at hospitalisation and by a briefer EE assessment, the Five minutes Speech Sample (FMSS; Magana et al., 1986) 5-6 weeks after discharge. They found no correlation between relatives’ CFI EE status and family interactional behaviour. However, when using the FMSS ratings, results showed that high-EE-critical relatives exhibited a more negative interaction style when discussing problems with the patient than high-EE-EOI or low-EE relatives. While this work has provided valuable insights into behaviour patterns in high/low-EE relatives, it does not inform us about the moment-to-moment interactions between relatives and patients. The current study uses ESM to capture real life spontaneous family interactions of patients with psychosis, and to investigate how these momentary interactions are associated with EE environments and subsequently, changes in affect and symptoms experienced.
ESM research suggests that emotional reactivity to daily stress might represent part of the underlying vulnerability for psychotic disorders (Myin-Germeys et al., 2003a; Myin-Germeys et al., 2001a). From the viewpoint of the diathesis-stress model of EE (Hooley and Gotlib, 2000), high-EE environments can be perceived as highly stressful for a person with an underlying vulnerability; and it has been found that patients report feeling more stressed when interacting with high-EE family members (Cutting et al., 2006). EE research suggests that certain interactions may have a direct impact on patients’ well-being. Hooley and Campbell (2002) found that relatives’ attempts at “behavioural control” may trigger stress in patients, and that such behaviours are more prevalent in high-EE environments. These can range from mild/moderate controlling behaviours such as keeping an eye on the patient or giving direct instructions, to more extreme responses like using coercion. An association between behavioural control attempts and high-EE has been demonstrated in relatives of patients with long-term (Hooley and Campbell, 2002) and recent-onset psychosis (Vasconcelos e Sa et al., 2013); and Hooley and Campbell (2002) further showed that high levels of behavioral control in family members of patients with a diagnosis of schizophrenia were strongly associated with poor clinical outcome. Thus, it is possible that experiencing certain behaviourally controlling interactions may act as an important stressor for patients with psychosis, impacting on their affect and symptom experiences. There may also be bi-directional relationships at play, such that patients’ symptom fluctuations elicit stress and behavioural control attempts by relatives. However, to our knowledge these hypotheses have not yet been tested in the context of daily life.

Aiming to integrate both relatives’ and patients’ perspectives, the present study used ESM to examine the impact of contact and interactions between relatives and patients with psychosis in the course of their daily interactions. First, we tested the hypothesis
that both contact with high-EE relatives per se and also relatives’ behavioural control attempts (reported by patients) would be associated with increased negative affect and symptoms in patients. Second, we examined whether contact with patient, behavioural control attempts (reported by relatives) and patients’ reported symptoms were associated with relatives’ affect; and we hypothesised that high-EE relatives would experience negative affect when in contact with patients, but this relationship would not hold for low-EE relatives. Finally, we tested whether patients’ reported symptoms would be associated with increased levels of relatives’ behavioural control. Hypotheses were tested with concurrent, proximal and lagged predictors.

5.3. Method

5.3.1. Participants

Patients were recruited from community mental health teams, early intervention services and independent patient and carer groups between 01/2011 and 03/2012. Patient inclusion criteria were: (a) diagnosis of schizophrenia/schizoaffective/delusional/psychotic disorder (not otherwise specified); (b) being under the care of mental health services; (c) no evidence of primary organic disorder; (d) aged between 18-65; (e) having at least 10 hours of weekly contact with a relative; (f) sufficient comprehension of English to complete the assessments; (g) able to provide informed consent. Where possible, patients were recruited in dyads and were asked to nominate their closest relative to participate in the study. Any relative was eligible for recruitment, including a parent, partner, sibling, offspring, or grandparent. However, patients could still take part without a relative, as was the case for 3 patients (see Figure 2). Participants who consented could complete the study irrespective of the other member of their dyad dropping out, which was the case for 1 relative. Patients were screened for the presence of persecutory delusions and/or auditory hallucinations using
the Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987) to ensure that these psychotic experiences were evident and therefore could be captured during the momentary assessments. Those with a score of 3 or more on the delusions or hallucinations subscales were included. Approvals from the North West 12 research ethics committee and local research and development offices were obtained and all participants provided informed consent.

5.3.2. Experience sampling method (ESM)

During the study, each participant was provided with a Palm device (Hewlett Packard; model: Tungsten E2) with ESP software (Barrett and Feldman Barrett, 2000) to deliver the ESM self-report questions, and a digital wristwatch (Timex Iron Man) to prompt completion. Following the procedure of previous ESM studies conducted with psychosis samples (e.g. Myin-Germeys et al., 2005; Myin-Germeys et al., 2001a), the wristwatch emitted 10 semi-random beeps per day between 9 am and midnight over 6 consecutive days, including a weekend. Participants were aware of the number of beeps per day, but unaware of the beep timings, other than that it would be ‘unpredictable’. Patients’ and relatives’ wristwatches were programmed to beep at the same time. Participants were instructed to complete the ESM self-report questions on the Palm device after each beep, assessing their current affect, symptom experiences, companionship and appraisals of the current interactions. Relative-patient dyads were specifically instructed to fill in the ESM reports individually and not to confer. The questions took about 2 minutes to complete on each occasion and were identical for relatives and patients, except for the psychopathology questions (absent for relatives) and for the interaction questions (which were mirrored). For example, if the patient was asked to rate ‘just before the beep went off he/she was nagging me’ the relative was asked to rate ‘just before the beep went off I was nagging him/her’.
ESM reports were considered valid if participants completed them within a 15-minute window of being prompted, although participants were not aware of this time limit. Any entries completed outside this window were excluded from the analyses, as they are less likely to be reliable (Delespaul, 1995). Furthermore, for inclusion in the analyses, a cut off of 20 (out of a possible 60) valid ESM reports was required by each participant, to ensure representativeness of the data (Palmier-Claus et al., 2010). Three dyads were excluded from the dyadic analyses: 1 dyad did not provide enough valid reports, and for the other 2, only one member did. The latter (1 patient and 1 relative) were therefore included in the patients/relatives analyses.

5.3.3. Procedure
An initial pre-ESM phase visit was arranged at which patient consent was obtained, socio-demographic information was collected and the PANSS (Kay et al., 1987) was administered to confirm the presence of positive symptoms. Consent was requested to contact a relative with whom the patient had at least 10 hours of weekly contact. Where there was more than one relative, patients opted for the person with whom they had closest contact.

During the ESM briefing visit, participants were introduced to the Palm, wristwatch and to the layout of the ESM questions. A practice trial was conducted. Participants were instructed to start completing the ESM questions the next day and informed that the researcher would call them, to ensure that the devices were functioning properly and to address any possible concerns. Additional optional telephone contacts during the ESM phase were offered to participants and the researchers’ contact details were provided.
A debriefing visit was arranged at the end of the 6 days to collect the devices and to conduct the post-ESM assessment, which included the Camberwell Family Interview with relatives.

5.3.4. Measures

5.3.4.1. ESM measures

**Affect.** Affect states were assessed at the time of the beep (current beep) in patients and relatives using eleven items rated on a 7-point Likert scale (1, not at all - 7, a lot). As in previous ESM studies with patients with psychosis (Myin-Germeys *et al.*, 2003c; Myin-Germeys *et al.*, 2001a; Oorschot *et al.*, 2012; Wigman *et al.*, 2013), principal components analysis identified two scales: the positive affect scale (Cronbach’s α=0.87, for the patient sample; Cronbach’s α=0.82 for the relative sample) composed of the adjectives ‘*happy, cheerful, satisfied, excited, relaxed*’; and the negative affect scale (Cronbach’s α=0.83, for the patient sample; Cronbach’s α=0.85 for the relative sample) composed of the adjectives ‘*guilty, irritable, anxious, annoyed, sad, lonely*’. Mean scores for the items in each scale were used in the analyses.

**Psychosis experiences.** Experiences of psychotic symptoms were assessed at the time of the beep (current beep) only in patients with 9 items rated on a 7-point Likert scale (1, not at all - 7, a lot). The psychosis symptoms scale (Cronbach’s α=0.91) was comprised of the items ‘*Just before the beep went off I was... hearing voices, seeing things (that other people cannot see), feeling that someone may try to cause me harm, suspicious, afraid I could lose control, unable to get rid of my thoughts, feeling unreal, feeling that my thoughts are being influenced or controlled, finding it difficult to express my thoughts.*’ The mean score of the 9 items was used in the analyses.
Affect and psychosis experience items were adapted from previous ESM studies conducted with participants experiencing psychosis (Devries and Delespaul, 1989; Myin-Germeys et al., 2005; Myin-Germeys et al., 2001a). Adaptations included a slight change in wording to ‘when the beep went off I was…’ in order to reflect truly momentary reports.

**Contact within the patient-relative dyad.** To make sure that all contact was captured, patients and relatives were asked to report (yes/no) first whether they were with the other member of the dyad at the time of the beep (current beep), and secondly whether they had been with the other member of the dyad since the last beep (between beeps). Contact between dyad members was derived from ESM interaction studies (Janicki et al., 2006; Larson et al., 1994) and defined as any situation where they were directly spending time or doing things together, including telephone or voice/multimedia over Internet contact. The items were ‘Just before the beep went off I was with the other participant’ and ‘Since the last beep I have been with the other participant’.

**Behaviourally controlling interactions within the patient-relative dyad.** Each time patients and relatives reported contact (at the current and between beeps), a set of branching questions specific to behaviourally controlling interactions were presented, both at the time of the beep (current beep) and for the time since the last beep (between beeps). Based on previous work (Vasconcelos e Sa et al., 2013) behaviourally controlling interactions items were developed to include momentary ‘direct influencing’ and ‘buffering’ behavioural attempts. ‘Direct influencing’ behaviours refer to actions attempting to directly change the patient’s behaviour, such as nagging or encouraging; ‘buffering’ attempts represent any behaviour aiming to take control or do things for the patient, and can be expressed as helping, supervising or taking over. As previously
mentioned, behaviourally controlling interaction items were mirrored. For patients these types of interactions were assessed with yes/no responses to the statements ‘Just before the beep went off this person was... and Since the last beep this person has been... encouraging me; nagging me; helping me; taking control of me; keeping an eye on me’.

For relatives behaviourally controlling interactions were assessed with yes/no responses to the statements ‘Just before the beep went off I was... and Since the last beep I have been... encouraging him/her; nagging him/her; helping him/her; taking control of him/her; keeping an eye on him/her’.

Prior to starting the study, items were piloted with anonymous patients and relatives’ consultants, who checked that items were relevant and reflected genuinely momentary experiences with which participants identify.

5.3.4.2. Non-ESM measures

5.3.4.2.1. Symptom severity

The Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987) was completed at baseline prior to the ESM phase to screen for current severity of psychotic symptoms (namely persecutory delusions and/or auditory hallucinations). Two assessors (DV and SH) achieved good inter-rater reliability on a set of 3 randomly selected PANSS interviews from the current study (ICC=0.99).

5.3.4.2.2. Expressed Emotion (EE)

The Camberwell Family Interview (CFI; Vaughn and Leff, 1976) was conducted with all participating relatives after the ESM assessments were completed. Critical comments (frequency count), hostility (0, no hostility - 3, hostility as both generalisation and rejection) and emotional over-involvement (EOI; 0, none - 5, marked EOI) were rated,
and the conventional criteria were used to classify high-EE (6 or more critical comments, any hostility, or a rating of 3 or more for EOI). EE categorisations and levels of criticism and EOI were used in the analyses. The first author carried out all EE codings following training with Dr. Vaughn. Interrater reliability was assessed from a random sample of 3 interviews using a trained independent rater, who was unaware of the study hypothesis. 100% agreement on EE status was obtained, with good to absolute agreement on the critical comments (ICC=0.86) and EOI (ICC=1.00) sub-scales.

5.3.5. Statistical analyses

Multilevel models were used to account for the hierarchical structure of the ESM data: multiple time points (level 1), nested within multiple days (level 2) and nested within participants (level 3). Data was analysed using STATA (Version 12 for MAC) employing the XTMIXED command for analyses with continuous dependent variables and XTMELOGIT for analyses with dichotomous dependent variables. Analyses included data drawn from patients, relatives and dyads datasets. P-values are reported at a .01 significance level to reduce the likelihood of accepting chance findings that may result from conducting multiple analyses. The analysis strategy first investigated the associations between predictor variables and the outcome variables, followed by the examination of the moderating effects. Analyses were threefold for each hypothesis and will be referred to as such throughout the paper: momentary/current beep analyses involved predictor variables relating to the time of the current beep; proximal/between beeps analyses involved predictor variables measured at the current beep, but which related to the time period between the current and the previous beep; lagged/previous beep analyses involved predictor variables measured at the previous beep. To test hypotheses examining moderating effects interaction terms and lagged interaction terms were created. The lagged interactions examine the effects of interaction terms measured
at the previous beep on the outcome variables at the current beep. Separate time-lagged analyses were repeated with the insertion of these lagged variables in consecutive models.

**Effect of contact and EE**

To test whether contact with high-EE relatives was associated with patients’ affect and symptoms, analyses were carried out in two stages. First, the association between patient’s reported contact with the other member of the dyad and patient’s current affect and symptoms was examined. Separate analyses were conducted using the patients’ dataset and entering contact with the other member of the dyad as an independent variable in consecutive models with negative affect; positive affect; and symptoms as dependent variables. Second, the moderating effects of EE status and its components were tested. Using the dyads dataset separate analyses were conducted with the insertion of the moderator variables (EE status; criticism; EOI) as well as their interaction term with contact with the other member of the dyad as independent variables in consecutive models. The same analysis strategy using the relative’s dataset was followed to assess the effect of relative’s EE status on the association between relatives’ reported contact with the other member of the dyad and relative’s affect.

**Effect of behaviourally controlling interactions**

To investigate if patients perceptions and relatives reports of behavioural control (5 items) predicted the other member of the dyad’s current affect and (for patients only) symptoms, separate analyses using the patients and relatives datasets were conducted entering each behavioural control item as independent variables in consecutive models with negative affect; positive affect; and (for patients) symptoms as dependent variables.
**Effect of patient’s symptoms**

To assess whether patient’s reported symptoms predicted relatives’ current affect and behavioural control, separate analyses using data from the dyad dataset were conducted entering patient’s symptoms mean item score as the independent variable in consecutive models with relative’s negative affect, positive affect and each of the 5 behavioural control items as dependent variables.

**5.4. Results**

**5.4.1. Sample**

Figure 2 describes the flow diagram for the study sample, which included of 25 patients, 23 relatives and 21 patient-relative dyads.

**Figure 2:** ESM patient-relative dyad sample flow diagram
The mean age of the patient sample (n=25) was 31 (SD=10.4), 64% were male (n=16), single (n=17) and all except one lived with a relative (96%, n=24). In the relatives’ sample (n=23) the mean age was 52 (SD=15.1), 87% were female (n=20), 65% were married (n=15) and most relatives were mothers (52%, n=12), followed by partners (26%, n=6). Descriptive information for the patient-relative dyad sample (n=21) is provided in Table 12. Of the 21 dyads that completed the ESM phase with valid data, both patients and relatives provided data on average at over half of the sixty assessments (M=40.1, SD=10.6; M=45.4, SD=7.9, respectively). Appropriate statistical tests were used to compare those who completed the ESM phase and those who did not and no differences in terms of gender, relationship with patient, education level, employment, marital status, age and CFI length were found.

Table 12
Descriptive information for the patient-relative dyad sample (n= 21)

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<th>Patients</th>
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<th>Relatives</th>
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<tr>
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<td></td>
<td>1</td>
<td>4.8</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>21</td>
<td>100.0</td>
<td>21</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Occupational status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed (part-time)</td>
<td>2</td>
<td>9.5</td>
<td>5</td>
<td>23.8</td>
</tr>
<tr>
<td>Employed (full-time)</td>
<td></td>
<td></td>
<td>2</td>
<td>9.5</td>
</tr>
<tr>
<td>Voluntary</td>
<td>1</td>
<td>4.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>4</td>
<td>19.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home duties</td>
<td>1</td>
<td>4.8</td>
<td>2</td>
<td>9.5</td>
</tr>
<tr>
<td>Retired</td>
<td></td>
<td></td>
<td>6</td>
<td>28.6</td>
</tr>
<tr>
<td>Unemployed</td>
<td>13</td>
<td>61.9</td>
<td>6</td>
<td>28.6</td>
</tr>
<tr>
<td><strong>Highest level of education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>2</td>
<td>9.5</td>
<td>2</td>
<td>9.5</td>
</tr>
<tr>
<td>Secondary</td>
<td>7</td>
<td>33.3</td>
<td>9</td>
<td>42.9</td>
</tr>
<tr>
<td>Further</td>
<td>8</td>
<td>38.1</td>
<td>5</td>
<td>23.8</td>
</tr>
<tr>
<td>Higher</td>
<td>4</td>
<td>19.0</td>
<td>5</td>
<td>23.8</td>
</tr>
</tbody>
</table>
### Diagnosis

<table>
<thead>
<tr>
<th>Disorder</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>First episode psychosis</td>
<td>7</td>
<td>33.3</td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>8</td>
<td>38.1</td>
</tr>
<tr>
<td>Schizoaffective</td>
<td>1</td>
<td>4.8</td>
</tr>
<tr>
<td>Psychotic disorder (NOS)</td>
<td>2</td>
<td>9.5</td>
</tr>
<tr>
<td>Unspecified non-organic psychosis</td>
<td>3</td>
<td>14.3</td>
</tr>
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### Trust type

<table>
<thead>
<tr>
<th>Type</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIS</td>
<td>11</td>
<td>52.4</td>
</tr>
<tr>
<td>CMHT</td>
<td>9</td>
<td>42.9</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>4.8</td>
</tr>
</tbody>
</table>

### Living arrangements

<table>
<thead>
<tr>
<th>Arrangement</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>With relative(s)</td>
<td>20</td>
<td>95.2</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>4.8</td>
</tr>
</tbody>
</table>

### Relationship with patient

<table>
<thead>
<tr>
<th>Relationship</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural mother</td>
<td>12</td>
<td>57.1</td>
</tr>
<tr>
<td>Natural father</td>
<td>1</td>
<td>4.8</td>
</tr>
<tr>
<td>Sibling</td>
<td>1</td>
<td>4.8</td>
</tr>
<tr>
<td>Partner</td>
<td>6</td>
<td>28.6</td>
</tr>
<tr>
<td>Other blood relative</td>
<td>1</td>
<td>4.8</td>
</tr>
</tbody>
</table>

### Expressed Emotion

<table>
<thead>
<tr>
<th>Type</th>
<th>N</th>
<th>Mean (SD)</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>High/low</td>
<td>12/9</td>
<td>57.1/42.9</td>
<td></td>
</tr>
<tr>
<td>High EE (CC only)</td>
<td>4</td>
<td>19.0</td>
<td></td>
</tr>
<tr>
<td>High EE (hostility only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High EE (EOI only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High EE (CC &amp; hostility)</td>
<td>4</td>
<td>19.0</td>
<td></td>
</tr>
<tr>
<td>High EE (CC &amp; EOI)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High EE (hostility and EOI)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High EE (CC, hostility &amp; EOI)</td>
<td>4</td>
<td>19.0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Mean (SD)</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>26*</td>
<td>19-51</td>
<td>22-79</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weekly contact hours with patient</th>
<th>Mean (SD)</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>40*</td>
<td>7-168</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CFI length (in minutes)</th>
<th>Mean (SD)</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>66*</td>
<td>32-97</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Critical comments</th>
<th>Mean (SD)</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0*</td>
<td>0-11</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hostility</th>
<th>Mean (SD)</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0*</td>
<td>0-2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EOI</th>
<th>Mean (SD)</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0*</td>
<td>0-4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Warmth</th>
<th>Mean (SD)</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.9 (1.2)</td>
<td>1-5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Positive remarks</th>
<th>Mean (SD)</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0*</td>
<td>0-6</td>
<td></td>
</tr>
</tbody>
</table>

*Note: *Median reported for non-normally distributed variable

Abbreviations: NOS= not otherwise specified; EIS= early intervention service; CMHT= community mental health team; CC= critical comments; EOI= emotional overinvolvement, SD= standard deviation

Table 13 provides descriptive data for the contact and behavioural control ESM items.
Table 13
Descriptives for contact with other participant and behavioural control items

<table>
<thead>
<tr>
<th>ESM item reported</th>
<th>Total obs</th>
<th>Total obs. item was endorsed (Yes)</th>
<th>Mean (SD)</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>by relatives (n= 23)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact with other participant</td>
<td>615</td>
<td>400</td>
<td>.65 (.48)</td>
<td>0-1</td>
</tr>
<tr>
<td>Encouraging</td>
<td>400</td>
<td>73</td>
<td>.18 (.39)</td>
<td>0-1</td>
</tr>
<tr>
<td>Nagging</td>
<td>400</td>
<td>22</td>
<td>.06 (.23)</td>
<td>0-1</td>
</tr>
<tr>
<td>Helping</td>
<td>400</td>
<td>83</td>
<td>.21 (.41)</td>
<td>0-1</td>
</tr>
<tr>
<td>Taking control</td>
<td>400</td>
<td>8</td>
<td>.02 (.14)</td>
<td>0-1</td>
</tr>
<tr>
<td>Keeping eye on</td>
<td>400</td>
<td>117</td>
<td>.29 (.46)</td>
<td>0-1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ESM item reported</th>
<th>Total obs</th>
<th>Total obs. item was endorsed (Yes)</th>
<th>Mean (SD)</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>by patients (n= 25)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact with other participant</td>
<td>550</td>
<td>373</td>
<td>.68 (.47)</td>
<td>0-1</td>
</tr>
<tr>
<td>Encouraging</td>
<td>373</td>
<td>55</td>
<td>.15 (.36)</td>
<td>0-1</td>
</tr>
<tr>
<td>Nagging</td>
<td>373</td>
<td>11</td>
<td>.03 (.17)</td>
<td>0-1</td>
</tr>
<tr>
<td>Helping</td>
<td>373</td>
<td>77</td>
<td>.21 (.41)</td>
<td>0-1</td>
</tr>
<tr>
<td>Taking control</td>
<td>373</td>
<td>4</td>
<td>.01 (.10)</td>
<td>0-1</td>
</tr>
<tr>
<td>Keeping eye on</td>
<td>373</td>
<td>165</td>
<td>.44 (.50)</td>
<td>0-1</td>
</tr>
</tbody>
</table>

Note. Obs.= observations, SD= standard deviation

5.4.2. Contact and EE

Patients’ contact with relatives, reported both at the momentary, proximal and lagged levels, was not related with patients’ current negative or positive affect, nor with psychosis symptom experiences (Table 14). Further analyses revealed that neither EE status, nor criticism, nor EOI moderated the relationship between patient’s reported contact with relative and patient’s current affect or symptoms. When analyses were repeated using the lagged variables the results remained non-significant.

