Thesis Submitted in Partial Fulfilment of the Degree of Doctor of Clinical Psychology

(DClinPsych)

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May 2023

Word Counts

Systematic Review of Research Literature (SRL) *Identifying individuals at risk of developing psychosis: A systematic review of the literature in primary care services.*	**5,420 words**
Service Improvement Project (SIP) *The experience of seeking and accessing help from mental health services amongst young people of Eastern European backgrounds: A qualitative interview study*	**4,943 words**
Theory-Driven Research Project (TDRP) *Understanding unusual sensory experiences: a randomised experimental study of a school-based intervention for adolescents.*	**4,282 words**
Executive Summary	**704 words**
Connecting Narrative	**999 words**
Total	**16,348 words**

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Abstracts

Systematic Review of Research Literature (SRL)

Identifying individuals at risk of developing psychosis: A systematic review of the literature in primary care services

Aim: Psychosis and related disorders are a major public health issue. Early identification and prevention for those at high risk (at-risk-mental-state, ARMS) is important. General practitioners (GPs) are often the first point of contact for health services. In this review we aim to identify 1) the most common methods for identifying individuals with an ARMS in primary care, 2) the methods for improving identification of individuals with an ARMS in primary care, and 3) the most common barriers that prevent GPs from screening for individuals with an ARMS.

Methods: We conducted a systematic review (PROSPERO CRD42021245095) of quantitative and qualitative studies with no date restriction. Searches were performed in September 2021. Studies' quality was appraised using Mixed Methods Appraisal tool (MMAT).

Results: We identified 16 eligible studies, and all but one provided quantitative data. Nearly two-thirds of studies were classified as 'medium' quality. Employing narrative synthesis, we identified three themes relating to 1) improving GP knowledge and confidence in identifying individuals with an ARMS, 2) balancing the over- and under-identification of individuals with an ARMS in primary care, and 3) supporting GPs as significant stakeholders in early diagnosis and treatment of individuals with an ARMS.

Conclusions: Improved identification of individuals with an ARMS is needed. We identified various strategies, including development and implementation of identification methods (e.g., screening measures), educational interventions for GPs (e.g., workshops), and systemic interventions (e.g., simplifying referrals to secondary care, developing integrated services). When implemented successfully, these interventions may help facilitate the access to appropriate care for individuals with an ARMS.

Keywords: at-risk mental state, screening, primary care, general practitioner

Service Improvement Project (SIP)

The experience of seeking and accessing help from mental health services amongst young people of Eastern European backgrounds: A qualitative interview study.

Objectives: Most lifetime mental health problems (MHP) start before the age of 25. Yet young people – particularly those of minority backgrounds – often do not seek or access professional help. In the UK, young people of Eastern European (EE) backgrounds represent a large minority group; however, little is known about their experiences of MHP and help-seeking. In this study we aim to understand the help-seeking process from the perspectives of EE young people.

Design: We used a qualitative study design with semi-structured individual interviews. The results were analysed using reflexive thematic analysis.

Method: Twelve young people (18-25 years) of EE backgrounds, living in Oxfordshire, UK, took part. All participants had experienced a severe MHP and were identified in the community.

Results: EE young people's experiences of MHP and help-seeking were driven by a sense of being caught between different cultures and simultaneously needing to navigate the potentially contrasting expectations of both cultures. This process was reinforced or tempered by the perceived continuing influence of young people's families, i.e. families with more open views about MHP made it easier for young people to navigate through the process of help-seeking. Young people's internalised cultural and familial beliefs about mental health affected their help-seeking decision-making when experiencing mental health difficulties, their levels of trust in health services, and their perceived sense of resourcefulness and ability to cope with the situation.

Conclusions: Recognising and responding to the cultural tension that young people of EE backgrounds may experience can help us to develop more accessible and inclusive mental health services.

Keywords: youth mental health; early intervention; thematic analysis; barriers and facilitators

Practitioner Points

- Navigating different cultural expectations whilst experiencing MHP can make the process of help-seeking difficult for young people of EE backgrounds.
- The key culturally influenced barriers EE young people described were more stigmatising societal and familial views of mental health problems and help-seeking, lack of trust in (mental) health services, and culturally reinforced beliefs about coping with mental health problems (e.g., not seeing mental health problems as serious enough to require professional support).
- EE young people identified a range of strategies that could facilitate their help-seeking, such as improving their knowledge of MHP and available help, reducing mental health stigma in EE communities, and informing young people about what to expect from professional help.
- Mental health services could become more accessible for young people of EE backgrounds by promoting a safe and compassionate culture, including young people in service development (i.e., co-production) and offering a range of different choices (e.g., therapists of the same or different backgrounds, therapy available in different language).

Theoretically Driven Research Project (TDRP)

Understanding unusual sensory experiences: a randomised experimental study of a school-based intervention for adolescents

Background: One in ten young people experience unusual sensory experiences (USE), such as hallucinations. From a cognitive perspective the appraisal of USE determines the impact of these experiences. Negative appraisal, as well as other psychological processes (e.g., thinking flexibility, maladaptive schemas, anxiety/depression), are associated with more distress. Our aim was to i) develop a universal single-session school-based intervention on USE for adolescents and ii) evaluate the effect of the intervention on appraisals of and help seeking intentions for USE.

Methods: A randomised controlled experimental design with a one-month follow-up was used to test the effectiveness of the intervention in one school. Students (n=223) aged 12-13 were randomised by class to a single-session intervention on USE or a control intervention (generic mental wellbeing). Participants completed measures of appraisals of and help-seeking intentions for USE at pre-, post-intervention, and at one-month follow-up. They also completed measures of schemas, thinking flexibility and anxiety/depression at pre-intervention.

Results: Overall, 190 adolescents completed the main outcome measures at all three points. The intervention on USE led to a significant ($p<0.05$) increase of positive appraisals of USE compared to the control, with effects sustained at one-month follow up. The intervention on USE did not lead to significantly greater help-seeking intentions for USE (p=0.26). Adolescents' schemas were associated with appraisals, and slow thinking and anxiety/depressive symptoms with help-seeking behaviour for USE.

Conclusions: A single-session universal school-based intervention shows promise by improving appraisals of USE. Further research is required across different school populations.

Keywords: adolescence; early intervention; schools; youth mental health

Key practitioner message:

- Unusual sensory experiences (USE) are experienced by up to 15% of children and adolescents in the general population. Although usually transient, they can lead to high levels of distress and stigma for some young people.
- From a cognitive perspective, the way that young people make sense of USE (appraisal) is crucial in determining the distress and impact of these experiences. Psychoeducational interventions aiming to increase normalising and non-threatening appraisals of USE for young people might reduce the negative impact of these experiences.
- We designed and evaluated a single-session school-based intervention for young people aged 12-13 years. We compared the intervention with a control condition (i.e., generic wellbeing intervention).
- Adolescents receiving the intervention on USE reported more positive appraisals of USE immediately after the intervention and at one-month follow-up. The intervention did not lead to changes in help-seeking intentions for USE. In general, more adaptive schemas were associated with more positive appraisals of USE, whereas lower levels of anxiety/depressive symptoms and slower (i.e., rational) thinking were associated with higher intentions to seek help for USE.

- Results of this study suggest that a simple, single-session psychoeducational intervention focused on adolescents’ appraisals of USE has the potential to lead to positive and lasting changes in appraisals of USE.
- Future research should focus on developing and evaluating psychoeducational interventions that also target identified protective factors.

Systematic Review of the Literature Paper

Identifying individuals at risk of developing psychosis – A systematic review of the literature in primary care services.

Identifying at-risk mental state in primary care

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Date of submission to the Course: June 2022

Journal: This systematic review was published in *Early Intervention in Psychiatry* (https://onlinelibrary.wiley.com/doi/10.1111/eip.13365) in January 2023 (see Appendix A.1). This journal has been selected as it is an internationally recognised journal in the field of early intervention for psychosis. Similar systematic reviews (i.e., a systematic review on identifying ARMS individuals in educational settings) have been published with the same journal. Author guidelines are available in Appendix A.2.

Word-count: 5,420 words

Abstract

Aim: Psychosis and related disorders are a major public health issue. Early identification and prevention for those at high risk (at-risk-mental-state, ARMS) is important. General practitioners (GPs) are often the first point of contact for health services. In this review we aim to identify 1) the most common methods for identifying individuals with an ARMS in primary care, 2) the methods for improving identification of individuals with an ARMS in primary care, and 3) the most common barriers that prevent GPs from screening for individuals with an ARMS.

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Results: We identified 16 eligible studies, and all but one provided quantitative data. Nearly two-thirds of studies were classified as 'medium' quality. Employing narrative synthesis, we identified three themes relating to 1) improving GP knowledge and confidence in identifying individuals with an ARMS, 2) balancing the over- and under-identification of individuals with an ARMS in primary care, and 3) supporting GPs as significant stakeholders in early diagnosis and treatment of individuals with an ARMS.

Conclusions: Improved identification of individuals with an ARMS is needed. We identified various strategies, including development and implementation of identification methods (e.g., screening measures), educational interventions for GPs (e.g., workshops), and systemic interventions (e.g., simplifying referrals to secondary care, developing integrated services). When implemented successfully, these interventions may help facilitate the access to appropriate care for individuals with an ARMS.

Keywords: at-risk mental state, screening, primary care, general practitioner

Introduction

Psychosis is defined as an abnormal mental state characterised by the presence of delusions, hallucinations, or both (APA, 2022). Psychosis and related disorders are a significant public health issue, especially due to the young age at onset, high levels of associated impairment and high prevalence of comorbid physical and mental health conditions (Anderson, 2019; Rössler et al., 2005). Preventive health strategies, such as identifying individuals at risk of developing psychosis, have the potential to prevent or delay the onset of a first psychotic episode (Fusar-Poli et al., 2013) and to improve the outcomes of those who do later develop psychosis (Valmaggia et al., 2015). However, only a minority of individuals who develop psychosis are identified before development of psychosis, i.e. whilst ‘at risk’ (McGorry et al., 2018). Early identification in everyday settings, such as in schools or primary care, could facilitate access to appropriate and timely treatment (Fusar-Poli et al., 2020).

Over the past few decades, research has demonstrated that psychosis-like experiences (PLEs), such as subclinical hallucinations and delusions, occur on a continuum, rather than the historic categorical conceptualisation. This dimension includes general public, those at high risk, and people experiencing psychosis (Bebbington et al., 2013; Unterrassner et al., 2017). When accompanied by decline in functioning, PLEs are one of the key markers of a clinical high-risk for psychosis (Fusar-Poli et al., 2013). The importance of this concept and its predictive values for psychosis and other mental health problems, including anxiety and depression, has been increasingly recognised, and therefore, many argue that it should be included in the main section of the DSM-5 revision (Corcoran et al., 2021). However, unlike most other mental health problems in the DSM-5, the concept of high-risk for psychosis has been constantly evolving. More recent studies suggest that symptoms such as anxiety, low mood, and substance use are equally important as PLEs when identifying those at risk for developing psychosis (Carrión et al., 2013; Fusar-Poli et al., 2013). The lack of a clinical consensus and overlapping symptoms between those at risk of developing psychosis and those experiencing other mental health problems make early identification of these individuals particularly tricky.

Several definitions have been used to describe individuals who are at risk of developing psychosis (Miller et al., 2003; Yung & McGorry, 1996). In this review we use the term 'at-risk mental state' (ARMS) as set out by A. Yung et al.(1998). This framework defines three criteria that indicate being at-risk: 1) experiencing attenuated psychotic symptoms (APS; sub-threshold frequency or intensity), 2) brief limited intermittent psychotic symptoms (BLIPS; with these symptoms resolving spontaneously within a week), 3) genetic vulnerability to developing a psychotic disorder (Thompson et al., 2016). All three groups require a drop in functioning for at least one month within the previous 12 months. A person is considered 'at risk' if they meet one or more of these criteria. Second criterion is the one most associated with transition to psychosis (Fusar-Poli et al., 2017). ARMS is most commonly identified in young people, aged 15-25, which is the period associated with the highest risk of developing first episode psychosis (Thompson et al., 2016).

There are three main routes for identifying individuals with an ARMS, including primary prevention (e.g., universal screening in schools), secondary prevention (e.g., screening those at risk in GP surgeries) and tertiary prevention (e.g., specialist mental health services) (Fusar-Poli et al., 2019). Individuals with an ARMS are usually identified in specialised early intervention clinics (Howie et al., 2019). However, detection of individuals with an ARMS via specialised clinics misses a significant proportion of people who later develop psychosis, and therefore outreach campaigns, involving other community stakeholders (e.g., schools, GPs) are instrumental to improve early detection rates (Fusar-Poli et al., 2019).

The first clinical and research clinic for detection and treatment of individuals with an ARMS in the world was The Personal Assessment and Crisis Evaluation – PACE Clinic in Australia (Yung et al., 1996), which worked closely with the GPs, schools, universities and other support agencies for young people (Yung et al., 2007). Many other countries, including the UK, Norway, Denmark, and Canada, have since developed similar ARMS clinics and (assertive) community outreach strategies aimed at early detection and treatment of individuals with an ARMS. These programmes have generally been well accepted by patients and their support networks (Jackson & McGorry, 2009). However, individuals identified within these services often represent a small percentage of those who will develop psychosis (e.g., Murguia-Asensio et al., 2013) and therefore, further work with the main stakeholders and referrers needs to be done to enhance the early detection strategies (Power et al., 2007).

Primary care and educational practitioners have access to a wide range of young people and therefore these settings provide an opportunity for potential early identification of individuals with an ARMS (Kennedy et al., 2020). A recent systematic review of 9 studies looking at identifying individuals with an ARMS in educational settings identified a number of screening tools used in schools (e.g. Prodromal Questionnaire – PQ), and a relatively large proportion (i.e., up to 40%) of individuals who scored above the ARMS threshold. This suggests that higher-than-recommended thresholds might be used to identify ARMS individuals more accurately in non-clinical settings (Howie et al., 2019). Notably, one third of the studies also identified that young people with ARMS also had other comorbid problems (most commonly anxiety and depression), highlighting the complex clinical picture of these participants. Therefore, more sensitive measures assessing a whole range of symptoms might be more efficient than identifying individuals that only experience psychosis-like symptoms (van Os & Guloksuz, 2017).

Similarly to schools, primary care practitioners (GPs) are particularly well placed to identify individuals with an ARMS as they often represent the first port of call for individuals with psychological problems and act as 'gatekeepers' between primary care and specialist mental health services (Strelchuk et al., 2021). Indeed, a recent systematic review of pathways to care (i.e., the time between symptom onset, first professional contact and the beginning of an appropriate treatment) in ARMS identified GPs to be one of the key pathway agents (Allan et al., 2020). In addition, each person – regardless of their background – can access a GP, and the average number of GP visits per person per year is around 4 in the UK (Hobbs et al., 2016). This enables GPs to identify individuals with an ARMS from various backgrounds, including those from Black and Minority Ethnic (BAME) backgrounds – individuals who are particularly under-represented in specialist mental health services (Beck et al., 2019). However, the success of primary care practitioners in identifying individuals with an ARMS remains unclear. To date there has been no systematic assessment of identifying individuals with an ARMS in primary care.

In this systematic review we set out to understand the role of primary care practitioners in identifying individuals with an ARMS. There are three research questions:

1) What are the most common methods (e.g., screening tools, interviews) for identifying individuals with an ARMS in primary care?
2) What are the methods of improving identification of individuals with an ARMS in the primary care setting?
3) What are the most common barriers that prevent primary care practitioners from screening for ARMS?

Method

This systematic review followed the updated version of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Moher et al., 2009; Page et al., 2021). A PRISMA checklist is provided in Supporting information 1. The review's protocol was registered with the International Prospective Register of Systematic reviews (PROSPERO) in April 2021 (registration number: CRD42021245095).

Literature Search

The search terms captured three major concepts: 1) at-risk mental state, 2) primary care, and 3) screening (see Supporting information 2 for details). To estimate the number of records and to inform the final search strategy we conducted scoping searches in February 2021. These searches identified approximately 2,000 search results from multiple databases. As the search strategy was revised after conducting scoping searches, the identified 2,000 records were not included in the final set of records. The final search was conducted in September 2021 using the NHS Evidence Healthcare database, which combines Medline, PsychINFO and Embase. In addition, we searched the Web of Science Core Collection. Hand-searching methods were also used to check the reference lists of identified papers in the full text screening stage. We performed backward and forward reference searching for papers that met the eligibility criteria in the initial searches.

In line with the requirements of the University of Oxford, we also conducted an updated search in February 2023[1].

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[1] The number of records in PRISMA chart on page 23 includes the number of records identified through both searches (i.e., in September 2021 and February 2023).

Eligibility Criteria

The study was included if it reported 1) details about the methods (e.g. screening tools) for identifying individuals with an ARMS in primary care AND/OR 2) methods/interventions to improve the identification of individuals with an ARMS in primary care AND/OR 3) barriers for screening/identifying individuals with an ARMS in primary care. Studies that reported relevant data prospectively and/or retrospectively were included. We included qualitative as well as quantitative and mixed methods studies. In addition, the study was included if participants were recruited through primary care services (i.e., GPs or individuals accessing primary care services). Finally, the study was included if the manuscript was accessible in English and published in a peer review journal. Theoretical articles and systematic reviews/meta-analyses on related topics, as well as studies only reporting pathways to care to ARMS services were not included.

Data Extraction

Data extraction forms were developed within the research team and included the following information: (1) Area of focus (ARMS identification tools, barriers to identification, or strategies to improve identification), (2) methodology used (quantitative, qualitative, or mixed methods), (3) country, (4) number of participants, (5) participants' age, (6) percentage female participants, and (7) key findings in relation to the review's research question. Data extraction was led by JR, who extracted the data for all identified papers. Data from 50% (n = 8) of studies were also independently extracted by the second reviewer (EI). In case of discrepancies between the reviewers, a third member of the research team (LJ/FW) was consulted.

Quality Rating

We used the Mixed Methods Appraisal Tool – MMAT (Hong et al., 2018). The MMAT was chosen due to the high heterogeneity of the studies. The MMAT permits the reviewer to appraise the quality of five categories of studies – qualitative, randomised controlled trials, non-randomised studies, quantitative descriptive studies, and mixed methods studies (Hong et al., 2018). Further, the MMAT has favourable psychometric characteristics, with intra-class correlations ranging from 0.7 to 0.9 indicating moderate to perfect agreement between different reviewers (e.g., Pace et al., 2012). JR assessed the quality of all included studies, and the second reviewer (EI) assessed the quality of 50% (n = 8) of the studies. Any discrepancies between the reviewers were discussed and resolved within the research team. Quality ratings (total scores) are reported in Table 1. Based on the total sum score, each study was classified as ‘low’ (total sum score ≤ 2), ‘medium’ (total sum score of 3 or 4) and ‘high’ (total sum score of 5). Individual item ratings for each study are reported in Supporting Information 3.

Data Synthesis

Data were analysed using narrative synthesis and following ESRC guidance (Popay et al., 2006). Narrative synthesis is a method of data analysis for systematic reviews including a wide range of study formats (e.g., qualitative, quantitative, mixed methods) that might otherwise make statistical approaches less feasible (Barnett-Page & Thomas, 2009). We followed Synthesis without meta-analysis (SWiM) reporting guidance (Campbell et al., 2020) to ensure that narrative synthesis was conducted according to the ESRC guidance.

Data synthesis began with preliminary synthesis (Popay et al., 2006). This included creating short textual descriptions of studies (i.e., producing a descriptive paragraph for each study), which enabled the reviewers to become familiarised with each study. The following step included tabulation of studies according to their 1) methodology used, 2) study aims, 3) participant group (i.e., GPs or individuals with an ARMS), 4) participant gender, 5) participant age, 6) study results, and 7) implications. Information regarding each study's quality appraisal was also included. This was followed by creating a 'common rubric' (common framework) – organising the results of all studies in a meaningful way and in relation to the review's aims. For instance, the common rubric for research question 1 included the details about the screening tool used (e.g., screening questionnaire) and main study findings in relation to the utility of the screening tool in primary care setting. The final stage of preliminary synthesis was a Thematic Analysis. Information extracted in 'common rubrics' was treated as codes, which were then grouped and organised in an inductive manner (i.e., without being driven by a set of a priory themes/review's aims). For instance, codes 'sensitivity/specificity issues' and 'false positives' were combined in a family of codes/subtheme called 'identification issues' which then formed a significant part of the main theme (Theme 2). The final set of themes was generated analytically – providing the interpretation 'beyond' the primary review's aims and generating a story about the review's findings (e.g., Thomas and Harden, 2008).

The third step of analysis included exploring the relationship within the studies. For instance, we explored the relationship within a group of studies with the same research question, which included comparison of their findings and exploring the relationship between these studies and identified themes. We also explored the relationships between the studies, which included comparing studies conducted via different methodologies and in different countries. We further explored variability in outcomes, designs, and populations of included studies, and investigated whether this variability affects our main themes identified in the previous step of Narrative Synthesis. Any identified pattern of difference was reported in the Results section.

In the final step of narrative synthesis (assessing robustness) we assessed the robustness of the synthesis by removing the studies with the lowest quality and investigating whether this affected the results.

