

E-Risk Study Concept Paper template

Provisional Paper Title: An exploration of the interaction between maternal expressed emotion and household environmental factors in contributing to the presence of psychotic experiences in adolescents: A longitudinal study.
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Today's Date: 7/8/2024
Please indicate if you will require an E-Risk independent reproducibility check: <input type="checkbox"/>

Please describe your proposal in 2-3 pages with sufficient detail for helpful review.

Background & objectives of the study:

Psychotic phenomena:

There are a range of factors demonstrated to impact the likelihood of experiencing psychotic phenomena in adolescence and young adulthood. These factors include genetics, as well as various environmental factors, such as experiences of relationships with family members and those relating to the wider social and political context of the child's upbringing (Cardno et al., 2016; Sieradzka et al., 2015; Taylor et al., 2022; Trotta et al., 2021; Zavos et al., 2014). Although operationalised definitions of psychotic phenomena have differed across clinical research, they converge on the idea that psychotic phenomena refer to "altered experiences of reality", with subtypes of experience identified as hallucinations, delusions, and thought interference (Dowson et al., 2000; Shaffer et al., 2000; Stochl et al., 2015).

The presence of psychotic phenomena is often experienced as distressing by adolescents (Barnes et al., 2022). Developmentally, they are predictive of future poor mental health across a number of psychiatric phenotypes (Karcher et al., 2018; O Hare et al., 2021). Psychotic symptoms in adolescence are associated with raised likelihood of a diagnosis of schizophrenia in adulthood (Fisher et al., 2013). Similarly, psychotic experiences during the teenage years have been associated with future onset of depressive disorders (Giocondo et al., 2021).

Determinants of psychotic phenomena have been investigated at length, with research suggesting that a focus on social contributors may be a fruitful avenue of continued exploration, due to the idea that negative experiences in childhood are associated with biological predictors of psychotic symptoms above genetic risk factors (Baldwin et al., 2018; Trotta et al., 2021). An example of work investigating social aspects of the aetiology of psychotic phenomena has incorporated data from twin studies based in the UK and in Sweden. This has indicated that increased exposure to environmental risk factors, listed as 'bullying', 'dependent life events', 'cannabis use', 'tobacco use', and 'low birth weight' are likely to play the major role in determining whether adolescents experience psychotic phenomena (Taylor et al., 2022). The role of macro-environmental factors in the UK as potential contributors towards the development of psychotic experiences have also been investigated using longitudinal data. These have demonstrated that there are positive associations

between urbanicity, and air pollution with raised likelihood of these experiences in adolescence (Bouter et al., 2023; Newbury et al., 2019).

Maternal expressed emotion:

Comparable methodologies have also sought to investigate the relationships between early within-household environmental factors and the development of psychopathology. One such familial factor which has been focussed on extensively in relation to the development of psychopathology is that of expressed emotion (EE) (Peris & Miklowitz, 2015). High expressed emotion is characterised by a raised level of critical, hostile, and “emotionally over-involved” comments when family members are asked to describe an individual (Butzlaff & Hooley, 1998). There is a wealth of historic and recent evidence to indicate that high EE is associated with relapse across a number detrimental mental health outcomes, particularly relating to adult psychosis, but also others in domains ranging from depression to eating disorders (Amaresha & Venkatasubramanian, 2012; Brown et al., 1972; Rienecke et al., 2016; Vaughn & Leff, 1976). Specifically, a recent meta-analysis indicates that the relationship between high EE and psychopathology is one in which EE can be viewed as a vehicle through which mental ill-health is transmitted from one generation to another within families (Fahrer et al., 2022).

Household chaos:

EE is not the only familial factor that has been associated with the development of mental illness. Also associated with developmental pathways whereby risk for psychopathology is raised is that of ‘household chaos’ (HC) (Marsh et al., 2020). HC describes the presence of unstructured and erratic activity, often coupled with raised levels of background stimuli (Bronfenbrenner & Evans, 2000). Although it is not as well established a construct as EE in the context of the development of mental health difficulties, it has been demonstrated to impact on levels of conduct difficulties in children, albeit mediated through other environmental factors (Jaffee et al., 2012) Further, it has been identified as a moderating variable between parent and adolescent executive functioning (Brieant et al., 2017). Similarly, developmental research has indicated that the association between HC and ADHD in children is greater than the association between maternal genetic risk identifiers and ADHD in children (Agnew-Blais et al., 2022). Taken together, these studies evidence that HC does impact on longer term psychological functioning underpinning behaviours.