Momentary, proximal and lagged analyses showed that relatives’ reported contact with the patient, did not predict relative’s current affect (Table 14). Further momentary, proximal and lagged regression analyses revealed that relative’s EE status had no
moderating effect on the association between contact with patient and relative’s affect.

### Table 14

Effect of contact on affect and symptoms (reported by patients, n= 25); and effect of contact on affect (reported by relatives, n= 23)

<table>
<thead>
<tr>
<th></th>
<th>Patients</th>
<th></th>
<th>Relatives</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>95% CI</td>
<td>p</td>
<td>β</td>
</tr>
<tr>
<td><strong>Negative affect</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA</td>
<td>.015</td>
<td>[-.148, .178]</td>
<td>0.854</td>
<td>.107</td>
</tr>
<tr>
<td>PA</td>
<td>-.083</td>
<td>[-.200, .033]</td>
<td>0.162</td>
<td>.011</td>
</tr>
<tr>
<td>LA</td>
<td>-.145</td>
<td>[-.351, .060]</td>
<td>0.166</td>
<td>.050</td>
</tr>
<tr>
<td><strong>Positive affect</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA</td>
<td>.016</td>
<td>[-.176, .208]</td>
<td>0.870</td>
<td>-.062</td>
</tr>
<tr>
<td>PA</td>
<td>.119</td>
<td>[-.009, .246]</td>
<td>0.068</td>
<td>.103</td>
</tr>
<tr>
<td>LA</td>
<td>.115</td>
<td>[-.110, .339]</td>
<td>0.317</td>
<td>-.239</td>
</tr>
<tr>
<td><strong>Symptoms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA</td>
<td>-.038</td>
<td>[-.188, .112]</td>
<td>0.621</td>
<td>-</td>
</tr>
<tr>
<td>PA</td>
<td>-.002</td>
<td>[-.108, .103]</td>
<td>0.966</td>
<td>-</td>
</tr>
<tr>
<td>LA</td>
<td>-.138</td>
<td>[-.320, .044]</td>
<td>0.136</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note. CI= confidence interval, MA= momentary analyses, PA= proximal analyses, LA= lagged analyses*

### 5.4.3. Behaviourally controlling interactions

Patients’ momentary perceptions of the relative ‘taking control of’ the patient significantly predicted higher levels of patients’ current symptoms. No further significant associations were found for the remaining behavioural control items at the momentary and proximal levels. Time-lagged analyses showed that patient perception that the relative was helping at the previous beep significantly predicted increased negative affect at the subsequent beep. The remaining associations in the time-lagged analyses were non-significant (Table 15).
Table 15
Effect of behavioural control on affect and symptoms (reported by patients, n= 25)

| Behavioural Control | Negative Affect | | | | | | Symptoms | | | |
|---------------------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                     | β               | 95% CI| p     | β     | 95% CI| p     |
| Encouraging         |                 |       |       |       |       |       |
| MA                  | -.265           | [-.508, -.021] | 0.033 | -.014 | [-.234, .207] | 0.904 |
| PA                  | -.060           | [-.253, .132] | 0.538 | -.033 | [-.198, .132] | 0.698 |
| LA                  | -.043           | [-.323, .237] | 0.762 | .184  | [-.071, .438] | 0.158 |
| Nagging             |                 |       |       |       |       |       |
| MA                  | .224            | [-.225, .674] | 0.328 | .152  | [-.251, .554] | 0.460 |
| PA                  | .253            | [-.088, .594] | 0.145 | .088  | [-.207, .383] | 0.559 |
| LA                  | .618            | [.109, 1.126] | 0.017 | .185  | [-.277, .648] | 0.432 |
| Helping             |                 |       |       |       |       |       |
| MA                  | .009            | [-.218, .236] | 0.939 | .024  | [-.180, .227] | 0.821 |
| PA                  | .095            | [-.097, .286] | 0.331 | -.079 | [-.244, .087] | 0.350 |
| LA                  | .320            | [.077, .562] | 0.010*| .168  | [-.051, .387] | 0.132 |
| Taking control      |                 |       |       |       |       |       |
| MA                  | .849            | [.105, 1.594] | 0.025 | 1.079 | [.418, 1.740] | 0.001*|
| PA                  | -.608           | [-1.122, -.093] | 0.021 | -.437 | [-.882, .008] | 0.054 |
| LA                  | .708            | [-.034, 1.449] | 0.062 | .645  | [-.040, 1.331] | 0.065 |
| Keeping eye on      |                 |       |       |       |       |       |
| MA                  | -.274           | [-.505, -.043] | 0.020 | .003  | [-.204, .211] | 0.976 |
| PA                  | -.013           | [-.223, .197] | 0.906 | .091  | [-.090, .273] | 0.323 |
| LA                  | .083            | [-.177, .344] | 0.530 | .109  | [-.124, .342] | 0.358 |

Note. CI= confidence interval, MA= momentary analyses, PA= proximal analyses, LA= lagged analyses. *p< .01

Relatives’ momentary self-reports of nagging and taking control of the patient significantly predicted higher levels of relatives’ current negative affect. Similarly, at the proximal level relatives reports of nagging, taking control and keeping an eye on the patient significantly predicted increased current negative affect in relatives. In addition, momentary and proximal self-reports of nagging, and proximal self-reports of taking
control were significantly associated with decreased current positive affect in relatives. When analyses were run with the lagged variables, relative reports of nagging at the previous beep, significantly predicted increased negative affect at the subsequent beep. The remaining relatives’ behavioural reports had no effect on relatives’ affect (Table 16).

**Table 16**

Effect of behavioural control on affect (reported by relatives, n=23)

<table>
<thead>
<tr>
<th>Behavioural Control</th>
<th>Negative affect</th>
<th>Positive affect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>95% CI</td>
</tr>
<tr>
<td>Encouraging</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA</td>
<td>.066</td>
<td>[-.201, .334]</td>
</tr>
<tr>
<td>PA</td>
<td>-.038</td>
<td>[-.228, .153]</td>
</tr>
<tr>
<td>LA</td>
<td>.230</td>
<td>[-.087, .546]</td>
</tr>
<tr>
<td>Nagging</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA</td>
<td>1.232</td>
<td>[.857, 1.606]</td>
</tr>
<tr>
<td>PA</td>
<td>.974</td>
<td>[.668, 1.279]</td>
</tr>
<tr>
<td>LA</td>
<td>1.096</td>
<td>[.635, 1.557]</td>
</tr>
<tr>
<td>Helping</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA</td>
<td>.053</td>
<td>[-.189, .295]</td>
</tr>
<tr>
<td>PA</td>
<td>.057</td>
<td>[-.143, .257]</td>
</tr>
<tr>
<td>LA</td>
<td>.036</td>
<td>[-.246, .319]</td>
</tr>
<tr>
<td>Taking control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA</td>
<td>.877</td>
<td>[.175, 1.580]</td>
</tr>
<tr>
<td>PA</td>
<td>.807</td>
<td>[.394, 1.220]</td>
</tr>
<tr>
<td>LA</td>
<td>.780</td>
<td>[.046, 1.514]</td>
</tr>
<tr>
<td>Keeping eye on</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA</td>
<td>.263</td>
<td>[.035, .492]</td>
</tr>
<tr>
<td>PA</td>
<td>.483</td>
<td>[.266, .700]</td>
</tr>
<tr>
<td>LA</td>
<td>.167</td>
<td>[-.093, .427]</td>
</tr>
</tbody>
</table>

*Note. CI= confidence interval, MA= momentary analyses, PA= proximal analyses, LA= lagged analyses

*p< .01
5.4.4. Patient’s symptoms

No significant associations were found between patients reported symptoms and relative’s affect and self-reported behavioural control in either momentary or lagged analyses (Table 17).

Table 17
Effect of patients’ symptoms on relatives’ affect and behavioural control (n=21)

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>95% CI</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Negative affect</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA</td>
<td>.025</td>
<td>[-.052, .103]</td>
<td>0.521</td>
</tr>
<tr>
<td>LA</td>
<td>.005</td>
<td>[-.073, .083]</td>
<td>0.901</td>
</tr>
<tr>
<td><strong>Positive affect</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA</td>
<td>-.041</td>
<td>[-.132, .049]</td>
<td>0.374</td>
</tr>
<tr>
<td>LA</td>
<td>.012</td>
<td>[-.085, .109]</td>
<td>0.808</td>
</tr>
<tr>
<td><strong>OR</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encouraging</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA</td>
<td>.500</td>
<td>[-.116, 1.117]</td>
<td>0.111</td>
</tr>
<tr>
<td>LA</td>
<td>.225</td>
<td>[-.334, .784]</td>
<td>0.430</td>
</tr>
<tr>
<td>Nagging</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>[-.729, .511]</td>
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<td>.365</td>
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<tr>
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<td>[-.217, .648]</td>
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<td>[-.118, .771]</td>
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*Note. OR= odds ratio, CI= confidence interval, MA= momentary analyses, LA= lagged analyses*
5.5. Discussion

As hypothesised, perceived momentary behaviourally controlling interactions predicted patients’ affect and symptom experiences. However, contact with high-EE relatives had no effect on patients’ affect or symptoms. Similarly, for relatives in this study, reported behavioural control attempts significantly predicted fluctuations in relatives’ affect; but EE status did not moderate the association between contact with the patient and relatives’ affect. Patients’ symptoms also did not influence relatives’ affect or behavioural responses.

In this study contact with relatives did not predict patients’ current affect or psychosis symptom experiences. This finding contrasts with prior research, which found that being in the presence of familiar people lessens the occurrence of delusional moments in individuals with psychosis (Myin-Germeys et al., 2001b), and the occurrence of abnormal perceptions in subjects with high vulnerability for psychosis (Verdoux et al., 2003). This discrepant result may be due to methodological differences: first, in the present study contact was restricted to a key relative, whereas in the previous two studies this distinction was not made; contact with familiar individuals included any contact with relatives, friends or partners; second, in Myin-Germeys (2001b)’s study only delusional moments were evaluated, whilst in this study patients’ self-reports assessed positive psychotic experiences, including delusional and hallucinatory momentary experiences. Moreover, one study demonstrated that individuals with high levels of trait paranoia report less paranoid thinking when among less-familiar company as compared to being with a familiar company (Collip et al., 2011) and, there is also evidence that change in social company over two ESM assessments can be a stronger predictor of psychotic experiences than the actual current social company (Verdoux et al., 2003). These inconsistencies in findings suggest that further ‘real-world’
momentary research is needed to clarify how being around family members can impact on the variation of symptoms and affect. Furthermore, neither EE status, nor criticism or EOI, moderated the relationship between momentary contact with the relative and patients’ current affect or symptoms, suggesting that the presence of high-EE per se does not influence current affect and symptoms experience in patients. This finding is consistent with Hahlweg (1989)’s study which examined interactional patterns between recent-onset psychosis patients and their high/low-EE relatives using family interaction tasks in a laboratory setting, and found no association between relative’s CFI EE ratings and their interactional behaviour.

On the other hand, this study did reveal significant links between patients’ perceptions of certain behaviourally controlling interactions and patients’ affect and symptom experiences. Specifically we found that patients’ immediate perceptions of their relatives taking control of them were associated with higher current symptoms. Furthermore, patients’ perceptions of their relatives helping them at the previous time-point predicted increases in negative affect at the subsequent time-point. One might have expected that perceived helping interactions would be associated with low or reduced negative affect. One possible, although speculative, explanation is that, even though these helping behaviours might be well intended, patients perceive them as inappropriate or intrusive, impacting on their affect. This is to some extent comparable to the finding that relatives’ overinvolved attitudes, usually manifested in overprotective or devoted behaviours, are associated with greater patient anxiety and depression (Bentsen et al., 1996). On the other hand, it might well be that relatives’ helping attempts increase patients’ awareness that they not capable of helping themselves, fuelling feelings of frustration or hopelessness. Overall, these findings suggest that some of the moment-to-moment variations in patients’ affect and symptoms are
associated with their perceptions of relatives’ behaviours, indicating that the measure of
behavioural interactions rather than the EE status of the relative is more sensitive to
momentary fluctuations in patients’ symptoms and affect.

Relatives’ reports that they were or had been taking control of the patient were linked
with increases in their negative affect. Similarly, when relatives reported that they were
or had been nagging the patient, they also felt significantly more sad/irritated as well as
significantly less happy/satisfied. The effects of nagging on relatives’ affect seem to
persist, as these findings were also significant in the lagged analyses. Decreases in
positive affect were also evident when relatives reported that they had been taking
control of the patient; and increases in low mood were also associated with relatives’
reports that they had been keeping an eye on the patient. Overall, when relatives engage
in a range of behavioural control interactions, they also tend to experience increases in
low mood as well as decreases in positive mood; and these low feelings seem to linger.
Supervisory interactions like keeping an eye on the patient also seem to be associated
with lower mood. Possibly the way relatives appraise interactions determines their
emotional responses. Prior evidence suggests that negative evaluations of caregiving
directly relate to carer stress (Kuipers et al., 2006) and that understanding relatives’
beliefs and appraisals may help us to identify those at risk of enduring problems
(Barrowclough et al., 2014). Thus, clinical support offered to relatives should identify
early on which beliefs and interactional styles are more adaptive. Modifying interactions
might then improve relatives’ own mood, predicting a better adjustment. Finally, our
findings showed that patients’ symptom severity had no effect on relatives’ affect or
behavioural responses. This result is consistent with previous research that used
conventional retrospective assessment of control and found no significant links between
patients symptomatology and controlling behaviours (Wuerker et al., 2002).
5.5.1. Limitations

The following limitations should be taken into account when interpreting these results. First, to guarantee that behaviourally controlling interactions were captured, participants were asked to self-report on these items both at the momentary and proximal levels. This repeated probing might have increased participants’ self-awareness, making self-assessments more likely to be biased. Second, although data was collected in a longitudinal structure (up to 60 reports over 6 days) with synchronised dyads, causation cannot be inferred. Thus, it is impossible to determine whether behaviourally controlling interactions influence affect and symptoms, or vice-versa. Third, many multilevel analyses of the data were conducted and this could result in spurious results, although a more stringent significance level was adopted in the interpretation of the findings. Fourth, the majority of the sample was female and white British restricting the generalisability of findings to other groups. Furthermore the small sample size and the skewness of some of the predictors may have underpowered the study. Finally, recruitment in dyads may have reduced the number of available participants and introduced a selection bias.

5.5.2. Conclusions

The present study highlights the importance of integrating both relatives’ and patients’ perspectives of their daily interactions, and how these moment-to-moment interactions impact on psychotic experiences and affect. Our findings showed that high/low-EE contact within the patient-relative dyad per se had no impact on affect or, in the case of patients, symptoms. However, we found that patients’ momentary perceptions of behaviourally controlling interactions, such as taking control or helping relate to increased negative affect and symptoms. In a similar way, we have established links between momentary self-reports of relatives’ behavioural responses and their negative
affect. Overall, these results indicate that ‘negative’ behavioural interactions relate simultaneously to increased negative affect both in patients and relatives, suggesting that these behavioural interplays within the dyad should be a focus of clinical interventions.

These novel findings emphasise the need to integrate patients’ perceptions and relatives’ reports of behavioural responses when delivering psychoeducational and clinical interventions; and to further explore the contribution of specific behavioural interactions to patient’s and relative’s distress. The experience sampling methodology provides a closer insight into how certain types of behaviourally controlling interactions play a significant role on the experience of symptoms and affect in patient-relative dyads.

5.6. Role of funding source

This study was funded by doctoral grant from Fundação para a Ciência e Tecnologia (FCT), Portugal (SFRH/BD/37569/2007) and completed as part of the first author’s Doctor of Philosophy qualification.

5.7. Acknowledgments

We thank Garry Byrne for technical support with Palms devices; Rebecca Band for facilitating EE reliability; Christopher Reeve-Mates for data input support; two anonymous consultants and MHRN FACTOR group for reviewing study material; clinical studies officers, clinical teams and independent groups for helping recruit and all participants.
Chapter 6: General discussion

The following chapter will provide a summary of the key findings from the studies described in the preceding thesis chapters, and then discuss them with reference to the studies’ hypotheses within the context of the existing literature. This will be followed by a consideration of the strengths and limitations of the studies included in this thesis. Implications of the key findings for clinical practice will be discussed, before outlining suggestions for future research to build on the understanding gained from the current thesis.

6.1. Key findings

Study 1: Expressed Emotion, types of behavioural control and controllability attributions in relatives of people with recent-onset psychosis.

The aim of Study 1 was to investigate controlling beliefs and behaviours in high and low-EE relatives. Specifically, associations between controllability attributions and controlling behaviours were examined, and types of behavioural control attempts (termed ‘direct influencing’ and buffering) in high-EE-critical/hostile and high-EE-EOI relatives were compared. The sample recruited consisted of dyads of patients recently diagnosed with first episode psychosis and a key relative with whom they had the most daily contact.

The findings revealed that high-EE relatives attributed patients’ problems to factors within patients’ control more than did low-EE relatives; high-EE relatives also engaged in more controlling behaviours towards the patient than low-EE relatives. This is in accord with previous studies conducted with carers of people with long-term psychosis (Barrowclough and Hooley, 2003). In terms of types of behavioural control, our results showed that high-EE relatives tend to employ more direct influencing and buffering
attempts than low-EE relatives. Furthermore, high-EE-critical relatives predominantly used proportionally more direct influencing attempts, whereas high-EE-EOI relatives used proportionally more buffering control attempts. With respect to patient outcome, neither EE, controllability attributions, nor behavioural control predicted patient relapse in this sample.

Findings from Study 1 extended our understanding of behavioural control attempts to a recent-onset sample, particularly with reference to the association between controllability attributions and behavioural control, and further evidenced that criticism and EOI relate to different types of behavioural control attempts, namely direct influencing and buffering respectively. These results contribute to the literature by illuminating the types of behaviours that are associated with different sets of beliefs (about controllability) and different types of EE (criticism and EOI), thus highlight the importance of identifying relatives’ beliefs and behavioural patterns from early on to further understand the underlying mechanisms that lead to the development of EE attitudes in recent-onset families.

Study 2: Self-blame attributions in relatives of people with recent-onset psychosis: associations with relatives’ distress and behavioural control.

The aims of Study 2 were to explore the nature and extent of self-blaming attributions in relatives, and to examine how self-blame attributions relate to distress, and to behavioural control attempts. The sample used in Study 2 was the same as that reported in Study 1.

The findings reported in Study 2 demonstrate that higher levels of self-blame in relatives were associated with more behavioural control attempts towards the patient;
and self-blaming beliefs predicted relatives’ controlling behaviour responses. Furthermore, links between self-blame and distress were found, but relatives’ self-blame was not predictive of distress (however younger patient age was). Content analysis revealed that most relatives who blamed themselves did so for not overseeing their family member’s mental health problems properly or for perceiving themselves generally as inadequate in their relationship with the patient.

The evidence from Study 2 highlights the association between relatives’ cognitive appraisal of their own role in their family member’s outcome and their behavioural responses towards the patient. Those relatives who blamed themselves more for contributing to the patient’s outcome also exhibited more attempts to control the patient’s behaviour; this suggests that at an early stage of the psychosis self-blame can already play an important role in motivating relatives’ responses to the patient, particularly when relatives perceive that they have been poor carers or have handled the events around the condition onset badly, thus seeking for some form of engagement as a form of reparation.

Study 3: Expressed Emotion and behavioural control in the daily life of patient-relative dyads experiencing psychosis.

Study 3 was developed to examine on a momentary basis whether contact with high-EE relatives, and relatives’ behavioural control attempts, related to patients’ symptoms and affect in both patients and relatives. The study used a momentary assessment methodology, which allows temporal associations between these variables to be assessed in dyads. A new sample of patient-relative dyads was recruited for the purpose of this study.
The results of multilevel analyses revealed that for patients, momentary perceptions of particular behavioural control attempts on the part of their relatives, namely taking control and helping, were associated with increased patient negative affect and symptoms. However, results showed that mere contact with high-EE relatives had no effect on patients’ affect or symptoms. In terms of the relatives, findings from Study 3 further showed that behavioural control responses reported by the relatives, such as nagging, taking control and keeping an eye on the patient, were associated with increased relative negative affect and decreased positive affect.

The findings from Study 3 provided a new insight into the daily interactions between patients and relatives living in EE environments, and into how these moment-to-moment interactions influence psychotic experiences and affect. The results revealed association between patients’ momentary perceptions of behaviourally controlling interactions and their increased negative affect and symptoms; and between momentary self-reports of relatives’ behavioural responses and their negative affect; suggesting that ‘negative’ behavioural interactions relate simultaneously to increased negative affect both in patients and relatives. However, causal inferences about the direction of these relationships cannot be made.

6.2. General discussion

The findings from the three empirical studies outlined above demonstrate that relatives’ beliefs and behavioural responses towards a patient experiencing psychosis play an important role in both patients and relatives’ outcomes. As hypothesised in Study 1 and consistent with model introduced in ‘Chapter 1’, high-EE relatives of people with recent-onset psychosis attributed greater volitional control to patients and were significantly more behaviourally controlling than their low-EE counterparts. The pattern
of results found were similar to those found in previous studies examining associations between EE, controllability attributions and behaviours in relatives of people with more long-term psychosis (Barrowclough and Hooley, 2003; Hooley and Campbell, 2002), but extended these findings to recent-onset groups. These findings offer further support to the Hooley’s attributional controllability model of EE (Hooley, 1985; Hooley, 1987) whereby relatives who believe that the patient can do more to control their symptoms or problem behaviours are also more likely to criticise the patient. In Study 1 criticism was the only scale showing significant positive associations with attributions of control, whereas EOI was negatively associated with attributions of control. This is consistent with the proposal that, similar to low-EE relatives, high-EE-EOI relatives are less likely to adopt a critical stance towards the patient because they attribute problem behaviours to uncontrollable causes (Barrowclough et al., 1994).