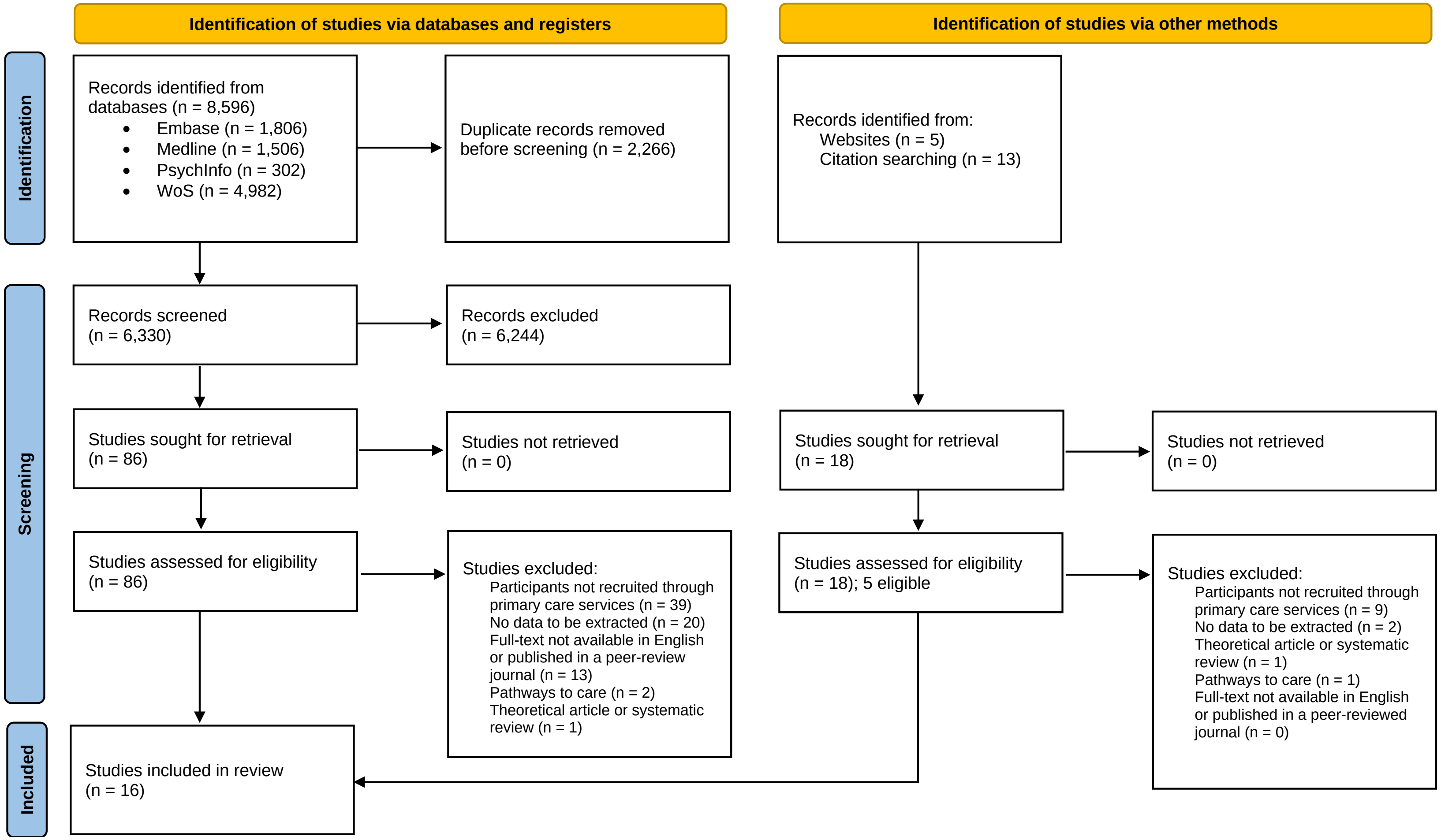
Results

Study Selection

In total, 8,596 records were identified from databases. After duplicates were removed, 6,330 abstracts and 86 full texts were screened. Sixteen studies were identified as eligible and are included in the current review. Study selection was led by the first author (JR), who screened all abstracts and full texts. A proportion of records (20% of abstracts and 25% of full texts) were independently screened by a second reviewer (EI) and the agreement between the reviewers was very good ($\kappa > .81$). The full process of study selection is presented in the PRISMA flowchart (Figure 1).

Figure 1

PRISMA flowchart of study selection process



Study Description

Sixteen studies were identified, with 15 studies providing quantitative and one study providing qualitative data. Two (12.5%) studies were exploring methods of identifying individuals with an ARMS in primary care, seven (43.8%) studies explored ways of improving the identification of ARMS in primary care, and the remaining seven (43.8%) studies examined barriers to identifying individuals with an ARMS in primary care. Study characteristics are presented in Table 1. Studies are ordered by research question and alphabetically within that.

Table 1

Characteristics of included studies

First author (year)	Study focus	Study Aim	Study Type (Subtype)[a]	Number of participants	Country	Age	Females (%)	Study findings in relation to research question	Quality Rating – Total
French et al. (2012)	ARMS identification tool (RQ1)	To assess the ability of the Primary Care Checklist (PCCL) to accurately identify individuals with an ARMS.	Quantitative (Descriptive)	176 (83% met the diagnostic criteria for ARMS); 37 (21%) screened with PCCL by their GP	UK	14-34 (*M* = 20.78, *SD* = 4.16)	37.5% [b]	Instrument used: PCCL checklist (French and Morrison, 2004) Findings: PCCL checklist has high sensitivity and low specificity in identifying ARMS adolescents. Better sensitivity/specificity ratio for short 6-item version or the original version with different weighting	4 (medium)
Quijada et al. (2010)	ARMS identification tool (RQ1)	To describe and evaluate an ARMS screening programme and the demographic and clinical characteristics of people presenting to the service.	Quantitative (Descriptive)	20[b] individuals with an ARMS	Spain	14.7-16.8 [b]	40% [b]	Instrument used: Spanish version of ERIraos checklist (Maurer et al., 2006) Findings: ERIraos checklist could help identifying individuals with an ARMS in primary care.	3 (medium)

Chen et al. (2019)	Strategy to improve identification of ARMS in primary care (RQ2)	To identify common symptoms and patterns of symptoms presented to the GPs prior to the diagnosis of first psychotic episode.	Quantitative (non-RCT – Case-control study)	3,045 patients with recorded FEP and 12,180 controls	UK	16-45 (*Me* = 30)	37.1%	Strategy: Examination of patients' medical records Findings: • Patterns of consultations: Higher number of GP consultations in patients who later develop psychosis • Symptoms: Mood disorders, 'neurotic' symptoms, behavioural change in volition, substance misuse, physical symptoms, perceptual changes (relatively rarely, but significantly more common than in healthy controls). Three distinct prodromal patterns - 1) no/minimal symptoms cluster (if symptoms, then mood or physical health), 2) Mood cluster (most commonly 2 symptoms, e.g., low mood and 'neurotic' symptoms), 3) multiple symptom cluster (e.g., mood, physical health, behavioural problems). The first two clusters were more common. Cluster one likely youngest and male; cluster three likely older and more likely female and long DUP. • Time consultation-diagnosis: 2-2.5 years (shorter for perceptual changes).	5 (high)
Falloon et al. (1996)	Strategy to improve identification of ARMS in primary care (RQ2)	Evaluation of the 'Buckingham project' - collaboration between GPs and specialist mental health services. (pilot study)	Quantitative (Descriptive)	18 GPs	UK	n/a	n/a	Strategy: Different service set-up Findings: Formal screening for ARMS in GP setting, combined with family and specialised mental health support resulted in reduced incidence of schizophrenia in the area.	Not Assessed

Perez et al. (2015)	Strategy to improve identification of ARMS in primary care (RQ2)	Establishing if 1) low intensity (postal information campaign) or 2) high intensity (postal information + theory-based educational intervention) lead to different outcomes in terms of the number of ARMS referrals from primary care.	Quantitative (RCT)	30 GP practices included in high-intensity intervention and 34 in low intensity intervention (from Peterborough and Cambridgeshire)	UK	n/a	n/a	<u>Strategy</u>: ARMS educational intervention <u>Findings</u>: High intensity intervention was more effective than low intensity intervention in increasing the number of referrals to first episode psychosis and ARMS services. High number of true and false positives referred via the high intensity group. Intervention was costly but has a potential to lead to long-term savings due to earlier detection/intervention. Low intensity intervention was no more efficient than no intervention.	5 (high)
Platz et al. (2006)	Strategy to improve identification of ARMS in primary care (RQ2)	To assess help-seeking behaviours and main presenting symptoms of individuals with an ARMS presenting to the GPs.	Quantitative (non-RCT – Cohort study)	50 individuals with an ARMS	Switzerland	21	38%	<u>Strategy</u>: Examination of patients' self-reported symptoms and help-seeking behaviour <u>Findings:</u> • <u>Symptoms</u>: Depression, social decline, social withdrawal. 'Typical' psychosis symptoms (e.g., hallucinations) were less common/rare compared to the first-episode psychosis group. • <u>Patterns of consultations</u>: GPs were most consulted for negative/non-psychosis-specific symptoms (e.g., depression).	3 (medium)
Reynolds et al. (2015)	Strategy to improve identification of ARMS in primary care (RQ2)	Evaluation of GP training (1 session) on ARMS recognition and referrals to appropriate service.	Quantitative (non-RCT – Cohort study)	29 GP practices; 54 individuals referred/identified as ARMS by the GPs	UK	*M* = 21.85 (*SD* = 4.16)	41%	<u>Strategy</u>: ARMS educational intervention <u>Findings</u>: 50% of referrals by the GPs were correctly identified as ARMS. 1hour GP training increased the number of ARMS (but not EIP) direct referrals. Increased number of false and true positives.	3 (medium)

Simon et al. (2010)	Strategy to improve identification of ARMS in primary care (RQ2)	To see if a repeated exposure (sensitisation) to the clinical vignette can improve diagnostic knowledge of ARMS in GPs.	Quantitative (non-RCT – Cohort study)	750 GPs [b]	Switzerland	n/a	n/a	Strategy: ARMS educational intervention Findings: GPs exposed to the intervention showed a significant improvement in diagnostic knowledge of ARMS at 6 - and 12-month follow-up (the effect persisted after sensitisation). This was not observed for non-sensitised GPs. Sensitised GPs also improved their knowledge of symptoms of ARMS that are often under-identified (e.g., social withdrawal and functional decline).	3 (medium)
Sullivan et al. (2018)	Strategy to improve identification of ARMS in primary care (RQ2)	To see if a primary care consultation pattern for ARMS can be used to identify patients who later develop psychosis.	Quantitative (non-RCT – Case-control study)	530 primary care practices; 11 690 patients with psychosis and 81 793 matched controls	UK	*M* = 51.34 (*SD* = 21.75)	57.4% [b]	Strategy: Examination of patients’ medical records Findings: • Symptoms: Bizarre behaviour, suicidal behaviour (strongest predictor), cannabis-associated problems, depressive symptoms, blunted affect, ADHD-like symptoms, OCD-like symptoms, social isolation, role functioning problems, mania symptoms, sleep disturbance, smoking-associated problems. Positive predictive value of symptoms greater for men than women. • Patterns of consultations: More common GP consultations; increasing number of consultations over time.	5 (high)
Jacobs et al. (2011)	Barriers/facilitators to identifying ARMS in primary care (RQ3)	Understanding GPs appraisals of ARMS.	Quantitative (Descriptive)	72 GPs	US	*M* = 52.7 [b] (*Me* = 53.0)	47.6% [b]	Barriers: Lack of knowledge about ARMS (i.e., thinking about it as schizophrenia spectrum); lack of diagnostic category to capture the symptoms of ARMS.	3 (medium)

Jacobs et al. (2012)	Barriers/facilitators to identifying ARMS in primary care (RQ3)	Exploring how different practitioners (GPs, clinical psychologists and psychiatrists) treat individuals with an ARMS.	Quantitative (Descriptive)	68 primary care practitioners	US	*M* = 52.6 (*SD* = 10.9)	48% [b]	Barriers: Lack of knowledge about ARMS, its identification and treatment.	3 (medium)
Russo et al. (2012)	Barriers/facilitators to identifying ARMS in primary care (RQ3)	To identify factors that influence the identification of individuals with an ARMS in primary care using theory of planned behaviour.	Quantitative (Descriptive)	82 GPs	UK	*M* = 45.6 (*SD* = 9.4)	47%	Barriers: Thinking that their peers (e.g., psychiatrist) would not approve them diagnosing individuals with an ARMS (systemic barriers); low level of confidence and perceived control over identification of ARMS, lack of skills. Facilitators: Positive attitudes and intentions towards identifying individuals with an ARMS, high personal motivation/interest in ARMS and mental health, knowledge of patient and their background.	3 (medium)
Simon et al. (2009)	Barriers/facilitators to identifying ARMS in primary care (RQ3)	The international GP study on early psychosis - to assess the diagnostic knowledge, treatment practices, attitudes, and preferences for support of GPs in different countries.	Quantitative (Descriptive)	2,784 GPs	International - Switzerland, Austria, UK, New Zealand, Czech Republic, Canada, Australia, Norway	*M* = 46.4 (*SD* = 9.44)	45.30%	Barriers: Lack of knowledge about ARMS (about symptoms of 'functional decline'), lack of low-threshold services to refer individuals with an ARMS to. Facilitators: Good knowledge of ‘positive symptoms’ of psychosis; being a ‘gatekeeping GP’ (have better diagnostic knowledge than non-gatekeeping GPs), practicing in ‘Commonwealth’ countries (have better diagnostic knowledge than continental European GPs).	3 (medium)

Smith et al. (2021)	Barriers/facilitators to identifying ARMS in primary care (RQ3)	To understand GPs' comfort and understanding of ARMS; to understand GPs' interest in specialised training.	Quantitative (Descriptive)	75 GPs	Australia	n/a	n/a	Barriers: Lack of knowledge about ARMS (31% of GPs not aware of the concept of ARMS) Facilitators: Motivation for further training (almost all (95%) of GPs interested in further training in YP mental health).	3 (medium)
Strelchuk et al. (2021)	Barriers/facilitators to identifying ARMS in primary care (RQ3)	To investigate GPs views about identifying individuals with an ARMS in primary care. To identify barriers and facilitators related to the identification.	Qualitative	20 GPs	UK	32-63 (*M* = 46.0, *SD* = 8.6)	40%	Barriers: Lack of knowledge about ARMS, lack of mental health training, diagnostic similarities between ARMS and other mental health problems, lack of diagnostic categories (e.g., ARMS), lack of time (short GP consultations), difficulties making appointment with the GP, high threshold for accessing secondary care, difficulties about getting an appointment in secondary care, fears about labelling patients, patients not seeking help due to lack of motivation, depression and stigma, Facilitators: Increasing knowledge about specialist referrals and ARMS treatment;	5 (high)
Tor and Lee (2009)	Barriers/facilitators to identifying ARMS in primary care (RQ3)	To compare attitudes of Singapore psychiatrists vs. GPs about ARMS.	Quantitative (Descriptive)	107 primary care practitioners	Singapore	57.9% aged between 30-40	51.40%	Barriers: Lack of knowledge about ARMS (GPs more likely to diagnose patients with psychosis), lack of confidence in identifying ARMS (less than a third of GPs advocate for screening for ARMS in high-risk groups), low confidence in treating individuals with an ARMS (almost all GPs not wanting to treat ARMS), low tolerance of psychosis-like symptoms.	2 (low)

Abbreviations: RQ1-3, Research Question 1-3, PCCL, Primary Care Checklist; ERIraos, Interview for the Retrospective Assessment of the Onset and Course of Schizophrenia and Other Psychoses (German version); EIP, early intervention in psychosis; YP, young people; ADHD, attention-deficit hyperactivity disorder; OCD, obsessive-compulsive disorder

n/a, the study did not report participants’ gender or age.

[a] Study type as defined by MMAT (quality appraisal tool)

[b] Study characteristics reported in relation to the whole sample (i.e., sub-group statistics were not reported)

In the majority (75.0%) of the studies, participants were GPs, whilst in the remaining 25.0% of studies, participants were individuals with an ARMS or first episode psychosis (FEP) patients. Studies varied considerably in terms of country (with 50.0% of studies conducted in the UK, 12.5% in the US, 12.5% in Switzerland, 6.3% in Australia, 6.3% in Spain, 6.3% in Singapore and 6.3% across multiple countries); age range in years (from 32 to 63[2] for GP participants and from 14 to 45 for patient samples); sample size (from 18 to 2,784 for GP participants and from 20 to 3,045 for patient samples); gender (percentage of females ranging from 40.0% to 57.4% for GP participants, and from 37.1. to 40.0% for patient samples). Notably, several (25.0%) studies did not report participant age and the same proportion of studies did not report participant gender.

Quality Ratings

Studies assessed varied considerably in terms of quality. The majority of studies (62.5%) were classified as ‘medium’ quality, a quarter of the studies were classified as ‘high’ quality and one study (6.3%) as ‘low’ quality. One of the included studies did not meet the MMAT criteria for quality appraisal (i.e., the study did not pass two screening questions for quality appraisal); however, the study was still included in the review. Strengths of the studies usually included appropriate sampling strategies, data analysis methods, and descriptions of measures. Limitations of the studies usually related to absence of detail regarding sample representativeness and lack of information on risk of no response bias.

Identified Themes

We identified three themes that were common across all included studies. The themes were named (i) Improving GP knowledge and confidence in identifying individuals with

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[2] Estimated age range based on reported age ranges of GPs by 7 out of 11 studies.

an ARMS, (ii) Balancing over- and under-identification of individuals with an ARMS in primary care, and (iii) Supporting GPs as significant stakeholders in early diagnosis and management of individuals with an ARMS. The relationship between the themes and this review's aims is outlined in Table 2 and the content of each theme is summarised below. Distribution of themes across the studies is available in Supporting information 4.

Table 2

Identified themes in relation to the review's aims

Aim	Results	Theme
Aim 1: The most common methods (e.g., screening tools, interviews) for identifying ARMS in primary care	Two tools identified: - PCCL checklist (French and Morrison, 2004) - ERIraos checklist (Maurer et al., 2006)	Theme 2: Balancing over- and under-identification of individuals with an ARMS in primary care
Aim 2: Methods of improving identification of ARMS in primary care	- Educational interventions for GPs - Optimising cut-off values of existing tools - Using medical-record-based prognostic models	Theme 2: Balancing over- and under-identification of individuals with an ARMS in primary care
	- Providing specialist input within primary care practices	Theme 3: Supporting GPs as significant stakeholders in early diagnosis and treatment of individuals with an ARMS
Aim 3: The most common barriers to screening for ARMS in primary care	- Lack of knowledge about ARMS - Lack of confidence in treating ARMS	Theme 1: Improving GP knowledge and confidence in identifying individuals with an ARMS
	- Limited time for individual consultations - High threshold for secondary care mental health services - Long waiting times - Patient-experienced stigma	Theme 3: Supporting GPs as significant stakeholders in early diagnosis and treatment of individuals with an ARMS

Theme 1: Improving GP knowledge and confidence in identifying individuals with an ARMS

The majority of studies identified a lack of knowledge of ARMS amongst GPs (Jacobs et al., 2011; Jacobs et al., 2012; Russo et al., 2012; Simon et al., 2009; Smith et al., 2021; Strelchuk et al., 2021; Tor & Lee, 2009). Furthermore, GPs reported not feeling confident about treating individuals with an ARMS (Jacobs et al., 2011; Tor & Lee, 2009) and finding it hard to distinguish ARMS from other common mental health disorders due to a lack of a single diagnostic category and overlap between ARMS and other mental health problems (Jacobs et al., 2011; Strelchuk et al., 2021). GPs seem to be more aware of ‘positive’ ARMS symptoms (e.g., hallucinations), rather than symptoms of functional decline (Simon et al., 2009). This is important, as studies suggest that individuals with an ARMS most commonly consult their GPs for non-psychosis-specific symptoms (e.g., depression, social withdrawal, obsessive-compulsive disorder-like symptoms) (Chen et al., 2019; Platz et al., 2006; Sullivan et al., 2018). Notably, some studies (e.g., Sullivan et al., 2018) suggest that GPs should be particularly mindful when identifying the non-psychosis-specific symptoms in young men since these symptoms seem to be a particularly strong predictors of ARMS in this population.

Theme 2: Balancing over- and under-identification of individuals with an ARMS in primary care

Simple (e.g., single session) interventions can improve GPs knowledge of ARMS (Simon et al., 2010) and improve GPs’ identification of individuals with an ARMS in primary care (Perez et al., 2015; Reynolds et al., 2015). Similarly, clinician-administered ARMS screening checklists, such as the Early Detection Primary Care Checklist – PCCL (French & Morrison, 2004) and The Early Recognition Inventory – ERIraos (Maurer et al., 2006), can potentially help with early identification of individuals with an ARMS in primary care (French et al., 2012; Quijada et al., 2010). However, although GPs seem to be interested in receiving further training on identifying individuals with an ARMS (Smith et al., 2021), research suggests that educational interventions and an ARMS checklist can often lead to a large number of false positives (French et al., 2012; Perez et al., 2015; Reynolds et al., 2015). Modifying the scoring criteria of existing checklists (French et al., 2012), using tailored cost-effective interventions (Perez et al., 2015; Reynolds et al., 2015), and developing a medical-record-based prognostic model of identifying individuals with an ARMS in primary care (Sullivan et al., 2018) all have the potential to outweigh the benefits of over-identifying individuals with an ARMS in primary care.

Theme 3: Supporting GPs as significant stakeholders in early diagnosis and treatment of individuals with an ARMS

GPs are often familiar with their patients, so they are well placed for identifying individuals with an ARMS (Russo et al., 2012). However, some logistical barriers, such as limited time for individual consultations, high threshold for secondary care mental health services, and long waiting times, represent important obstacles for identifying individuals with an ARMS in primary care (Simon et al., 2009; Strelchuk et al., 2021). GPs also reported concerns about patient-experienced stigma related to identifying individuals with an ARMS in their practices (Strelchuk et al., 2021), and concerns about other colleagues (e.g., psychiatrists) having doubts about GPs’ abilities to accurately identify ARMS (Russo et al., 2012). Providing specialist input within primary care practices (i.e., integrated services) has the potential to improve GPs’ abilities to confidently identify individuals with an ARMS in primary care (Falloon et al., 1996; Simon et al., 2009).

Robustness of the Synthesis

To assess the robustness of the synthesis, we removed two studies – the study with the lowest quality rating and the study that did not meet the criteria for a quality appraisal (Falloon et al., 1996; Tor & Lee, 2009) and re-examined the findings in relation to the identified themes. The main study findings and themes remained the same after excluding these studies.

Discussion

Main Results

This study identified and reviewed 16 studies addressing: 1) existing methods, 2) strategies to improve, or 3) barriers that prevent primary care practitioners from screening for ARMS in primary care. We identified three themes relating to GPs' knowledge and confidence in identifying ARMS in primary care, balancing the costs and benefits of identifying ARMS in primary care, and supporting GPs in early diagnosis/treatment of individuals with an ARMS.

GPs' knowledge about and confidence in identifying ARMS is generally low. Indeed, the findings suggest that GPs are well equipped for identifying PLEs, however, they often overlook the symptoms that are most strongly associated with ARMS, such as low mood, social withdrawal, and reduced functioning. Some strategies of improving GPs' knowledge of ARMS and early identification in primary care could include the use of screening tools (e.g., PCCL; French & Morrison, 2004), reviewing patients' medical records, and attending educational workshops on ARMS identification and treatment. Research suggests that these strategies are associated with higher proportions of correctly identified individuals with an ARMS in primary care. However, they also lead to a high proportion of false positives, which can be problematic, especially given the stigma associated with psychosis and related disorders (e.g., Strelchuk et al., 2021). Providing support for GPs on a systemic level (e.g., integrated services, such as OASIS in London) and developing screening tools that focus on a wide range of symptoms associated with ARMS (e.g., anxiety, low mood, social withdrawal) may lead to higher rates of correct identification of individuals with an ARMS (Fusar-Poli et al., 2013).