Similarly, measures of household chaos have rarely been incorporated into research investigating risk factors for psychotic phenomena. In cases where the impact of household chaos on psychotic phenomena has been considered, it has been only one aspect of a wider ‘atmosphere at home’ factor (Crush et al., 2018) (Riches et al., 2019). Such studies have shown that a positive atmosphere at home, to which lack of HC provided a contributing score, was associated with a reduced level of psychotic phenomena. To date, longitudinal research has not yet attempted to address the relationships between HC and the future onset of psychotic phenomena. Moreover, there has been a lack of longitudinal research which has sought to investigate the ways in which different familial factors, such as HC and EE might interact to contribute to the emergence of psychotic symptoms.

Aims:

The proposed piece of research will seek to further investigate the relative contributions of both EE and HC towards the presence of psychotic phenomena, while taking a developmental approach which recognises that there may be differences in expression on PE at different stages in adolescence. To do this, the impact of EE factors and HC factors on the presence of psychotic phenomena at ages 12 and 18 will be investigated. This conceptualisation is outlined in Figure 1.

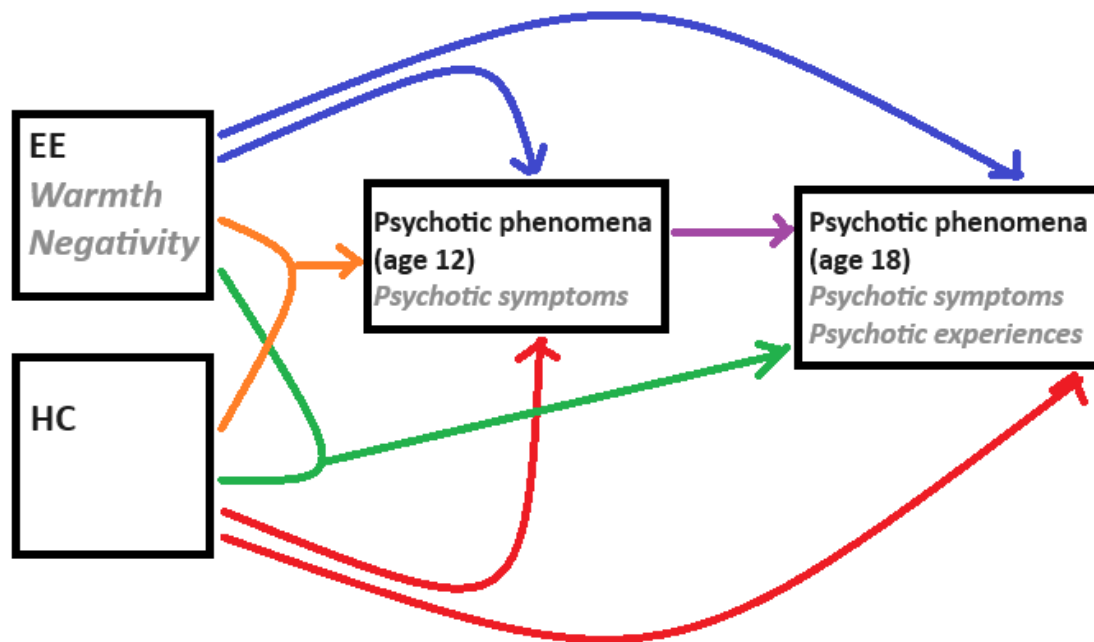


Figure 1

This study will provide the basis of a Doctorate in Clinical Psychology thesis to be completed at the University of Essex, to be supervised by Dr Antonella Trotta.

Significance of the study (for theory, research methods or clinical practice):

Theory:

This study has the potential to inform understandings of the ways in which specific environmental factors may contribute directly, or through interaction with other factors, towards the presence of PE in young people at different stages in their psychological development. Findings will shed light on the developmental trajectories of psychotic phenomena throughout adolescence. For example, it may be indicated that the risk of early life experiences (e.g. raised levels of EE or HC) on the emergence of PE may be latent at particular developmental stages, whereas other life experiences may have more of an immediate impact on likelihood of psychotic phenomena emerging.

Clinical Practice:

In terms of potential impact on clinical practice, findings from the proposed study may shed light on where early preventative interventions for psychotic symptomology should be targeted. For example, if it is demonstrated that EE within the home is a greater contributor to psychotic symptoms and psychopathology more generally, then the provision of extra resources at this level may be deemed appropriate. Conversely, if factors relating to HC are shown to have a greater relative impact on the measures of psychopathology focussed on, healthcare commissioners may see fit to attach greater weight to material interventions. By focussing on the longitudinal trajectory of psychotic phenomena, this study has the potential to inform ideas around when during childhood and adolescence such interventions may be scheduled.

In drawing links between early experiences and psychotic symptoms in later life, contributions could be made towards a demarcation of high- and low- risk individuals before symptoms have manifest in observable ways. Such contributions could begin to inform early interventions of those suffering mental distress by considering the quality of maternal EE received as a predictor variable of future functioning. Additionally, any insights could be used to guide the approaches taken by psychological professions working alongside individuals experiencing psychotic symptoms.