In line with the proposed model results further indicate that high-EE relatives exhibited greater levels of direct influencing and buffering attempts compared to low-EE relatives, with high-EE-critical/hostile relatives behaving predominantly in a direct influencing manner (i.e. by directly attempting to change the patient’s behaviour often through coercion), whereas high-EE-EOI relatives acted primarily in a buffering way (i.e. by taking control of or doing things for the patient). These findings build on previous research and contribute to further understanding of how high-EE responses, particularly critical and overinvolved attitudes, may develop in relatives. Those relatives who believe that the patient can do more to control his or her own symptoms and problems will more likely respond in a more persuasive controlling manner and show a critical stance, while relatives who believe that the patient’s problems are less likely to be controllable by the patient, will tend to show a more overinvolved or intruding attitude and respond by “taking over” (Barrowclough et al., 1994). These findings
support the idea that criticism and EOI might be inherently different and that their attempts to exert control may also follow different pathways (Barrowclough and Hooley, 2003).

The findings of Study 1, that neither controllability attributions nor behavioural control were significant predictors of relapse, contrast with prior research conducted with relatives with more long-term caregiving roles (Barrowclough and Hooley, 2003; Hooley and Campbell, 2002), and suggest that, at least in the early stages of the psychosis, the threshold for the effect of controllability attributions and behaviours on clinical outcome might be higher. On the other hand, in Study 1 relapse was not assessed prospectively and continuously within the follow-up period, this caveat may have also clouded the findings. Nevertheless, in the context of daily life of dyads experiencing psychosis (Study 3) moment-to-moment behaviourally controlling interplays seem to impact both patient and relatives’ outcomes. Specifically, these findings demonstrate that for patients behavioural attempts perceived as taking control or helping were associated with momentary increases in patient’s symptom experiences and negative affect; suggesting that behavioural responses captured in situ as they naturally occur may provide a better insight into how experiencing these attempts at behavioural control may act as an important stressor for an individual vulnerable to psychosis. It has been suggested that subtle alterations in the way that people interact with their environment may constitute part of the vulnerability for psychosis (Myin-Germeys et al., 2001a). Measures of momentary behavioural control may capture subtle changes in behaviour that may be more pertinent to patient symptoms than global measures of behavioural control, which may provide a more trait-like or an overall tendency to engage in controlling behaviours. Taken together these findings offer partial support to the model proposed in Chapter 1.
Momentary analyses with dyads (Study 3) indicated that the presence of high-EE per se did not impact on current patients’ affect and symptoms experience, but their experience of momentary behaviourally controlling interactions with a relative did, offering some support to our model and to the proposal that behavioural control and also its types may be a more proximal measure of the processes linked to relapse (Barrowclough and Hooley, 2003). The authors further suggest that attributions may be important antecedents of behaviours that are pivotal to understand the relapse process (Barrowclough and Hooley, 2003). More recently, Wasserman and colleagues’ (2012) demonstrated that self-blame predicted high-EE responses. Study 2 found that higher levels of self-blame predicted greater behavioural control attempts in relatives, suggesting that relatives’ blaming attributions may play a key role in the relapse process by motivating relatives to engage in controlling behaviours that may be experienced as highly stressful by individuals vulnerable to psychosis; thus constituting another liable route to relapse, which is in line with the model presented in the introductory chapter.

Furthermore, in Study 3 the negative responses that were meaningfully associated with patients’ outcome were the ones that had some degree of overlap with relatives’ buffering style, which has been found in Study 1 to be the predominant style of high-EOI relatives. To some extent this suggests that more overprotective or overinvolved behaviours, such as taking over aspects of the patient’s life or persistent helping, characteristically seen in high-EOI relatives may be the behaviours that are more keenly experienced as daily stressors directly impacting on patients’ outcomes. The ESM items that reflected a buffering style may be an important proxy measure of relatives’ EOI providing a more accurate assessment of their behavioural repertoires, thus constituting another particularly important way to further understand the EE-relapse mechanisms.
However, further investigation with more representative samples is needed to corroborate these findings.

As previously noted, results from Study 3 demonstrate that attempts to control the patient’s behaviour also impacted on relatives’ outcome. Relatives’ momentary reports of nagging, taking over, keeping an eye on the patient were linked with increases in relatives’ negative affect and decreases in relatives’ positive affect and these low feelings tended to linger, suggesting that these coping responses may be maladaptive and offering some support to our model. Possibly, when relatives perceive these behavioural attempts to be ineffective in controlling the patient’s symptomatology and behaviours, they may experience higher levels of distress, which may in turn motivate them to engage in more extreme behavioural control attempts (such as issue an ultimatum or taking the patient over). Behavioural control attempts can be conceptualised as form of coping behaviour; thus distress might be predicted by failure of coping attempts to change behaviour, acting as maladaptive coping. Support for this idea can be found in the literature. For instance, Holahan et al. (1996) suggested that maladaptive coping with one’s own physical illness is predictive of poor psychological adjustment. Furthermore, Garcia, Hernandez and Dorian (2009) found that the higher the coping efficacy (operationalised as the caregivers’ subjective assessments of whether or not their coping efforts were successful) the lower psychological distress of the caregivers with a relative with a diagnosis of schizophrenia. This suggests that understanding the way relatives appraise these behavioural interactions and which beliefs are fuelling these behaviours is crucial to an understanding of their emotional responses. In study 2 relatives’ distress was significantly (positively) associated with their self-blaming cognitions, but it is still unclear how these processes operate. There is some indication that, at least in the early stages of the psychosis, relatives’ appraisals of
how efficiently they are coping with the condition may impact on their psychological distress (Addington et al., 2003; Addington et al., 2005; Barrowclough et al., 2014; Onwumere et al., 2008). For instance Barrowclough et al. (2014) found that relatives’ increased perceived coping efficacy predicted a reduction in their distress levels. It might be that relatives’ self-blame attributions lead to both coping attempts and distress and that failed coping attempts would feedback into distress and possibly into self-blame, but this warrants further investigation.

6.3. Strengths and limitations

Methodological limitations have been discussed in the preceding chapters, but there are a number of strengths and limitations that apply to all studies included in this thesis that should to be taken into account in the interpretation of the findings. These will be discussed in turn.

On important asset of the current thesis is the multimethod approach that was utilised, incorporating cross-sectional, momentary and qualitative methods. This allows for the benefits of each method to be combined to increase our understanding of the nature of attributions and behaviours in families experiencing psychosis. The cross-sectional methods used in Study 1 and 2 allowed for the concurrent relationships between relative’s EE, attributions and types of controlling behaviours to be identified (Study 1), as well for the associations between self-blame, distress and behavioural control (Study 2) to be revealed. The triangulation with a qualitative method offered a rich and detailed comprehension of relatives’ perceptions of self-blame (Study 2). The use of experience sampling methodology enabled dyadic interactions between patients and high/low-EE relatives to be captured within their naturalistic environment, and to explore links between behavioural control, affect and symptom experiences within dyadic interactions.
In addition, throughout the studies presented within this thesis EE mechanisms were investigated from both a patient and relative perspective. Momentary analyses were particularly useful in this regard as this method offers the opportunity to examine relatives’ and patients’ responses occurring at the same moment in time, and to establish relationships between responses and outcomes from both perspectives; that is, from the perspective of the individual exhibiting the response and from the perspective of the individual experiencing the response (Study 3). This was particularly relevant for Study 3 as the broad aim of this study was to investigate how relatives’ behavioural responses impact on patients’ affect and symptom experiences, but also to examine how relatives are affected by being around patients experiencing psychosis.

The use of different dyads samples (but with common assessment methods) enabled understanding of the impact of EE, attributions and behaviourally controlling responses on psychotic experiences and affect within different contexts. Study 1 and 2 assessed a group of patient-relative dyads experiencing the first onset of the psychosis, providing an opportunity to build on previous findings with families with more long-term conditions. Study 3 focused on the daily life experiences of individuals who were currently experiencing delusions and auditory hallucinations and their relatives; therefore a more heterogeneous sample of patient-relative dyads was utilised to include patients who had recently had their first episode as well as those who had been experiencing such episodes for longer. This allowed a more inclusive insight into the links between EE, behavioural responses, and symptom and affect experiences in dyads experiencing psychosis. Recruiting a wider sample allowed constraints relating to recruitment to be overcome, as described in detail in ‘Chapter 2: Methodology’. 
Moreover, including a more diverse sample ensures a broader examination of EE, acknowledging the argument regarding the developmental nature of EE, which suggests that the links between EE and relapse are less prominent in early stages of the psychosis (Bachmann et al., 2002).

Notwithstanding the strengths outline above, there are a number of limitations that must be considered before drawing any firm conclusions from the findings. Firstly, although in Study 3 momentary analyses allowed examination of locally temporal relationships, the research was conducted using a cross-sectional design, which does not allow any inferences about the direction of causality to be reliably made. Associations between EE, attributions, behavioural control and outcome are likely to be dynamic and bidirectional. Also, EE seems to be a malleable construct where EE levels in relatives can change over time depending on certain circumstances (Hooley, 2007), thus the findings from the current body of work may only be generalised to other recent-onset samples.

Sample sizes for the three empirical studies included in this thesis were based upon power calculations and previous similar studies. Obtaining the required sample sizes involved considerable effort, which was facilitated for Study 1 and 2 through convenience sampling. Due to the recruitment difficulties associated with demanding nature of ESM (see ‘Chapter 2: Methodology’ for more detail) Study 3 recruited a different sample. The advantages of using different samples have been highlighted above, and although it might have been beneficial for all studies to have focus solely on first-episode experiences for comparison purposes, this would not be feasible if similar large sample sizes as the ones recruited for Study 1 and 2 ought to be required.
Although statistical analyses were conducted to examine the distribution of the data in the three studies included in this thesis and transformations were applied were appropriate, the asymmetric distribution of some of the predictor variables may have influenced the relationships found. In Study 1 and in Study 2 behavioural control and controllability attributions scores were normally distributed, but the skewed distribution of the EE components (namely critical comments, hostility and EOI; see Appendix 11) and self-blame attributions scores (see Table 8) in both studies may have restricted the chance of finding any significant relationships with the outcome variables. Similarly, in Study 3 the skewed distribution of criticism, hostility and EOI, and the low number of times that relatives endorsed some of the behaviourally controlling items (see Table 13) may have also reduced the power to detect a significant effect. Further exploration of these effects with larger sample sizes would be required clarify these findings.

Furthermore, compared to other samples of people with more long-term experience of the psychosis (Barrowclough and Hooley, 2003), the number of critical comments made within the current studies samples was fairly low, whereas a high proportion of relatives evidenced high levels of EOI (based on the rating of EOI only and on the ratings of EOI and criticism). The high rate of high-EE EOI responses may be due to the fact that most of the samples in the current studies were mothers, but it may also reflect the fact that for the majority of the relatives this was their first experience with the acute onset of the psychosis; thus it might be that at this stage of the condition relatives will more likely to respond to their ill family member with overprotective, intruding or reparative attitudes, rather than using a critical stance. Nevertheless, the low rates of critical comments may have reduced the power of detecting significant relationships.

Further limitations that may have compromised the generalisability of the findings
related to particular characteristics of the samples. Two thirds of data across the three empirical studies was drawn from the same sample of 80 patient-relative dyads, which were recruited through convenience sampling. The majority of the participants were white British; relatives were also mainly middle-aged and mothers; thus the findings may not generalise to different or wider groups. In addition, the recruitment in pairs of participants may have limited the number of available participants and introduced a selection bias. Generalisability of the findings may have also been further limited by the nature of recruitment sources (previously mentioned in the ‘Methodology’ Chapter). Firstly, due to ethical considerations, participants were required to be recruited via the clinical teams, allowing for biases in the recruitment process to be introduced, as clinical staff may have referred participants whom they considered to be the most appropriate for the studies rather than those patients who simply met the eligibility criteria, this may have introduced a selection bias issue limiting the generalisability of the findings. Secondly, the procedure required patients to nominate a key relative to participate; this may have introduced a systematic bias on the selection of the relative, with certain relatives being overrepresented and others underrepresented. For instance, in some cases patients nominated the mother in preference to the father, thus there may have been differences in the patient’s relationship with other relative (e.g. less intruding or overprotective) that could have affected the assessment of EE. For instance, it has been argued that high-EE overinvolved attitudes tend to develop within the mothering role, although not exclusively (Leff and Vaughn, 1985). The inclusion of wider groups of relatives (such as fathers, siblings, friends) or types of relationship with the patient (i.e. not mainly with mothers) may have provided greater detail not only about the range of the other EE responses, but also about the attributions and behavioural responses that other groups might hold. For instance, Studies 1 and 2 revealed that female relatives were more likely to score higher on the behavioural control and self-blame attributions.
scales, and that parents were more likely to be more behaviourally controlling than other kinds of relatives, suggesting that gender and kinship differences may account for different EE related outcomes.

As noted above, one important limitation of the current body of work is that only few participants included in the studies samples were not White and British, which implies that the findings can be only generalised to a Caucasian European population but not to other ethnic groups or cultures were EE has been shown to differ. For instance, Lopez and colleagues found that warmth was a protective factor for Mexican-American families but not Anglo-American, whereas criticism was found to be a risk factor for the Anglo-American families but not for the Mexican-American; suggesting that the levels of criticism and warmth may vary across cultures (Lopez et al., 2004). There is also some evidence that the levels of EE varies cross-culturally with high-EE responses being more prevalent in industrialised and developed countries (Barrowclough and Hooley, 2003), and that the families’ conceptualizations of the psychosis also tend to vary across cultures (Jenkins, 1988); this suggests that culture can construe the way individuals think about the condition, and hence shape the ways relatives may respond to a family member with psychosis. However, the influence of culture on EE was constrained in the current body of work due to its fairly homogeneous samples.

Furthermore, the use of self-report measures, such as the ESM items, may have introduced potential biases, namely those due to social desirability (Edwards, 1953), demand characteristics (Orne, 1962) and reactivity (Wheeler and Reis, 1991), which may have affected the nature of the findings, although this is a limitation common to most research in this area. Another important limitation in Study 1 and Study 2 is that part of the relatives’ variables, namely EE and attributions, were both elicited from the
same source of discourse, the CFI. There was therefore the potential for cross-contamination of the ratings, although the independence of these ratings was assessed and checks on the reliability of the ratings were carried out, as described in preceding chapters. However, if complementary measures were available this could have further corroborated the validity of these findings.

Another important shortcoming relates to the validity of the coding system used in Studies 1 and 2. Even though the behavioural control scale used in both studies was based in a prior published coding system (Hooley and Campbell, 2002) and its reliability has been consistently confirmed, the validity of this scale was not ascertained in the current studies. One possible way to overcome this limitation would have been to use the experience sampling behavioural control items used in Study 3 to test the validity of this coding scale. Similarly, the attributions scales used in Studies 1 and 2 were based in previous research, but were not validated in the current studies. The approach used to assess attributions in these studies employed the analysis of spontaneous causal thinking of relatives, which is argued to be the most valid and naturalistic method of obtaining individuals’ attributions (Barrowclough and Hooley, 2003). However, using complementary self-report attributions measures could have provided a test of the validity of these coding scales.

On a related matter, the scales used to assess behavioural control and attributions were all assumed to be linear, and data was considered at least at an ordinal level. Hence, all the statistical analyses tested linear relationships between these scales and the outcome variables, and when no linear relationship was found this was interpreted as an absence of relationship. However, such interpretation may have clouded the findings given that an relationship may in fact exist, but is curvilinear in nature; that is, whilst high levels of
behavioural control may be associated with relapse, more mild levels of control may in fact be highly functional and protective, and be therefore less associated with relapse than no behavioural control. Similarly, although high levels of controllability attributions may predict high levels criticism, and self-blame attributions may predict high levels of distress, it might be possible that mild levels of controllability and self-blame attributions are more adaptive than very low levels. However, such relationships are not accounted for in linear models.

6.4. Implications for clinical practice

Clinical implications of the findings have been discussed throughout the thesis, but this subsection provides an overview of the main ways in which these findings can inform practice.

The findings from Study 1 highlight the influence of relatives’ beliefs in the way that they respond to a family member experiencing psychosis and suggest that treatment approaches which focus on helping families to adapt to mental health problems without addressing the role of relatives’ beliefs and behaviours may be limited. Furthermore, the finding that critical and overinvolved relatives behave differently, that is critical relatives tend show a more direct influencing response style while overinvolved relatives are more likely to exhibit a buffering manner, suggests that critical and overinvolved relatives may require different interventions. This emphasises the need to include aspects in the interventions that address both critical/direct controlling and EOI/buffering responses. Barrowclough and Hooley (2003) argued that family treatment approaches for relatives of people with psychosis will be unsuccessful if they aim to ‘lecture’ relatives and if they ignore relatives underlying beliefs systems. Taken together with the evidence from the current thesis, there is scope to suggest that relatives’
responses towards the patient should be taken into account when designing treatment or management plans.

The findings from the daily life of families experiencing psychosis (Study 3) advance traditional EE research portraying patient and relatives within a system of mutual influence, whereby both members of the dyad can impact and be impacted by their interactions. Study 3 evidenced that relatives’ momentary behaviours may impact not only on patients’ symptoms and mood experiences, but also on relatives’ mood, suggesting that both parties can be equally negatively affected by these behavioural interplays and that the future development of clinical and familial interventions may benefit both patient and relative outcomes. Evidence suggests that family interventions are effective at reducing patient psychotic relapse and readmissions (Pilling et al., 2002) as well as relatives’ high levels of EE (Pfammatter, Junghan and Brenner, 2006; Pharoah et al., 2010). Possibly, if the concept of behavioural control is acknowledged within the context of these interventions, they may also be effective in helping relatives finding more suitable response styles to interact with the patient.

Furthermore, the finding from Study 2 that self-blame attributions predicted behavioural control attempts in early stage relatives indicates the importance of targeting relatives’ beliefs to better understand how relatives may respond to a family member experiencing mental health difficulties. As previously noted, behavioural attempts on the part of relatives, particularly if persistent or forceful, may be experienced as a stressor for someone vulnerable to psychosis. The importance of addressing relatives’ beliefs in designing treatment interventions has been acknowledged in some family interventions for psychosis, suggesting that such interventions need to go beyond educating relatives about psychosis (e.g. Crisp and Gleson, 2009). Furthermore, the use of reattribution
techniques or cognitive behavioural techniques may prove beneficial in helping relatives to acquire a more balanced attributional stance (Barrowclough and Hooley, 2003). On the other hand, the findings that certain behavioural responses on the part of relatives, such as taking over or nagging, are linked with current severity of psychotic symptoms suggests that these may be experienced as a stressor. The use of experience sampling methodology is another potential route for intervention, whereby an immediate intervention could reduce the impact of these stressors on the experience of psychosis. Recently the role of using ESM to deliver mobile interventions has been emphasised; this would be advantageous, for instance, in providing individualised therapeutic interventions, exercises, tasks or immediate strategies to cope with distressing symptoms (Oorschot et al., 2012).

The evidence gathered from Study 2 and 3 further ascertains that relatives of people with psychosis can be greatly impacted, experiencing distress and low mood, which highlights the need to support relatives in their caregiving role. Recent evidence suggests that family interventions may improve relatives’ outcomes and that the focus of these interventions should be on reducing relatives’ distress, with relatives being involved and supported throughout the recovery process (Lobban et al., 2013). Despite this evidence there are still indications that these interventions may not be routinely available for families experiencing psychosis (Department of Health, 2010).

One key issue around family work is implementation. Rates of uptake to family interventions are very poor and this is mainly due to the lack of availability of suitable families, which may result from service recipients feeling disempowered, blamed or stigmatized (Berry and Haddock, 2008). The current findings may offer some guidance on this. For instance, acknowledging relatives blaming beliefs and controlling
behaviours may provide a less stigmatising way to establish rapport with families that may be more reluctant to engage with services. Similarly, increasing families and staff awareness about the concept of behavioural control, conceptualising it as an everyday response that may be experienced as a stressor by more vulnerable patients, may allow relatives’ behavioural patterns to be better understood and more positively reframed. For example, Study 3 provided evidence that helping behaviours could impact patients negatively, possibly being perceived as intruding attempts to provide help. Reframing these behaviours and criticisms as genuine efforts to ameliorate the situation may provide a better way to engage with families.

**6.5. Future directions for research**

Each chapter identified areas in which the research could be further extended, therefore in the following subsection key recommendations for future work will be summarised. Firstly, the link between controllability attributions and types of behavioural control were examined using a cross-sectional design and were not assessed in comparison to potentially changing EE statuses; thus precluding inferences about the direction of causal relationships. There is some evidence that EE levels increase over time in the face of chronic exposure to psychotic experiences, and that EE levels can also fluctuate depending on certain aspects of the patients’ condition (Hooley, 2007). Further research including prospective designs would therefore be beneficial to clarify the consistency of these associations over time, although this would be quite demanding, as it would require the measurement of EE at several time points.

Although there is a large body of empirical work on the relationship between EE and attributions, little is known regarding the attributions that high-EOI or low-EE relatives hold. The current body of work shed some light regarding the attributional and
behavioural style of high-EOI relatives, but further investigation is required to corroborate these findings and to elucidate on the attributional style of low-EE relatives. Recently, it has been found that low-EE relatives are more likely to make attributions about positive illness-related events and less about negative events, than high-EE relatives, and that they are more likely to credit patients for positive events rather than negative events, suggesting that the ability to make patient-crediting beliefs may act as a protective factor for relatives distress (Grice et al., 2009). However, further evidence on the predictive value of low-EE on better relative and patient outcome is required to corroborate these findings. Furthermore, EE research has placed much importance on the negative effect of EE attitudes on outcome and rather less on its the positive aspects. Warmth has been found to be associated with lower relapse rates in patients experiencing long-term (Lopez et al., 2004) and recent-onset psychosis (Lee et al., 2013). Consistent with Lee et al.’s (2013), the finding from Study 1 provided evidence that relapse was negatively linked with warmth in recent-onset patients, highlighting the protective value of warmth and suggesting that future research should focus on what families do well and on factors that enable families fostering positive interactions (Lobban et al., 2013).