The results of this review are broadly consistent with the existing literature. Problems with high rates of false positives and suboptimal sensitivity/specificity ratios of

ARMS screening tools have been reported in a systematic review of ARMS screening tools in educational settings (Howie et al., 2019). Similarly, previous research also identified symptoms of affective disorders, reduced neurocognitive performance, functional impairments and nonpositive attenuated symptoms (e.g., motor disturbances) to be highly predictive of ARMS (Carrión et al., 2013; Howie et al., 2019), indicating that understanding of ARMS as a concept should be broad and not limited only to psychosis-like symptoms. Previous studies have also demonstrated that using statistical modelling of patients' medical health records to improve the identification of certain mental health problems (most commonly using 'deep learning' – a form of artificial intelligence) has been effective in identifying mental health problems (Pham et al., 2017; Su et al., 2020). However, it is important to be aware of ethical implications of such prediction models as they can undermine patients' and clinicians' sense of agency, and shared decision making (Lane & Broome, 2022). Finally, previous research also identified systemic barriers related to the early identification of mental health problems in primary care, such as limited consultation time and long waiting times for specialist services (e.g., O'Brien et al., 2016), indicating the need for systemic changes in primary care. Expansion of primary-care-based mental health services, such as involvement of mental health professionals in decision making in primary care and integrated medical-behavioural health care models, have both been associated with an increase identification of mental health problems in primary care (Asarnow et al., 2015; Haavet et al., 2021; Simon, 2009) and therefore, it is likely they could help GPs overcome barriers associated with identification of ARMS. However, only with the appropriate systemic changes, can we expect that interventions focused only on the GPs (e.g., educational workshops on ARMS) will be truly successful (Gask, 2007).

Our review identified several possibilities for further research. Firstly, there appears to be a lack of ARMS screening tools for use in primary care, and therefore, future research could focus on developing and validating short and easy-to-use ARMS screening questionnaires. Previous research with screening questionnaires for young people demonstrated that symptom impact questions often have a higher predictive value than disorder symptoms themselves (Evans et al., 2017; Goodman, 2001; Radez et al., 2021), and therefore, ARMS screening tools might achieve the optimal sensitivity/specificity ratios if including symptom impact questions. The short version of the Prodromal Questionnaire (PQ-16) (Ising et al., 2012) is an example of a short self-reported questionnaire for ARMS that includes the symptom impact items, and future research could investigate its utilisation in primary care. In addition, future research should focus in identifying optimal cut-off values for the ARMS questionnaires identified in current review (e.g., PCCL) for different populations (e.g., adults). Given a rapid expansion of the role of machine learning in mental health, future studies could also focus on further development and implementation of prediction models for identification of individuals with an ARMS based on their medical records and consultation patterns. Finally, we identified only one study that used qualitative in-depth methodology to understand GPs' views about identifying and managing ARMS in primary care, and therefore, future qualitative research should further explore how GPs want to be supported when identifying and treating individuals with an ARMS in their practices.

Implications

This review's findings have clear practical implications. Firstly, there is a need to improve GPs knowledge and confidence in identifying individuals with an ARMS in primary care. Developing and validating quick and easy-to-use screening tools and software programs could help GPs identify individuals with an ARMS.. Simple (i.e., one session) educational interventions could also aid early identification of ARMS in primary care. Educational interventions should also focus on educating GPs around potential barriers to (over)identification of individuals with an ARMS, such as misdiagnosis and unnecessary labelling of young people. Systemic factors, such as time for each GP consultation and difficulties making a referral to secondary care, need to be carefully considered when implementing identification of ARMS in primary care. Similarly, working closely with other community stakeholders and specialist mental health teams will likely make the above interventions more effective. Further, involving community stakeholders could also help GPs focus on other areas of psychosis prevention, such as reducing the exposure to risk factors (e.g., high potency cannabis use, see Murray et al., 2021) in those who may be at-risk. Finally, our review identified that a lack of a clear diagnostic category for ARMS and use of multiple terms to describe individuals with an ARMS creates further confusion and reduces clinicians' confidence in identifying ARMS. Therefore, using the same name/diagnostic label could be beneficial.

Limitations

There are limitations to this review. Due to the high heterogeneity of included studies and reporting methods, it was not possible to conduct a meta-analysis of ARMS screening tools or effectiveness of interventions to improve ARMS identification. Similarly, we were not able to compare study findings quantitatively in relation to the study characteristics (e.g., methodology used, country). Although we used broad search terms, which resulted in a high number of identified abstracts, a significant proportion of papers were identified using other (non-database) searches (e.g., forward/backwards citation searching). This may be related to the nature of the ARMS concept and a wide range of definitions. It is important to acknowledge that none of the included studies investigated how rates of individuals with an ARMS identified via primary care compare to the rates of individuals with an ARMS identified via other settings (e.g., emergency departments, educational settings) and this question remains to be explored. Finally, only one study explored cross-cultural differences (Simon et al., 2009) and therefore, future research could explore this further – in particular as ARMS service models vary significantly between different countries.

Conclusions

Early identification of those at high risk of psychosis has the potential to prevent or delay the onset of a first episode psychosis, with benefits for the individual, their families, as well as wider society. GPs are particularly well placed to identify individuals with an ARMS; however, as self-identified by the GP participants included in this review, they often lack the appropriate knowledge and tools to do so. There are a number of interventions that could support GPs to identify individuals with an ARMS accurately and promptly, including developing and validating ARMS screening tools, delivering educational workshops for GPs, using machine learning to identify individuals with an ARMS based on their medical record patterns, simplifying referrals to secondary care services, and developing integrated services. Future development and implementation of these interventions may help individuals with an ARMS to access help promptly, and delay or even prevent the onset of psychosis.

Contributions

The review's research question was developed by JR, FW and LJ. JR conducted the searches, led the abstract/full-text screening and data extraction/quality rating. EI was a second reviewer for each stage. FW and LJ oversaw each of the above and provided input at each stage. JR drafted the first version of the manuscript and FW, LJ and EI all contributed to the completion of the manuscript.

Acknowledgements

The authors would like to thank Dr Karl Marlowe and Sarah Amani of Oxford Health NHS Foundation Trust, and Dr Silvia Murgia of East London NHS Foundation Trust for providing the details on one of the UK's first ARMS detection services. The authors would also like to thank Dr Sophie Allan of Norfolk and Suffolk NHS Foundation Trust for input into the design of this review. Felicity Waite is funded by a Wellcome Trust Clinical Doctoral Fellowship (102176/B/13/Z).

The authors declare that they have no conflict of interest.

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Supporting Information

Support information 1 – PRISMA Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	10
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	11
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	11-16
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	16
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	18
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	17
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	17 Supporting information 2
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	22
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	22
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	18
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	18
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	19
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	n/a
Synthesis	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention	19-21

Section and Topic	Item #	Checklist item	Location where item is reported
methods		characteristics and comparing against the planned groups for each synthesis (item #5)).	
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	20
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	19-20
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	19
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	20-21
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	21
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	n/a
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	n/a
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	23
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	23
Study characteristics	17	Cite each included study and present its characteristics.	25-30
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	25-30
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	25-30
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	31
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	25-35
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	25-35
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	35

Section and Topic	Item #	Checklist item	Location where item is reported
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	n/a
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	n/a
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	36-37
	23b	Discuss any limitations of the evidence included in the review.	39-40
	23c	Discuss any limitations of the review processes used.	39-40
	23d	Discuss implications of the results for practice, policy, and future research.	38-39
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	11, 17
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	17
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	n/a
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	41
Competing interests	26	Declare any competing interests of review authors.	41
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	n/a

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: http://www.prisma-statement.org/

Supporting information 2 – Search Terms

Table 1

At-risk mental state	Primary care	Screening
ARMS	GP	Screen*
Ultra-high risk	G.P.	Detect*
Clinical high risk	General Practi*	Assess*
Brief limited intermittent psychotic symptoms	Family Practi*	Self* report
BLIPS	Primary Care	Question*
Attenuated psycho* symptom*	Primary Health Care	Identif*
Attenuated psycho* syndrome	Primary Care Physician*	Diagnos*
Basic symptom*	Family Physician*	Interview*
Prodrom*		
Psycho* prodrom*		
Gen* risk psychosis		
Prepsychotic		

Search terms

(“At risk mental state” OR ARMS OR “Ultra-high risk” OR “Clinical high risk” OR “Brief limited intermittent psychotic symptoms” OR BLIPS OR “Attenuated psycho* symptom*” OR “Attenuated psycho* syndrome” OR “Basic symptom*” OR “Schizophreni* Prodrom*” OR “Psycho* prodrom*” OR “Gen* risk psychosis” OR Prepsychotic) AND (GP OR “G.P.” OR “General Practi*” OR “Family Practi*” OR “Primary Care” OR “Primary Health Care” OR “Primary Care Physician”* OR “Family Physician”* OR “Family Doctor*”) AND (Screen* OR Detect* OR Assess* OR “Self* report” OR Question* OR Identif* OR Diagnos* OR Interview*)

Supporting Information 3 – Quality ratings for each individual study

Table 1

Quality ratings for each individual study

Study Type	Research questions (RQ) clear?	Collected data allow to address the RQs?	MMAT1	MMAT2	MMAT3	MMAT4	MMAT5	Total^{a}
Quantitative - Descriptive			Sampling strategy	Sample representative	Measures appropriate	Risk of nonresponse bias low	Analyses appropriate	
French et al. (2012)	yes	yes	1	0	1	1	1	4
Quijada et al. (2010)	yes	yes	1	1	0	1	0	3
Jacobs et al. (2011)	yes	yes	1	0	1	0	1	3
Falloon et al. (1996)	no	no	Not applicable - treated as non-empirical research					
Jacobs et al. (2012)	yes	yes	1	0	1	0	1	3
Russo et al. (2012)	yes	yes	1	0	1	0	1	3
Simon et al. (2009)	yes	yes	1	0	1	0	1	3
Tor and Lee (2009)	yes	yes	1	1	0	0	0	2
Smith et al. (2021)	yes	yes	1	1	0	0	1	3
Quantitative - Non-RCT			Participants representative	Measures appropriate	Outcome data complete	Confounders accounted for	Intervention administered as intended	
Sullivan et al. (2018)	yes	yes	1	1	1	1	1	5
Chen et al. (2019)	yes	yes	1	1	1	1	1	5
Reynolds et al. (2015)	yes	yes	1	1	1	0	0	3
Platz et al. (2006)	yes	yes	1	0	1	0	1	3
Simon et al. (2010)	yes	yes	1	1	0	0	1	3

Quantitative - RCT			Randomisation appropriate	Groups comparable at baseline	Outcome data complete	Assessors blinded to the intervention provided	Participants’ adherend to the assigned intervention	
Perez et al. (2015)	yes	yes	1	1	1	1	1	5
Qualitative			Qualitative approach appropriate	Data collection methods suitable for research question	Findings derived from the data	Interpretation of results substantiated by data	Coherence between qualitative data sources, collection, analysis and interpretation	
Strelchuk et al. (2021)	yes	yes	1	1	1	1	1	5

[a] Total sum score ≤ 2 = ‘low’, Total sum score of 3 and 4 = ‘medium’, Total sum score of 5 = ‘high’ quality.

MMAT1-MMAT5, 5 items assessing studies’ quality based on the Mixed Methods Appraisal Tool (MMAT, 2018, see http://mixedmethodsappraisaltoolpublic.pbworks.com/w/file/fetch/127916259/MMAT_2018_criteria-manual_2018-08-01_ENG.pdf)

Supporting Information 4 – Distribution of themes across the studies

Table 1

Distribution of themes across research studies, included in the review

	Theme 1: Improving GP knowledge and confidence in identifying individuals with an ARMS	Theme 2: Balancing over- and under-identification of individuals with an ARMS in primary care	Theme 3: Supporting GPs as significant stakeholders in early diagnosis and treatment of individuals with an ARMS
French et al. (2012)		▨	
Quijada et al. (2010)		▨	
Chen et al. (2019)	▨		
Falloon et al. (1996)			▨
Perez et al. (2015)		▨	
Platz et al. (2006)	▨		
Reynolds et al. (2015)		▨	
Simon et al. (2010)		▨	
Sullivan et al. (2018)	▨	▨	
Jacobs et al. (2011)	▨		
Jacobs et al. (2012)	▨		
Russo et al. (2012)	▨		▨
Simon et al. (2009)	▨		▨
Smith et al. (2021)	▨	▨	
Strelchuk et al. (2021)	▨		▨
Tor and Lee (2009)	▨		

Service Improvement Project (SIP) Paper

The experience of seeking and accessing help from mental health services amongst young people of Eastern European backgrounds: A qualitative interview study.

Candidate: Dr Jerica Radez (jerica.radez@hmc.ox.ac.uk)

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External supervisor: Dr Felicity Waite (felicity.waite@psych.ox.ac.uk)

Date of submission to the Course: April 2023

Journal: This manuscript was submitted to *Psychology and Psychotherapy: Theory, Practice and Research* on May 2nd 2023. This journal was chosen due to being an internationally reputable journal for publications reporting research in anxiety, depression, psychosis, and other common mental health conditions. In addition, the journal accepts empirical research using rigorous qualitative research methods. Author guidelines are available in Appendix B.1.

Word-count: 4,943 words

Abstract

Objectives: Most lifetime mental health problems (MHP) start before the age of 25. Yet young people – particularly those of minority backgrounds – often do not seek or access professional help. In the UK, young people of Eastern European (EE) backgrounds represent a large minority group; however, little is known about their experiences of MHP and help-seeking. In this study we aim to understand the help-seeking process from the perspectives of EE young people.

Design: We used a qualitative study design with semi-structured individual interviews. The results were analysed using reflexive thematic analysis.

Method: Twelve young people (18-25 years) of EE backgrounds, living in Oxfordshire, UK, took part. All participants had experienced a severe MHP and were identified in the community.

Results: EE young people's experiences of MHP and help-seeking were driven by a sense of being caught between different cultures and simultaneously needing to navigate the potentially contrasting expectations of both cultures. This process was reinforced or tempered by the perceived continuing influence of young people's families, i.e. families with more open views about MHP made it easier for young people to navigate through the process of help-seeking. Young people's internalised cultural and familial beliefs about mental health affected their help-seeking decision-making when experiencing mental health difficulties, their levels of trust in health services, and their perceived sense of resourcefulness and ability to cope with the situation.

Conclusions: Recognising and responding to the cultural tension that young people of EE backgrounds may experience can help us to develop more accessible and inclusive mental health services.

Keywords: youth mental health; early intervention; thematic analysis; barriers and facilitators

Practitioner Points (2 to 4 points)

- Navigating different cultural expectations whilst experiencing MHP can make the process of help-seeking difficult for young people of EE backgrounds.
- The key culturally influenced barriers EE young people described were more stigmatising societal and familial views of mental health problems and help-seeking, lack of trust in (mental) health services, and culturally reinforced beliefs about coping with mental health problems (e.g., not seeing mental health problems as serious enough to require professional support).
- EE young people identified a range of strategies that could facilitate their help-seeking, such as improving their knowledge of MHP and available help, reducing mental health stigma in EE communities, and informing young people about what to expect from professional help.
- Mental health services could become more accessible for young people of EE backgrounds by promoting a safe and compassionate culture, including young people in service development (i.e., co-production) and offering a range of different choices (e.g., therapists of the same or different backgrounds, therapy available in different language).

Introduction

Mental health problems (MHP) usually start in childhood and adolescence, with peak age at onset of MHP at 14.5 years (Solmi et al., 2021) and nearly three-quarters of lifetime MHP starting before the age of 25 (Kessler et al., 2007). Prevention, identification, and early treatment of MHP in young people can have a positive impact on their health and wellbeing (Marmot et al., 2008). However, young people often do not access appropriate support (Merikangas et al., 2010; Sadler et al., 2018), and access rates are particularly low for young people from non-White minority ethnic groups (Bui & Takeuchi, 1992; Kataoka et al., 2002). The data also show that young people from non-White groups access services through different pathways compared with their White counterparts (e.g., Edbrooke-Childs & Patalay, 2019), highlighting the importance of understanding and addressing the reasons for these discrepancies. However, less is known about minority White young people and their access to mental health care.

Eastern Europeans (EE) represent a large (> 2.2 million) minority in the UK (ONS, 2019), and due to the lack of visible differences to their White-British (WB) peers, their experiences of mental health services may be overlooked (Peñuela-O′Brien et al., 2023). However, research studies with adults suggest that cultural differences and mental health stigma associated with historical and socio-political factors may continue to shape EE’s perceptions of MHP and help-seeking (Peñuela-O′Brien et al., 2023; Winkler et al., 2017). Furthermore, recent local (e.g., the UK leaving the EU) and global events (e.g., the Ukrainian war) may contribute to higher levels of uncertainty, as well as racism and xenophobia targeted at UK-resident EE (Rzepnikowska, 2019), and increase their risk of experiencing MHP (Schouler-Ocak et al., 2021). However, to our knowledge, researchers have not yet explored the experiences of MHP in young people of EE backgrounds living in the UK.

In this qualitative interview study, we set out to explore how young people (aged 18-25) of EE backgrounds make decisions about seeking professional help for their MHP and what they see as the main barriers and facilitators in the help-seeking process. The study was set in Oxfordshire, UK, which is a diverse area, and the proportion of people from EE backgrounds in some parts of the county (e.g., Oxford city) is four times higher than in most parts of the country (ONS, 2022). Whilst local community mental health services (e.g., Oxfordshire Early Intervention Service – EIS) report seeing a representative proportion of EE young people with severe MHP (e.g., psychosis), young people of EE backgrounds seem to be under-represented at the early stages of MHP (e.g., in Child and Adolescent Mental Health Services – CAMHS), i.e., during the peak time for the onset of MHP and key opportunity for prevention and early intervention. Understanding the reasons for this treatment gap could help clinicians to develop more accessible mental health services. In particular, it is important to understand help-seeking from the perspectives of young people who have not yet successfully accessed mental health support (i.e., young people living in the community).

Service Evaluation Component

This Service Improvement Project (SIP) was commissioned by the Oxfordshire Early Intervention Service (EIS) in 2021. Although an audit of the referral data suggested that the proportion of EE people seen in the service is representative of the proportion of EE people in the region (i.e., roughly 10% of the Oxfordshire population), the clinicians working in the service reported that people of EE backgrounds tend to 1) access support when symptoms of their MHP become very severe and interfering, and 2) be less engaged with the mental health service. A subsequent additional audit of referrals to local CAMHS suggested that young people of EE backgrounds seem to be significantly under-represented in mental health services, with the number of referrals being half that expected based on the Census data (i.e., 5% vs. 10%).

Method

Design

We conducted a qualitative interview study using Reflexive Thematic Analysis (Braun & Clarke, 2006, 2019). The study was granted ethics approval by the University of Oxford Central University Research Ethics Committee (CUREC) (reference R79066/RE001).

Participants

Participants were recruited in the community. Researchers shared a study flyer with various community stakeholders, including the University of Oxford colleges, Oxford-based EE societies and associations (e.g., Ukrainian society), and Healthwatch Oxfordshire. Study flyers were distributed in different community venues (e.g., EE supermarkets) across the county and on social media.

Overall, 14 young people contacted the lead researcher (JR) after seeing the study flyer. One participant subsequently declined to participate, and one participant was ineligible, resulting in 12 participants. Young people were included if they were: aged 18–25 years, identifying as EE (e.g., Polish), having a lived experience of a severe MHP (e.g., severe and interfering anxiety, low mood, psychosis), living in Oxfordshire, sufficient conversational English for interview, and able to provide informed consent.

Procedure

The lead researcher (JR) shared a participant information leaflet with potential participants and then assessed their eligibility via telephone. If eligible, participants were assigned a pseudonym and then JR conducted arranged a qualitative one-to-one interview at a time convenient for participants. The interviews took place remotely (via MS Teams) with an average duration of 50 minutes *(SD* = 9 minutes, range from 42 to 74 minutes) and participants were reimbursed for their time. We used an interview topic guide (see Supplementary Materials) flexibly – by adapting the order of questions to the narrative of each participant. Interviews were audio recorded on a password-encrypted audio recorder. Interviews were transcribed verbatim. Participants were sent a short summary of the study findings after completion.

Public and patient involvement

All study materials (i.e., study flyer, participant information leaflet and interview topic guide) were developed with patient and public involvement (PPI), including young people with experience of MHP and people of EE backgrounds. We also sought PPI input for the study results to ensure that our interpretation of study findings was meaningful for the target population.

Analysis

Interviews were analysed using six stages of Reflexive Thematic Analysis (Braun & Clarke, 2006, 2019), which was led by JR. In the first stage of analysis, JR familiarised herself with the data, which included transcribing, listening, and re-listening to the interviews. JR also kept a reflexive journal in which she noted down initial ideas associated with each interview and ideas that emerged during the data analysis (an example of a Reflexive Journal note is available in Supplementary Materials). In the second stage of analysis, JR generated an initial set of codes. This was done by a cyclical and iterative process in which codes were frequently refined and renamed, for example, the codes ‘brought up in a religious environment’ and ‘religious extended family members’ were refined to ‘affected by religious beliefs’. JR coded for explicit and implicit contents (e.g., a code ‘lack of trust’ was assigned when a participant asked not to be quoted). NVivo (QSR International Pty Ltd, 2021) was used to help organise the codes. The initial set of codes was then reduced by grouping into families of codes (e.g., codes ‘transgenerational trauma in EE’, ‘lack of trust due to the past communist regime’ and ‘austerity in EE countries’ were grouped into a higher order code, ‘EE historical factors affecting perception of mental health’). Further, families of codes were refined where appropriate. JR, FW, and LJ then generated the initial set of themes by collating related families of codes. At this stage, we sought connections between families of codes and attempted combinations of grouping and regrouping families of codes (see Supplementary Materials for an example) to generate themes. During this process, we paid particular attention to culturally informed themes/subthemes. Identified themes were then reviewed by JR checking whether the themes were directly related to families of codes, as well as the entire dataset. Connections and relationships between themes and subthemes were also established by re-examining participants’ narratives about their individual help-seeking experiences. JR then presented the final set of themes to FW and LJ to discuss naming of the themes, which were then refined multiple times. The final set of themes was then presented to a member of PPI, who acted as a member of a research team at this stage and shared their views of the themes and subthemes naming. In the sixth stage of Reflexive Thematic Analysis, the researchers produced a study report by providing evidence for the generated themes, including supporting quotes.

Positionality statement

The researchers had extensive previous experience in conducting research on help-seeking in young people. In addition, the lead researcher shared similar cultural background to the participants (i.e., Central/Eastern European). The team regularly reflected on the impact of their research interests, previous experiences, and personal experiences on the process of data collection, analysis, and interpretation.