Data analysis methods:

The proposed piece of research will ask the following questions and sub-questions, while employing quantitative data analysis methods.

1. What are the individual relationships between household factors and the presence of psychotic phenomena at both 12 and 18?
 - To assess the relationship between each dimension of EE (warmth and negativity) and psychotic phenomena at 12.
 - To assess the relationship between each dimension of EE (warmth and negativity) and psychotic phenomena at 18.
 - To assess the relationship between HC and psychotic phenomena at 12.
 - To assess the relationship between HC and psychotic phenomena at 18.
2. How do EE and HC interact to produce changes in psychotic phenomena at both 12 and 18?
 - To assess whether there is an effect of interaction between either of the EE dimensions (warmth and negativity) and HC on psychotic phenomena at 12.
 - To assess whether there is an effect of interaction between either of the EE dimensions (warmth and negativity) and HC on psychotic phenomena at 18.
3. To what extent do EE and HC predict the persistence of psychotic phenomena from age 12 to age 18?

Prior to the above questions being asked, descriptive statistics will be produced of key variables and correlational analyses of variables will be carried out to allow judgements to be made regarding the relatedness of constructs investigated. Further to this, demographic factors and those which have been previously shown to be predictive of psychotic phenomena within the E-Risk sample will be incorporated into analyses, to allow any conclusions made to be relevant to the variables of interest, namely EE, HC, and PE.

The model outlined in Figure 1 will be evaluated. The individual and combined contributions of both dimensions of EE, and both dimensions of HC will be compared for their effect on changes in variance of psychotic phenomena as assessed at age 12 and age 18.

The present study will incorporate two measures of psychotic phenomena. The first 'psychotic symptoms' measure is binary categorical variable, and is coded as '0' vs '1 or more'. This measure has been taken at age 12 and age 18. To compare the impact of EE and HC on 'psychotic symptoms', multiple logistical regression models will be used (to compare relative contributions of household factors, to assess whether an interaction of household factors produces changes). The second measure of psychotic phenomena used in the study will be 'psychotic experiences', which has been taken just at age 18. The inclusion of this measure allows for a greater level of information to be retained than a simple binary score. This measure is represented by an ordinal scale of 0 to 3, with the number psychotic experiences categorised as 0, 1-2, 3-5, and 6+ (Newbury et al., 2023). As a result, the impact of EE and HC on this measure will be assessed using ordinal logistic regression. Again, this will compare the relative contributions of household factors and assess the extent to which they may or may not interact to produce changes in the 'psychotic experiences' variable.

HC measures have been taken at 7, 10, and 12. These will be averaged across time points to create a single 'household chaos' variable which will be used in the described analysis. EE measures have been taken at ages 5 and 10, however these will be averaged across these ages. As a result, an overall 'warmth' score will be created for each participant, an overall 'negativity' score will be created for each participant, and a combined 'expressed emotion' score will be created incorporating both of these dimensions. Separate analysis, as described above, will be run for each of these scores (in combination with the averaged 'household chaos' score, as indicated).

Confounding variables and covariates:

When carrying out any statistical analyses incorporating data representing the full sample of participants, adjustments will be made for potential confounding variables and covariates demonstrated in existing research using the E-Risk data set to be positively associated with the dependent variables selected, including the following:

- sex of twins
- family socioeconomic status
- maternal psychotic symptoms
- exposure to severe victimisation

These confounding variables are consistent with related research using E-Risk data, e.g. Wickersham's proposed study focussing on relationships between EE and adolescent psychopathology.

All analyses will be corrected for the non-independence of twin observations using the Huber-White variance estimator.

Variables needed and at which ages:

Age 5:

FAMILYID	Unique family identifier
ATWINID	Twin A ID (ex chkdg)
BTWINID	Twin B ID (ex chkdg)
ORDERP5	Random Twin Order
RISKS	Sample groups
COHORT	Cohort
SAMPSEX	Sex of Twins: In sample
ZYGOSITY	Zygoty
SESWQ35	Social class composite
WARME5	Warmth towards elder twin
DISSE5	Dissatisfaction/Negativity towards elder twin

Age 7:

CHAOSM7	Chaos in the home
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Age 10:

WARME10	Warmth towards elder twin
DISSE10	Dissatisfaction/Negativity towards elder twin
CHAOSM10	Chaos in the home

Age 12:

PSYSYMP01E12	Psychosis Symptom Count-Verified Coding-Elder - 0, 1+ - Elder
PSYSYM12	Mother Psychosis -Symptom Count
EX_SVE12	Exposed to severe victimization (0/1), 5-12, E-Twin
CHAOSM12	Chaos in the home

Age 18:

PSYSYMP01E18	Psychosis Symptom Count (0,1+) – P18 – Elder
PSYEXPCE18	Psychotic Experiences Scale (Cat) - P18 – Elder

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DATA SECURITY AGREEMENT

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