As outlined above, the results from Study 1 identified two types of controlling behaviours in relatives of people with recent-onset psychosis. Further replication of these findings would be required to assess whether these differences are reliable or specific to this study. Equally, it would be interesting to replicate this result with a sample of long-term carers. Furthermore, examination of gender differences in relation to EE may be particularly valuable to investigate further. Study 1 demonstrates that women were more likely to be rated as high-EE than men, suggesting that the EE construct may be better conceptualised taking into account gender differences.
Another avenue of inquiry that has been overlooked relates to the role that of other groups or relationships may play on EE. A recent review on the role of EE on staff-patient relationships suggests that staff attributions may play a key role in driving staff’s criticism towards the patient, which is consistent with findings from familial research. Thus it would be interesting to see if the current findings would hold with other kinship groups, such as fathers, partners, siblings and close friends.

In Study 2 significant association between self-blame attributions and distress were found, but these links were not examined longitudinally, opening an interesting route for further investigation. One recent study examining distress in recent-onset relatives found that almost half of the relatives experienced significant distress that persisted at 6 months (Barrowclough et al., 2014). Thus, it would be interesting to determine whether the link between self-blame and distress would also persist over time.

Another beneficial focus for future research would be to investigate whether the current findings would be replicated with other cultural groups in a recent-onset psychosis sample in the same way the current body of work replicated the majority of the attributional findings in a White British sample of dyads experiencing recent-onset psychosis.

### 6.6. Conclusions

The work presented within this thesis demonstrates novel techniques for investigating EE interpersonal relationships in families experiencing psychosis, providing a number of new findings that indicate that relatives’ beliefs and behavioural responses are associated in significant and meaningful ways with psychosis experiences. The role of interpersonal processes related to attributions and behavioural control and its impact on
relative and patient outcomes has been documented, building on the current psychosis literature and showing its importance to understand EE mechanisms in psychosis. What is less clear, is the mechanisms thorough which different high-EE-critical and high-EE-EOI behavioural responses may develop and how these mechanisms can causally impact on patients’ outcomes. These unanswered questions provide potential routes for future research. The findings do suggest that relatives’ beliefs and behavioural control attempts are important in impacting both patient and relative outcomes, therefore future investigations of interpersonal relationships and psychosis experiences should include measures of behavioural control. Another potential avenue for further research would be to develop a user-friendly (i.e. easier to administer) measure of behavioural control attempts. Furthermore, the findings highlight that the concept of behavioural control may be helpful to identify relatives’ behavioural styles, and should be considered in future clinical work with families experiencing psychosis.
References


Hahlweg, K., Goldstein, M.J., Nuechterlein, K.H., Magaña-Amato, A.B., Mintz, J.,


Assessment Guide for Research in Schizophrenia and Severe Mental Disorders. 


Emotional reactivity to daily life stress in psychosis. *Archives of General Psychiatry*, 58(12), 1137-1144.


Predictors of relapse following response from a first episode of schizophrenia or schizoaffective disorder. *Archives of General Psychiatry, 56*(3), 241-247.


Stirling, J., Tantam, D., Thomas, P., Newby, D., Montague, L., Ring, N. *et al.* (1993). Expressed emotion and schizophrenia: the ontogeny of EE during an 18-month follow-
up *Psychological Medicine*, 23(3), 771-778.


Appendices 1 to 11
Appendix 1: Participant information sheet for Study 3 (relative version)

PALM:
Psychosis Assessment of Life in the Moment
Relative Information Sheet
Version 4 (04/01/2011)

Research Study Title: PALM: Psychosis Assessment of Life in the Moment

We would like to invite you to take part in a research study. This project is being undertaken as part of a PhD for Debora Vasconcelos de Sa and Samantha Hartley. Before you decide whether you would like to take part, it is important that you understand why this research is being done and what it will involve. Please take the time to read the following information carefully. We can go over it in more detail when we meet if you like. You can also discuss it with others if you wish. Please ask us if there is anything that is unclear or that you would like more information about. Take time to decide whether or not you wish to take part.

What is the research study about?

This study aims to find out more about individuals and carers' daily experiences of psychosis. The study includes 2 projects; one is looking at day to day relationships between individuals and their relatives and how these relate to psychotic experiences and mood, and the other looking at the relationships between the way we think and psychotic experiences.

Who is organising and funding the research study?

This study is funded by the Portuguese Fundação para a Ciência ea Tecnologia (FCT) It is being organised by The University of Manchester, in partnership with a number of other NHS trusts.

Who will be taking part?

We are hoping to recruit up to 40 participants and their close relatives (e.g. parent or partner) to take part in this study. Relatives will have at least 10 hours of weekly contact with someone experiencing psychosis.

Why have I been asked to take part?

You have been asked to take part because you are a close relative of someone experiencing psychosis.

Do I have to take part?

It is completely up to you to decide whether or not you would like to take part. If you do decide to take part you will be given a copy of this information sheet and be asked to sign a consent form. If you do decide to take part you can leave the study at any time without giving a reason. If you do decide not to take part or to leave at any time, this will not affect the standard of care you receive.
Appendix 1: Participant information sheet for Study 3 (relative version)

What will taking part involve for me?

If you do decide to take part, a research assistant will arrange a time to come and meet you, either at home or at another place where you feel comfortable. This study involves two parts:

Part 1: Uses a method called Experience Sampling, this means that you will carry a pocket computer (called a ‘Palm’) for 6 days. The Palm will beep 10 times per day at unpredictable times. When the Palm beeps it will display some questions that you will answer. This will include questions that you answer by rating scales (e.g. from ‘not at all’ to ‘very much’) or ticking boxes. The questions will be about your mood (e.g. ‘I am feeling sad’), day to day relationships (e.g. ‘I have been encouraging him/her’) and activities (e.g. ‘I was watching TV’). Your relative will be answering similar questions with their own Palm.

Part 2: We will then meet you to talk about your experiences as a relative of someone experiencing psychosis. This will take approximately 1 ½ hours, but breaks are allowed or we can even split the interview into two visits. The interview will be audio-recorded. These recordings are made to make sure that the research team keeps to the same research format and to help us understand more about what happens in the assessment. During this visit, you and your relative will receive £15 in high street shopping vouchers to share, as a token of our appreciation for completing Parts 1 and 2.

Will my taking part be confidential?

If you agree to take part in this study, any information you provide to the research team will be kept strictly confidential. We will conform to the Data Protection Act of 1998 with respect to data collection, storage and destruction. Your name will not appear on any of the forms, we will replace it by a study identification number. Any information you give to any person from the research team will not be shared with any staff without your consent, unless the researcher feels that either yourself or others are likely to be harmed.

We will ask you to consent to audio-record some assessments. All the information that you give will be strictly confidential; no information taken from you will be shown to anyone outside the research team. The information (data) collected will be anonymised, any audio recordings will be stored on a password-protected computer or as CDs in a locked filing cabinet in the principal investigator’s office and any direct quotes used in the write up of the study will be done so in such a way as not to identify you.

What are the advantages and disadvantages of taking part?

This study will help us to understand how relatives of people with psychosis experience daily life. We hope that by collecting information from you that we may be able to inform the development of better treatment and support for people with psychosis and their relatives.

We do not expect any disadvantages in taking part of the study, but it is possible that talking about your personal experiences may cause some distress. The people from the research team interviewing you will be sensitive to this. We will check if you have
Appendix 1: Participant information sheet for Study 3 (relative version)

any concerns and you will have the opportunity to discuss any concerns at the end of the interview.

What do I do if something goes wrong?

If you have a concern about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions. If they are unable to resolve your concern or you wish to make a complaint regarding the study, please contact a University Research Practice and Governance Co-ordinator on 0161 2757583 or 0161 2758093 or by email to research-governance@manchester.ac.uk.

In the event that something does go wrong and you are harmed by taking part in this research project you may have grounds for a legal action for compensation against The University of Manchester and NHS, but you may have but you may have to pay your legal costs. The normal National Health Service complaints mechanisms will still be available to you.

What will happen to the results of the research?

If you participate in this study you will be informed of the results. The findings will also be presented to a range of mental health professionals in the form or newsletters or oral presentation. It is hoped that the findings will help to improve mental health services and validate the experiences of other service users. We also aim to publish the findings of the study in scientific journals and other publications with the aim of reaching a range of mental health professionals and service users.

Further information

If you would like any further information or have any questions about this study, please contact either:

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Appendix 2: Participant information sheet for Study 3 (patient version)

PALM:
Psychosis Assessment of Life in the Moment
Service User Information Sheet
Version 4 (04/01/2011)

Research Study Title: PALM: Psychosis Assessment of Life in the Moment

We would like to invite you to take part in a research study. This project is being undertaken as part of a PhD for Debora Vasconcelos de Sa and Samantha Hartley. Before you decide whether you would like to take part, it is important that you understand why this research is being done and what it will involve. Please take the time to read the following information carefully. We can go over it in more detail when we meet if you like. You can also discuss it with others if you wish. Please ask us if there is anything that is unclear or that you would like more information about. Take time to decide whether or not you wish to take part.

What is the research study about?

This study aims to find out more about individuals and carers’ daily experiences of psychosis disorder. The study includes 2 projects; one is looking day to day relationships between individuals and their relatives and how these relate to psychotic experiences and mood, and the other looking at the relationships between the way we think and psychotic experiences.

Who is organising and funding the research study?

This study is funded by the Portuguese Fundação para a Ciência ea Tecnologia (FCT). It is being organised by The University of Manchester, in partnership with a number of other NHS trusts.

Who will be taking part?

We are hoping to recruit up to 40 participants to take part in this study. Participants will have experience of psychosis, and will be aged 18-65, have at least 10 hours of weekly contact with a close relative (e.g. parent or partner), and be in contact with mental health services.

Why have I been asked to take part?

You have been asked to take part because you have experience of psychosis. Your care coordinator has agreed for us to approach you.

Do I have to take part?

It is completely up to you to decide whether or not you would like to take part. If you do decide to take part you will be given a copy of this information sheet and be asked to sign a consent form. If you do decide to take part you can leave the study at any time
Appendix 2: Participant information sheet for Study 3 (patient version)

without giving a reason. If you do decide not to take part or to leave at any time, this will not affect the standard of care you receive.

What will taking part involve for me?

Part 1: If you do decide to take part, a research assistant will arrange a time to come and meet you, either at home or at another place where you feel comfortable. First we will ask you some questions about your experiences. This will take approximately 1 ½ hours to complete, but you will be able to have a break during the visit if you wish. We are looking for people with certain types of experiences to take part. If what you describe to us matches up with that then we can move onto the next parts of the project.

Part 2: Uses a method called Experience Sampling, this means that you will carry a pocket computer (called a ‘palm’) for 6 days. The Palm will beep 10 times per day at unpredictable times. When the Palm beeps it will display some questions that you will answer. This will include questions that you answer by rating scales (e.g. from ‘not at all’ to ‘very much’) or ticking boxes. The questions will be about your mood (e.g. ‘I am feeling sad’), day to day relationships (e.g. ‘He/she has been encouraging him/her’), experiences (e.g. ‘I have been hearing things’) and activities (e.g. ‘I was watching TV’). Your relative will be answering similar questions with their own Palm.

Part 3: We will meet with you and your relative to receive the Palms back from both of you. At the same time, we will talk with your key relative to about their experiences as a relative of someone experiencing psychosis. Separately, we will also ask you some further questions about your experiences. This interview will take approximately 1 ½ hours to complete, but breaks are allowed or we can even split the interview into two visits. We will ask you if you would like to do this at the same time, or we can arrange to come back and do this another day if this is better for you. You can have as many breaks as you like during the interviews and can stop at any time. During this visit, you and your relative will receive £15 in high street shopping vouchers to share, as a token of our appreciation for completing Parts 2 and 3. If you have participated in the project without your relative being involved, you will receive £7 in high street shopping vouchers.

All of the interviews will be audio-recorded. These recordings are made to make sure that the research team keeps to the same research format and to help us understand more about what happens in the assessment.

Will my taking part be confidential?

If you agree to take part in this study, any information you provide to the research team will be kept strictly confidential. We will conform to the Data Protection Act of 1998 with respect to data collection, storage and destruction. Your name will not appear on any of the forms, we will replace it by a study identification number. Any information you give to any person from the research team will not be shared with any staff without your consent, unless the researcher feels that either yourself or others are likely to be harmed.

If you agree, we will contact your GP and other appropriate professionals to let him/her know that you are taking part in this study. We will also need to look at your medical
Appendix 2: Participant information sheet for Study 3 (patient version)

notes to check there is nothing that would prevent you from taking part in this study, and to see what treatments you have previously received. As you are under the care of a mental health NHS Trust, we are required to put a copy of your consent form into your usual medical notes. This copy may be reviewed by the trust Clinical Audit Department to confirm that you have given written informed consent.

If you are under the care of a mental health NHS trust, a copy of your consent form will be copied into your usual medical notes and this copy may be reviewed by the Trust Clinical Audit Department to confirm that you have given written consent to take part.

We will ask you to consent to audio-record some assessments. You may at any time decline permission for us to use an audio recorder and still take part in the study.

All the information that you give will be strictly confidential; no information taken from you will be shown to anyone outside the research team. The information (data) collected will be anonymised, any audio recordings will be stored on a password-protected computer or as CDs in a locked filing cabinet in the principal investigator’s office and any direct quotes used in the write up of the study will be done so in such a way as not to identify you.

What are the advantages and disadvantages of taking part?

This study will help us to understand how you experience psychosis in daily life. This will give you a chance to reflect on your daily psychosis experiences. We hope that by collecting information from you that we may be able to inform the development of better treatment and support for people with psychosis and their relatives.

We do not expect any disadvantages in taking part of the study, but it is possible that talking about your personal experiences may cause some distress. The people from the research team interviewing you will be sensitive to this. We will check if you have any concerns and you will have the opportunity to discuss any concerns at the end of the interview. If you wish, you will be able to talk to one of the clinical psychologists on the research team to discuss what to do next and what support is available. We can also speak with your clinical team if you wish.

What do I do if something goes wrong?

If you have a concern about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions. If they are unable to resolve your concern or you wish to make a complaint regarding the study, please contact a University Research Practice and Governance Co-ordinator on 0161 2757583 or 0161 2758093 or by email to research-governance@manchester.ac.uk.

In the event that something does go wrong and you are harmed by taking part in this research project you may have grounds for a legal action for compensation against The University of Manchester and NHS, but you may have but you may have to pay your legal costs. The normal National Health Service complaints mechanisms will still be available to you.
Appendix 2: Participant information sheet for Study 3 (patient version)

What will happen to the results of the research?

If you participate in this study you will be informed of the results. The findings will also be presented to a range of mental health professionals in the form of newsletters or oral presentation. It is hoped that the findings will help to improve mental health services and validate the experiences of other service users. We also aim to publish the findings of the study in scientific journals and other publications with the aim of reaching a range of mental health professionals and service users.

Further information

If you would like any further information or have any questions about this study, please contact either:

**Samantha Hartley**
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debora.v.sa@postgrad.manchester.ac.uk
Appendix 3: Participant briefing procedure checklist for Study 3

ESM Briefing Procedure Checklist
PALM Version 2 (14.05.2010)

☐ Introduction
We want to investigate what people feel and think during their daily lives. To do so we use a PALM device, which you will be carrying all the time. Although you will be carrying the PALM all time, it is important to live your life and to do things you would normally do. You will also wear a watch; the watch will emit 10 random beeps throughout the day between _9 AM and _midnight. Once you hear a beep, turn the PALM on and tap the ESP icon to begin the questions. You don’t have to get up earlier than usual to hear all beeps, but when you are awake you will have to carry the PALM and wear the watch until you go to bed. Every time the watch emits a beep you will have to fill in the questions on the PALM immediately after hearing the beep. You and your relative will both be filling out the questions on the PALM at the same time and answering similar questions. It is important that you answer truthfully, your relative will not be able to see your answers.

☐ Explain briefly purpose of the study
☐ The purpose is to investigate what people feel and think and some of their experiences during their daily life
☐ Use PALM- carry it all the time
☐ Every time the watch emits a beep you will have to fill out the questions on the PALM immediately
☐ Spontaneous responses
☐ Filling out independently and keep it private

☐ Explain how PALM/watch works
☐ Not water resistant
☐ Beeps are random (10/ day over 6 days)
☐ Beeps will go of between _9am and midnight pm (important to live your everyday life, not to change routines)
☐ Beeps length (few seconds)
☐ How to stop the beeps (press any button)
☐ Not adjustable volume and no vibration option
☐ Unable to use other functions on the PALM- only programmed to be used for the study
☐ Beeps can go off after 15 minutes or after 2 hours. If you don’t hear a beep after 4 hours and you have not been in a noisy place please contact us
☐ Synchronised beeps

☐ Explain the structure of the diaries
☐ Good night sheet (not activated by the beep)
☐ Beep pages (one full diary for each beep; 10 entries corresponding to the 10 beeps; beep prompted; important to answer immediately)
Appendix 3: Participant briefing procedure checklist for Study 3

☐ Explain the questions and answering format
  □ Different sections that will have questions about your thoughts, feeling experiences and context (e.g. what you’re doing, with whom you are) at the moment
  □ Different types of questions: fixed choice questions (could either be to choose: one answer, (e.g. Yes/No); or as many answers as wanted (e.g. tick all that apply) and rating scales questions
  □ Explain how to deal with multiple answers (e.g. activities/locations)
  □ Explain mood section and rating scale
  □ Explain points of the scale and that scale refers to the question before the scale
  □ Explain context section and force choice answers. Explain ‘other participant’ option
  □ Every question refers to the moment before the beep went off except for the since the last beep
  □ Explain since the last beep questions
  □ Explain good night page – related to the day. Explain substance use section
  □ First beep from second day and first beep on first day (explain that these refer to time since last beep on previous day, and time since practice beep, respectively)
  □ Do trial exercise

☐ Concluding briefing session
  □ Ask if they have any questions or concerns
  □ Explain that they will start filling out the PALM diary the next day.
  □ Show them the researchers’ contact numbers and assure them that they can call anytime they want if they have any questions.
  □ Take note of the PALM device serial number
  □ Inform participants that you will call them the next day to check if there are any problems or questions.
  □ Schedule the phone check
  □ Discuss best number to contact them
  □ Inform that you plan to contact by phone every two days to ensure that everything is going well and to keep them motivated as well
  □ Inform that you will schedule the following phone check every time you call participants.
  □ Inform that once the ESM phase is finished, you will be in touch to arrange the final meeting, where we will do some final questionnaires, give the PALM and watch back and receive the vouchers.
Appendix 4: Study 3 sample recruitment flow diagram

Patients not approached by key worker
33
11 ineligible
8 not approached
5 unable to contact key worker
4 disengaged from services
3 unwell
1 discharged from services
1 moved house

Patients identified as potentially eligible
165

Patients approached by key worker
132

Patients not approached by researcher
67
30 not interested
12 unwell
12 declined, no reason
3 unable to contact
2 Hospitalised
2 started new job
1 declined for information to be shared
1 ineligible
1 relative unwell
1 preferred a different project
1 not good relationship with relative
1 not wanting others to hear the beep

Patients not given consent form
27
9 not interested
4 unwell
4 unable to contact
3 declined, no reason given
3 did not attend visits
1 relative unwell
2 ‘unable to commit to it’
1 ‘too busy at the moment’

Patients approached by researcher
65

Patients provided consent form
38

Patients refused
2
1 works shifts
1 ‘doesn’t like being asked questions’

Patients consented
36

Ineligible for ESM phase
4

Patients eligible for ESM phase
32

Dyads dropped out during or after ESM phase
8

Patients consented for relative to take part (consented patient-relative dyads)
29

Dyads completed ESM phase
21

Patients consented
36

Dyads dropped out during or after ESM phase
8

Dyads completed ESM phase
21
### Appendix 5: Participants socio-demographic information forms

#### SOCIODEMOGRAPHIC INFORMATION (SELF REPORT)
(Version 1, 15.09.2010)

<table>
<thead>
<tr>
<th>Participant ID number</th>
<th>Gender</th>
<th>Date of birth (dd/mm/yyyy)</th>
<th>Age (years)</th>
<th>Highest level of education</th>
<th>Employment status</th>
<th>Occupation (if employed)</th>
<th>Marital status</th>
<th>Living arrangements (Who does the person live with?)</th>
<th>Accommodation</th>
<th>Ethnic origin (ask as an open question and record)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male ☐</td>
<td>/</td>
<td>/</td>
<td>Primary ☐</td>
<td>F/T ☐ P/T ☐</td>
<td>F/T ☐ P/T ☐ ☐</td>
<td>Single ☐</td>
<td>Spouse/partner only ☐</td>
<td>Own home ☐</td>
<td>Asian or Asian British ☐</td>
</tr>
<tr>
<td></td>
<td>Female ☐</td>
<td>/</td>
<td>/</td>
<td>Secondary ☐</td>
<td>☐</td>
<td>☐ ☐</td>
<td>Married ☐</td>
<td>☐ Spouse/partner plus children ☐</td>
<td>Rented ☐</td>
<td>☐ Bangladeshi ☐</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td>Further ☐</td>
<td>☐</td>
<td>☐ ☐</td>
<td>Cohabitating ☐</td>
<td>☐ Spouse/partner plus other/s (not children) ☐</td>
<td>☐ Live with parents ☐</td>
<td>☐ Indian ☐</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Higher ☐</td>
<td>☐</td>
<td>☐ ☐</td>
<td>Civil Partnership ☐</td>
<td>☐ Supported accommodation/hostel ☐</td>
<td>☐ Supported flat/home ☐</td>
<td>☐ Pakistani ☐</td>
</tr>
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<td></td>
<td>☐</td>
<td>☐ ☐</td>
<td>Separated ☐</td>
<td>☐ Child/children only ☐</td>
<td>No fixed abode ☐</td>
<td>☐ Any other Asian background ☐</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>☐</td>
<td>☐ ☐</td>
<td>Divorced ☐</td>
<td>☐ Close relative plus children ☐</td>
<td>Other ☐</td>
<td>☐ Close relative only (without children) ☐</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>☐</td>
<td>☐ ☐</td>
<td>Widowed ☐</td>
<td>☐ Other ☐</td>
<td>☐ Specify ☐</td>
<td>☐ Mixed ☐</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td></td>
<td>☐</td>
<td>☐ ☐</td>
<td></td>
<td>☐ White &amp; Asian ☐</td>
<td>☐ Other ☐</td>
<td>☐ White &amp; Asian ☐</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>☐</td>
<td>☐ ☐</td>
<td></td>
<td>☐ White &amp; Black African ☐</td>
<td>☐ Specify ☐</td>
<td>☐ White &amp; Black African ☐</td>
</tr>
<tr>
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<td></td>
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<td></td>
<td></td>
<td>☐</td>
<td>☐ ☐</td>
<td></td>
<td>☐ White &amp; Black Caribbean ☐</td>
<td></td>
<td>☐ White &amp; Black Caribbean ☐</td>
</tr>
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<td>☐</td>
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<td></td>
<td>☐ Any other mixed background ☐</td>
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<td>☐ Any other mixed background ☐</td>
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<td>☐</td>
<td>☐ ☐</td>
<td></td>
<td>☐ Any other White background ☐</td>
<td></td>
<td>☐ Any other White background ☐</td>
</tr>
</tbody>
</table>