Results

Participant Characteristics

Table 1 outlines participant characteristics, with participants ordered based on their recruitment. Mean participant age was 20.7 years (*SD* = 1.4 years) and more than half of participants (58.3%) described themselves as Polish, with the remaining participants from Slovakian, Romanian, and Albanian backgrounds. One participant described themselves as ‘mixed’ background. Table 1 also outlines the participants’ main presenting difficulties. The majority of young people (75%) described experiences of severe anxiety and/or low mood. In addition, young people also described experiences of obsessive-compulsive disorder, post-traumatic stress disorder, body dysmorphia and bulimia. Notably, all participants reported perceiving their mental health problems as ‘severe’ – i.e., highly distressing and significantly interfering with their everyday life (e.g., impairing their abilities to go to school or to study). Participants had varied help-seeking experiences; notably, most participants who had sought and accessed professional help in their home EE country accessed this via private healthcare, whereas all participants who reported accessing professional help in the UK managed to do so free of charge (i.e., via the University or NHS mental health services).

Table 1

Participant characteristics

Pseudonym	Lived experience of MHP[a]	Help-seeking experience	
		Type of help	When
Becky	Low mood with suicidal thoughts	Has never sought professional help	
Ben	Low mood	Twice sought and accessed – with a college tutor (UK) and a private psychologist (EE)	Both since starting the university

Leah	Eating disorder (bulimia)	Twice sought and once accessed – an unsuccessful attempt (UK), a successful attempt (EE) – a private psychologist	Since starting the university (UK), as a teenager (EE)
Natascha	Anxiety, low mood, body dysmorphia	Twice sought and accessed - counselling via the university (UK) and a private therapist (EE)	Since starting the university (UK), as a teenager (EE)
Kate	Anxiety, obsessive-compulsive disorder, low mood with suicidal thoughts	Sought and accessed multiple times (UK) - specialist mental health services	On multiple occasions since childhood
Dawn	Recurrent depression, social anxiety	Sought and accessed once (EE) - a private therapist[b]	Since starting the university
Wanda	Low mood, history of trauma	Sought and accessed once (EE) – a private therapist[b]	Since starting the university
Amy	Post-traumatic stress disorder	Sought and accessed once (UK) - GP and counselling via the university	Since starting the university
Shaun	Obsessive-compulsive disorder	Twice sought and once accessed - an unsuccessful attempt (UK), a successful attempt (EE) – a private therapist[b]	On multiple occasions since childhood
Bella	Anxiety, low mood	Sought and accessed once (UK) - counselling via the university	Since starting the university
Nick[c]	Low mood	Sought and accessed once (UK) - counselling via the university	Since starting the university
Tina	Anxiety, low mood	Sought and accessed once (UK) - counselling and psychiatrist - via the University	Since starting the university

[a] Participants' self-described lived experience of MHP and not a formal diagnosis given by the researchers,
[b] Participant is living in the UK and currently receiving professional help from EE therapist (remotely),
[c] Participant asked not to be quoted.

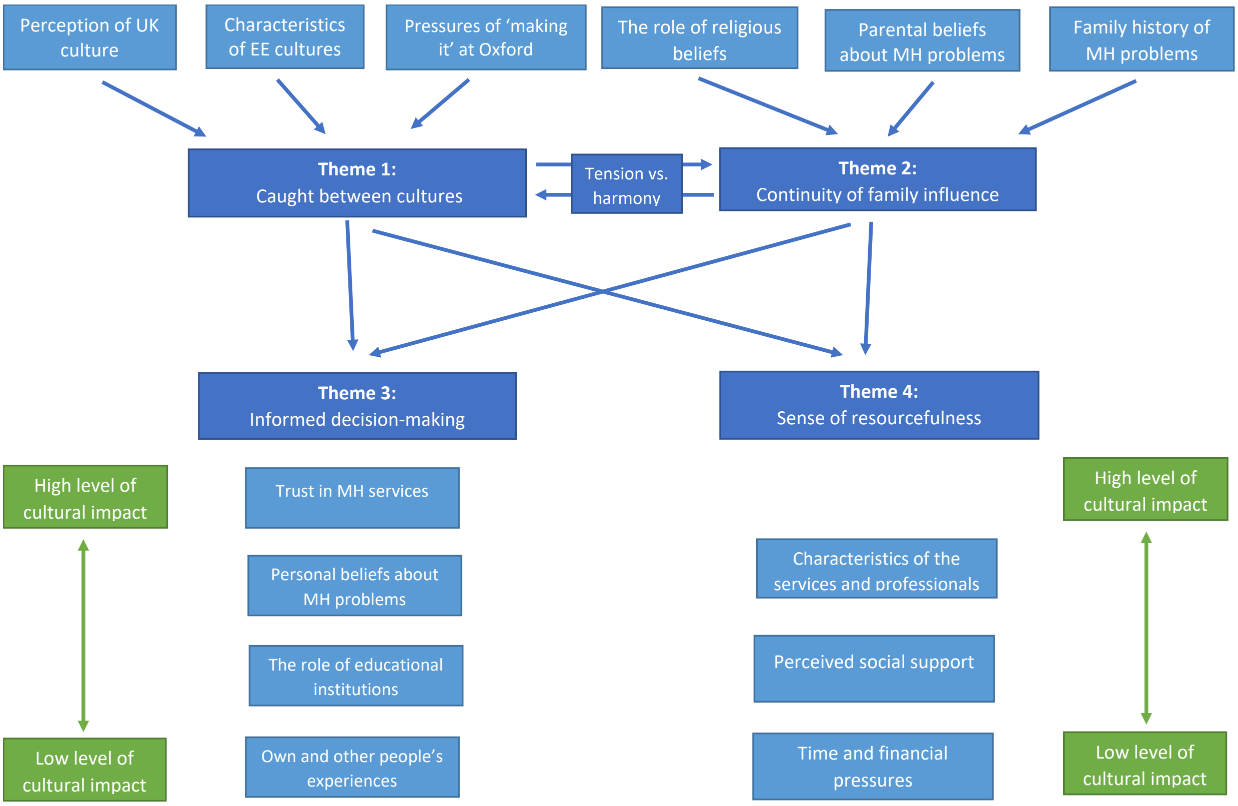
Themes and Subthemes

We identified four themes describing EE young people's experiences of seeking professional help for their MHP: (i) caught between cultures, (ii) continuity of family influence, (iii) informed decision-making, and (iv) sense of resourcefulness. Young people's narratives were led by their sense of feeling caught between their own EE culture and UK culture, and this sense was either further reinforced or tempered by the influences of young people's families. Both internalised cultural and familial beliefs further shaped young people's decision-making when experiencing MHP and affected their perceived sense of resourcefulness when coping with their difficulties.

Figure 1 outlines identified themes, subthemes, and their relationships, as well as the levels of cultural impact for subthemes identified within themes three and four. Themes with examples of quotes are outlined below. Further quotes, as well as the distribution of participants' responses across the themes, are available in Supplementary Materials.

Figure 1

Identified themes and subthemes



Theme 1: Caught between cultures

> *…some people like me can be quite lucky and they will find support in people around them, and people who will tell them 'no, you're not making this up, it does sound like what you're going through is very difficult, and I feel sorry for you', but other people may be*

> *surrounded by people who are more immersed in the Eastern European culture, which just tells you to toughen up and carry on with your life. So those people might not even realise that what they're experiencing is mental health, and that they should be seeking help for it.* (Becky, 20)

This was one of the two central themes describing EE young people's experiences of MHP and help-seeking. EE young people's perceptions of UK culture, characteristics of EE cultures, which young people carry with them (even upon moving to the UK), and worries around feeling under pressure to 'make it' in Oxford, all contributed to young people's sense of feeling caught between cultures.

Most young people reported appreciating the more **open and normalising approach to MHP in the UK** compared to their EE home countries, where high levels of stigma and shame around MHP was described. Bella (23) said: '*…here I feel like going to therapy, getting mental health is very normalised now. You know, a lot of like famous people said like they've been going to therapy, and they could help them and it's something normal. While like, yeah, like in Poland I think it will still be like shocking if someone like came, you know, like came out...*'. Young people reflected why that might be the case, and they identified certain **characteristics of EE communities** (e.g., the communities being perceived to be very enclosed, mistrustful) as one of the main reasons. Participants linked these characteristics to relevant historical factors pertinent to EE, such as a strict, communist regime, as described by Leah (22) – '*…I think my family is quite new to the whole mental health problem thing, because, yeah, they were kind of raised in a, in a kind of sparsity culture, rather than abundance, so there wasn't too much space for these sorts of, I guess they would say next level conversations, that aren't just around physical health and you know, just getting the food and hygiene and that kind of stuff…*'. Some young people also reported that their EE native language makes it hard for them to talk about MHP. For instance, Natascha (20) found it hard to describe body dysmorphia to her family – ‘*…I wouldn't even know how to describe this to my family. No, yeah, there's no words that I can use to, you know, openly talk about it, or properly talk about it, or not make it seem like it's nothing, but also not making it seem like it's a very big thing. Yeah, it's a language barrier…*’. Some participants reported finding it difficult to express their MHP to their families upon their moving to Oxford – due to feeling **‘*guilty*’ for not fulfilling family expectations and fully embracing the opportunities** they have by studying in such an ‘elite’ place. Dawn (21) said: *‘I think quite a few of us get imposter syndrome when reaching out for help, especially since, yeah, in Oxford like…we have such a privileged background now and maybe there’s like survivors’ skills often of like, you made it out the country, you did all these things, you look back home, and like the rest of my family’s not doing that well economically and like, it’s like ‘well why I am complaining?’, so…*’. This illustrates how young people’s pressures of needing to fulfil their own, parental, and cultural expectations can act as a barrier in seeking professional help for their MHP.

Theme 2: Continuity of family influence

> *…I had friends with mental health issues, and I remember being 15 and finding out that one of my closest friends was cutting, being very confused about what that meant, talking to my parents about it and my parent’s response was, ‘you shouldn’t be friends with her anymore’. So, I think that kind of, again, influenced my views about my own mental health.’* (Wanda, 20)

Continuity of family influence was the second central theme in EE young people’s narratives, and it describes how participants’ experiences of mental health problems are shaped by their primary families. Notably, these influences can either exacerbate or temper young people's sense of feeling caught between different cultures.

Participants differed in terms of what **beliefs their parents held around MHP**, with some participants reporting their parents seeing MHP as a sign of weakness, whereas other participants, like Shaun (23) seeing their parents as very open to these topics – '*…Yeah, so, so my family, well the younger generation is, well understand it [mental health] pretty well. Well, especially my parents and they have been very supportive throughout my whole life really'*. Some participants also reported **a history of MHP within their family**, and notably, this usually represented a barrier in EE young people's help-seeking – in particular if parental experiences were associated with shame, stigma, and fears of potential repercussions, as described by Dawn (21) '*I wanted to go to some kind of psychologist, but my dad was very much against it… He told me that they would write up everything I say and then I won't be able to get a job because that's how it looked in his times*'. Finally, this theme captures the interplay between **religious beliefs** within the primary family, extended family, and wider social context, and participants' experiences of MHP. Most participants reflected on the (mainly negative) role of traditional religious beliefs on help-seeking in their home country. For instance, Amy (19) described the sense of guilt in relation to young people's experiences of depression due to someone's own responsibility for becoming unwell being imposed by the Catholic church – '*I've like heard, less so my aunties and uncles, but like my Grandparents, like if someone's suffering they're like, oh 'they were probably a bad person, they've been sinning a lot and this is God's punishment for them*''.

Theme 3: Informed decision-making

… I grew up in the same school since I was 6 until I graduated at 18, so, erm, I knew a lot of the teachers, and although they must have noticed that something was kind of wrong or

> *something, no one really called it out, except for one like PE teacher who was also like my friend, she said it once, and I don't think it had an impact on me too much…* (Leah, 22)

EE young people's decision making when experiencing MHP was informed by the continuing influence of their family, as well as their sense of feeling caught between cultures, leading to some barriers and facilitators identified within this theme being more (e.g., trust in mental health services) and some less (e.g., own and other people's experiences) culturally informed than others.

Some EE young people reported feeling **mistrustful about (mental) health services** in their own country, which could act as a barrier when considering help-seeking in the UK. Tina (20) said: '*I wouldn't have seen anyone in Romania, like any therapist…there's notorious problems with [the] Romanian health system, you know, like sort of, if you get lucky you will be treated very well and, you know, there will be no problem, but if you're unlucky, you know, then you might be worse off than at the start'*.. Young people also talked about the **role of various stakeholders** (e.g., primary/secondary schools, universities, parents, friends, and partners) in their understanding of their MHP and making decisions to seek help, such as recognising symptoms of MHP and knowing where to get help. Related to that, the theme also captures how young people's **personal appraisals of MHP** can act as a barrier or facilitator to help-seeking, as described by Ben (20), who decided not to seek help: '*I thought, and still kind of do, but not to that extent, that, I still kind of believe, that like mental problems, that I have at least, were not like purely medical things, but they were some things I was able to figure out myself.'*. In addition, young people's **own or other people's (lack of) experiences** of mental health and help-seeking can further inform their help-seeking decision-making process. For instance, Kate described being affected by a negative experience of professional help: '…*I think, objectively, some of the stuff that was said, or the kind of attitudes that were shown* *were a bit questionable. One time, I was in hospital for a suicide attempt and one of the Crisis Team said to my mother, 'oh, she'll be back again soon' and that didn't really feel like a great message to be receiving when I was already at a very low point'.*

Theme 4: Sense of resourcefulness

> *…If it was like a Polish therapist that had like typically Polish cultural religious mindset, I don't think I'd feel comfortable talking to them. But if it was someone who was aware of like the typical Polish cultural mindset and they opposed it, so they like experienced it, but also understood the importance of seeking out mental health support, I'd probably feel more comfortable speaking to them than someone who, like, had no idea like an English therapist…* (Amy, 19)

Two central themes – caught between cultures and continuity of family influence - also shaped EE young people's sense of resourcefulness when experiencing MHP and seeking/accessing help.

An important culturally informed factor affecting young people's sense of resourcefulness are **perceived characteristics of mental health services**, such as (lack of) their cultural awareness. Kate (19) said: '*…I think a lot of British professionals don't have a great awareness that it's not as simple as 'go talk to your parent'. It's not as simple as like, 'have this conversation, start it…', you know, that's not a feasible answer for a lot of people because sometimes the cultural differences can be massive and if you've never, ever had a conversation, it's really difficult'*. Some participants also reported **professionals' characteristics** that might facilitate their help-seeking, such as a preference for therapists of their gender and age. Young people's **perceived social support** (e.g., support by their partners, friends) was also identified as a significant contributor to the sense of resourcefulness, and notably, young people valued this support even if their close ones were living abroad (i.e., in their home EE countries). Tina (20) described an experience of her social support facilitating help-seeking: '…*I think a friend told me, like…he told me, sort of, 'maybe you should like talk to someone', you know, 'because this is worrying'. It's just like, you know, 'it seems like quite bad'. And I think that I agreed with him*'. Finally, young people named **time and financial pressures** as important factors affecting their sense of resourcefulness, with the majority of young people identifying their own and professionals' lack of time and availability, as well as high costs of private support as one of the barriers to accessing help. Amy (19) said – '…*there's some who are able to afford it, they can like seek out help privately if like, private therapy and stuff but that's not accessible for everyone. I know that when I first like sought help I did get a lot of resources from the welfare team at college and quite a few of them were like paid, that I'd have to pay for therapy, or like some sort of counselling workshops and stuff, that's something that's definitely not accessible to me*'. Notably, all participants who reported receiving private therapy did this remotely with a therapist from their own country.

Discussion

In this study, we set out to understand how young people of EE backgrounds living in the UK make decisions about help-seeking for their MHP, and what they perceive as the most common barriers and facilitators in this process. To our knowledge, this was the first study investigating the views of young EE people on this topic in the UK. We identified a number of culturally informed barriers to seeking help, such as: high stigma and shame associated with MHP, lack of trust in (mental) health services, the tendency to keep things private (i.e., within the family), strong religious beliefs that can reinforce someone's sense of guilt for experiencing MHP, and transgenerational 'negative attitudes' towards MHP and help-seeking (e.g., self-reliance and not seeing MHP as being as serious as physical health problems) in EE cultures.

The results of this study also highlight young people's need to navigate the (often conflicting) relationship between the expectations of their EE culture and British culture. However, a few young people reported very open views about MHP in their immediate families. Young people also talked about generational differences in people's understanding of MHP, with older generations finding these topics particularly stigmatising. Participants said that one of the reasons for large generational differences might be related to older generations growing up in times of atrocities related to the Cold War, which made people particularly mistrustful and unlikely to talk about contentious topics like MHP. Notably, all these societal and familial cultural differences affected young people's decision-making when struggling with their own MHP. In particular, the experience of lack of trust in (mental) health services in their EE countries might sometimes act as a barrier to trusting the services in the UK. Finally, young people's cultural views and expectations also informed their perceived sense of resourcefulness when seeking help, with some young people reflecting on a concern that British therapists may not necessarily understand EE young people's background, which may have affected their decisions to not seek help.

In addition to many culturally specific barriers to help-seeking, outlined above, EE young people in our study also identified a range of other, more general barriers, such as logistical barriers (e.g., lack of time and money) and preference to rely on themselves when facing MHP. This is consistent with the key findings of systematic reviews on young people's help-seeking for a wide range of MHP (Gulliver et al., 2010; Radez et al., 2020). However, to our knowledge, these systematic reviews did not include any studies focusing on the experiences of EE young people, which highlights the importance of the qualitative approach in unpicking the cultural nuances pertinent to this group.

Our study has clear clinical implications. Based on the views of the young people interviewed, clinicians might find it beneficial to adopt a curious approach when working with young people of EE backgrounds. For instance, clinicians might find it helpful to ask young people about their family background and how it may have affected their relationship to MHP and help-seeking. In terms of fostering trust in mental health services, young people suggested that clinicians could ensure they clearly explain what to expect from mental health support and how their information will be used. Clinicians might also find it helpful to promote a culture of safety, dignity, compassion and avoidance of stigma and coercion to help build trust in services in EE communities (Gaebel et al., 2014). Furthermore, young people might appreciate clinicians' awareness of socio-political factors pertinent to EE countries (e.g., wars, communism) that can affect the relationship of young people, and their support network, to mental health, as well as contribute to some specific MHP within the family (e.g., transgenerational trauma).

In terms of wider systemic and service implications, participants in our study suggested that offering a choice of therapists (i.e., therapists of the same or different backgrounds) might help them navigate through the cultural tensions and make informed decision-making about help-seeking. Services should also aim to offer therapy in different languages, which might be particularly important for young people who are less well educated. All participants also reported appreciating the opportunity to take part in the research study focusing on EE communities, and therefore, one of the strategies for increasing the levels of trust and engagement with mental health services in EE communities might be including EE young people in the commissioning, planning, and delivery of mental health services (co-production). Notably, it will be also important to consider the views of young people who have already successfully accessed mental health support. Mental health services, as well as educational institutions, such as schools and universities, can also aim to improve young people’s knowledge of MHP and reduce mental health stigma in EE communities through outreach activities (e.g., mental health talks in community centres, places of worship) and by involving members of EE communities in research.

Limitations

This study has several limitations. Firstly, all participants were university students, and most of them self-identified as being from socio-economically privileged backgrounds, meaning that the participants in this study may not be representative of the population of EE young people in the region. The invitation to participate was circulated in a number of community venues and channels, and it is possible that the lack of response from non-student EE young people reflects higher levels of mental health stigma in this population and other (e.g., language) barriers. Furthermore, no participants had an experience of psychosis, which might indicate a particularly strong stigma around more serious MHP in EE young people. Finally, it is important to acknowledge the researchers’ previous experience and interests in understanding and facilitating help-seeking in young people, which might have led them to interpret the results of the current study through the lenses of previous research.

Conclusions

Help-seeking in young people is a complex process and being a young person of a minority background can further complicate this process. Young people of EE background represent a significant minority group in the UK, and the results of this study suggest that they can experience a range of culturally influenced barriers in the process of seeking and accessing mental health support. One of the most common barriers was related to young people's need to navigate the views of their own, as well as UK culture, and the cultural views of their own culture being further imposed by their immediate families. Mental health professionals have a responsibility to maintain a curious and open approach to young people of EE backgrounds and explore their culturally informed views and expectations in relation to mental health and help-seeking. It is particularly important for the practitioners, as well as the services, to work on fostering trust in mental health services in young people of EE. In addition to mental health services, young people in this study also suggested that educational and research institutions could reduce the barriers to help-seeking by improving young people's knowledge about common MHP and available help, and reducing mental health stigma. Finally, young people in this study were clear about the importance of their views being considered when talking about making mental health services more accessible. Including young people through coproduction might be the key to developing more inclusive and easily accessible mental health services in the future.

Acknowledgments: The authors thank study participants and members of patient and public involvement for sharing their stories and contributing to the design of this study and preparation of study materials. The authors also thank the University of Oxford, Oxford colleges, Healthwatch Oxfordshire, and other local institutions and societies for their help with the recruitment. Finally, the authors thank Dr Mat Lister of Oxford Health for his support in linking with local CAMHS services.

JR was supported by funding for professional clinical psychology training by Oxford Health NHS Foundation Trust. FW is funded by a Wellcome Trust Clinical Doctoral Fellowship (102176/B/13/Z).

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Supplementary Materials

The experience of seeking and accessing help from mental health services amongst young people of Eastern European backgrounds: A qualitative interview study.

S1 – Interview Topic Guide

Introduction: *Many young people experience mental health problems. However, they can often find it hard to get help. In this interview, I will be interested to hear more about you, your experiences, and ideas for better helping young people when they experience mental health problems.*

This interview will last approximately one hour and there will be no right or wrong answers. I will only be interested in what you think.

Understanding of SMHP

1. Can you tell me about your understanding of mental health problems?
   - Probe: what does 'having a serious mental health problem' mean to you?
   - Probe: how can you tell if someone of your age is struggling with serious mental health problems?

2. How do people in your community view mental health problems?
   - Probe: how do people in your family see serious mental health problems?
   - Probe: how do your friends perceive serious mental health problems?
   - Probe: what makes you/your family/friends think about serious mental health problems in a certain way?

Personal experience of SMHP and help-seeking

3. Can you tell me about your experience with mental health problems?
   - Probe: who played the most important role in helping you identify symptoms of a serious mental health problem in you?
   - Probe: what role did your family play in identifying symptoms of a serious mental health problem in you?
   - Probe: who are your friends? what role did your friends play in identifying symptoms of a serious mental health problems in you?
   - Probe: what role did school/college/work play in identifying symptoms of a serious mental health problems in you?
   - Probe: do you have any religious beliefs? If so, what role did these play in identifying symptoms of a serious mental health problem in you?

4. Have you sought *any* help for your symptoms of serious mental health problems?

   a) *If yes – can you describe this experience to me*?

   - Probe: where did you seek help? Who did you speak to?
   - Probe: what made you speak to that particular person?
   - Probe: have you sought help with professionals (including schoolteacher or your GP)?

   b) If no – What stopped you from seeking help?

   - Probe: what stopped you from speaking with your family/friends?
   - Probe: what stopped you from speaking to a professional (including school teacher or your GP)?
   - Probe: what role did you family/friends play in you not speaking to a professional?

Attitudes towards help-seeking

5. What do you think about speaking to other people about symptoms of serious mental health problems?

   - Probe: Some people think it is brave to speak about symptoms of serious mental health problems, others think the opposite. What do you think?
   - Probe: Who do you think plays the most important role in how you see help-seeking for serious mental health problems? School/friends/family? Why?
   - Probe: What would you think about someone else who speaks about their mental health problems to other people?

6. Do you think that you would think about help-seeking differently if you were living in another country (e.g., Poland – *adapt based on participant's nationality*). *If yes* – how do you think that living in a different country affects your thoughts about help-seeking?

Barriers to help-seeking

7. Now let's think about professional help only. What do you think are the main reasons that stop young people like yourself from seeking professional help for symptoms of serious mental health problems?

   - Probe: How easy/hard it is for young person like yourself to get professional help for symptoms of serious mental health problems?

- Probe: Would your friends know where and how to seek and access professional help for symptoms of serious mental health problems?
- Probe: What role does a family/friends play in young person seeking and accessing professional help for symptoms of serious mental health problems?
- Probe: What role does someone’s cultural background/nationality play in young person seeking and accessing professional help for symptoms of serious mental health problems?

Facilitators to help seeking

8. In Oxfordshire, many people like yourself do not seek professional help for their serious mental health problems. What do you think are things that could make it easier for young people like yourself to seek or access professional help?
    - Probe: How would you want the professional services to look like?
    - Probe: What kind of services do you think would be most interesting/attractive for young people like yourself?
    - Probe: what kind of person would young people like yourself find it easiest to talk to? What role does the professional’s nationality play in that?
    - Probe: How do you think that people around you could help you seek/access professional help?
    - Probe: what do you think that professionals can do to make the services more available and accessible for young people like yourself?

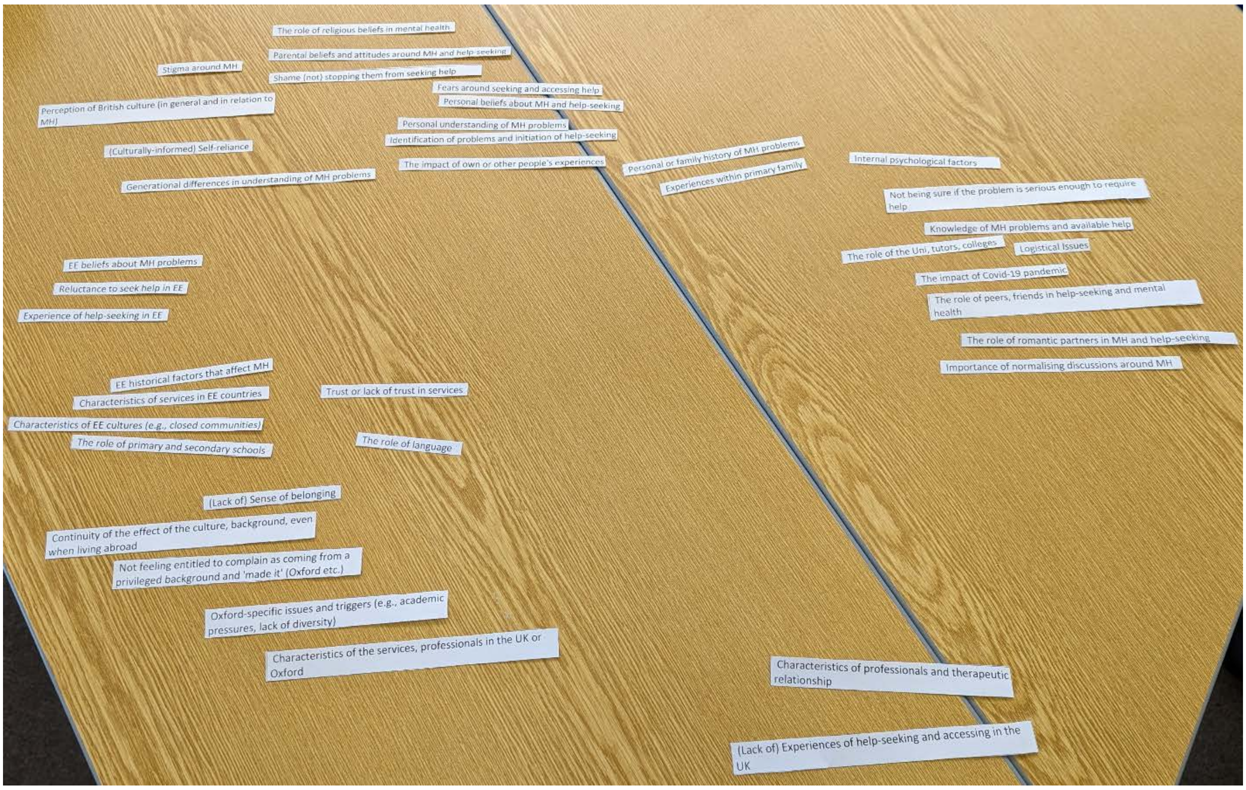
Ending

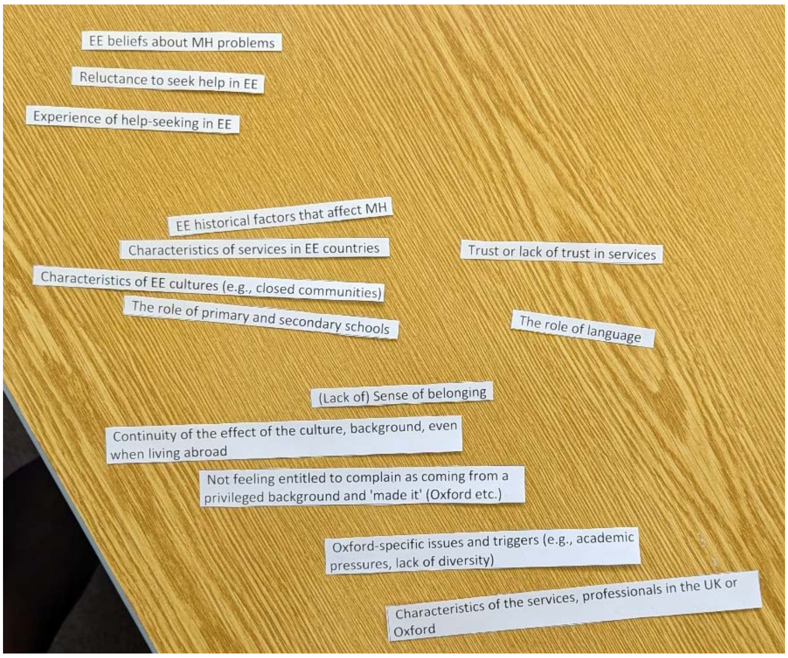
9. Finally, is there anything we haven’t discussed and you think is relevant for the purpose of this discussion?

S3 – Examples of notes from Reflective Diary

Event	Personal reflection
Participant describing only realising that a school psychologist existed in their school years upon finishing.	Remembering that there were two school psychologists in my school, but they were only dealing with ‘naughty children’. Going to a psychologist to speak about anxiety and depression was never something anyone considered doing.
Participants describing EE beliefs about ‘fixing’ things, including mental health problems.	Thinking about the experiences in my own country, especially when talking to older generations, they are often reluctant to speak about mental health issues, and offer practical solutions instead (e.g., going for a walk).
Participants describing feeling privileged to come from a background that is supportive and remains supportive even upon them moving to the UK.	Reflected on my own personal experiences of always feeling supported by my primary family, even upon moving to the UK, and thinking about the advantages of being in this position.
Organising codes – i.e., grouping initial set of codes in the families of codes	Had ideas/names for families of codes in my mind from conducting another study on help-seeking. Had to actively push that prior knowledge to the side and think more about the current project and its novelties.

S3 – Example of grouping and re-grouping of family of codes





S4 – Additional Quotes

Theme 1: Caught between cultures	
Perceptions of British culture	*But here, you say you're anxious, there are something that, I mean, people listen and not only that, people kind of try to give you solutions in a way, or like try to be like 'hey, you could talk to someone' or 'hey, you can do this' or 'hey you can do that' , but they don't necessarily try to ask or justify it, which I think is very mindful.* (Natascha)
Characteristics of EE cultures	*I think it's largely sort of the heritage of it [mental health] not having been a topic when they were growing up, and I think that in, in let's say the East, we didn't go through this, let's call it 'revolution' that the West did, that it became an issue that was talked, that it became an issue a focus for the NHS, for example, we don't have that so we just carry on with this, you know, sort of archaic approach of not really talking about mental because everyone is sad from time to time, erm, yeah so I really think it's a cultural thing.* (Becky)
Pressures of 'making it' at Oxford	*Another factor is you...and that's something even I have felt with my pretty open attitude that I can be letting my family down cause, you know, they've cared for me that well and they've given me everything that I possibly could have wanted, and they were very supportive and then I still have a lot of stupid mental health problem, and I felt that well, I'm not, you know, I'm not being grateful enough to my parents because I'm, well, clearly I could be, you know, depressed or have OCD if I was raised in a house where they didn't support me, but I was raised in a fantastic house.* (Shaun)
Theme 2: Continuity of family influence	
Family history of MH problems	*I could never suggest like to my Grandma, for example, 'oh you should go to therapy' because she would be offended. And I don't know like my Mum, which is kind or weird like, she had told me like recently she thinks my Dad has like a bipolar disorder, which was like, she should not diagnose that. But like no-one ever diagnosed that, but I know that no-one ever will, because my Dad will not go to like a psychologist or psychiatrist. Because like it is perceived, you know, as if there's something like, wrong with you.* (Bella)
Parental belief about MH problems	*I think it was more like, 'you can live with it, it's not bad enough to stop you doing stuff', because like…and I guess he [father] did seek help and he said it didn't hep him and he's still doing all this stuff, and I guess, I get it, like he did give up his job, you know, he left his friends and that to come to this country and that's gonna create a certain attitude in you.'* (Kate)

The role of religious beliefs	*I know the access to mental health services in Poland is really bad and definitely not taken seriously, plus also the very like conservative religious minds that would definitely have more blame put on to me for being raped. It wouldn't be considered, like, everyone I've spoken to [in the UK] are like, 'oh it's not your fault'. But I don't think this is what I'd be met with in Poland.* (Amy)
Theme 3: Informed decision-making	
Trust in MH services	*I think it's more the culture itself and for me it was repercussions of seeking help. Unfortunately sometimes there are repercussions of, I dunno, if there was this huge view that was instilled of me of nobody's gonna want to hire me and this is gonna be like a huge issue for the rest of my life. And if you go in already struggling and thinking that you are-- it does-- it feels like it's such lose, lose situation because you reach out and you already don't trust services because you've been taught to not trust the services. There is this view of like crazy people and you get locked up...* (Wanda)
Personal beliefs about MH problems	*Well I think that the biggest one is like just being kind with yourself and allowing yourself to accept that you feel that way cause I feel like I do it also sometimes. Like when I feel bad or like, you know, I have bad thoughts, it was like difficult for me, I always tell myself like it's my fault, I'm just lazy, I just don't want to do my work and I think that it's accepting that you can get help.* (Bella)
Own and other people's experiences	*So, yeah, basically that was the point where I really tried to get help. It was so bad I actually ended up asking a priest for help because, you know, everywhere was booked out, I mean, I went to college counsellor, but you know how they are completely booked out... So, then I'm talking to a pastor about it which is just terrible.* (Tina)
The role of educational institutions	*Maybe like at the beginning when they [university students] just join, to have some kind of introduction like, you know, we have a lot of introduction course like talks in the first week. Maybe have like 10, 15 minutes talk about mental health kind of... I forgot the nice word, but kind of like make it more accessible, like explaining what it is. Kind of trying to like get rid of all this bias that people from this country [Poland] may have.* (Bella)
Theme 4: Sense of resourcefulness	
Characteristics of the services and professionals	*...maybe things like, un-understanding of people's backgrounds, erm, because, especially in the UK, the diversity of the professionals makes quite a big difference, because you have people coming from all sorts, from all sorts of countries, backgrounds, like economic statuses, I'm sure that makes a difference. Erm, and like therapist match.* (Leah)

Perceived social support	*Yeah, well I have a good friend who's here in Oxford as well and erm he's always... I'd say, very smart guy, and he has a very similar perspective to me, erm when it comes to life let's say. So when we talk to each other about this topic, sometimes, like we will understand each other really well, like I feel I would be better if I talk to this guy...So we are both confident that a different perspective [professional] would be helpful, but…* (Ben)
Time and financial pressures	*...I always wanted – in Oxford – to be a place that...you just go there, you just have some tea and somebody to talk to because otherwise you're all the time alone, in your room or in the study session... and it would be just nice to have some place where you could talk to somebody face to face or to someone that is going through the same stuff you do... So, being able to just sit somewhere, go somewhere… yeah.* (Dawn)

S5 – Distribution of themes across study participants

Theme	Caught between cultures			Continuity of family influence			Informed decision-making				Sense of resourcefulness		
Subtheme	Perception of UK culture	Characteristics of EE cultures	Pressures of 'making it' at Oxford	The role of religious beliefs	Parental beliefs about MH problems	Family history of MH problems	Trust in MH services	Personal beliefs about MH problems	The role of educational institutions	Own and other people's experiences	Characteristics of the services and professionals	Perceived social support	Time and financial pressures
Becky	■	■		■				■				■	■
Ben	■	■						■	■	■	■	■	
Leah		■		■				■		■	■	■	■
Natascha	■	■		■				■		■	■	■	■
Kate		■		■	■	■		■			■	■	■
Dawn	■	■		■	■			■		■		■	■
Wanda		■	■		■		■	■	■	■	■	■	■
Amy		■		■	■	■		■	■		■	■	■
Shaun		■	■						■	■	■	■	■
Bella	■	■		■	■			■				■	■
Nick		■		■		■	■	■	■		■	■	■
Tina		■	■	■			■	■	■		■	■	■

Theory Driven Research Project (TDRP) Paper

Understanding unusual sensory experiences: a randomised experimental study of a school-based intervention for adolescents.

Unusual Sensory Experiences in Adolescents - USE-A.

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Date of submission to the Course: October 2022

Journal: This empirical research paper was published in *Child and Adolescent Mental Health* (https://acamh.onlinelibrary.wiley.com/doi/full/10.1111/camh.12651) in March 2023 (see Appendix C.1). This journal has been selected as it is an internationally recognised journal of research in child and adolescent mental health. In addition, the journal has a relatively high impact factor and is popular with practitioners and academics. Author guidelines are available in Appendix C.2.

Word-count: 4,282 words

Abstract

Background: One in ten young people experience unusual sensory experiences (USE), such as hallucinations. From a cognitive perspective the appraisal of USE determines the impact of these experiences. Negative appraisal, as well as other psychological processes (e.g., thinking flexibility, maladaptive schemas, anxiety/depression), are associated with more distress. Our aim was to i) develop a universal single-session school-based intervention on USE for adolescents and ii) evaluate the effect of the intervention on appraisals of and help seeking intentions for USE.

Methods: A randomised controlled experimental design with a one-month follow-up was used to test the effectiveness of the intervention in one school. Students (*n*=223) aged 12-13 were randomised by class to a single-session intervention on USE or a control intervention (generic mental wellbeing). Participants completed measures of appraisals of and help-seeking intentions for USE at pre-, post-intervention, and at one-month follow-up. They also completed measures of schemas, thinking flexibility and anxiety/depression at pre-intervention.

Results: Overall, 190 adolescents completed the main outcome measures at all three points. The intervention on USE led to a significant ($p<0.05$) increase of positive appraisals of USE compared to the control, with effects sustained at one-month follow up. The intervention on USE did not lead to significantly greater help-seeking intentions for USE ($p=0.26$). Adolescents’ schemas were associated with appraisals, and slow thinking and anxiety/depressive symptoms with help-seeking behaviour for USE.

Conclusions: A single-session universal school-based intervention shows promise by improving appraisals of USE. Further research is required across different school populations.

Key Practitioner Message

- Unusual sensory experiences (USE) are experienced by up to 15% of children and adolescents in the general population. Although usually transient, they can lead to high levels of distress and stigma for some young people.
- From a cognitive perspective, the way that young people make sense of USE (appraisal) is crucial in determining the distress and impact of these experiences. Psychoeducational interventions aiming to increase normalising and non-threatening appraisals of USE for young people might reduce the negative impact of these experiences.
- We designed and evaluated a single-session school-based intervention for young people aged 12-13 years. We compared the intervention with a control condition (i.e., generic wellbeing intervention).
- Adolescents receiving the intervention on USE reported more positive appraisals of USE immediately after the intervention and at one-month follow-up. The intervention did not lead to changes in help-seeking intentions for USE. In general, more adaptive schemas were associated with more positive appraisals of USE, whereas lower levels of anxiety/depressive symptoms and slower (i.e., rational) thinking were associated with higher intentions to seek help for USE.
- Results of this study suggest that a simple, single-session psychoeducational intervention focused on adolescents’ appraisals of USE has the potential to lead to positive and lasting changes in appraisals of USE.
- Future research should focus on developing and evaluating psychoeducational interventions that also target identified protective factors.

Introduction

Between 10 and 15% of children and adolescents in the community report experiencing unusual sensory experiences (USE), such as visual and auditory hallucinations (Kelleher et al., 2012, 2015). In this study, USE are described as all situations where there is a discrepancy between what is perceived by a young person and what exists in the real world. We focused on multimodal sensory experiences, i.e., auditory, visual, olfactory, gustatory, and bodily sensations (e.g., Jardri et al., 2014), and other less well-known sensory experiences, such as sensing the presence of another person. Although commonly associated with symptoms of serious mental health problems, such as psychosis, USE for young people usually spontaneously resolve (Bartels-Velthuis et al., 2011). However, young people can find these experiences distressing (Parry et al., 2021) and highly stigmatising (Bogen-Johnston et al., 2019), which is associated with persistence of these experiences.

Cognitive models of USE and similar psychotic-like experience (PLEs) emphasise the central role of appraisals (the way that people make sense of experiences) in determining the impact of USE and predicting the distress and subsequent need for professional help (Freeman, 2016; Garety et al., 2001; Morrison, 2001). Research with adults suggests that personalising, distressing, and threatening appraisals of USE lead to higher levels of impact and distress, whereas normalising and supernatural appraisals of USE tend to be associated with a more favourable outcome (Gaynor et al., 2013; Peters et al., 2017; Ward et al., 2014). Similarly, recent studies with young people suggest that developing personal meaning-making explanations of USE leads to lower levels of distress than understanding USE through the lens of a potential serious mental health problem (Parry & Varese, 2021).

There are many different psychological processes (henceforth referred to as ‘covariates’) that are associated with someone’s appraisals of USE. One cognitive model argues that dysfunctional appraisals of USE are maintained by reasoning processes (e.g., belief inflexibility), maladaptive schemas (i.e., negative beliefs about oneself, other people, the world), adverse social environments, emotional processes (e.g., anxiety and depression), and secondary appraisal (e.g., stigma associated with mental health and help-seeking) (Garety et al., 2001). Although there is no single accepted psychological model of USE in adolescents, research suggests that psychological processes identified in adult models, such as maladaptive schemas (Anilmis et al., 2015), reasoning processes (Hassanali et al., 2015), and internalising/externalising problems (Lancefield et al., 2016) apply to young people as well. Understanding the role of the above processes in predicting the distress of USE is important as it can help us develop targeted interventions for reducing 1) the negative impact and 2) the stigma associated with USE for young people (Gin et al., 2021).

Psychoeducation focusing on normalising and destigmatising USE can be instrumental in reducing the overall distress and negative impact of USE for young people (Maijer et al., 2019; Parry & Varese, 2021). Given the high prevalence of USE in the adolescent general population, there is an opportunity to deliver psychoeducational interventions through educational settings (Parry & Varese, 2021; Parry, 1992). However, existing school-based interventions mainly focus on common mental health problems, such as anxiety and depression (Fazel et al., 2014), despite clinicians’ and young people’s preference for interventions with a transdiagnostic focus (Garralda, 2015; Kapur et al., 2014). The recently developed and evaluated CUES-Ed is a universal school-based intervention, focusing on promoting non-stigmatising appraisals of USE in primary age children. The intervention is delivered through eight school lessons and the preliminary results in pre-adolescent children are promising (Underwood et al., 2021). However, to our knowledge, no school-based intervention has yet focused only on USE and been provided to adolescents.

In this randomised controlled experimental study, we aimed to develop and evaluate a single-session school-based intervention on USE in adolescents. The study had two primary and two secondary hypotheses. In our primary hypotheses we predicted that, compared to a control condition, the intervention would (i) lead to an increase in positive (e.g., normalising) appraisals of USE in adolescents, and (ii) lead to an increase in young people's help-seeking intentions regarding USE. We also hypothesised that these effects would be maintained over time (measured at one-month follow-up). Our secondary hypotheses predicted that the intervention would lead to a higher increase in positive appraisals/help-seeking intentions in individuals with i) higher levels of flexibility of thinking, ii) positive self-perceptions/schemas, and iii) lower levels of anxiety and depression symptoms.

Method

The study was pre-registered at the Open Science Framework (Radez et al., 2022).

Interventions

Understanding Sensory Experiences in Adolescents (USE-A)

The USE-A is a single session (40 minute) educational session delivered in school by a mental health practitioner with the aim of increasing adolescents' understanding of USE. The intervention consisted of the following topics: 1) definition of USE including examples of sensory experiences that are odd and unexpected (e.g., optical illusions, auditory hallucinations), and reasons for different sensory experiences (e.g., lack of sleep, drugs, illness, high anxiety, grief), 2) explanation using a cognitive model including examples of how different interpretations of sensory experiences influence the way we feel and act in response to them (e.g., how threatening interpretations of USE lead to higher levels of negative emotions and can increase an overall impact and distress of these experiences), and 3) help-seeking for USE (i.e., examples of when and where to seek help for USE).

The intervention – based on the cognitive models of psychosis (e.g., Garety et al,. 2001) – was developed by JR, FW, and LJ and modified upon consulting additional researchers and clinicians working with young people. The contents of the intervention were also informed by treatment protocols for managing USE in adults (e.g., Dodgson et al., 2021). In addition, the researchers sought input from mental health charities and secondary school teachers. The final version of the intervention was piloted with young people aged 11-13 to ensure it was understandable and engaging for the target population.

Control Intervention

A single session (40 minute) educational intervention on general mental health and wellbeing topic was developed as an active control condition. The control intervention was entitled “Be physically active – 5 steps to mental wellbeing” and this topic was selected by the participating school.