ID Number: ___________   RA: ___________  Date: ___________
### Additional SOCIODEMOGRAPHIC INFORMATION (SELF REPORT) (Version 1, 15/07/2011)

**To be used where relative does not take part**

<table>
<thead>
<tr>
<th>For the purposes of the project, who is your ‘key relative’</th>
<th>Mother ☐</th>
<th>Father ☐</th>
<th>Sibling ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Partner/Wife/Husband/Civil Partner ☐</td>
<td>Child ☐</td>
<td>Friend ☐</td>
</tr>
<tr>
<td>Other relative (e.g. grandparent/aunt/uncle/cousin) ☐</td>
<td>Other (Please state) ___________________________</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| What gender is your key relative? | Male ☐ | Female ☐ |

<table>
<thead>
<tr>
<th>How old is your relative? (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F/T ☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What is your relative’s employment status?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single ☐</td>
</tr>
<tr>
<td>Separated ☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Is your relative………</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spouse/partner only ☐</td>
</tr>
<tr>
<td>Spouse/partner plus other(s) (not children) ☐</td>
</tr>
<tr>
<td>Child/children only ☐</td>
</tr>
<tr>
<td>Close relative plus children ☐</td>
</tr>
<tr>
<td>Other ☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How would you class your relative’s ethnic origin?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian or Asian British ☐</td>
</tr>
<tr>
<td>Black or Black British ☐</td>
</tr>
<tr>
<td>Mixed ☐</td>
</tr>
<tr>
<td>White ☐</td>
</tr>
<tr>
<td>Other Ethnic Group ☐</td>
</tr>
<tr>
<td>Specify ___________________________</td>
</tr>
</tbody>
</table>
Appendix 6: Adapted Controllability Attributions manual

Adapted controllability attributions manual

The following manual describes the criteria for extracting, transcribing, coding and rating attributional material from Camberwell Family Interview (CFI) interviews and assigning a global rating on a 5-point scale for perceived controllability attributions. Controllability ratings are based on the Weisman et al. (1995) coding manual for rating controllability attributions and on the Hooley and Campbell (2002) instructions for rating attributions of control, and also on the guidelines for rating controllability from Barrowclough’s (1991) and Brewin’s (1991) work.

The instructions for extracting and rating attributional material are summarised as follows:

Part I: Listening to the CFI for perceived controllability attributional statements and extracting them.

Part II: Rating perceived attributional material either as: controllability attributions in a 5-point scale (1 = no perceived control over virtually all aspects of the disorder; 5 = perceived control over virtually all aspects of the disorder).

Perceived controllability statements should be transcribed verbatim from the CFI tapes, interviewing relatives (usually parent) or carers who spend at least ten hours per week with a family member diagnosed with psychosis. These statements should include as much of the passage as necessary to fully understand the relative’s explanation (attribution) for the given outcome. The following criteria should be used to determine whether all the attributional information is recorded within one statement or under separate ones:

- When relatives deviate briefly from the topic of the attributional statement and then return to it, include it as one statement, separated by irrelevant phrases or statements (you may use (...) rather than transcribing irrelevant phrases or statements);

- When relatives make an attributional statement and then shift topics to discuss another unrelated subject or subjects, and only returned to the original one at a later point in the interview, include it as two separate statements;

- When relatives give, explore or infer more than one explanation for the same event (e.g. “he never went out because he had no energy and no incentive”): (a) include it as one statement, even if relatives briefly digressed to other irrelevant issues during his/her explanations; (b) include it only as two separate statements if relatives shift topics to discuss another unrelated subject, and than return to the same event at a later point in the interview, regardless of any additional explanations to that same outcome.

- When relatives give, explore or infer the same explanation for different outcomes (e.g. “he was untidy, didn’t wash and never went out because he had no energy”): (a) included it all as one statement; (b) however, if the following explanations are separated from the first one by a complete change in the topic of the interview, include it as separate statements.
Appendix 6: Adapted Controllability Attributions manual

- When relatives repeat the same explanation for the same outcome throughout the interview (a) include it as separate statements if the following explanations are separated from the first one by a complete change in the topic of the interview; (b) otherwise, include it all as one statement.

- When relatives give different explanations for the different outcomes (e.g. “I think what set her off this time was basically that her psychiatrist just dropped the levels of the medicine and then something happened that really upset her. I think the time before that it was because she had something to drink and it just totally knocked everything out of whack”): (a) include it as separate statements.

For part I please record all statements. All statements need to be accurately transcribed verbatim from the interview tape. If required, pause and listen to passages several times, in order to get them accurate. Please do not paraphrase or make inferences. In case of doubt, always be inclusive, and transcribe all verbatim. The transcript should always be anonymised. Thus, persons and places names should be replaced by a consistent reference to the person or place in question using square brackets (e.g. [patient], [care coordinator], [home town], [hospital], etc). For part II use the rating table to allocate a global rating for relative’s controllability attributions.

Before beginning please read carefully the following criteria guidelines, which indicate how perceived controllability statements should be extracted, transcribed, coded and rated.
Appendix 6: Adapted Controllability Attributions manual

Definitions

Perceived controllability attributional statement:
Is a statement that comprises one or more given, explored or inferred explanation or cause for the occurrence of a certain event, which implies the relative’s perception of the patient’s capacity or lack of capacity to control without an exceptional effort the given event.¹

Event:
Is a reported outcome, behaviour or situation that is directly associated with the patient being discussed in the CFI, including references to:
- Illness (onset or exacerbation)
- Symptoms or related problems behaviours
- Any undesirable characteristic of the patient or in the patient’s life

Explanation or cause:
Comprise all the given, explored or inferred reasons perceived by the relative to be causing the event.

<table>
<thead>
<tr>
<th>Given explanation or cause</th>
<th>When the event and the cause are linked by causal connectives (e.g. because, so, that’s how, that’s why, due to, therefore) Example: ‘I think she became ill because she was using all these drugs’)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explored explanation or cause</td>
<td>When relatives will not be certain about the causes of the events, but they will still put forward possible explanations (e.g. it might be, maybe it was, it might have something to do with, I don’t know whether it is X or whether it is because of Y) Example: ‘Being bullied at school and using drugs I think might have all contributed for the start of it’</td>
</tr>
<tr>
<td>* Inferred explanation or cause</td>
<td>When the event and the cause are still linked although there are no causal connectives. Example: ‘When he was very ill he had, he saw things that wasn’t there when he was asleep’ ‘I noticed it [beginning of the problems] when we got the divorce’</td>
</tr>
</tbody>
</table>

¹ Usually the inference that the cause and the event are linked is made through the temporal or situational association between the two components. Somebody says or does something or a particular situation arises (causes) and the event occurs. Such a juxtaposition of an event with causal material in time may be sufficient to assume causal attribution. Thus, for a causal link between the situation and the event to be coded as inferred: 1) the speaker must infer that the event is present when the situation is present, and absent when the situation is absent, i.e. there is some evidence for systematic degree of covariance between the event and the cause AND/OR 2) the cause has the potential power to create the event. An idea of consensus agreement

¹ These attributions are not all necessarily causal attributions. Specifically for controllability attributions, only perceptions of patient’s control over the behaviour itself and over the cause of the behaviour or the illness are considered to indicate personal control (e.g. ‘she could go out more if she wanted to’).
Appendix 6: Adapted Controllability Attributions manual

amongst people similar to the relative being interviewed might be used to assess the power of the situation to cause the events.

<table>
<thead>
<tr>
<th>Example</th>
<th>Qualifies as inferred?</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘It was around the time that her grandmother came to stay that she began to get ill’</td>
<td>No (thus not rateable)</td>
<td>1) There is no suggestion that the illness covaried systematically with grandmother’s stay, only that on this one occasion the two coincided. Evidence for a degree of covariance is slight. 2) It is not a common belief that grandmother’s coming to stay causes mental illness, or in other words has the power to create this event.</td>
</tr>
<tr>
<td>‘Every time her grandmother came home she started hearing voices’</td>
<td>Yes (thus rateable)</td>
<td>1) There is suggestion that the illness covaried systematically with grandmother’s stay. Evidence for degree of covariance. 2) Although it is not a common belief that grandmother’s coming to stay causes mental illness, based on 1) it would be rateable.</td>
</tr>
<tr>
<td>‘It was soon after she had a car accident that she became very nervous’</td>
<td>Yes (thus rateable)</td>
<td>1) There is only one instance of the situation, the car accident, so there is limited evidence of systematic covariance. Evidence for degree of covariance is slight. 2) However, it is reasonable to assume that a commonly held belief is that car accidents have the power to crate nervousness.</td>
</tr>
</tbody>
</table>
Appendix 6: Adapted Controllability Attributions manual

Criteria for extracting perceived controllability attributional statements

Identify all statements (current and past) from the CFI that imply the relative’s perception of the patient’s capacity or lack of capacity to control without an exceptional effort:

I) The illness (onset or exacerbation),
II) The symptoms or related problem behaviours, and/or
III) Any undesirable characteristic of the patient or any undesirable situation (current or past) in patient’s life.

Definition of perceived control without exceptional effort
A statement of perceived control without exceptional effort refers to a given, explored or inferred explanation for the reason(s) or cause(s) for a given outcome (i.e., the illness, symptoms, related problem behaviours and/or any undesirable characteristics of the patient) in which the relative clearly suggests either:

a) the patient is not making enough effort to improve his/her condition or situation
b) the patient is capable of doing more (e.g., “He should do more chores”)
c) the patient could or should do more than he/she is currently doing
d) the outcome would be improved if the patient altered his/her behaviour in some way (e.g., “She would do much better if she took her medications”)

Definition of lack of perceived control without exceptional effort
A statement of lack of perceived control refers to a given, explored or inferred explanation for the reason(s) or cause(s) for a given outcome (i.e., the illness, symptoms, related problem behaviours and/or any undesirable characteristics of the patient) in which the relative clearly suggests either:

a) the given outcome is inevitable and even if the patient tries he/she cannot make an exceptional effort to influence or improve his disorder or his/her condition/situation
b) the patient’s behaviour/symptom/undesirable characteristic is a direct result of the illness itself, therefore inevitable (e.g., “She started yelling in frustration with the voices” or “When she was in the delusion she was not herself”)
c) the given outcome is influenced by factors outside the patient’s control (e.g., “When they lowered the medication, that was the start of the relapse”)

I) References to illness (onset or exacerbation of the illness) will commonly be mental illness, condition or schizophrenia, because this is the common diagnosis of the patients, but other synonyms or more vague references (e.g. incident) should also be included if there is sufficient attributional material. The relative might make specific or more vague, but still reasonably inferable references, as illustrated in the next examples.

• Specific examples: “He began to get ill”, “Her illness got worse”, “When his condition started”.

If the relative attributes the patient’s behaviour to the medication, this statement should be recorded as outside of the patient’s control. However, if the relative indicates that the patient’s behaviour is influenced by his/her refusal to take the medication (including instances where they say that the patient is not taking the medication because he/she doesn’t think he/she is ill), this is not considered to be outside patient’s control, thus it should be recorded as within the patient’s control.
II) References to symptoms or related problem behaviours include all references to “symptoms and related problem behaviours” listed below irrespective of whether the relative indicates or infers that such symptoms or related problems behaviours have negative value to them, and irrespective of whether the relative perceives them as “symptoms”.

<table>
<thead>
<tr>
<th>List of references to symptoms and problem behaviours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Irritability (including snappiness and other irritability synonyms)</td>
</tr>
<tr>
<td>2. Sleep disturbance</td>
</tr>
<tr>
<td>3. Appetite change</td>
</tr>
<tr>
<td>4. Bodily complains (including headaches and other aches)</td>
</tr>
<tr>
<td>5. Underactivity (including lack of energy, sitting or lying around not doing much, difficulty occupying self, stopping doing things used to do, etc)</td>
</tr>
<tr>
<td>6. Concentration or attention difficulties</td>
</tr>
<tr>
<td>7. Slowness</td>
</tr>
<tr>
<td>8. Overactivity</td>
</tr>
<tr>
<td>Unusual cheerfulness, excited/ agitated, being noisy/ shouting, restlessness/ pacing behaviour, being unusually talkative, swearing, etc</td>
</tr>
<tr>
<td>9. Violence (including both verbal or physical)</td>
</tr>
<tr>
<td>10. Destructive behaviour</td>
</tr>
<tr>
<td>11. Withdrawal (including keeping oneself, refusing to meet people, avoiding members of the family or friends, lacking interest in people, being less talkative, spending long periods alone, being unable or unwilling to go out, or any other restriction or reduction in social behaviour or going out from the house)</td>
</tr>
<tr>
<td>12. Confusion or memory loss</td>
</tr>
<tr>
<td>13. Fears/anxiety (including any restrictions or avoidance due to fear)</td>
</tr>
<tr>
<td>14. Worrying (including concern, preoccupation or milder feeling states such as “worrying a little” or “being a bit upset”)</td>
</tr>
<tr>
<td>15. Depression (including unhappiness or any demonstration of it (e.g. crying) or milder feeling states such as “being a bit unhappy”)</td>
</tr>
<tr>
<td>16. Obsessional behaviour (including routines and rituals)</td>
</tr>
<tr>
<td>17. Self-care neglect</td>
</tr>
<tr>
<td>18. Oddness in manner or appearance (including oddities in walking or sitting, self rocking, speech oddities)</td>
</tr>
<tr>
<td>19. Delusions (including strange ideas, thinking people are against or talking about him/her)</td>
</tr>
<tr>
<td>20. Hallucinations (including talking to him/herself)</td>
</tr>
<tr>
<td>21. Substance abuse (including alcohol, drugs, tobacco)</td>
</tr>
<tr>
<td>22. Gambling</td>
</tr>
<tr>
<td>23. Failing to participate in household tasks (including decreases or refuses in participation)</td>
</tr>
<tr>
<td>24. Poor money management</td>
</tr>
<tr>
<td>25. Psychotropic medication or any other treatment non-compliance (including stopping psychotropic medication, unless prescribed reduction; or non attending or cancelling any medical/psychiatric or psychological treatment)</td>
</tr>
</tbody>
</table>

III) References to any undesirable:

- **characteristic of the patient** include all references which the relative indicates or infers to be negative for themselves or the patient. Examples of undesirable behaviours, feelings and characteristics would be: “He wouldn’t take his medication”, “He had difficulty expressing himself”, “He thought he was the...”
Appendix 6: Adapted Controllability Attributions manual

devil himself”, “She couldn’t get on with the other employees”, “She started acting oddly”.

• situation (current or past) in patient’s life include all references to going into hospital, job loss, arguments or quarrels, serious accidents, marital/relationship problems or breakdowns. Examples of undesirable current and past situation in patient’s life would be: “It (the job) didn’t last”, “There was a big argument”, “They split up”, “They sacked him”, “The only thing I can think of is he was bullied at school for being over weight”.

Past tense statements should be included, unless they strongly suggest or clearly state that currently the relative no longer holds that belief.

Perceived controllability attributional statements should be excluded if:

• only mere descriptive or juxtaposed material is given and no given/explored/inferred explanation or cause is reported (e.g. ‘He seemed to get very depressed, he never mixed with anybody’ or ‘He is not very good with people, he is like that’)

• there is no clear referent (e.g. “It’s been said that he’d be fine if…”);

• they refer to hypothetical (e.g. “If she had an hobby, maybe she would better) or non occurring beliefs (e.g. “He doesn’t get irritable”);

• they refer to past beliefs no longer held by the relative (e.g. “I thought it all started with the drugs, but I don’t anymore”);

• they refer to relative’s view of other people’s, such as the GP, ability to manipulate the illness (e.g. “He would be less agitated if the doctor increased the medication dose);

• they indicate beliefs held by other parties, such as the GP or other relative, unless there is clear evidence that the relative themselves agreed with them (e.g. “My husband was saying “[patient is just being lazy, if he wanted we could do something”, you know, but I don’t think is like that”);

• there is no indication that the relative held a belief expressed by someone else (e.g. “The impression I got the other day from her cousin being here was that, she seems to think that all her problems are basically to do with the way he [father] shows her no affection”);

• only consensus information is available as a potential explanation without being supported by any further explanation (e.g. ‘She has headaches, but a lot of people do’ or ‘Like most of the boys he never tidies up his room’ or “They all do now (drink excessively) it’s the thing isn’t it?”).
Appendix 6: Adapted Controllability Attributions manual

Criteria for rating perceived controllability attributional statements

After finishing extracting all statements from the CFI, using the guidelines mentioned above and considering all statements made, allocate a global rating relative’s pattern of controllability attributions by using the following scales. In case of doubt or insufficient information, rather than trying to second-guess the relative’s perception, always give more conservative rating when rating a statement.

I. Rating individual statements for controllability (3-point scale):

Prior to assigning a global rating for perceived controllability, each statement is rated as not, mild/mixed or high in perceived control, according to the guidelines bellow. Each individual rating should have the event identified in BOLD and the given/explored/inferred explanation(s) UNDERLINED.

- **Not (0)** perceived control statements indicate that the relative holds the belief that the patient cannot control any aspect of the disorder or reported symptom/related problem behaviour/undesirable situation or patient’s characteristic; or believes that the cause is inevitable or outside the patient’s control (e.g., genetic heritage).

<table>
<thead>
<tr>
<th>Explanations usually rated as not controllable would be:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enduring personality traits;</td>
</tr>
<tr>
<td>Environmental stress;</td>
</tr>
<tr>
<td>Illness and handicap (unless if perceived as controllable by the relative);</td>
</tr>
<tr>
<td>Florid psychotic symptoms (e.g., delusional beliefs and hallucinations);</td>
</tr>
<tr>
<td>Mood changes;</td>
</tr>
<tr>
<td>Emotional reactions (e.g., fear, worry, agitation, although not necessarily the expression of such emotions);</td>
</tr>
<tr>
<td>Lack of ability</td>
</tr>
<tr>
<td>Luck, chance or fate;</td>
</tr>
<tr>
<td>Actions and characteristics of others;</td>
</tr>
<tr>
<td>Situational demands;</td>
</tr>
<tr>
<td>Unconscious attitudes;</td>
</tr>
<tr>
<td>Forgetting;</td>
</tr>
<tr>
<td>The effects of prescribed drugs (except if the carer believes that the patient is voluntarily misusing drugs);</td>
</tr>
<tr>
<td>Characteristic (such as shyness, self-confidence, self-esteem);</td>
</tr>
</tbody>
</table>

*Exceptions* apply to this guideline, as illustrated by the following examples:

- if the relative attributes the patient’s behaviour to the medication, this statement should be rated as uncontrollable by the patient (i.e., outside the patient’s control). However, if the relative indicates that the patient’s behaviour is influenced by his/her refusal to take the medication, this is rated as being controllable by the patient (i.e., within the patient’s control);

- if relatives perceive certain patient’ characteristics, such as self-esteem or self-confidence, as being manageable (e.g. “she could learn to manage her self-esteem” or “she could build-up her self-confidence”), this is rated as being controllable by the patient.

*Thus the above guidelines should be used only as a guide – it is always the relatives’ perceptions of controllability that are being rated.*
Appendix 6: Adapted Controllability Attributions manual

• **Mild/mixed (1)** perceived control statements imply that the relative believes that the patient has some degree of control over the reported symptom/related problem behaviour/undesirable situation or patient’s characteristic, but some control is also explained by other factors outside the patient’s control; or indicate that the relative believes that the reported symptom/related problem behaviour/undesirable situation or patient’s characteristic has different explanations, one controllable and another uncontrollable by the patient; or state that the relative is questioning the legitimacy of the patient’s effort to improve the reported symptom/related problem behaviour/undesirable situation or patient’s characteristic (e.g. “I guess because I can’t see it [the voices], I don’t know if she is even capable of making a conscious effort to fight it and to try harder”).

**Explanations usually rated as mild/mixed controllable** would be:

| Laziness (controllable patient characteristic) and childhood trauma (uncontrollable patient characteristic); Voluntary action of the patient (controllable) and an external event (uncontrollable); |

• **High (2)** statements in perceived control denote that the relative believes that the patient can control without exceptional effort, but is not making reasonable effort to improve the described symptom/related problem behaviour/undesirable situation or patient’s characteristic.

**Explanations usually rated as controllable** would be:

| Voluntary statements and actions (unless if perceived as inevitable by the relative); Habits and behavioural patterns (e.g. smoking); Statements made or words spoken to others Abusing or stopping drugs\(^3\) (unless if perceived as uncontrollable by the relative or assuming no specific addiction); Characteristics such as laziness, arrogance, bad temper and contrariness |

*Exceptions apply to this guideline depending on the context, as illustrated by the following example:

• if a relative appears to believe that a voluntary action, such as swearing, is inevitable this should be rated as uncontrollable (e.g., “He keeps swearing at me, but I know is not him, it is just the illness”).
• If a relative states that the patient smokes because he/she is addicted to nicotine, this should be rated as uncontrollable (e.g., “I don’t like him smoking, but he obviously feels like he needs to smoke”)

Non-rateable explanations would include: statements, actions or characteristics where the degree of voluntary control is uncertain or not explicit or where explanatory factors are not given.