Procedure

This study took place in a large (>1,500 pupils) mixed state school in Southeast England. The school distributed parental study information leaflets and opt-out forms electronically to all parents of Year 8 (12-13 years) students (*N*=270) in April 2022. At the same time the school also electronically distributed adolescent information leaflets to all Year 8 (12-13 years) students. After two weeks, a researcher delivered one of the interventions in person during one school lesson (60-minutes). All classes (*n*=10) were randomly assigned to either the experimental or control intervention, with class being used as a clustering variable. Prior to each intervention, adolescents were asked to fill in five brief questionnaires (see Measures), taking approximately 15 minutes in total. Following initial questionnaire completion, the intervention was delivered which lasted up to 40 minutes. Adolescents were then asked to fill the Appraisals Measure and GHSQ immediately after the intervention. All the interventions were delivered within two weeks with nine delivered by the lead researcher (JR) and one by another researcher (LJ). For the follow-up, adolescents were asked to fill in the Appraisals Measure and GHSQ after approximately one month. This was done using paper forms during the class tutor time. The lead researcher (JR) collected paper forms from the school as soon as they were completed. After data collection was completed, all young people in the control condition were given access to a pre-recorded intervention on USE via e-learning. No personal data were collected, and students used anonymised, unique ID codes to ensure that their follow up questionnaire responses were matched.

Measures

The measures used to assess help-seeking, anxiety and depression symptoms, and schemas have all been developed and evaluated with young people. However, there is a lack of validated measures of appraisals of USE and reasoning processes in young people. Therefore, we adapted the appraisals measure for ‘unusual experiences in children’ developed by Bradley et al., (2013). To ensure that the final set of outcome measures was appropriate to use with young people, we piloted the questionnaire measures with young people aged 11-13. All young people reported finding the measures appropriate and understandable.

Primary outcome measures

Measure of Appraisal of USE. We generated a 6-item measure assessing appraisals of USE using item specific response options (see Appendix S1). The 6-item measure was an adaptation of the 3-item measure developed by Bradley et al. (2013). The 3-item measure included questions relating to three aspects of appraisals (externality, agency, and threat). For the purpose of this study, we added three additional items reflecting the remaining aspects of appraisals of USE as specified by Brett et al. (2007) – Valence, Abnormality, and Controllability. The questionnaire started with a probe (i.e., *Imagine hearing things that other people cannot hear or seeing things that other people cannot see. What would you think about this experience most of the time?*), adapted from the existing measure (Bradley et al., 2013). The probe was followed by six sentences, for each sentence the young person had to select an ending from five item-specific options. Item-specific response options were chosen due to research studies demonstrating the superiority of this approach over the traditional agree/disagree response options (Saris et al., 2010). Item responses were sorted beginning with the ones reflecting more negative appraisals of USE and ending with the ones reflecting more positive appraisals of USE. Each response was assigned a numerical value of 1 to 5 with higher values indicating more positive appraisals.

Before calculating the total appraisals score, a psychometric evaluation of the measure was performed (see Appendix S2). Following the results of this evaluation, participants' responses to items 1, 5 and 6 (Threat, Abnormality, and Valence) were summarised and are subsequently used in main analyses as a measure of participants' appraisals. Participants' responses to remaining three items were included in descriptive analyses only.

General Help-Seeking Questionnaire - GHSQ (Wilson et al., 2005). The GHSQ is 10-item questionnaire measuring help-seeking intentions for mental health problems in young people. For each question, the individual reports how likely they are to seek help from a specific source. The total score is calculated by summing participants' responses to all 10 items. The GHSQ has adequate psychometric characteristics when used in general population (Deane et al., 2001; Rickwood et al., 2004). Questionnaire instructions were adapted for the purpose of this study (i.e., asking adolescents about help-seeking for USE rather than for emotional or personal problems as in the original questionnaire).

Secondary outcome measures

Fast and Slow Thinking (FaST) questionnaire (Hardy et al., 2020). FaST is a 10-item questionnaire measure of reasoning processes. FaST measures fast (e.g., 'jumping to conclusions') and slow (e.g., thorough review of the evidence) reasoning biases that can contribute to the development and distress of a wide range of experiences, including

USE (Daalman et al., 2013). The original questionnaire was developed for paranoid thoughts, and therefore the initial probe was changed for this study (i.e., “When I have a paranoid or suspicious thought…” was changed to “When I have an upsetting thought about a situation…”) to make the opening more suitable for the general population. The FaST questionnaire has two subscales (Fast thinking and Slow thinking) and adolescent responses to appropriate items were summarised to calculate subscale scores.

11-item version of the Revised Children’s Anxiety and Depression Scale (RCADS) (Radez et al., 2021)**.** We used the 11-item version of the RCADS (henceforth referred to as ‘RCADS-11’), which consists of six items assessing anxiety and five items assessing depression symptoms in young people. In this study, we used an overall total score, which was calculated by summarising participants’ responses to all items.

Schema Questionnaire for Children – SQC (Stallard & Rayner, 2005). The SQC is a 15-item self-report questionnaire of early maladaptive schemas. Each item is rated on a visual analogue scale of 1-10 ranging from ‘not believing’ to ‘highly believing’ in each statement. Total SQC is calculated by summarising responses to all 15 items and a higher score indicates less adaptive schemas.

Sample Size Calculation

We computed an *a priori* power analysis using the ‘WebPower’ package (Zhang & Mai, 2018) in R Studio. With an alpha level of .05, power .80 and effect size (f) of .25, the required sample size was approximately N=156 for the planned main analyses (i.e., repeated measures ANOVA).

Analysis

Questionnaire responses were entered into a spreadsheet, checked, and cleaned. We then analysed the missing data and performed sensitivity analyses. This was followed by calculating item-level descriptive statistics (Means and Standard Deviations) and item-level differences between the experimental and control group (Mann-Whitney *U*-tests) for the main outcome measures (the Appraisals Measure and GHSQ). We then calculated baseline scale/subscale differences in the main outcome variables and covariates between the intervention and control group (independent samples *t*-tests with the effect sizes – Cohen's *d*), and reliability analyses for all included measures. The main analyses included mixed model analyses of variance (ANOVA) with three different time points (pre-, post- and follow-up) for both main outcome variables (help-seeking and appraisals of USE) as within subject factors and intervention (USE intervention and control intervention) as between subject factors. For our exploratory hypotheses, covariates (thinking flexibility, dysfunctional schemas, anxiety/depression symptoms) were included in ANOVA models. Prior to running ANOVAs, the data were checked to meet all the assumptions to conduct the analyses. To estimate the practical meaning of our findings, effect sizes (partial η^2) were calculated. All analyses were conducted in IBM SPSS 27 (IBM Corp., 2020) and we used the α level of 0.05.

Results

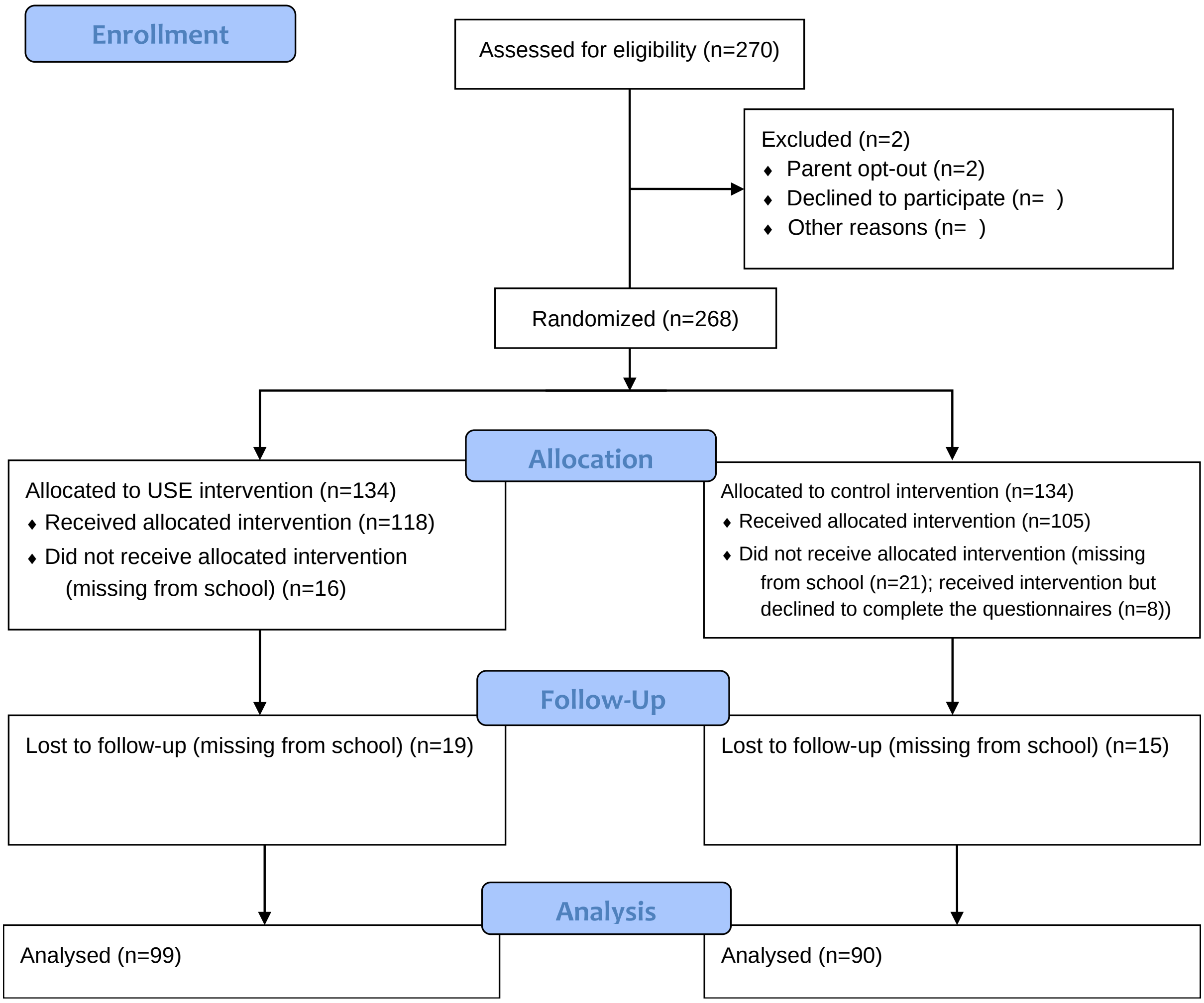
Missing Data Analysis

Across the whole sample, the proportion of missing responses on any of the completed questionnaires was low (range 0–5.2%) (see Appendix S3) and therefore only complete cases were used in further analyses (Scheffer, 2002). Out of 223 adolescents taking part in the intervention and completing at least one of the first two sets of questionnaires, 34 (15.2%) were lost due to attrition at the follow-up.

We performed sensitivity analyses by conducting a series of *t*-tests by comparing means of the main outcome variables between adolescents with full questionnaire responses and adolescents that were lost due to attrition (Twisk, 2013). None of the differences were significant and therefore it was concluded that the missing data was missing completely at random (MCAR) (Rubin & Little, 2019). Due to the large sample size and adequate power, and the assumption of MCAR being satisfied, the listwise deletion was used to handle the missing data (Kang, 2013). Figure 1 outlines the process of study enrolment.

Figure 1

Consort 2010 Flow Diagram of study phases



Preliminary Analyses

Descriptive statistics for individual items included in the main outcome measures across three time points are presented in Appendix S3. Appendix S3 also includes a table of baseline differences in the main outcome measures across both groups. Notably, the only statistically significant baseline difference was observed on GHSQ where participants in the control group reported significantly lower help-seeking intentions ($t(205)=2.29$, $p<0.05$); however, the effect size of this difference was small ($d=0.32$).

Reliability of Measures

Reliability coefficients ranged from 0.628 to 0.912. Table outlining reliability coefficients for all measures across the whole dataset and within each group is presented in Appendix S4.

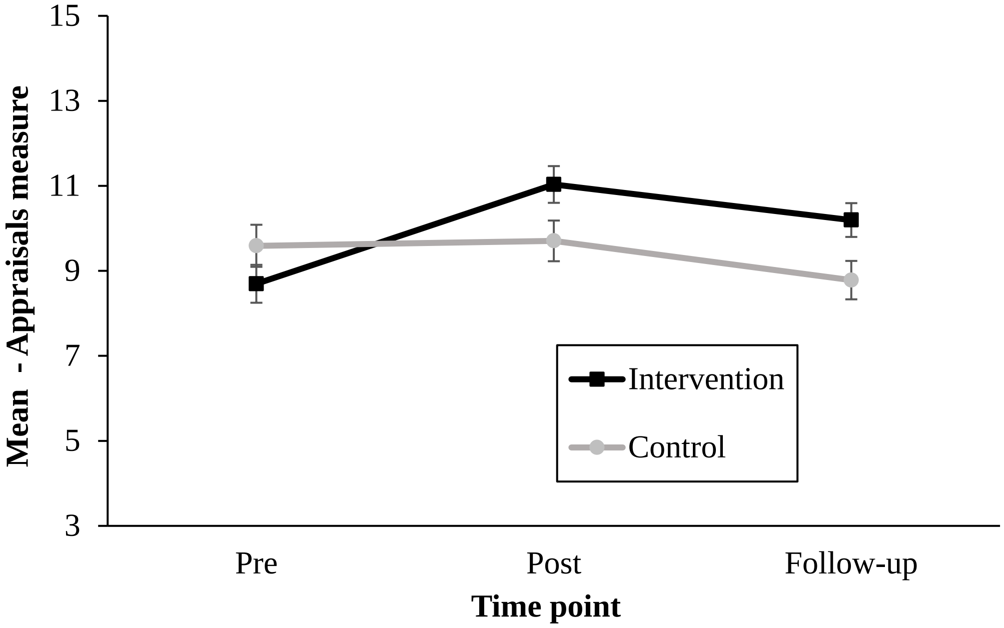
Main Analyses

(i): Effect of intervention on adolescents' appraisals of USE

Mixed ANOVA analysis identified a significant effect of time ($F(1.9, 315.9)=34.01$, $p<0.01$, $\eta^2_P=0.17$), a significant effect of interaction between time and type of intervention ($F(1.9, 315.9)=36.41$, $p<0.01$, $\eta^2_P=0.18$), and a significant effect of the intervention ($F(1, 168)=5.11$, $p<0.05$, $\eta^2_P=0.03$) on adolescents' appraisals of USE. Figure 3 illustrates the nature of interaction between the between-subject variable (intervention type) and within-subject variable (time).

Figure 3

Estimated marginal means for Appraisals with 95% error bars for each group and across three different time points



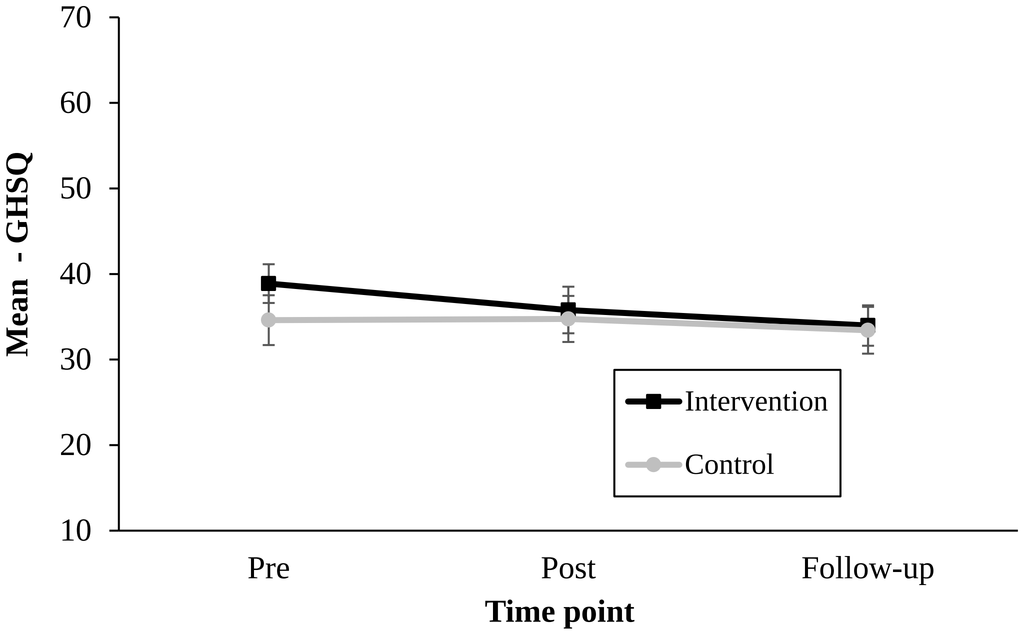
Post-intervention, participants in the USE group reported more positive appraisals of USE compared to those in the control intervention. Post-hoc comparisons showed that these differences remained statistically significant at the one-month follow-up (M_d=1.33, p<0.01).

(ii): Effect of intervention on adolescents' help-seeking intentions for USE

A significant effect of time on adolescents' help-seeking intentions for USE was identified ($F(1.8, 272.7)=12.04$, $p<0.01$, $\eta^2_P=0.07$). There was also a significant interaction between the type of intervention and time ($F(1.8, 272.7)=5.30$, $p<0.01$, $\eta^2_P=0.03$), indicating differences in help-seeking intentions between the USE and control group at various time points. However, the effectiveness of intervention itself was not statistically significant ($F(1, 151)=1.26$, $p=0.26$, $\eta^2_P=0.01$). Further post-hoc analyses showed that the interaction was only significant for time point 1 (before the intervention) (M_d=4.27, $p<0.05$) with the differences between both groups decreasing over time. This can be also seen in Figure 4.

Figure 4

Estimated marginal means for GSHQ with 95% error bars for each group and across three different time points



(iii): Examination of covariates in the relationship between adolescents' appraisals of USE and type of intervention

Correlations between the main outcome variables (Appraisals Measure and GHSQ) and covariates were calculated first (see Appendix S5). Appraisals Measure (across different time points) was significantly negatively associated with the SQC and

RCADS-11. There were no associations between Appraisals Measure and FaST-FT/FaST-ST scores and therefore these were not included in the model as covariates.

When controlling for SQC and RCADS-11 scores, the effect of time remained significant (*F*(1.9, 274.1)=7.34, $p<0.01$, $\eta^2_P=0.05$). Further, the interaction between the type of intervention and time remained significant (*F*(1.9, 315.9)=28.12, $p<0.01$, $\eta^2_P=0.16$), whereas no significant interaction was identified between SQC score and time (*F*(1.9, 315.9)=0.65, $p=0.65$, $\eta^2_P=0.00$) and RCADS-11 score and time (*F*(1.9, 315.9)=0.64, $p=0.52$, $\eta^2_P=0.00$).

The main effect of intervention remained significant after controlling for the covariates (*F*(1, 145)=4.62, $p<0.05$, $\eta^2_P=0.03$) and adolescents' SQC scores were significantly associated with appraisals of USE (*F*(1, 145)=5.63, $p<0.05$, $\eta^2_P=0.04$), indicating that adolescents with more positive beliefs about themselves/others/the world reported more positive appraisals of USE. Adolescents' RCADS-11 scores were not significantly associated with the appraisals of USE (*F*(1, 145)=0.05, $p=0.82$, $\eta^2_P=0.00$).

(iv): Examination of covariates in the relationship between adolescents' help-seeking intentions for USE and type of intervention

GHSQ scores were found to be significantly associated with all covariates and therefore, all 4 variables were included in a further ANOVA model.

After controlling for covariates, the effect of time on adolescents' help-seeking intentions was no longer significant (*F*(1.8, 218.9)=1.32, $p=0.27$, $\eta^2_P=0.01$), but the interaction between the intervention type and time remained significant (*F*(1.8, 218.9)=4.45, $p<0.05$, $\eta^2_P=0.03$). Controlling for covariates slightly increased the observed effect of intervention of GHSQ scores, however, the effect of intervention itself still failed to reach statistical significance (*F*(1, 125)=2.78, $p=0.10$, $\eta^2_P=0.02$). Finally, two covariates were identified as significant – FaST-ST (*F*(1, 125)=9.42, $p< 0.01$, $\eta^2_P=0.07$) and RCADS-11 (*F*(1, 125)=10.24, $p<0.01$, $\eta^2_P=0.08$). Results regarding covariates indicate that adolescents with slower thinking and lower level of anxiety and depressive symptoms reported being more likely to seek help for USE.

Discussion

We set out to investigate the effectiveness of a universal school-based psychoeducational intervention on adolescents’ appraisals of USE and help-seeking intentions for USE. We also explored the associations between adolescents’ schemas, cognitive flexibility, and anxiety/depression symptoms and appraisals of USE/help-seeking for USE. We found that the single-session intervention was effective in increasing positive appraisals of USE and these effects were sustained over time. Contrary to our expectations, the intervention did not lead to an increase in help-seeking intentions for USE. Finally, we identified significant associations between 1) adolescents’ schemas and appraisals of USE, and 2) cognitive flexibility and anxiety/depression symptoms and help-seeking intentions for USE.

The results of this study are broadly consistent with the previous research investigating the effectiveness of a similar CBT-based universal school-based intervention delivered over eight sessions with preadolescent children (CUES-Ed; Underwood et al., 2021), where researchers reported an overall reduction of cognitive vulnerability (i.e., a composite measure including negative appraisals of USE, as well as stigmatising beliefs about USE and reasoning biases) following the intervention. The researchers reported particularly high reduction in reasoning biases (‘jumping to conclusions’) (Underwood et al., 2021). Although results in our study failed to demonstrate a positive effect of the intervention on adolescents’ help-seeking intentions, these results were not surprising. The intervention was focused primarily on appraisals of common USE (e.g., hearing a noise when falling asleep) emphasising their normality and generally non-threatening nature, which could lead to the majority of adolescents thinking that help-seeking for USE is not required. This is consistent with previous research suggesting that mental health interventions do not necessarily lead to greater help-seeking intentions but can reduce stigma associated with mental health problems in non-clinical populations (Xu et al., 2018). It is also possible that the opening question of the GHSQ was not well-phrased for the purpose of this study, as it asks adolescents about general help-seeking intentions for USE rather than seeking help for *distressing and prolonged* USE. Future research could therefore use a different opening question or include a measure of stigma, which is another psychological process associated with the distress of USE in adult cognitive models (e.g. Garety et al., 2001).

Our study provided some interesting findings regarding the role of covariates in adolescents' appraisals of USE and help-seeking intentions for USE. In line with previous research (e.g., Anilmis et al., 2015), schemas, reasoning processes, and anxiety and depressive symptoms were identified as significant psychological processes in understanding adolescents' appraisals of USE/help-seeking intentions for USE. While previous studies have mainly focused on associations between the covariates and negative appraisals of USE (and other PLEs), this study identified covariates associated with positive appraisals of USE, and hence, potentially identified young people's *protective* (i.e., rather than risk) factors. These results highlight the opportunity for universal mental health interventions to focus on building up these positives.

Taken together, our study findings suggest that a 40-minute universal school-based intervention on USE can lead to an increase in adolescents' positive appraisals of USE. These findings, along with the findings of the role of covariates, provide preliminary evidence for applicability of some components of cognitive models (e.g., Garety et al., 2001) in understanding USE in adolescents. Furthermore, these results may have clinical implications by highlighting which psychological processes could be targets of treatment in CBT with adolescents with prolonged and distressing USE. This would need further testing with clinical populations. The results of our study also have other clear research implications by providing grounds for optimism for future school-based research, which is currently one of the most important topics in adolescent mental health research (see Department of Health & Department of Education, 2017). In particular, brief psychoeducational interventions targeting less functional appraisals may be most cost-effective, which is particularly important in an educational context, where time and financial pressures are not uncommon. In addition, our identification of significant covariates, such as schemas and anxiety and depressive symptoms, indicates the need for developing approaches that target multiple domains of adolescent mental health and focus on strengthening adolescents' protective factors (Minnard, 2002). This highlights the importance of discussing young people's strengths as a part of the regular school wellbeing curriculum. The CUES-Ed study provides a good example of a universal school-based study addressing different psychological factors of mental health in preadolescent children, and future research could focus on developing similar psychoeducational interventions for the adolescent population.

Limitations

Our study had several limitations. Firstly, all participants were recruited from one school. Furthermore, the school is based in one of the least deprived areas of the UK based on the Index of Multiple Deprivation (IMD; DLUHC, 2019), which limits the generalisability of our findings. Although participants were randomised by class, it is possible that young people from different groups talked to each other about the interventions, meaning that participants' responses at the follow-up might have been affected by contamination bias. Future research could overcome this issue by recruitment of more schools and cluster randomisation by school. It is also important to note that we used school class as a clustering variable at randomisation and did not perform additional statistical analyses to account for this study design. For instance, the difference in main outcome measures between classes could be attributed to other factors, pertinent to each class. We also did not collect any demographic variables (e.g., gender, ethnicity), which might further explain the observed differences in the main outcome variables at baseline. Further, the final composite score used in main analyses only included three items assessing the perceived threatening aspects of appraisals. A more comprehensive appraisals measure that is developed and validated with young people is required. Although the intervention was well-accepted by young people, we believe that adolescents' experiences of the intervention could be further explored using qualitative methodology. Finally, our study did not include a measure of distress or impact of USE or a measure of stigma.

Conclusions

USE are common in adolescence. Appraisals of USE are the main drivers of distress and impact of these experiences, and therefore, interventions aimed at developing more positive appraisals of USE can be helpful. To our knowledge, this is the first study developing and evaluating a universal school-based mental health intervention targeting adolescents' appraisals of USE. We demonstrated that a one-session intervention can be effective in improving adolescents' appraisals of USE. The intervention was well-accepted by young people consulted during the process of the intervention development, and by young people taking part in this study. Due to its brevity and easy delivery, this intervention has the potential to be delivered during the regular school curriculum by schoolteachers ensuring wide access and ease of implementation.

Acknowledgements

The authors thank the young people, parents, and staff at the participating school. The authors also thank to all members of patient and public involvement. The authors thank Dr

Sarah Parry of the University of Manchester, Dr Amy Hardy and Dr Tom Ward of King's College London, the Voice Collective charity, child and adolescent researchers and clinicians at the University of Oxford, and the young people and their parents for their input in developing the USE intervention and selecting the final set of outcome measures.

JR was supported by funding for professional clinical psychology training by Oxford Health NHS Foundation Trust. FW is funded by a Wellcome Trust Clinical Doctoral Fellowship (102176/B/13/Z).

The authors have declared that they have no competing or potential conflicts of interest.

Ethical Information

The study was granted a full ethics approval by the Oxford University Research Ethics Committee (CUREC) (reference R79066/RE001). Ethics approval letter is available in Appendices. All participants were required to provide an informed consent prior to taking part in the study.

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Supporting Information

Understanding unusual sensory experiences: a randomised experimental study of a school-based intervention for adolescents

S1 – Appraisals Measure

Imagine hearing things that other people cannot hear or seeing things that other people cannot see. What would you think about this experience most of the time?

1. I would think that that the experience is…[threat]
    a) Definitely dangerous to me or other people
    b) Slightly dangerous to me or other people
    c) Neither dangerous or not dangerous to me or other people
    d) Mostly not dangerous to me our other people
    e) Definitely not dangerous to me our other people

2. I would think that the experience is caused by something… [externality]
    a) Completely outside me (e.g., a real person)
    b) Mostly by something outside me
    c) Mix by something outside and something inside me
    d) Mostly by something inside me
    e) Completely by something inside me (e.g. being very tired)

3. I would think that the experience is…[controllability]
    a) Completely out of my control
    b) Mostly outside my control
    c) Partially outside my control and partially under my control
    d) Mostly under my control
    e) Completely under my control

4. I would think that this experience is...
    a) Completely caused by what other people are doing
    b) Mostly by what people are doing but some of it caused by other things
    c) A mix of both
    d) Mostly by other things but some of it caused by what other people are doing
    e) Completely caused by other things

5. I would think that… [abnormality]
    a) Something is definitely wrong with me
    b) Something is probably wrong with me
    c) I could be normal or not
    d) I am probably normal
    e) I am definitely normal

6. I would think that the experience is… [valence]
   a) Strongly negative.
   b) Somehow negative.
   c) Neutral.
   d) Somehow positive.
   e) Strongly positive.

S2 – Psychometric Evaluation of the Appraisals Measure

A correlation matrix for adolescents' responses on the Appraisals Measure (across different times) is presented in Table 1.

Table S2

A correlation matrix for items included in the Appraisals Measure

	AM 1	AM 2	AM3 3	AM4 4	AM 5	AM 6
AM 1	1	.191**	.096*	.099*	.510**	.433**
AM 2		1	.125**	.241**	.052	.071
AM 3			1	.159**	.183**	.227**
AM 4				1	0.075	.100*
AM 5					1	.469**
AM 6						1

Note. *$p < 0.05$, ** $p < 0.01$.

AM 1 – 6 = items 1 – 6 of the Appraisals Measure.

Although statistically significant, correlations between most of the items were weak (i.e., < 0.3), and only three relatively strong associations were observed between items measuring Threat, Abnormality and Valence (items 1, 5 and 6). To further examine the dimensionality of the Appraisals Measure, we conducted EFA. The Kaiser-Meyer-Olkin (KMO) value was .660 and Bartlett's Test of Sphericity was statistically significant ($\chi^2 = 469.42$; $p < 0.01$), indicating that the correlations between the items were satisfactory to conduct EFA. EFA with 6 items resulted in two-factor solution, however, due to low correlations between individual items, the two-factor solution was not interpretable.. Further exploratory analyses indicated that items assessing Externality, Controllability and Agency (items 2, 3 and 4) did not exhibit a consistent pattern of association between themselves or with the remaining three items (1, 5 and 6), and therefore, they were excluded from calculating the Appraisals' sum score. EFA including only items 1, 5 and 6 identified one factor which explained a satisfactory proportion (45.5%) of the variance and with high factor loadings (ranging from 0.61 to 0.72). Participants' responses to items 1, 5 and 6 (Threat, Abnormality and Valence) were therefore summarised and treated as a measure of participants' appraisals.

S3 - Preliminary Analyses

Table S3a

Item-level descriptive statistics, between group comparisons

	Whole sample *M(SD)*		USE		Control	
	M(SD)	% missing	*M(SD)*	% missing	*M(SD)*	% missing
Appraisal_Pre - Threat	3.15(1.17)	0.9%	3.08(1.14)	0.9%	3.24(1.19)	1.0%
Appraisal _Pre - Externality	3.50(1.14)	0.5%	3.50(1.18)	0.9%	3.51(1.09)	0.0%
Appraisal _Pre - Controllability	2.58(1.04)	0.5%	2.56(1.00)	0.9%	2.59(1.09)	0.0%
Appraisal _Pre – Agency*	2.91(1.12)	2.3%	2.76(1.10)	3.5%	3.08(1.13)	1.0%
Appraisal _Pre - Abnormality	3.03(1.14)	0.5%	2.91(1.06)	0.9%	3.16(1.21)	0.0%
Appraisal _Pre – Valence	2.64(0.80)	0.5%	2.57(0.80)	0.9%	2.71(0.79)	0.0%
GHSQ_Pre - Intimate partner (e.g. boyfriend or girlfriend)	3.76(1.83)	3.2%	3.79(1.68)	4.4%	3.74(1.99)	1.9%
GHSQ_Pre - Friend (not related to you) *	4.29(1.73)	0.5%	4.61(1.61)	0.9%	3.93(1.79)	0.0%
GHSQ_Pre – Parent	5.40(1.93)	0.5%	5.56(1.86)	0.9%	5.22(1.99)	0.0%
GHSQ_Pre - Other relative/family* member	3.99(1.80)	0.5%	4.24(1.72)	0.9%	3.7(1.84)	0.0%
GHSQ_Pre - Mental health professional (e.g., psychologist, social worker, counsellor)	4.02(2.08)	0.5%	4.21(2.05)	0.9%	3.80(2.10)	0.0%
GHSQ_Pre - Phone helpline	2.64(1.73)	0.9%	2.75(1.74)	0.9%	2.51(1.72)	1.0%
GHSQ_Pre - Doctor/GP	3.74(2.02)	1.4%	3.95(1.99)	1.7%	3.50(2.04)	1.0%
GHSQ_Pre - Minister or religious leader (e.g., Priest, Rabbi, Chaplain)	2.33(1.72)	1.8%	2.30(1.63)	2.6%	2.36(1.82)	1.0%
GHSQ_Pre - I would not seek help from anyone*	4.99(2.04)	0.9%	5.27(1.90)	1.7%	4.69(2.14)	0.0%
GHSQ_Pre - I would seek help for another not listed above (e.g., teacher)	2.45(1.61)	2.8%	2.49(1.58)	2.6%	2.4(1.65)	2.9%
Appraisal _Post - Threat*	3.63(1.12)	2.3%	3.93(0.91)	0.0%	3.28(1.24)	5.0%
Appraisal _Post - Externality*	3.50(1.14)	2.3%	3.70(1.14)	0.0%	3.25(1.10)	5.0%
Appraisal _Post - Controllability	2.85(1.08)	2.3%	2.95(1.15)	0.0%	2.73(0.98)	5.0%
Appraisal _Post – Agency	2.98(1.02)	3.2%	2.99(1.01)	1.7%	2.96(1.04)	5.0%
Appraisal _Post - Abnormality*	3.55(1.14)	2.3%	3.81(1.07)	0.0%	3.23(1.16)	5.0%
Appraisal _Post - Valence*	2.90(0.80)	2.8%	3.03(0.80)	0.9%	2.74(0.79)	5.0%
GHSQ_Post - Intimate partner (e.g. boyfriend or girlfriend)	3.57(1.93)	5.2%	3.51(1.87)	5.4%	3.64(2.01)	5.0%

GHSQ_Post - Friend (not related to you)	4.10(1.78)	2.8%	4.25(1.79)	1.7%	3.93(1.75)	4.0%
GHSQ_Post - Parent	5.06(2.05)	2.8%	4.98(2.09)	1.7%	5.14(2.01)	4.0%
GHSQ_Post - Other relative/family member	3.91(1.93)	3.2%	3.92(1.91)	1.7%	3.89(1.95)	5.0%
GHSQ _Post- Mental health professional (e.g., psychologist, social worker, counsellor)	3.62(2.01)	2.8%	3.68(2.11)	1.7%	3.55(1.90)	4.0%
GHSQ_Post - Phone helpline	2.51(1.69)	2.8%	2.56(1.72)	1.7%	2.46(1.67)	4.0%
GHSQ_Post - Doctor/GP	3.38(2.01)	3.2%	3.31(1.95)	1.7%	3.45(2.08)	5.0%
GHSQ_Post - Minister or religious leader (e.g., Priest, Rabbi, Chaplain)	2.31(1.76)	3.2%	2.40(1.68)	1.7%	2.20(1.85)	5.0%
GHSQ_Post - I would not seek help from anyone	4.94(2.02)	3.7%	4.81(2.00)	1.7%	5.09(2.05)	6.1%
GHSQ_Post - I would seek help for another not listed above (e.g., teacher)	2.52(1.72)	3.2%	2.57(1.75)	2.6%	2.46(1.70)	4.0%
Appraisal_FU - Threat*	3.40(1.00)	0.0%	3.69(0.97)	0.0%	3.09(0.96)	0.0%
Appraisal _FU - Externality	3.38(0.97)	0.5%	3.40(1.08)	0.0%	3.36(0.84)	1.1%
Appraisal _FU - Controllability*	2.61(1.04)	0.0%	2.84(1.02)	0.0%	2.36(1.02)	0.0%
Appraisal _FU - Agency	3.07(0.93)	0.0%	3.09(0.96)	0.0%	3.04(0.90)	0.0%
Appraisal _FU - Abnormality*	3.29(1.08)	0.0%	3.59(1.00)	0.0%	2.97(1.07)	0.0%
Appraisal _FU - Valence*	2.65(0.70)	4.4%	2.76(0.71)	3.1%	2.53(0.68)	5.9%
GHSQ_FU - Intimate partner (e.g. boyfriend or girlfriend)	3.52(1.82)	5.0%	3.55(1.69)	4.2%	3.48(1.96)	5.9%
GHSQ_FU - Friend (not related to you)	3.98(1.62)	1.6%	4.06(1.60)	0.0%	3.89(1.65)	3.4%
GHSQ_FU - Parent	4.93(1.95)	1.1%	4.98(1.88)	0.0%	4.86(2.03)	2.3%
GHSQ_FU - Other relative/family member	3.70(1.76)	2.2%	3.85(1.76)	0.0%	3.53(1.74)	4.7%
GHSQ_FU - Mental health professional (e.g., psychologist, social worker, counsellor)	3.44(2.03)	2.2%	3.42(2.06)	1.0%	3.46(2.02)	3.4%
GHSQ_FU - Phone helpline	2.39(1.63)	2.2%	2.31(1.60)	1.0%	2.48(1.66)	3.4%
GHSQ_FU - Doctor/GP	3.24(1.92)	2.2%	3.32(2.00)	0.0%	3.15(1.83)	4.7%
GHSQ_FU - Minister or religious leader (e.g., Priest, Rabbi, Chaplain)	2.14(1.56)	2.7%	2.22(1.54)	1.0%	2.05(1.58)	4.7%
GHSQ_FU - I would not seek help from anyone	4.38(1.97)	3.8%	4.22(1.87)	3.1%	4.57(2.08)	4.7%
GHSQ_FU - I would seek help for another not listed above (e.g., teacher)	2.55(1.68)	1.6%	2.56(1.69)	1.0%	2.53(1.68)	2.3%

Note. * indicates significant ($p < 0.05$) difference in item responses between the USE and Control group (Mann-Whitney U-test).

Pre = before the intervention, Post = immediately after the intervention, FU = 1-month follow-up.

Appraisal = individual item of the Appraisals Measure, GHSQ = General Help-Seeking Questionnaire.

Table S3b

Baseline scores in experimental and control group for all included questionnaire measures

	Whole sample		USE		Control			
Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*	*t* (*p*-value)	*d*
Appraisals Measure	8.8	2.4	8.5	2.3	9.1	2.5	-1.72 (0.09)	-0.23
GHSQ	37.2	11.2	38.9	10.1	35.4	12.1	2.29 (0.02)	0.32
FaST-FT	12.6	3.5	13.0	3.6	12.1	3.4	1.76 (0.08)	0.24
FaST-ST	17.1	3.7	17.2	3.4	16.9	4.0	0.51 (0.61)	0.07
SQC	59.2	19.6	60.4	19.8	57.8	19.4	0.96 (0.34)	0.13
RCADS-11	11.5	6.9	11.7	6.4	11.3	7.5	0.45 (0.65)	0.06

Note. GHSQ = General Help-Seeking Questionnaire, FaST-FT/ST = Fast and Slow Thinking questionnaire – Fast Thinking/Slow Thinking, SQC = Schema Questionnaire for Children, RCADS-11 = 11-item version of the Revised Children's Anxiety and Depression Scale.

S4 - Reliability Analysis

Table S4

Cronbach's alpha coefficients for included questionnaire measures

Measure	Whole sample	USE	Control
Appraisal-Pre	0.637	0.628	0.636
Appraisal-Post	0.719	0.679	0.492
Appraisal-FU	0.722	0.764	0.622
GHSQ-Pre	0.806	0.762	0.832
GHSQ-Post	0.822	0.828	0.815
GHSQ-FU	0.833	0.827	0.841
FaST-FT	0.644	0.686	0.584
FaST-ST	0.700	0.628	0.759
SQC	0.796	0.804	0.787
RCADS-11	0.891	0.868	0.912

Note. Pre = before the intervention, Post = immediately after the intervention, FU = 1-month follow-up.

GHSQ = General Help-Seeking Questionnaire, FaST-FT/ST = Fast and Slow Thinking questionnaire – Fast Thinking/Slow Thinking, SQC = Schema Questionnaire for Children, RCADS-11 = 11-item version of the Revised Children's Anxiety and Depression Scale.

S5 – Correlations between the main outcome variables and covariates

Table 1

Pearson’s correlation coefficients between all included measures

	Appr-Pre	Appr-Post	Appr-FU	GHSQ-Pre	GHSQ-Post	GHSQ-FU	FaST-FT	FaST-ST	SQC	RCADS-11
Appr-Pre	1	.659**	.510**	-0.036	0.016	-0.086	-0.071	0.011	-.290**	-.226**
Appr-Post		1	.604**	0.004	-0.075	-.155*	-0.048	0.091	-.286**	-.199**
Appr-FU			1	-0.117	-0.113	-.209**	0.045	-0.055	-0.138	-0.039
GHSQ-Pre				1	.861**	.731**	.204**	.336**	-.233**	-.426**
GHSQ-Post					1	.741**	0.115	.337**	-.254**	-.362**
GHSQ-FU						1	0.128	.191*	-.221**	-.346**
FaST-FT							1	.159*	0.123	-0.005
FaST-ST								1	-0.051	-0.083
SQC									1	.635**
RCADS-11										1

Note. **p* < 0.05, ***p* < 0.01. Pre = before the intervention, Post = immediately after the intervention, FU = 1-month follow-up.

GHSQ = General Help-Seeking Questionnaire, FaST-FT/ST = Fast and Slow Thinking questionnaire – Fast Thinking/Slow Thinking, SQC = Schema Questionnaire for Children, RCADS-11 = 11-item version of the Revised Children’s Anxiety and Depression Scale.

Executive Summary

Understanding unusual sensory experiences in adolescents

Why is this important?

- Around one in ten young people experience unusual sensory experiences (USE), such as seeing or hearing things that other people cannot see/hear.
- USE in young people usually spontaneously resolve. However, some young people might find them very stressful.
- From a cognitive perspective, the way that a young person makes sense of USE (also known as the appraisal) will determine the impact of these experiences and whether the person will need professional help.
- In general, seeing USE as non-threatening, positive, caused by internal factors (e.g., fatigue), under one's control or as a normal experience leads to lower levels of distress.
- There are also some other psychological factors associated with appraisals of USE. For instance, people's thinking flexibility, beliefs about themselves/other people/the world (i.e., schemas), anxiety and low mood have all been linked with their appraisals of USE.
- Most of the studies so far that investigated appraisals and impact of USE have focused on adult populations.
- However, mental health problems (such as psychosis) usually start in adolescence, making this period most suitable for prevention and early intervention.

What were our aims?

- The aim in our study was to develop a single-session school-based workshop on USE in adolescents and to evaluate the effect of the workshop on appraisals of USE and help-seeking intentions for USE.
- We also investigated the role of other psychological factors (i.e., young people's thinking flexibility, schemas, and anxiety and low mood) in appraisals and help-seeking.

What did we do?

- We conducted a school-based study with a randomised controlled experimental design.
- The study was conducted in one school with 223 young people aged 12-13 (Year 8), with half of the students receiving a single-session workshop on USE and the other half receiving a control workshop that focused on a generic mental wellbeing topic.
- Young people were asked to complete questionnaires of appraisals of USE and help-seeking for USE before the workshop, immediately after the workshop and at one-month follow-up. Young people also completed questionnaires of thinking flexibility, schemas, and anxiety and low mood before the workshop.

What did we find out?

- Out of 223 students receiving either workshop, 190 (85.2%) completed the measures of appraisals of USE and help-seeking for USE at all three time points.

- The workshop on USE led to a significant increase in positive appraisals of USE compared with the control condition, and these effects were sustained at one month follow-up.
- In contrast, the workshop on USE did not lead to a significant increase in help-seeking intentions for USE.
- Adolescents with positive schemas generally reported more positive appraisals of USE, and adolescents with higher help-seeking intentions reported lower levels of anxiety/low mood symptoms and slower (i.e., more rational) thinking.

How is this relevant for my work?

- Overall, the study results suggest that a simple, single-session psychoeducational workshop can lead to 1) significant and 2) sustainable improvements of young people’s appraisals of USE. This is important, as the appraisals of USE are one of the main drivers of distress in response to USE.
- **If you are a clinician working with young people:** If you are working with young people who experience USE, you can help them to create normalising appraisals of USE. This may help with preventing any further distress associated with USE, as well as any further mental health problems (e.g., psychosis).
- **If you are an educational practitioner:** The results of this study demonstrate that the workshop can be easily administered during one (40-minute) school lesson. Due to its brevity and ease of administration, the workshop may be cost-effective in a school context, where time and financial pressures are not uncommon. The workshop could be delivered by trained teachers.
- **If you are a researcher:** The results of this study provide grounds for optimism in school-based research. Future research could focus on further developing and evaluating this workshop through a larger randomised controlled trial. Future

research could also aim to develop and evaluate a measure of appraisals of USE in young people.

Please see our paper published in *Child and Adolescent Mental Health (CAMH)* to find out more about the study
https://acamh.onlinelibrary.wiley.com/doi/full/10.1111/camh.12651

Connecting Narrative

CRL

Before starting the course, I completed a PhD focused on adolescent mental health, and particularly looked at early identification of anxiety/depression in the community. GPs were often identified as one of the key stakeholders in successfully identifying young people that require further professional input. Whilst doing the PhD, my colleagues explored GPs views on the identification of mental health problems in young people. I felt very interested in the area myself and keen to explore the role of the GPs in early identification of more complex (e.g., psychosis).

The idea for the CRL was elaborated and formed in discussions with my supervisors, who both have years of expertise in working with people with an ARMS and psychosis in clinical and research settings. Besides helping me to finalise my CRL proposal, my supervisors also signposted me to other clinicians and researchers focusing on early identification of ARMS. Following these discussions, I identified a clear need to conduct a systematic review on understanding and improving identification of individuals with an ARMS in primary care.