**Special guidelines for past attributional statements**

Please take into account the following guidelines to rate past attributions.

\(^3\) Including instances where the relatives states that patient is not taking the medication, because he/she doesn’t believes that he/she is ill; or instances where the relative states that the patient misuses drugs to control a symptom (e.g. anxiety).
## Appendix 6: Adapted Controllability Attributions manual

<table>
<thead>
<tr>
<th>Past event (i.e. illness reference/symptom/related problem behaviour/situation) where <strong>no explanation/cause</strong> (explicit/explored/inferred) is given.</th>
<th><strong>“He was very depressed, he never mixed with anybody”</strong></th>
<th><strong>Non-ratable</strong> statement (no clear cause given)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past event (i.e. illness reference/symptom/related problem behaviour/situation) where a <strong>current explanation/cause</strong> (explicit/explored/inferred) is given.</td>
<td><strong>“He used to have headaches but I think that’s just a side effect of the medication”</strong></td>
<td><strong>Ratable unless otherwise stated</strong> (e.g. but I don’t think that anymore)</td>
</tr>
<tr>
<td>Past event (i.e. illness reference/symptom/related problem behaviour/situation) where an <strong>unclear if current explanation/cause</strong> (explicit/explored/inferred) is given.</td>
<td><strong>“At the beginning he used to have headaches but that was just a side effect of the medication”</strong>; <strong>“He used to self-harm but that was just attention seeking”</strong>; <strong>“[I: has she kept herself to herself a lot?] She has done when she was first ill. She wouldn’t speak to nobody, like I say, she would just follow me all around. She wouldn’t go out or anything and if she was going out it was to go to the bridge to jump off ‘cause the voices were telling her”</strong></td>
<td><strong>Ratable</strong> (although is not clear if attribution is still current, is also not otherwise stated)</td>
</tr>
<tr>
<td>Past event (i.e. illness reference/symptom/related problem behaviour/situation) where a <strong>past tense explanation/cause</strong> (explicit/explored/inferred) is given.</td>
<td><strong>“He used to have headaches but I just thought it was a side effect of the medication”</strong>; <strong>“She was hearing voices and at the time I thought it was due to the illness”</strong></td>
<td><strong>Non-ratable</strong> (not clear what she attributes now because is using the past tense, i.e. I thought)</td>
</tr>
</tbody>
</table>

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**Statements where the event (i.e. illness reference/symptom/related problem behaviour/situation) has changed (for the better or the worst) and where the current explanation/cause (explicit/explored/inferred) for the change is given**

- **“He stated hearing voices again once they changed his medication’**
- **‘He used to hear voices but he is fine now. I put that down to his illness’”**
- **“He eats, he’s a good eater but he doesn’t overeat. Whereas before he was in a particular drug he was just eating, eating, eating”**

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| Statements where the event (i.e. illness reference/symptom/related problem behaviour/situation) has changed (for the better or the worst) and where only the past explanation/cause (explicit/explored/inferred) prior to the change is given. | **“He used to hear voices at the beginning of the illness, but now he is fine, but I just thought it was one of his excuses”** | **Non-ratable** (since is not clear what relative thinks now because is using the past tense, i.e. I thought) |

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| Statements where the event (i.e. illness reference/symptom/related problem behaviour/situation) is current or past and where the explanation/cause (explicit/explored/inferred) given has changed. | **“He used to have headaches but I just thought it was one of his excuses for not doing things, but now I can see that’s only a side effect of the medication”** | **Ratable but only taking into account the most recent explanation** |
Appendix 6: Adapted Controllability Attributions manual

II. Making a global rating of perceived controllability (5-point scale):

After each individual statement has been rated, all statements should be taken into account to assign a global rating on a 5-point scale, ranging from 1 (no perceived control over virtually all aspects of the disorder) to 5 (perceived control over virtually all aspects of the disorder). The intensity and type of statements made should be considered in assigning the global rating for perceived controllability as well as the events precedence (i.e. most recent or current events should take precedence compared to past or non-current events while assigning the global rating). Each point of the scale is presented in greater detail as follows:

1 = no perceived control over virtually all aspects of the disorder
2 = minimal perceived control over minor aspects of the disorder
3 = some perceived control over some aspects of the disorder
4 = fair perceived control over almost all aspects of the disorder
5 = perceived control over virtually all aspects of the disorder

• Controllability global rating of 1 (no perceived control over virtually all aspects of the disorder)

Relatives believe that virtually all aspects of the patient’s disorder are outside of the patient’s control; even if the patient tried to get better there is virtually nothing that he/she could do to improve his/her condition or situation.

Relatives clearly perceive that the cause of the patient’s difficulties constitutes a legitimate disorder and that they are virtually unable to control their symptoms and related problem behaviours. Even though, such relatives may make references suggesting mild/mixed control, but if they do so it will be very rarely or over minor aspects of the disorder.

• Controllability global rating of 2 (minimal perceived control over a few aspects of the disorder, but not most part of the others)

Relatives believe that almost all aspects of the patient’s disorder are outside of the patient’s control; the patient could not change/improve without exceptional effort, help or guidance.

Relatives clearly perceive that almost all aspects patient’s problems are a consequence of a legitimate disorder over which they have little control. Such relatives occasionally make statements suggesting control (i.e. individually rated as high in perceived control) over very few aspects of the disorder, but for the most part they implicate uncontrollable or mildly/mixed controllable causal factors in the patient’s disorder.

• Controllability global rating of 3 (some perceived over some aspects of the disorder, but not others)

Relatives believe that some aspects of the patient’s disorder are outside of the patient’s control, but not others; there are some aspects of the disorder that the patient could potentially control without exceptional effort, but there are other aspects that would require exceptional effort to change.
Appendix 6: Adapted Controllability Attributions manual

Relatives make references to perceived control (i.e. individually rated as high) over some aspects of the disorder, but also perceive other aspects of the patient’s problems as consequence of a legitimate disorder (i.e. they make references to other explanatory factors) or they express little doubt about it.

- **Controllability global rating of 4 (fair perceived control over almost all aspects of the disorder)**

Relatives believe that almost all aspects of the patient’s disorder are within the patient’s control; there are several aspects of the disorder that the patient can improve, but he/she is not making an effort to do so.

Relatives perceive that almost all aspects patient’s problems are not a consequence of a legitimate disorder or express considerable doubt about it. Such relatives frequently believe the patient has a fair amount of control over almost all aspects of the illness (i.e., they make several statements rated as high in perceived control) and they tend to make few references to other mitigating factors.

- **Controllability global rating of 5 (perceived control over virtually all aspects of the disorder)**

Relatives believe that virtually all aspects of the patient’s disorder are within the patient’s control; the patient can get better, but he/she is not making an effort to do so.

Relatives perceive that the patient can control virtually all aspects of the disorder and they express considerable doubt or rarely believe that the patient has a legitimate disorder. Such relatives tend to believe that the patient has a great amount of control over virtually all aspects of the disorder, rarely making references to the influence of other mitigating factors; and they also tend to be very dismissive of any psychological reasons for their patients’ difficulties.

While making the controllability ratings take the evidence as a whole and please adhere to the following additional guidelines:

- Relatives who have a clear perception that the patient has legitimate mental health difficulties, or who not have an illness model, usually receive a controllability rating no greater than 3. However, if there is available evidence suggesting otherwise (i.e., other statements made during the interview suggesting controllability), coders can deviate from this rule. (e.g. "Maria can't do housework and schoolwork like before, she is just too sick with that schizophrenia. She probably could be a little neater around the house though if she tried. I also think if she'd go to therapy and take her medicines as prescribed she might not be as bad off as she is now").

- Relatives who clearly implicate God's will or fate as the primarily reason for the patient's disorder and symptomatic behaviour usually never receive a controllability rating greater than 3. However if there is available evidence suggesting otherwise (i.e., other statements made during the interview suggesting controllability), coders can deviate from this rule (e.g. "John's illness is just God's fate, he can't help it. I think he might feel better though if he would talk to us more, and stop spending so much time watching dumb television shows that poison his mind.")
Appendix 7: Types of Behavioural Control manual

Types of Behavioural Control manual

The types of behavioural control measure is concerned with quantifying and categorising qualitative data regarding behavioural control attempts. The behavioural control attempts are based on how the relatives managed patients with a psychosis diagnosis and their illness and symptoms. **Behavioural control statements refer to attempts (both verbal and physical) made (current and past) by relatives of people with psychosis to influence or control the patient or the patient’s behaviour.** These statements are extracted from the Camberwell Family Interview (CFI), which is a semi-structured interview about the development of the illness, covering aspects of the patient’s history, behaviours and relationships, and its impact on the family environment.

Behavioural control statements are first rated individually on a 4-point scale. Each individual statement rating reflects the degree (intensity and frequency) and type of exertion of relatives’ behavioural control. Afterwards a supplementary global score is generated from a five-point rating scale, reflecting an overall impression of the relative’s controlling behaviour. The following guidelines instruct how to extract and rate behavioural control statements.

**Part I: Instructions for extracting and transcribing behavioural control statements**

**Extracting criteria**

During the first part you will listen to CFI tapes of interviews with relatives (usually parent) or carers who spend at least ten hours per week with a family member diagnosed with psychosis. While listening, **please identify and extract all statements that indicate current or past attempts (verbal and physical) by the relative to influence or control the patient or the patient’s behaviour.** These attempts to influence or control should be seen within a continuum and they could vary from being merely a polite request, or they could be as controlling as using force. In case of doubt, always **be inclusive and extract all verbatim that meet the following criteria:**

a) Reported **explicit current or past attempt to influence or control** the patient or the patient’s behaviour. These attempts are often, but not always, statements of the “I (verb) her/him” type. Note that these attempts to influence or control do not need to be successful attempts and they are not always dysfunctional per se. This could be an overt influence through instigating joint activities, buying things, or using force; or it could be a covert attempt to influence without the patient’s knowledge, by contacting others, checking up on them, or confiscating possessions. Bellow are some examples:

- “As soon as he found out we bought a large or an extra large he wouldn’t want it. So what we had to do, we bought two t-shirts, a small and an extra large and we swapped the tags”
- “I had to write back and undo all the things he did.”
- “I said to him ‘Don’t come near me or you’ll end up going to the hospital’ and he came at me and he pushed me and I pushed him back, and caught him on the side of the face.”
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• “I told her if she continued her behaviour she would have to move out of the house”

b) Reported conversations with or comments to the patient relating either directly to the illness/symptoms, or about the patient’s behaviour in general, illustrating a direct statement of advice, suggestion or instruction to the patient to alter the behaviour. Including relatives voicing either positive or negative opinions, or making a direct statement of advice or instruction to the patient.

• “I stood at the bottom of the stairs and said ‘[patient] Cut that out and go to your room’ and he said ‘Don’t talk to me’. I said ‘[patient], Just go to your room.’”
• “She does sit around quite a lot not doing much. But you just put that down to depression ‘cause that’s what the doctor said would happen anyway. [What do you do when she’s being like that?] Ask her does she wants to do something and we’ll do something. Go out or something, go for a drive or maybe a walk.”
• “He complained about being restless and I said well, go do something at the Y.”

c) Reported implied statements that have the function of attempting to change or alter the patient’s behaviour. Including questioning the patient by implying that he/she should behave differently. As illustrated by the next example:

• “I suggested she try and get some sleep”
• “I say ‘[patient] who are you talking to?’, ‘I’m not talking to anybody’. ‘What was the funny joke? What are you laughing at?’ ‘I’m not laughing’. But if you watch him that’s what’s going on.’”

Transcribing guidelines

a) Transcription format criteria:

• All current and past statements need to be an accurately explicit transcribed verbatim from the interview tape (this may require listening to passages several times to get them accurate). Please do not paraphrase or make inferences. Whenever behavioural control attempts statements are not explicit, raters must be aware of the implied function or intention of the behavioural control attempt and apply personal judgement on whether the relative is being controlling or not; all behaviours that fit the transcribing and rating criteria must be rated, irrespective of how well the relatives justify themselves. Give as much relevant context as possible (e.g. “last week I got really wound up and I told him to stop talking to himself, I’d never done that before” instead of only “I told him to stop talking to himself”, since this second statement carries no information of how often the behaviour happens nor how strongly it is).

• If the relative reports a behavioural control statement, but briefly digressed to other issues before returning to the original behavioural control statement, this should be rated as one statement, separated by irrelevant phrases (you may put (...) rather than transcribing irrelevant phrases).
Appendix 7: Types of Behavioural Control manual

• If however, the relative made a behavioural control statement, and then began to discuss another subject, and only returned to the original one at a subsequent point in the interview, this should be recorded as **two separate statements**.

• **Repeated reports of the same behavioural control statement** should be recorded as **two separate statements**, but making a side note of the frequency of the behaviour, i.e., recording that the behaviour is exercised more than once.

• If the relative discusses **two separate reactions to two different behaviours** even though he/she is discussing them in answer the same question, these should be recorded as **two separate statements** (e.g. “Mostly it’s about laundry, and that kind of thing, you know. I’ve a shortage of socks in my drawer and be a real pain about it you know. But that’s mostly the kind of thing it’s about. Or like sometimes she opens my mail and that upsets me... I’m 20 years old and expect to be able to open my mail not that she does it often... I just said you know, ‘do me a favour, you know I’ll open it when I get to it’.”)

• If the relative discusses the **same reaction (e.g. direct instruction) to two different behaviours** even though he/she is discussing them in answer to the same question, these should be recorded as **two separate statements** (e.g. “He seems to think I’m here to do everything for him. Making a cup of tea or tidying up his bed. I just do it when it needs to be done rather than wait for him to do it [I: Do you talk to him about it?] yeah I do ‘you need to do more’. I try telling him what needs to be done // (separate here) and if he’s got money he’d rather just go out and buy something and spend it and I try and tell him to control his money more, ‘there’s things here that you can eat rather than go out and buy fast food or something’. His money just seems to go on fast food and cigarettes” – RAP 6003).

• All statements relating to the relative’s attempts to get the patient **admitted to hospital** when the patient is **acutely psychotic** should be recorded and considered separately. Instructions on how these should be rated are presented in Part II. Also record every other time the relative was involved in the patient’s **treatment**, as well as things the relative said or did while the **patient was in hospital**.

• The **counter number with the starting point of each transcribed statement** should be written down on the left side column of the transcribing and rating sheet (Appendix I), using the time counter on a tape player. The **total length of the interview** should also be **recorded**. Each **statement number** should also be recorded on the left side column of the transcribing and rating sheet (Appendix I).

• The transcript should be **anonymised**. Thus, persons and places names should be removed and replaced by a consistent reference to the person or place in question using square brackets (e.g. [patient], [care coordinator], [home town], [hospital], [college]).

• The **participant number** and the relative’s **affiliation with the participant should be recorded** (e.g. 4101 Mother). The transcription date and transcribers initials should be recorded as well, as illustrated in **Appendix I**.
Appendix 7: Types of Behavioural Control manual

b) Transcription disqualifiers:

- Exclude descriptions of any other people’s controlling behaviour towards the patient, other than the relative who is speaking on the tape. However, include times when the interviewee talks about “we”, i.e. that both themselves and other people engage in a controlling behaviour/conversation.

- Exclude whenever times when the relative is merely passing on instructions from others (e.g. an instruction about medication from the psychiatrist), unless they use excessive or inappropriate force/coercion to do this.

- Exclude any mere or vague descriptions made by the relative where no attempt to influence or alter the behaviour is explicitly made or clearly inferred from what is been said. (e.g., “Just the type of quarrels where, like sometimes when we are wrong thinking and that, and someone else tries to point out where you are wrong”)

- Exclude any hypothetical or future tense examples made by the relative (e.g. “If I found out she’d been taking drugs I’d be really upset and I’d tell her to stop” or “I will tell him to stop smoking”, or “I feel really sorry for him and other days I look at him and want to give him a right big shake”).

- Exclude instances when the patient is controlling of the relative (e.g. “I feel like I’m being thrown out of my own home you know, he’ll come in and he’ll say “what are you doing here?” “I live here”. “Are you not going to [partner]’s?” “Well I wasn’t planning on doing” “well [patient girlfriend]’s here” “and?” “Well [patient girlfriend]’s stopping” “well can I not stop here as well?” “Well I thought you might want to go to [partner]’s”. I said, “well I don’t exactly know if I want to go” “oh right”).

- Exclude mere criticisms, where no attempt to influence or alter the behaviour takes place (e.g., “I hate it when she does that and I wish she would stop.” Here, no attempt to stop was made).

- Exclude instances when there is no clear referent (e.g. “To be quite honest the way things were I said immediately the next thing he needs to do is going to see his GP and be referred to a psychiatrist immediately” –it is not clear to whom relative is speaking) or (e.g. ”He does exactly what everybody tells him to do, ‘you can’t drive’, so he doesn’t drive, or ‘you can’t go to work’ so he doesn’t go to work, he does what everybody tells him he should be doing (4117)”-it is not clear if the relative endorses this attempt)

Part II: Instructions for rating individual behavioural control statements

After finishing transcribing from the CFI all statements that indicate attempts by the relative to influence or control the patient’s behaviour, underline the explicit or implied behavioural control attempt. Afterwards, each statement should be first coded in terms of their degree (1=mild; 2=moderate; 3=high) and then on the following dimensions:
Appendix 7: Types of Behavioural Control manual

<table>
<thead>
<tr>
<th>Direct influencing (DI) type</th>
<th>Buffering (B) type</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 0 = Not applicable</td>
<td>• 0 = Not applicable</td>
</tr>
<tr>
<td>• 1 = Mild DI</td>
<td>• 1 = Mild B</td>
</tr>
<tr>
<td>• 2 = Moderate DI</td>
<td>• 2 = Moderate B</td>
</tr>
<tr>
<td>• 3 = High DI</td>
<td>• 3 = High B</td>
</tr>
</tbody>
</table>

Please refer to Table 1 and follow the anchor points in order to decide which code should be allocated to each statement. Please note that some statements may be categorised in different anchor points depending on the rater’s judgment. Independent from being rated as a 2.1 (direct instruction) or a 2.3 (strong suggestion), the most important is that the same statement is rated within the same degree category.

Rating guidelines

Rating format criteria:

- Ratings given to each statement should be written down on the right side column of the transcribing and rating sheet; assign 0 for no direct influencing or no buffering statement or when the statement is unrateable, 1 for a mild direct influencing or buffering statement, 2 for a moderate direct influencing or buffering statement and 3 for a high direct influencing or buffering controlling statement.

- All statements that are being rated must refer only to the relative’s behavioural control attempts, and not to those reported to be engaged in by other persons.

- In case of doubt or insufficient information, rather than trying to second-guess the behaviour control attempt, always give more conservative rating when rating a statement (i.e. if you are not sure if it’s 2 or 3, rate it as 2).

- All behavioural control statements should be rated if they are:
  a) current behaviours; or
  b) reported to occur in the past, but where there is no indication that the relative will not use them in the future (e.g. "I told him to take is medication last week"; or "I have told him to take his medication on one occasion").

- Behavioural control statements should not be rated if:
  a) they have now stopped (e.g. "I used to tell him to take his medication but I don’t any more"); or
  b) it is unclear whether past behaviours are currently being used (e.g., "I told him to take his medication last year").

- Often relatives state vague attempt (current or past) to influence or control the patient where it is unclear how the behaviour occurs, for instance frequently relatives report trying to encourage, tell or doing something for the patient (see example 1). Unless an example is clearly given or obviously inferred from what has been said (see example 2), these statements should not be rated.
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Example 1:

“I tried to talk to him and he would just push me away so then I just stayed away”

In this example the behavioural control attempt (tried to talk) is not clear. There is not enough information to conclude how the relative did it.

Example 2:

“I just try and do things around the house and that, help out with the house work and washing up and stuff like that yeah. If I can see she’s tired, I’ll, and [son] wants something or something, I’ll try and step in and do it and let her have a rest type of thing”

In this quotation the relative gives examples of how he tries to do things. Thus, this statement should be rated.

- In each statement where behaviours are reported to be exercised more than once, record their frequency by dichotomising to either: occasionally exercised \((F<3)\) (e.g. once or twice a week; couple of times; every couple of days) or frequently exercised \((F\geq 3)\) (e.g. more than three times per week; constantly; daily; all the time)

- If a relative says that sometimes they behave one way, and sometimes they behave a different way and both ways of behaving are current, then rate: a) both of those behaviours independently if they are discussed in different points in the interview, but taking into account the frequency of each; b) those behaviours jointly, rating only the highest if they are discussed in the same part of the interview.

- If a relative reports a previous past example of a behaviour control attempt (phrased in the past tense), which has permanently stopped and has been replaced by a current behavioural control attempt (phrased in the present tense), rate only the current behaviour control attempt that the relative engage in (e.g. “I have gone through the thing about you are not allowed to smoke in your room, you go outside in the back garden and he did that a couple of times and that went by the window. So he is still smoking in his room so the compromise is he opens all his window”). However, often it will be difficult to determine how far in the past the previous attempt was and when the change to a new way of behaving took place and how permanent it is, in these instances rate only the reported present behaviour control attempts that the relative engage in, irrespective of how permanent and new they are (e.g., “At first it was on a daily basis, it became quite annoying, probably! But, like I said I don’t mention it very often. I’m quite confident that she’s taking them at the moment”).

- All statements regarding relative’s attempts to get the patient admitted to hospital during acute psychosis should be rated separately (i.e., not included in the global rating). These should only be rated (i.e., included in the global rating) when there is enough information indicating clearly that the hospitalisation could have been avoided, as the following examples illustrate:
Appendix 7: Types of Behavioural Control manual

Example 1:
“"You know, you try to ignore the problem as long as you can but then finally you just say ‘Hey, look come on you got to get yourself straightened out’. And she generally doesn’t hear it. It takes probably a couple of days for me to talk her into it and then she’ll go up to the hospital. I think I’m the only one she’ll go up to the hospital for.”
The patient is not clearly acutely psychotic and the hospitalisation could arguably have been avoided. This statement should be rated.

Example 2:
“I did not want her in a state hospital…we got the whole thing set up so, they saw her in the morning and then in the afternoon we saw Dr [name], and they opened her case.”
This quotation alone would be rateable if the context of the event was not considered. This particular relative was arranging care to be in place when the patient returned from abroad. Another relative involved coerced the patient into leaving a foreign hospital and returning to their home country, coercion was needed because the patient was acutely psychotic. None of these behaviours described should be rated on behavioural control.

- All statements regarding relative’s attempts clearly aimed at preventing the patient from harming or other should be rated separately (i.e., not included in the global rating). These should only be rated (i.e., included in the global rating) when there is enough information indicating clearly that the attempts to prevent other- or self-harm were inappropriate or unnecessary (i.e., the relative exaggerates the threat), as the following examples illustrate:

Example 1:
“I would go around to pick him up on a Sunday, because that was the routine (...) trying to get him involved in things as well. There was no answer and all his curtains were shut so the first thing on my mind was he has done something (...) I called my dad (...) we ended up getting the building manager to break into his flat and open the lock. He is in there. We wake him up and he just started laughing. (...) I thought I need to get him out of here into my **. He got dress and got into the car. He was with this manic laugher (...) I kept saying ‘what is so funny?’ ‘Oh you know, you know’. (...) Got him back here and he staid here”.
The relative clearly thought that the patient could have hurt himself, therefore she called someone to break into the flat and open the lock. Taking into account the context this behaviour does not seem to be inappropriate or exaggerated, thus this statement should not be rated.

Example 2:
“He had a episode at my sister’s were he got terribly upset and he scratch his arm, he used a scalpel to scratch his arm (...) I didn’t know what was going on and I just tried to hold his arm to stop doing it and then everybody just thought well he just got a bit upset. (...) It was relatively easy to calm him down”.
Although the relative does not seem to be aware that the patient might be starting to have an acute episode, she holds the patient’s harm to prevent self-harm. This behaviour does not seem unnecessary or inappropriate, therefore this statement should not be rated.
## Appendix 7: Types of Behavioural Control manual

### Table 1: Behavioural Control Individual Statement Ratings

<table>
<thead>
<tr>
<th>Degree (intensity and frequency)</th>
<th>0 = No Statements that indicate absence of behaviour or where not enough information is available to rate the statement (unrateable)</th>
<th>1 = Mild Often low frequency (F&lt;3) statements that indicate a functional attempt to guide the patient, in which the patient has a choice about whether or not to follow the relative’s advice</th>
<th>2 = Moderate Statements that indicate a more frequent (F≥3) pronounced, but not dysfunctional per se, attempt to deliberately influence the patient</th>
<th>3 = High Tendentiously dysfunctional statements that clearly state or are an obvious inference from what has been said of infringement of the patient’s autonomy and/or independence as an individual, in which the patient stops doing what he/she wants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Direct influencing (DI) Statements that indicate a positive or negative intention to influence the patient to change. These can be covertly masked as well-intended remarks or concern or more extremely overtly expressed in an undisguised demanding and coercive manner. What is the relative trying to get the patient to do?</td>
<td>Buffering (B) Statements that indicate that the relative acts as an agent of change, by taking proactively control or by doing things for the patient. These can be covert statements masked as protective concern or devotion or more extremely overtly expressed in an intrusive manner. “What is the relative trying to protect the patient from?”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Polite request (including invitations)</td>
<td>1.2 Prompts to engage in/elicit a behaviour (e.g. conversation/dialogue; positive reinforcement)</td>
<td>1.3 Implied suggestion about appropriate course of action (about how should act); or Give explanations to the patient about the appropriate course of action</td>
<td>1.4 Voicing opinions; or Give reassurance about the patient/their behaviour/symptoms; or Talking with the patient about problems/their behaviour/symptoms</td>
<td>1.5 Occasional (F&lt;3) questioning patient’s behaviour/symptoms 1.6 Occasional (F&lt;3) reminders 1.7 Praise, encouragement, positive reinforcement</td>
</tr>
<tr>
<td>1.1 Doing something for the patient with his/her consent/agreement or for the patient’s sake</td>
<td>1.2 Asking permission/consulting to do something for the patient</td>
<td>1.3 Assigning tasks to the patient</td>
<td>1.4 Joint or single activities/planning which patient’s involvement in appears to have been consensusal</td>
<td>1.5 Supervise/observing patient’s behaviour (F&lt;3) (e.g. keep an eye on) 1.6 Offering or asking to pay/buy items for the patient (mutual agreement)</td>
</tr>
<tr>
<td>2.1 Direct Instruction</td>
<td>2.2 Command/order to engage in/elicit a behaviour (including yelling and shouting)</td>
<td>2.3 Strong suggestion about appropriate course of action (what patient had got to/ought/must/should do) or Indirect suggestion to others (what others had got to/ought/must/should do)</td>
<td>2.4 Engage in confrontations with or challenging the patient about their behaviour/symptoms</td>
<td>2.5 Persistent (F≥3) questioning patient’s behaviour/symptoms 2.6 Persisting (F≥3) reminders</td>
</tr>
<tr>
<td>2.1 Doing things for the patient which the patient did not ask for exactly</td>
<td>2.2 Pursuing a course of action which does not impinge free-will, but which the patient did not ask for exactly</td>
<td>2.3 Changing things that the patient has done or Indirect change (when relatives try to persuade others to influence or control the patient or the patient’s behaviour)</td>
<td>2.4 Joint or single activities/planning which patient’s involvement in appears to have been instigated by the relative</td>
<td>2.5 Checking behaviour (with patient knowledge); or Monitoring patient’s routine activities (e.g., bathing, dressing, meds) (F≥3); or Indirect checking (when relatives try to put or put others in charge of checking the patient or the patient’s behaviour) 2.6 Buying items or paying for the patient which the patient did not ask for exactly 2.7 Restricting without infringement of free-will</td>
</tr>
<tr>
<td>3.1 Ultimatum or use of intimidation (coercive behaviour: “if you don’t … I will)</td>
<td>3.2 Use of physical force (e.g. pushing, hitting)</td>
<td>3.3 Infringement of free-will: creating a situation so that they must do things against their wishes</td>
<td></td>
<td>3.4 Checking behaviour or monitoring routine activities (without patient knowledge) 3.5 Impingement of free-will: Restricting, confiscating or discarding or stopping use of items/ finances or contact with persons</td>
</tr>
</tbody>
</table>
Appendix 7: Types of Behavioural Control manual

Behavioural control statements rating examples

<table>
<thead>
<tr>
<th>Mild direct influencing statements (1 DI)</th>
<th>Mild buffering statements (1 B)</th>
</tr>
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<tbody>
<tr>
<td><strong>1.1 Polite Request</strong></td>
<td><strong>1.1 Doing something for the patient with the patient agreement/consent or for the patient’s sake</strong></td>
</tr>
<tr>
<td>“[Patient] will you do your room?”</td>
<td>“I know he has had problems sleeping and I know he had an exam today so I said right do you want me to shout you in the morning before I go to work? So we agreed, he said “mum, make sure I am up I don’t know how tired I am going to be” I said, “ok, I’ll phone you”</td>
</tr>
<tr>
<td><strong>1.2 Prompts to engage in/elicit behaviour</strong></td>
<td><strong>1.2 Asking permission to do something for the patient</strong></td>
</tr>
<tr>
<td>“Do you want to chat and he’d go leave it to the professionals”</td>
<td>“So I always say do you mind if I do this? ”</td>
</tr>
<tr>
<td><strong>1.3 Implied Suggestion or Give explanations to the patient about the appropriate course of action</strong></td>
<td><strong>1.3 Assigning tasks to the patient</strong></td>
</tr>
<tr>
<td>“Your tissues [patient]” “oh, ok mum”; “You could have stayed for an hour” “I said if you go to work now what are you going to do? You got no experience, no education, no nothing”</td>
<td>“He does do, I try to make him his job, the kitchen”</td>
</tr>
<tr>
<td><strong>1.4 Voicing opinions about the patient/their behaviour/symptoms or Talking with the patient about problems/their behaviour/symptoms</strong></td>
<td><strong>1.4 Joint or singular activities/planning which patient’s involvement in appears to have been consensual</strong></td>
</tr>
<tr>
<td>“I’ve said I think she’s terrible after she’s done nights, or a couple of nights.” “She thought people were talking about her, and that they didn’t like her. Which I said no one’s ever said a bad word about her, all these people always say they think about her.”</td>
<td>“So we made a plan, I said right, if I am not in I won’t cook you anything to eat and you can do your own washing, get your own washing basket” “It’s a joint thing (looking after money matters) to be honest. We’ve both got a hand in that”</td>
</tr>
<tr>
<td><strong>1.5 Occasional (F&lt;3) questioning patient’s behaviour/symptoms (often, why type of question)</strong></td>
<td><strong>1.5 Supervise/observing (F&lt;3) patient’s behaviour</strong></td>
</tr>
<tr>
<td>Sometimes I say ‘Why haven’t you opened your windows’. “He will talk about it when I ask about it. I don’t exactly know what the course involves but I’ve asked him if everything is alright” “I say to him ‘are you alright? ‘Any problems with your voices?’ ‘No, no not heard them for months’.” “I’ll eventually say ‘Are you alright? ‘Because I can pick up on a few signs of when he is feeling anxious”</td>
<td>“I kept keeping an eye on him ‘cause I could tell he was really uneasy, he went back upstairs and then I followed him upstairs” (relative states that this happened in one occasion)</td>
</tr>
<tr>
<td><strong>1.6 Occasional (F&lt;3) reminders</strong></td>
<td><strong>1.6 Offering or asking to pay/buy items or order prescriptions for the patient (mutual agreement)</strong></td>
</tr>
<tr>
<td>“I just leave him a note if he is in bed saying feed the dogs or empty the dishwasher. He just does it.”</td>
<td></td>
</tr>
<tr>
<td>“I don’t mention it very often, I’m quite confident that she’s taking them at the moment” “I’ve told him to get his prescription done every three weeks”</td>
<td></td>
</tr>
<tr>
<td><strong>1.7 Praise, encouragement, positive reinforcement</strong></td>
<td></td>
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</tbody>
</table>
Appendix 7: Types of Behavioural Control manual

Examples of both mild direct influencing and buffering statement

“So I’ll say alright we’ll compromise if you are going to smoke in your room you make sure all the windows are open and the hall window is open”

In this statement he mother is just offering a suggestion and both mother and patient seem to have a consensual agreement regarding the smoking issue

“I try to make him his job, the kitchen. (...) Or if I say to him ‘there is somebody coming tomorrow, you better get that Hoover on’”

In this quotation the mother makes an implied cleaning suggestion and tries to assign a task to the patient.

<table>
<thead>
<tr>
<th>Moderate (2)</th>
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</thead>
<tbody>
<tr>
<td>Moderate controlling statement should be rated if indicate a more frequent (F≥3) pronounced, but not dysfunctional per se, attempt to deliberately influence the patient. Bellow are the sub-categories of statements that should fall in this category</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Moderate direct influencing statements (2 DI)</th>
<th>Moderate buffering statements (2 B)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2.1 Direct Instruction/demand</strong></td>
<td><strong>2.1 Doing things for the patient, which the patient did not ask for exactly:</strong></td>
</tr>
<tr>
<td>“He gets shout out ‘get in there and get that done’”</td>
<td>“His room is a big problem actually. I said right I’m off [patient] on such a day I’ll do your room and we’ll do it together”</td>
</tr>
<tr>
<td>“I said ‘Well bad things do happen to people [patient] you have to learn to deal with it’, [patient] can’t deal with it, ‘Pull yourself together’”</td>
<td>“I said [patient] have you got your anti-psychotics? And he said, no. I said I’ll get a prescription for you”</td>
</tr>
<tr>
<td>“I said ‘go to the doctors [patient]’ even if you go on antidepressants for a short while I said ‘you need to speak to somebody’”</td>
<td><strong>2.2 Command/order to engage in/elicit behaviour</strong></td>
</tr>
<tr>
<td><strong>2.2 Command/order to engage in/elicit behaviour</strong></td>
<td><strong>2.2 Pursuing a course of action which does not impinge free-will, but which the patient did not ask for exactly</strong></td>
</tr>
<tr>
<td>“I sit down in his bedroom and I try and have a conversation with him, but he’s distracted, he’s on his game. Sometimes I sit and say talk to me, tell me how’s your day been. I’ll sit there for about ten minutes trying to get some sort of conversation out of him and he’s not interested so I go back downstairs.”</td>
<td><strong>2.3 Strong suggestion regarding appropriate course of action (what the patient had got to, ought, must or should do) or Indirect suggestion to others (i.e., when relatives try to persuade others to influence or control the patient or the patient’s behaviour)</strong></td>
</tr>
<tr>
<td><strong>2.3 Strong suggestion regarding appropriate course of action (what the patient had got to, ought, must or should do) or Indirect suggestion to others (i.e., when relatives try to persuade others to influence or control the patient or the patient’s behaviour)</strong></td>
<td><strong>2.3 Changing things that the patient has done</strong></td>
</tr>
<tr>
<td>“I said maybe we should go the doctors, we need to make an appointment”</td>
<td>“I’ll come home and he’s done the washing up. But I’ll have to do it again because he’s just sort of thrown in the sink, and I say thank you very much that’s very kind of you”</td>
</tr>
<tr>
<td>“But [patient] just get in there for a couple of hours you need to meet people”</td>
<td><strong>2.4 Joint or singular activities, which the patient’s involvement in appears to have been instigated by the relative (push to do things)</strong></td>
</tr>
<tr>
<td><strong>2.4 Engage in confrontations with or challenging the patient about their behaviour/symptoms</strong></td>
<td><strong>2.4 Joint or singular activities, which the patient’s involvement in appears to have been instigated by the relative (push to do things)</strong></td>
</tr>
<tr>
<td>“Do you watch everybody when you’re out? Are you looking at what everybody is got up? Are you looking and listening to what everybody is talking about? They are not interested in you””</td>
<td>“Because of his condition he doesn’t socialise, you have to push him to do anything. Last week we went to town and I said to my husband ‘we’ll have some tea late’ and [patient] was with us and I have never mentioned it to [patient] until we were in town”</td>
</tr>
<tr>
<td>“I said ‘Do you not understand that you have to”</td>
<td>“We were taking him on holiday for a week to sort of get him away from everything”</td>
</tr>
<tr>
<td><strong>2.5 Checking behaviour (checking upon patient’s behaviour with their knowledge) or Monitoring patient’s routine activities (e.g., bathing, dressing, mediation) or Indirect checking (i.e., when relatives try to persuade others or put others in charge of checking the patient or the patient’s behaviour)</strong></td>
<td><strong>2.5 Checking behaviour (checking upon patient’s behaviour with their knowledge) or Monitoring patient’s routine activities (e.g., bathing, dressing, mediation) or Indirect checking (i.e., when relatives try to persuade others or put others in charge of checking the patient or the patient’s behaviour)</strong></td>
</tr>
<tr>
<td>“The [medicine] he takes at night he always fails and that makes me watch him taking it ‘just take...”</td>
<td>“The [medicine] he takes at night he always fails and that makes me watch him taking it ‘just take...”</td>
</tr>
</tbody>
</table>
Appendix 7: Types of Behavioural Control manual

2.5 Persistent questioning patient’s behaviour/symptoms (F≥3)
“I’ll get home and he’s still sat in his room, I’ll say ‘you alright?’ ‘Yeah’ And ‘what have you done today?’ ‘Nothing’ ‘well, why don’t you go out?’ ‘Don’t want to’. Well, you know just go out’ ‘No I don’t want to’

2.6 Persisting reminders
“I’ll have to remind him and say '[patient] you have to go get your prescription’. (...) Not everyday”
“I have to ask him every single day”

Example of both moderate direct influencing and buffering statement
“I say to him every morning ‘have you taken you’re medication? Will you take it now?’ ‘Do you want to stand over me while I take it?’ ‘If I have to...’ I’ll stand there like a nursery, a glass of water and tablets and make sure that he takes them. I have to ask him every single day.”

In this example the mother states engaging in a persistent reminder regarding the medication, and reports frequently monitoring the medication intake in order to make sure the patient takes the medication.

High (3)
Highly controlling statements indicate tendentiously dysfunctional statements that clearly state or are an obvious inference from what as been said of infringement of the patient’s free will, autonomy and/or independence as an individual, in which the patient stops doing what he/she wants. The following sub-categories should fall into this category:

<table>
<thead>
<tr>
<th>High direct influencing statements (3 DI)</th>
<th>High buffering statements (3 B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Issuing of an ultimatum or use of intimidation (including a final demand and a retaliation)</td>
<td>3.1 Pursuing a course of action against the patient’s wishes/without their knowledge/without consulting them/in the knowledge that the patient did not consent to it (e.g. access patient’s bank account without their knowledge/consent; deciding for the patient without their knowledge; violate patient’s of privacy)</td>
</tr>
<tr>
<td>“The only thing I did frightened him, I just said to him if he didn’t stopped smoking that crap, if he didn’t cut down on it then I would seriously consider ask him to leave, but I wouldn’t I never do it, but I just thought it would shock him”</td>
<td>“He didn’t tell me then when I could have sorted it and I might, I might I probably would have sorted it so he wouldn’t have got bank charges, I had to find out myself when I went on the Internet into his account.”</td>
</tr>
<tr>
<td>“I’d only not looked at him for 2 minutes and he was out and when he came back I said '[Patient] don’t you ever do that, you don’t realise you are under my care now and if you’d have gone missing I don’t know if I would be able to bring you home again’ I said ‘if you ever do that to me again’ I said ‘I’ll take you back’. ”</td>
<td>“I had access to his room on, I was trying to find out if he was using drugs or something, but I couldn’t find anything”</td>
</tr>
<tr>
<td>“He just hasn’t the motivation (...) I can mess about and say ‘yes you are going to do this’ or whatever or I’ll threaten ‘you either do the hovering or go out in your bike for half an hour’ sometimes it works sometimes it doesn’t ’</td>
<td>3.2 Use of force by the relative (e.g. holding the patient if he become aggressive)</td>
</tr>
<tr>
<td>“I said to her ‘stop doing that, if you want to go home just say and we’ll go home now. You don’t need to do things like this to get attention. ‘I’m not going home’, so then she started punching me”</td>
<td></td>
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</tbody>
</table>

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Appendix 7: Types of Behavioural Control manual

“Well you’re not doing it today, but you’ll do it tomorrow. You’re not coming out with me tomorrow unless you shave. Do you understand that?”

3.2 Use of physical force (e.g. pushing, hitting)

“So I asked [patient] and he just turned and he grinned at me and I snapped and I said ”[patient] just go, just get out” and I said ”there’s something far wrong with you, you’re not right” I said ”there’s something wrong.” We’d been saying to him that he should go to the doctors but he wouldn’t. So I just went out, I just started pushing him out the back door and slammed the door”

“I had a word with him, a serious word with him... I had him up against the fridge trying to shake him to get an answer, saying ‘what’s the matter [patient]? What’s wrong with you? I had him up against the fridge, which I totally regret it the following day, but there was obviously something not right with him and I wanted to try to get it out of him”

3.3 Infringement of free will: Creating a situation so that patient must do things against their wishes

in the chest and she slapped my face and I turned around and she was punching me in the back. I said ’I’ll take her out’ so I literally had to put half of her hand in the back, take her out forcefully and outside the pub she tried to kick for no reason so literally, it sounds horrible but I grab her by the hair cos we’re in the middle of the road and tried to drag her away”

“She slapped me a couple of times and I think about the fourth time I actually slapped her back and she was taking back and she sort of calmed down”

3.3 Impingement of free will: Making the patient do things against their wishes

3.4 Checking behaviour or monitoring routine activities (without their knowledge)

“I’ll hold him and ask how many antidepressants for you have this month because I looked in his box and saw he only had two left.”

“I would hear the front door go I ended up following him, literally putting clothes all over my nightwear and following him on foot I would try not to let him see me following him.”

“I’ve had to go to the bank and get control of his account a couple of months back and well as him and have joint control so I can keep an eye on it to make sure that he doesn’t go overdrawn.”

Example of both high direct influencing and buffering statement

He said, ‘I slept in your bed last night because my bedroom was cold’. He knew he’d done wrong. I said ’oh because I forgot to lock it, you’ve just violated my trust again’. So I thought go out for a walk to calm down. When I got back he had gone back to bed. I just lost it, I said to him ‘get out’, I said, ‘I’m locking this door and taking the key with me’, I said ‘don’t you ever do that again’ ‘it was cold in my bedroom’, ‘I don’t care, I asked you not to go into my bed. I asked you to do something and you didn’t do it, you show me no respect at all’.

In this statement is clearly restricting the assess to her bedroom and the use of her bed, by putting a lock in her bedroom’s door; in her statement there is also an implied ultimatum when she says ‘don’t you ever do that again’.
Appendix 7: Types of Behavioural Control manual

Part II: Instructions for making the global behavioural control rating

Each relative should receive a supplementary global rating of their attempts to control the patient, considering all rated statements. The behavioural control global rating reflects an overall impression of the relative’s controlling behaviour and is rated on a 5-point scale from 1 (virtually not behaviour controlling) to 5 (highly behaviour controlling). The global rating is described as follows:

<table>
<thead>
<tr>
<th>Behavioural control global ratings (5-point scale)</th>
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<tbody>
<tr>
<td><strong>Global rating: 1 (Virtually not behaviour controlling)</strong></td>
</tr>
<tr>
<td>Virtually no efforts to influence or control the patient’s behaviour, and never in a highly controlling manner (i.e., no high statements). Only occasionally moderate attempts</td>
</tr>
<tr>
<td><strong>Global rating: 2 (Occasionally behaviour controlling)</strong></td>
</tr>
<tr>
<td>Occasional efforts to influence or control the patient’s behaviour, but never in a highly controlling manner (i.e., no high statements). Several mild and some moderate attempts.</td>
</tr>
<tr>
<td><strong>Global rating: 3 (Moderately behaviour controlling)</strong></td>
</tr>
</tbody>
</table>
| Recurrent attempts to influence or control the patient’s behaviour:  
  a) Several mild and moderate statements and never or almost never in a highly controlling manner; or  
  b) Few mild and moderate statements and occasionally in a highly controlling manner (i.e., 1-2 high statements). |
| **Global rating: 4 (Considerably behaviour controlling)** |
| Recurrent attempts to influence or control the patient’s behaviour occasionally in a highly controlling manner (i.e., at least one high statement). If only once highly controlling statement, then others are frequently moderate statements. |
| **Global rating: 5 (Highly behaviour controlling)** |
| Several attempts to influence or control the patient in a highly controlling manner. |
Appendix 8: Self-blame Attributions manual

Self-blame Attributions manual

The following manual describes the criteria for extracting, transcribing, coding and rating attributional material from Camberwell Family Interview (CFI) interviews and assigning a global rating on a 4-point scale for self-blame attributions. The present manual is based on the revised Weisman et al. (1993) coding guidelines for rating controllability attributions and on the Hooley and Campbell (2002) instructions. Aspects of other coding systems were also incorporated (Barrowclough, 1991; Brewin et al., 1991). Given that these manuals did not assess self-blame attributions considerable adaptations have been made in the present manual in order to incorporate self-blame attributions. These adaptations follow the structure of the original revised Weisman et al. (1993) manual.

Definition of a self-blame statement

A self-blame statement is a statement that comprises one or more given, explored or inferred explanations/causes for the occurrence of a certain negative event\(^1\), which conveys the speaker’s (relative’s) belief (or at least partial belief) that their behaviour/action/role/character (or omission of) contributed, at least partially, to the negative event. Self-blame statements include any utterance in which relatives imply that they could have done something to prevent/avoid the illness outcome from occurring.

Instructions for extracting self-blame statements

Identify all statements (current and past) from the CFI that imply the relative’s belief that their own behaviour/action (or omission of) or character at least partially:
- has contributed to
- could have prevented/avoided

the development (including: onset, exacerbation) of the patient’s illness and associated symptoms/problem behaviours or any undesirable characteristic of the patient or in the patient’s life.

Self-blame statements in the past tense should also be included, since they often imply continuity to the present (e.g., “I have often thought if it is something that I have done in the past that has made him to like this”). Past self-blame statements will only be excluded if currently the relative states holding a non self-blame statement (e.g. “I used to feel guilty, but I don’t anymore”).

Instructions for rating self-blame attributions

After finishing extracting all statements from the CFI, using the guidelines mentioned above and considering all statements made, allocate a global rating relative’s self-blame attributions by using the scales below. In case of doubt or insufficient information, rather than trying to second-guess the relative’s perception, always give more conservative rating when rating a statement.

Prior to assigning a global rating for self-blame, each statement is first rated as mild, moderate or high in self-blame according to the following instructions:

\(^1\) A negative event: is a reported outcome, behaviour or situation that is directly associated with the patient under discussion, including references to: illness (onset or exacerbation), symptoms or related problems behaviours, any undesirable characteristic of the patient or in the patient’s life.
I. Individual statement rating (3-point scale):

**Mild (1)** statements indicate that relatives contemplate/questioning, only for transitory moments, the possibility of whether or not their own behaviour contributed for or could have avoided, at least partially, the patient’s illness and associated problems, but without attributing any real self-blame. Such statements may imply a desire for having done something different regarding the patient’s illness and related problems.

**Moderate (2)** statements indicate that relatives hold contradictory (ambivalent) beliefs in whether or not their own behaviour contributed for or could have prevented, at least partially, the patient’s illness and related problems. These statements often imply relatives’ questioning whether or not they could have done something differently concerning the patient’s illness and associated problems.

**High (3)** statements explicitly indicate that relatives believe to a significant degree of conviction (i.e. at least a partial belief) that their own behaviour and/or character contributed for or ought have avoided, at least partially, the development of the patient’s illness and related problems. Complete conviction is not required, thus some doubt may still be present. High statements may imply the regret for not doing something differently or for not being aware earlier about the patient’s illness and associated problems.

**Note:** Exclusively for statements categorised as high self-blame (3), a further distinction should be made between global and specific self-blame:

(a) if the relative believes that the blame in question is associated with one event/incident about the illness (e.g. “I’m taking the blame here, I think I irritate him because of what I am saying” or “It’s all my fault that we had that argument yesterday”) this statement should be categorised as **specific**;

(b) if the relative believes that the blame in question is related to more general event/incident regarding the illness (e.g. “it’s all my fault, I feel I made him dependent on me”), this statement should be categorised as **global**.

This distinction has been made for the purpose of establishing a threshold for assigning a global rating of 4, which is explained below.

II. Global rating of self-blame (4-point scale):

Once each individual statement is rated, all statements should be considered to assign a global rating on a four-point scale, ranging from 1 (no self-blame) to 4 (a lot of self-blame). The degree of conviction of statements made should be taken into account in assigning the global rating of self-blame. Each point of the scale is described below in greater detail and examples are also provided.

**Self-blame global rating of 1 (no)**
Relatives make no reference to perceived blame to oneself for the patient’s illness and associated problems and/or do not believe that they could have done something to avoid/prevent the patient’s illness and related problems.
Appendix 8: Self-blame Attributions manual

Self-blame global rating of 2 (minimal)
Relatives make minor references to perceived blame to oneself (behaviour only) for the patient’s illness and associated problems and/or rarely believe that they could have done something to avoid/prevent the patient’s illness or related problems. These relatives often contemplate, only for transitory moments, the possibility if whether or not they contributed (at least partially) and/or could have done something (at least partially) to avoid/prevent the patient’s illness or related problems.

The following example illustrates such relatives. One husband contemplated only for brief moments if, to some extent, he had played a role in his wife’s disorder, but without attributing any “real” blame to himself. He did not believe that he could have done something to avoid the illness, stating that it was a mental illness.

Self-blame global rating of 3 (moderate)
Relatives make some references to perceived blame to oneself (behaviour only) for the patient’s illness and associated problems, but they also make references to other contributory factors. These relatives often express contradictory statements in whether or not they contributed (at least partially) and/or could have done something (at least partially) to avoid/prevent the patient’s illness or related problems. Such relatives believe to some degree of conviction that they could have done something to avoid/prevent the patient’s illness and related problems.

For instance, one mother believed that, in part, she might have contributed for the development of her son’s illness for things that she have done in the past, but equally she also recognised that other factors might have contributed for the development of the illness. Some times this mother pondered if she could have done something different to prevent the disorder, reporting frequent contradictory statements.

Self-blame global rating of 4 (a lot)
Relatives receive a rating of 4 whenever they make: (a) two or more specific high statements; (b) at least one global high statement. Such relatives make explicit references to perceived blame to oneself (behaviour and/or character) for the patient’s illness and associated problems and/or believe, to a significant degree of conviction, that they ought have done something (at least partially) to avoid/prevent the patient’s illness and associated problems.

For example, one mother made several self-blame statements (e.g., I feel guilty or it’s all my fault) about the way she raised her son and about not being aware of the illness, believing that that may have in part contributed for the development of the disorder. She made several specific high-perceived self-blame statements (e.g. “I start feeling guilty, I should have though him how to cook, I should have though him how to iron”), as well as several global high-perceived self-blame statements (e.g. “I feel guilty I didn’t know. How could I not know as his mother that there was something wrong? (…) What kind of mother am I? I have got a son like this and a daughter that is bulimic, what way did I go wrong?”). Furthermore, this mother believed that she could have intervened earlier if she was aware of the illness.
Appendix 9: Relative ESM items

**PALM relative questions**

100|Just before the beep went off I was feeling sad %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
110|Just before the beep went off I was feeling cheerful %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
120|Just before the beep went off I was feeling anxious %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
130|Just before the beep went off I was feeling happy %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
140|Just before the beep went off I was feeling irritable %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
150|Just before the beep went off I was feeling relaxed %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
160|Just before the beep went off I was feeling guilty %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
170|Just before the beep went off I was feeling satisfied %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
180|Just before the beep went off I was feeling lonely %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
190|Just before the beep went off I was feeling annoyed %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
195|Just before the beep went off I was feeling excited %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
300|Just before the beep went off I was %TYPE List|At Home|At work|At school|In a shop|Outside|On the move|Another location
310|Just before the beep went off I was %TYPE List|Doing nothing|Doing housework|Watching TV/Using the computer|Listening to music/radio|Self-hygiene|Eating|Shopping|Travelling/Commuting|Talking|Working/Studying|Leisure activities|Reading|Other
320|This activity is enjoyable %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
330|This activity is difficult/challenging %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
340|This activity reduces my stress %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
350|I would rather be doing something else %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
Appendix 9: Relative ESM items

360| I was doing this activity because (Tick all that apply) %TYPE Checkbox| I wanted to| I had to| I had nothing else to do | Someone suggested it | Someone made me do it

400| Just before the beep went off I was alone %TYPE Buttons| Yes %NEXT 700| No %NEXT 410

410| Just before the beep went off I was with the other participant %TYPE Buttons| Yes %NEXT 420| No %NEXT 600

420| We were talking or doing something together %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)

430| I like this person %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)

440| I feel comfortable with this person %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)

450| I would rather be alone %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)

500| Just before the beep went off I was encouraging him/her %TYPE Buttons| Yes %NEXT 505| No %NEXT 510

505| How much? %TYPE Popup| 1 (A bit)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)

510| Just before the beep went off I was nagging him/her %TYPE Buttons| Yes %NEXT 515| No %NEXT 520

515| How much? %TYPE Popup| 1 (A bit)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)

520| Just before the beep went off I was helping him/her %TYPE Buttons| Yes %NEXT 525| No %NEXT 530

525| How much? %TYPE Popup| 1 (A bit)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)

530| Just before the beep went off I was taking control of him/her %TYPE Buttons| Yes %NEXT 535| No %NEXT 540

535| How much? %TYPE Popup| 1 (A bit)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)

540| Just before the beep went off I was keeping an eye on him/her %TYPE Buttons| Yes %NEXT 545| No %NEXT 550

545| How much? %TYPE Popup| 1 (A bit)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)

550| Being with this person is %TYPE Popup| -3 (Very unpleasant)| -2| -1| 0 (Neutral)| 1| 2| 3 (Very pleasant)
Appendix 9: Relative ESM items

600| Just before the beep went off I was with/also with someone else %TYPE Buttons| Yes (3 people or less) %NEXT 610| Yes (more than 3 people) %NEXT 610
610| I was with/also with (Tick all that apply) %TYPE Checkbox| Spouse/Partner| Parent(s)| Child/Children| Other relative(s)/Friend(s)/Colleague(s)| Support worker(s)| Stranger(s)
620| We were talking or doing something together %TYPE Popup| 1 (Not at all)| 2| 3| (Moderately)| 5| 6| 7 (A lot)
630| I like this/these person(s) %TYPE Popup| 1 (Not at all)| 2| 3| (Moderately)| 5| 6| 7 (A lot)
640| I feel comfortable with this/these person(s) %TYPE Popup| 1 (Not at all)| 2| 3| (Moderately)| 5| 6| 7 (A lot)
650| I would rather be alone %TYPE Popup| 1 (Not at all)| 2| 3| (Moderately)| 5| 6| 7 (A lot)
660| Being with this/these person(s) is %TYPE Popup| -3 (Very unpleasant)| -2| -1| 0 (Neutral)| 1| 2| 3 (Very pleasant)
700| Since the last beep I have been with the other participant %TYPE Buttons| Yes %NEXT 710| No %NEXT 800
710| We have been together %TYPE Popup| 1 (Little time)| 2| 3| (Some time)| 5| 6| 7 (All the time)
720| We have been talking or doing something together %TYPE Popup| 1 (Not at all)| 2| 3| (Some time)| 5| 6| 7 (All the time)
730| Since the last beep I have been encouraging him/her %TYPE Buttons| Yes %NEXT 735| No %NEXT 740
735| How much? %TYPE Popup| 1 (A bit)| 2| 3| (Moderately)| 5| 6| 7 (A lot)
740| Since the last beep I have been nagging him/her %TYPE Buttons| Yes %NEXT 745| No %NEXT 750
745| How much? %TYPE Popup| 1 (A bit)| 2| 3| (Moderately)| 5| 6| 7 (A lot)
750| Since the last beep I have been helping him/her %TYPE Buttons| Yes %NEXT 755| No %NEXT 760
755| How much? %TYPE Popup| 1 (A bit)| 2| 3| (Moderately)| 5| 6| 7 (A lot)
760| Since the last beep I have been taking control of him/her %TYPE Buttons| Yes %NEXT 765| No %NEXT 770
765| How much? %TYPE Popup| 1 (A bit)| 2| 3| (Moderately)| 5| 6| 7 (A lot)
Appendix 9: Relative ESM items

770|Since the last beep I have been keeping an eye on him/her %TYPE Buttons|Yes %NEXT 775|No %NEXT 780
775|How much? %TYPE Popup|1 (A bit)|2|3|4 (Moderately)|5|6|7 (A lot)
780|Being with this person has been %TYPE Popup|3 (Very unpleasant)|-2|-1|0 (Neutral)|1|2|3 (Very pleasant)
800|Since the last beep I have been going over my thoughts in my mind %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
810|Since the last beep I have been daydreaming %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
820|Since the last beep I have been going over my problems in my mind %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
830|Since the last beep I have been worrying %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
840|Since the last beep I have been trying to stop unwanted thoughts %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
900|Since the last beep the most important event that happened to me was %TYPE Text
910|This event was %TYPE Popup|3 (Very unpleasant)|-2|-1|0 (Neutral)|1|2|3 (Very pleasant)
999|This beep disturbed me %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
Appendix 10: Patient ESM items

PALM patient questions

100| Just before the beep went off I was feeling sad %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)
110| Just before the beep went off I was feeling cheerful %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)
120| Just before the beep went off I was feeling anxious %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)
130| Just before the beep went off I was feeling happy %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)
140| Just before the beep went off I was feeling irritable %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)
150| Just before the beep went off I was feeling relaxed %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)
160| Just before the beep went off I was feeling guilty %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)
170| Just before the beep went off I was feeling satisfied %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)
180| Just before the beep went off I was feeling lonely %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)
190| Just before the beep went off I was feeling annoyed %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)
195| Just before the beep went off I was feeling excited %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)
200| Just before the beep went off I was hearing voices (that other people cannot hear) %TYPE Popup| 1 (Not at all)| %NEXT 210| 2 %NEXT 205| 3 %NEXT 205| 4 (Moderately) %NEXT 205| 5 %NEXT 205| 6 %NEXT 205| 7 (A lot) %NEXT 205
205| This was distressing %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)
210| Just before the beep went off I was seeing things (that other people cannot see) %TYPE Popup| 1 (Not at all)| %NEXT 220| 2 %NEXT 215| 3 %NEXT 215| 4 (Moderately) %NEXT 215| 5 %NEXT 215| 6 %NEXT 215| 7 (A lot) %NEXT 215
215| This was distressing %TYPE Popup| 1 (Not at all)| 2| 3| 4 (Moderately)| 5| 6| 7 (A lot)
220| Just before the beep went off I was feeling that someone may try to cause me harm %TYPE Popup| 1 (Not at all)| %NEXT 230| 2 %NEXT 225| 3 %NEXT 225| 4 (Moderately) %NEXT 225| 5 %NEXT 225| 6 %NEXT 225| 7 (A lot) %NEXT 225
Appendix 10: Patient ESM items

225) This was distressing %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)

230) Just before the beep went off I was suspicious %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)

240) Just before the beep went off I was afraid I could lose control %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)

250) Just before the beep went off I was unable to get rid of my thoughts %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)

260) Just before the beep went off I was feeling unreal %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)

270) Just before the beep went off I was feeling that my thoughts are being influenced or controlled %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)

280) Just before the beep went off I was finding it difficult to express my thoughts %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)

300) Just before the beep went off I was %TYPE List|At Home|At work|At school|In a shop|Outside|On the move|Another location

310) Just before the beep went off I was %TYPE List|Doing nothing|Doing housework|Watching TV/Using the computer|Listening to music/radio|Self-hygiene|Eating|Shopping|Travelling/Commuting|Talking|Working/Studying|Leisure activities|Reading|Other

320) This activity is enjoyable %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)

330) This activity is difficult/challenging %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)

340) This activity reduces my stress %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)

350) I would rather be doing something else %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)

360) I was doing this activity because (Tick all that apply) %TYPE Checkbox|I wanted to|I had to|I had nothing else to do|Someone suggested it|Someone made me do it

400) Just before the beep went off I was alone %TYPE Buttons|Yes %NEXT 700|No %NEXT 410

410) Just before the beep went off I was with the other participant %TYPE Buttons|Yes %NEXT 420|No %NEXT 600

420) We were talking or doing something together %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
**Appendix 10: Patient ESM items**

<table>
<thead>
<tr>
<th>Item</th>
<th>Scale Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like this person</td>
<td>1 (Not at all)</td>
</tr>
<tr>
<td>I feel comfortable with this person</td>
<td>1 (Not at all)</td>
</tr>
<tr>
<td>I would rather be alone</td>
<td>1 (Not at all)</td>
</tr>
<tr>
<td>Just before the beep went off this person was encouraging me</td>
<td>Yes</td>
</tr>
<tr>
<td>How much?</td>
<td>1 (A bit)</td>
</tr>
<tr>
<td>Just before the beep went off this person was nagging me</td>
<td>Yes</td>
</tr>
<tr>
<td>How much?</td>
<td>1 (A bit)</td>
</tr>
<tr>
<td>Just before the beep went off this person was helping me</td>
<td>Yes</td>
</tr>
<tr>
<td>How much?</td>
<td>1 (A bit)</td>
</tr>
<tr>
<td>Just before the beep went off this person was taking control of me</td>
<td>Yes</td>
</tr>
<tr>
<td>How much?</td>
<td>1 (A bit)</td>
</tr>
<tr>
<td>Just before the beep went off this person was keeping an eye on me</td>
<td>Yes</td>
</tr>
<tr>
<td>How much?</td>
<td>1 (A bit)</td>
</tr>
<tr>
<td>Being with this person</td>
<td>-3 (Very unpleasant)</td>
</tr>
<tr>
<td>Just before the beep went off I was with/also with someone else</td>
<td>No</td>
</tr>
<tr>
<td>We were talking or doing something together</td>
<td>Yes</td>
</tr>
<tr>
<td>I like this/these person(s)</td>
<td>1 (Not at all)</td>
</tr>
</tbody>
</table>
Appendix 10: Patient ESM items

640|I feel comfortable with this/these person(s) %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
650|I would rather be alone %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
660|Being with this/these person(s) is %TYPE Popup|-3 (Very unpleasant)|-2|-1|0 (Neutral)|1|2|3 (Very pleasant)
700|Since the last beep I have been with the other participant %TYPE Buttons|Yes %NEXT 710|No %NEXT 800
710|We have been together %TYPE Popup|1 (Little time)|2|3|4 (Some time)|5|6|7 (All the time)
720|We have been talking or doing something together %TYPE Popup|1 (Not at all)|2|3|4 (Some time)|5|6|7 (All the time)
730|Since the last beep this person has been encouraging me %TYPE Buttons|Yes %NEXT 735|No %NEXT 740
735|How much? %TYPE Popup|1 (A bit)|2|3|4 (Moderately)|5|6|7 (A lot)
740|Since the last beep this person has been nagging me %TYPE Buttons|Yes %NEXT 745|No %NEXT 750
745|How much? %TYPE Popup|1 (A bit)|2|3|4 (Moderately)|5|6|7 (A lot)
750|Since the last beep this person has been helping me %TYPE Buttons|Yes %NEXT 755|No %NEXT 760
755|How much? %TYPE Popup|1 (A bit)|2|3|4 (Moderately)|5|6|7 (A lot)
760|Since the last beep this person has been taking control of me %TYPE Buttons|Yes %NEXT 765|No %NEXT 770
765|How much? %TYPE Popup|1 (A bit)|2|3|4 (Moderately)|5|6|7 (A lot)
770|Since the last beep this person has been keeping an eye on me %TYPE Buttons|Yes %NEXT 775|No %NEXT 780
775|How much? %TYPE Popup|1 (A bit)|2|3|4 (Moderately)|5|6|7 (A lot)
780|Being with this person has been %TYPE Popup|-3 (Very unpleasant)|-2|-1|0 (Neutral)|1|2|3 (Very pleasant)
800|Since the last beep I have been going over my thoughts in my mind %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
810|Since the last beep I have been daydreaming %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
820|Since the last beep I have been going over my problems in my mind %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
Appendix 10: Patient ESM items

830|Since the last beep I have been worrying %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
840|Since the last beep I have been trying to stop unwanted thoughts %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
900|Since the last beep the most important event that happened to me was %TYPE Text
910|This event was %TYPE Popup|-3 (Very unpleasant)|-2|-1|0 (Neutral)|1|2|3 (Very pleasant)
999|This beep disturbed me %TYPE Popup|1 (Not at all)|2|3|4 (Moderately)|5|6|7 (A lot)
Appendix 11: Supplementary Table for Study 1

Descriptive information for the EE components, behavioural control and controllability attributions scores

<table>
<thead>
<tr>
<th></th>
<th>Relatives (n = 80)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
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<tr>
<td>Critical comments</td>
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<tr>
<td></td>
<td>1</td>
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<td>16</td>
</tr>
</tbody>
</table>

| Hostility score        | 0.00*     | 0-3     |
| EOI score              | 2.00*     | 0-5     |
| Warmth score           | 3.15 (1.18) | 1-5    |
| Positive remarks       | 1.00*     | 0-7     |
|                        | 1         | 23      | 1    | 23 | 28.7 |
|                        | 2         | 8       | 2    | 8  | 10.0 |
|                        | 3         | 11      | 3    | 11 | 13.8 |
|                        | 4         | 5       | 4    | 5  | 6.3  |
|                        | 5         | 1       | 5    | 1  | 1.3  |
|                        | 6         | 2       | 6    | 2  | 2.5  |
|                        | 7         | 1       | 7    | 1  | 1.3  |

| BC score               | 2.72 (1.1) | 1-5    |
| AC score               | 2.01 (0.96) | 1-5    |

Note. *Median reported for non-normally distributed variables

Abbreviations: EOI= emotional overinvolvement, BC= behavioural control, AC= controllability attributions