I found the process of conducting a systematic review rewarding. Firstly, I was able to learn more about ARMS and early intervention in psychosis – the area that I had an interest in for a long time but had not had a chance to conduct research in before starting the course. I was also able to apply my previous knowledge and skills in conducting systematic reviews, which helped with the process of running the searches, data extraction, and conducting narrative synthesis. I also enjoyed very fruitful discussions with my supervisors, as well as a fellow trainee (second reviewer). Finally, I learnt more about systematic review tools, such as quality appraisals tools.

TDRP

My research interest in young people’s mental health and ARMS/psychosis informed my decision about the topic of my theory-driven research project. In particular, I wanted to work with schools, which are, together with the GPs, some of the most important stakeholders in improving early identification and treatment of young people with emerging mental health problems. Furthermore, I had worked with schools during my PhD and found it very interesting and fulfilling – especially in terms of being able to work with *all* young people at the same time (i.e., including the ’difficult to reach’ populations, which are often under-represented in child and adolescent mental health services).

The idea for my school-based study was developed in my supervisions. Given that we all felt passionate about designing and delivering an intervention to all young people (i.e., universal intervention) and informed by the theories and models of psychosis, we decided to develop an intervention, which would enable every young person to identify with at least one experience discussed (i.e., the unusual experiences were very general, ‘low threshold’). I thoroughly enjoyed developing a workshop, and particularly valued the input of members of public and patient involvement (PPI), as well as other researchers in the field of psychosis/young people’s mental health. I also learnt much during the process of selecting the outcome measures for the intervention. Similarly to my CRL, designing this study enabled me to meet many inspiring professionals, with whom I might collaborate (again) in the future.

The most challenging aspect of delivering the intervention was related to the issues of communicating with the participating school, due to changes in staffing. As in many times before, I was extremely grateful for the support of my supervisors in these challenging circumstances. I was particularly lucky that one of my supervisors had a personal connection with the school, which eventually facilitated the recruitment process. After that, the process of delivering intervention ran smoothly, and I thoroughly enjoyed seeing young people being very engaged in discussions about their own unusual sensory experiences and ways of interpreting them.

Finally, analysing my TDRP results and seeing that our intervention was associated with a positive outcome made me feel very happy and proud, and hopeful that I can develop and test this intervention, as well as the adolescent appraisals measure in the future through a larger randomised controlled study.

SIP

I was able to combine my passion for young people’s mental health and ARMS/psychosis with my SIP, commissioned by Oxfordshire Early Intervention Service. The fact that I did my final year’s placement in this Service also brought additional value and motivation to conducting this research project. Finally, my SIP allowed me to explore barriers to help-seeking in young people, which is an area that I have a particularly strong interest in. The Service’s need to explore help-seeking from the perspective of Eastern European young people, living in Oxfordshire, resonated with me on my personal level as well – i.e., as a first-generation immigrant from Central Europe.

I enjoyed thinking about the study protocol, designing study materials, and developing the interview topic guide. As always, the part that I enjoyed the most was consulting the members of PPI and relevant community stakeholders (e.g., Oxford Polish/Ukrainian/Romanian society).

Talking to young people and listening to their personal stories of making sense of their mental health problems, whilst navigating the cultural differences between their own Eastern European culture and British culture made me reflect on my own experience of living abroad. I found it particularly helpful to keep a reflective journal throughout my recruitment phase, and to talk about my reflections with my supervisors.

I found the process of analysing the data for my SIP very interesting and insightful. Furthermore, I felt inspired by the personal stories of my participants. I am looking forward to seeing this paper published and being able to share my results with study participants, as well as broader audiences. I am also planning to disseminate the study findings in relevant services in Oxford Health, as well as University of Oxford colleges.

Conclusion

Taken together, I am very proud of my research outputs on the Doctoral training, and equally grateful for amazing opportunities to conduct clinically relevant research under supervision of very experienced researchers and clinicians. I am already looking forward to my new clinical-academic role(s).

Acknowledgements

Firstly, I would like to thank all service users, their families, and carers for sharing your personal stories with me and helping me develop my clinical skills. I am also very grateful to the research participants for taking the time to participate in my research and to members of the public and patient involvement who helped me at various stages of my research.

A very big thanks to my wonderful research supervisors, Dr Louise Johns and Dr Felicity Waite, for supporting me in developing a good set of skills for a future clinical-academic career. I am also very grateful to Dr Ciorsdan Anderson – I could have not imagined having a better and more compassionate course tutor. Thank you also to my placement supervisors – Chris Williams, Dr Abi Wroe, Dr Emma Barnett, Dr Sarah Walden, Dr Tom Crossland, Dr Mary Owen, Dr Rachel Manser and Dr Mat Lister, who have all helped on this three-year journey of personal and professional development. I am also thankful for my personal tutor, Dr Kim Hoffman.

I feel incredibly lucky for the support of my course friends, Becca, Bertie and Emma. It has been lovely to be on the same journey with you all, and I cannot wait to see where our paths take us in the future.

I owe a huge thank you (“hvala”) to my Slovenian support network. Thanks to my best friends Urša and Dunja for endless WhatsApp phone calls, and especially to my mum Ksenija, dad Ivan and brother Jernej for their constant encouragement, love, and support. A special thanks goes to my baby niece Mila for always bringing a smile to my face.

Lastly, my biggest thank you goes to Adam for sharing my passion for science, and most importantly, being here for me and reminding me about what matters the most.

Appendices

Appendix A.1 – SRL Paper

Received: 14 June 2022 | Revised: 12 October 2022 | Accepted: 2 January 2023
DOI: 10.1111/eip.13365

REVIEW ARTICLE

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Identifying individuals at risk of developing psychosis: A systematic review of the literature in primary care services

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Funding information
Wellcome Trust, Grant/Award Number: 102176/B/13/Z

Abstract

Aim: Psychosis and related disorders are a major public health issue. Early identification and prevention for those at high risk (at-risk-mental-state, ARMS) is important. General practitioners (GPs) are often the first point of contact for health services. In this review we aim to identify (1) the most common methods for identifying individuals with an ARMS in primary care, (2) the methods for improving identification of individuals with an ARMS in primary care, and (3) the most common barriers that prevent GPs from screening for individuals with an ARMS.

Methods: We conducted a systematic review (PROSPERO 42021245095) of quantitative and qualitative studies with no date restriction. Searches were performed in September 2021. Studies' quality was appraised using Mixed Methods Appraisal tool (MMAT).

Results: We identified 16 eligible studies, and all but one provided quantitative data. Nearly two-thirds of studies were classified as 'medium' quality. Employing narrative synthesis, we identified three themes relating to (1) improving GP knowledge and confidence in identifying individuals with an ARMS, (2) balancing the over- and under-identification of individuals with an ARMS in primary care, and (3) supporting GPs as significant stakeholders in early diagnosis and treatment of individuals with an ARMS.

Conclusions: Improved identification of individuals with an ARMS is needed. We identified various strategies, including development and implementation of identification methods (e.g., screening measures), educational interventions for GPs (e.g., workshops), and systemic interventions (e.g., simplifying referrals to secondary care, developing integrated services). When implemented successfully, these interventions may help facilitate the access to appropriate care for individuals with an ARMS.

KEYWORDS
at-risk mental state, general practitioner, primary care, screening

1 | INTRODUCTION

Psychosis is defined as an abnormal mental state characterized by the presence of delusions, hallucinations, or both (APA, 2022). Psychosis and related disorders are a significant public health issue, especially due to the young age at onset, high levels of associated impairment and high prevalence of comorbid physical and mental health conditions (Anderson, 2019; Rössler et al., 2005). Preventive health

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strategies, such as identifying individuals at risk of developing psychosis, have the potential to prevent or delay the onset of a first psychotic episode (Fusar-Poli et al., 2013) and to improve the outcomes of those who do later develop psychosis (Valmaggia et al., 2015). However, only a minority of individuals who develop psychosis are identified before development of psychosis, that is, whilst 'at risk' (McGorry et al., 2018). Early identification in everyday settings, such as in schools or primary care, could facilitate access to appropriate and timely treatment (Fusar-Poli et al., 2020).

Over the past few decades, research has demonstrated that psychosis-like experiences (PLEs), such as subclinical hallucinations and delusions, occur on a continuum, rather than the historic categorical conceptualisation. This dimension includes general public, those at high risk, and people experiencing psychosis (Bebbington et al., 2013; Unterrassner et al., 2017). When accompanied by decline in functioning, PLEs are one of the key markers of a clinical high-risk for psychosis (Fusar-Poli et al., 2013). The importance of this concept and its predictive values for psychosis and other mental health problems, including anxiety and depression, has been increasingly recognized, and therefore, many argue that it should be included in the main section of the DSM-5 revision (Corcoran et al., 2021). However, unlike most other mental health problems in the DSM-5, the concept of high-risk for psychosis has been constantly evolving. More recent studies suggest that symptoms such as anxiety, low mood, and substance use are equally important as PLEs when identifying those at risk for developing psychosis (Carrión et al., 2013; Fusar-Poli et al., 2013). The lack of a clinical consensus and overlapping symptoms between those at risk of developing psychosis and those experiencing other mental health problems make early identification of these individuals particularly tricky.

Several definitions have been used to describe individuals who are at risk of developing psychosis (Miller et al., 2003; Yung & McGorry, 1996). In this review we use the term 'at-risk mental state' (ARMS) as set out by A. Yung et al. (1998). This framework defines three criteria that indicate being at-risk: (1) experiencing attenuated psychotic symptoms (APS; sub-threshold frequency or intensity), (2) brief limited intermittent psychotic symptoms (BLIPS; with these symptoms resolving spontaneously within a week), (3) genetic vulnerability to developing a psychotic disorder (Thompson et al., 2016). All three groups require a drop in functioning for at least 1 month within the previous 12 months. A person is considered 'at risk' if they meet one or more of these criteria. Second criterion is the one most associated with transition to psychosis (Fusar-Poli et al., 2017). ARMS is most commonly identified in young people, aged 15–25, which is the period associated with the highest risk of developing first episode psychosis (Thompson et al., 2016).

There are three main routes for identifying individuals with an ARMS, including primary prevention (e.g., universal screening in schools), secondary prevention (e.g., screening those at risk in GP surgeries) and tertiary prevention (e.g., specialist mental health services) (Fusar-Poli et al., 2019). Individuals with an ARMS are usually identified in specialized early intervention clinics (Howie et al., 2019). However, detection of individuals with an ARMS via specialized clinics misses a significant proportion of people who later develop psychosis, and therefore outreach campaigns, involving other community stakeholders (e.g., schools, GPs) are instrumental to improve early detection rates (Fusar-Poli et al., 2019).

The first clinical and research clinic for detection and treatment of individuals with an ARMS in the world was The Personal Assessment and Crisis Evaluation – PACE Clinic in Australia (Yung et al., 1996), which worked closely with the GPs, schools, universities and other support agencies for young people (Yung et al., 2007). Many other countries, including the UK, Norway, Denmark, and Canada, have since developed similar ARMS clinics and (assertive) community outreach strategies aimed at early detection and treatment of individuals with an ARMS. These programmes have generally been well accepted by patients and their support networks (Jackson & McGorry, 2009). However, individuals identified within these services often represent a small percentage of those who will develop psychosis (e.g., Murguia-Asensio et al., 2013) and therefore, further work with the main stakeholders and referrers needs to be done to enhance the early detection strategies (Power et al., 2007).

Primary care and educational practitioners have access to a wide range of young people and therefore these settings provide an opportunity for potential early identification of individuals with an ARMS (Kennedy et al., 2020). A recent systematic review of nine studies looking at identifying individuals with an ARMS in educational settings identified a number of screening tools used in schools (e.g., Prodromal Questionnaire – PQ), and a relatively large proportion (i.e., up to 40%) of individuals who scored above the ARMS threshold. This suggests that higher-than-recommended thresholds might be used to identify ARMS individuals more accurately in non-clinical settings (Howie et al., 2019). Notably, one third of the studies also identified that young people with ARMS also had other comorbid problems (most commonly anxiety and depression), highlighting the complex clinical picture of these participants. Therefore, more sensitive measures assessing a whole range of symptoms might be more efficient than identifying individuals that only experience psychosis-like symptoms (van Os & Guloksuz, 2017).

Similarly to schools, primary care practitioners (GPs) are particularly well placed to identify individuals with an ARMS as they often represent the first port of call for individuals with psychological problems and act as 'gatekeepers' between primary care and specialist mental health services (Strelchuk et al., 2021). Indeed, a recent systematic review of pathways to care (i.e., the time between symptom onset, first professional contact and the beginning of an appropriate treatment) in ARMS identified GPs to be one of the key pathway agents (Allan et al., 2020). In addition, each person – regardless of their background – can access a GP, and the average number of GP visits per person per year is around 4 in the United Kingdom (Hobbs et al., 2016). This enables GPs to identify individuals with an ARMS from various backgrounds, including those from Black and Minority Ethnic (BAME) backgrounds – individuals who are particularly underrepresented in specialist mental health services (Beck et al., 2019). However, the success of primary care practitioners in identifying individuals with an ARMS remains unclear. To date there has been no systematic assessment of identifying individuals with an ARMS in primary care.

In this systematic review we set out to understand the role of primary care practitioners in identifying individuals with an ARMS. There are three research questions:

1. What are the most common methods (e.g., screening tools, interviews) for identifying individuals with an ARMS in primary care?
2. What are the methods of improving identification of individuals with an ARMS in the primary care setting?
3. What are the most common barriers that prevent primary care practitioners from screening for ARMS?

2 | METHOD

This systematic review followed the updated version of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Moher et al., 2009; Page et al., 2021). A PRISMA checklist is provided in Supporting information S1. The review's protocol was registered with the International Prospective Register of Systematic reviews (PROSPERO) in April 2021 (registration number: CRD42021245095).

2.1 | Literature search

The search terms captured three major concepts: (1) at-risk mental state, (2) primary care, and (3) screening (see Supporting information S2 for details). To estimate the number of records and to inform the final search strategy we conducted scoping searches in February 2021. These searches identified approximately 2000 search results from multiple databases. As the search strategy was revised after conducting scoping searches, the identified 2000 records were not included in the final set of records. The final search was conducted in September 2021 using the NHS Evidence Healthcare database, which combines Medline, PsychINFO and Embase. In addition, we searched the Web of Science Core Collection. Hand-searching methods were also used to check the reference lists of identified papers in the full text screening stage. We performed backward and forward reference searching for papers that met the eligibility criteria in the initial searches.

2.2 | Eligibility criteria

The study was included if it reported (1) details about the methods (e.g., screening tools) for identifying individuals with an ARMS in primary care AND/OR (2) methods/interventions to improve the identification of individuals with an ARMS in primary care AND/OR (3) barriers for screening/identifying individuals with an ARMS in primary care. Studies that reported relevant data prospectively and/or retrospectively were included. We included qualitative as well as quantitative and mixed methods studies. In addition, the study was included if participants were recruited through primary care services (i.e., GPs or individuals accessing primary care services). Finally, the study was included if the manuscript was accessible in English and published in a peer review journal. Theoretical articles and systematic reviews/meta-analyses on related topics, as well as studies only reporting pathways to care to ARMS services were not included.

2.3 | Data extraction

Data extraction forms were developed within the research team and included the following information: (1) Area of focus (ARMS identification tools, barriers to identification, or strategies to improve identification), (2) methodology used (quantitative, qualitative, or mixed methods), (3) country, (4) number of participants, (5) participants' age, (6) percentage female participants, and (7) key findings in relation to the review's research question. Data extraction was led by JR, who extracted the data for all identified papers. Data from 50% ($n = 8$) of studies were also independently extracted by the second reviewer (EI). In case of discrepancies between the reviewers, a third member of the research team (LJ/FW) was consulted.

2.4 | Quality rating

We used the Mixed Methods Appraisal Tool – MMAT (Hong et al., 2018). The MMAT was chosen due to the high heterogeneity of the studies. The MMAT permits the reviewer to appraise the quality of five categories of studies – qualitative, randomized controlled trials, non-randomized studies, quantitative descriptive studies, and mixed methods studies (Hong et al., 2018). Further, the MMAT has favourable psychometric characteristics, with intra-class correlations ranging from 0.7 to 0.9 indicating moderate to perfect agreement between different reviewers (e.g., Pace et al., 2012). JR assessed the quality of all included studies, and the second reviewer (EI) assessed the quality of 50% ($n = 8$) of the studies. Any discrepancies between the reviewers were discussed and resolved within the research team. Quality ratings (total scores) are reported in Table 1. Based on the total sum score, each study was classified as 'low' (total sum score ≤ 2), 'medium' (total sum score of 3 or 4) and 'high' (total sum score of 5). Individual item ratings for each study are reported in Supporting information S3.

2.5 | Data synthesis

Data were analysed using narrative synthesis and following ESRC guidance (Popay et al., 2006). Narrative synthesis is a method of data analysis for systematic reviews including a wide range of study formats (e.g., qualitative, quantitative, mixed methods) that might otherwise make statistical approaches less feasible (Barnett-Page & Thomas, 2009). We followed synthesis without meta-analysis (SWiM) reporting guidance (Campbell et al., 2020) to ensure that narrative synthesis was conducted according to the ESRC guidance.

TABLE 1 Characteristics of included studies

First author (year)	Study focus	Study aim	Study type (subtype)[a]	Number of participants	Country	Age	Females (%)	Study findings in relation to research question	Quality rating – Total
French et al. (2012)	ARMS identification tool (RQ1)	To assess the ability of the Primary Care Checklist (PCCL) to accurately identify individuals with an ARMS.	Quantitative (descriptive)	176 (83% met the diagnostic criteria for ARMS); 37 (21%) screened with PCCL by their GP	UK	14–34 (M = 20.78, SD = 4.16)	37.5% [b]	*Instrument used*: PCCL checklist (French & Morrison, 2004) *Findings*: PCCL checklist has high sensitivity and low specificity in identifying ARMS adolescents. Better sensitivity/ specificity ratio for short 6-item version or the original version with different weighting	4 (medium)
Quijada et al. (2010)	ARMS identification tool (RQ1)	To describe and evaluate an ARMS screening programme and the demographic and clinical characteristics of people presenting to the service.	Quantitative (descriptive)	20[b] individuals with an ARMS	Spain	14.7–16.8[b]	40%[b]	*Instrument used*: Spanish version of ERIraos checklist (Maurer et al., 2006) *Findings*: ERIraos checklist could help identifying individuals with an ARMS in primary care.	3 (medium)
Chen et al. (2019)	Strategy to improve identification of ARMS in primary care (RQ2)	To identify common symptoms and patterns of symptoms presented to the GPs prior to the diagnosis of first psychotic episode.	Quantitative (non-RCT – Case–control study)	3045 patients with recorded FEP and 12 180 controls	UK	16–45 (Me = 30)	37.1%	*Strategy*: Examination of patients' medical records *Findings*: *Patterns of consultations*: Higher number of GP consultations in patients who later develop psychosis *Symptoms*: Mood disorders, 'neurotic' symptoms, behavioural change in volition, substance misuse, physical symptoms, perceptual changes (relatively rarely, but significantly more common than in healthy controls). Three distinct	5 (high)

TABLE 1 (Continued)

First author (year)	Study focus	Study aim	Study type (subtype)[a]	Number of participants	Country	Age	Females (%)	Study findings in relation to research question	Quality rating – Total
								prodromal patterns: (1) no/minimal symptoms cluster (if symptoms, then mood or physical health), (2) Mood cluster (most commonly 2 symptoms, e.g., low mood and 'neurotic' symptoms), (3) multiple symptom cluster (e.g., mood, physical health, behavioural problems). The first two clusters were more common. Cluster one likely youngest and male; cluster three likely older and more likely female and long DUP. *Time consultation-diagnosis*: 2–2.5 years (shorter for perceptual changes).	
Falloon et al. (1996)	Strategy to improve identification of ARMS in primary care (RQ2)	Evaluation of the 'Buckingham project' – collaboration between GPs and specialist mental health services. (pilot study)	Quantitative (descriptive)	18 GPs	UK	n/a	n/a	*Strategy*: Different service set-up *Findings*: Formal screening for ARMS in GP setting, combined with family and specialized mental health support resulted in reduced incidence of schizophrenia in the area.	Not assessed
Perez et al. (2015)	Strategy to improve identification of ARMS in primary care (RQ2)	Establishing if 1) low intensity (postal information campaign) or 2) high intensity (postal information + theory-based	Quantitative (RCT)	30 GP practices included in high-intensity intervention and 34 in low intensity intervention (from Peterborough and Cambridgeshire)	UK	n/a	n/a	*Strategy*: ARMS educational intervention *Findings*: High intensity intervention was more effective than low intensity	5 (high)

TABLE 1 (Continued)

First author (year)	Study focus	Study aim	Study type (subtype)[a]	Number of participants	Country	Age	Females (%)	Study findings in relation to research question	Quality rating – Total
		educational intervention) lead to different outcomes in terms of the number of ARMS referrals from primary care.						intervention in increasing the number of referrals to first episode psychosis and ARMS services. High number of true and false positives referred via the high intensity group. Intervention was costly but has a potential to lead to long-term savings due to earlier detection/ intervention. Low intensity intervention was no more efficient than no intervention.	
Platz et al. (2006)	Strategy to improve identification of ARMS in primary care (RQ2)	To assess help-seeking behaviours and main presenting symptoms of individuals with an ARMS presenting to the GPs.	Quantitative (non-RCT – Cohort study)	50 individuals with an ARMS	Switzerland	21	38%	*Strategy*: Examination of patients' self-reported symptoms and help-seeking behaviour *Findings*: *Symptoms*: Depression, social decline, social withdrawal. 'Typical' psychosis symptoms (e.g., hallucinations) were less common/rare compared to the first-episode psychosis group. *Patterns of consultations*: GPs were most consulted for negative/non-psychosis-specific symptoms (e.g., depression).	3 (medium)
Reynolds et al. (2015)	Strategy to improve identification of ARMS in primary care (RQ2)	Evaluation of GP training (1 session) on ARMS recognition and	Quantitative (non-RCT – Cohort study)	29 GP practices; 54 individuals referred/ identified as ARMS by the GPs	UK	$M = 21.85$ ($SD = 4.16$)	41%	*Strategy*: ARMS educational intervention	3 (medium)

TABLE 1 (Continued)

First author (year)	Study focus	Study aim	Study type (subtype)[a]	Number of participants	Country	Age	Females (%)	Study findings in relation to research question	Quality rating – Total
		referrals to appropriate service.						*Findings*: 50% of referrals by the GPs were correctly identified as ARMS. 1 h GP training increased the number of ARMS (but not EIP) direct referrals. Increased number of false and true positives.	
Simon et al. (2010)	Strategy to improve identification of ARMS in primary care (RQ2)	To see if a repeated exposure (sensitisation) to the clinical vignette can improve diagnostic knowledge of ARMS in GPs.	Quantitative (non-RCT – Cohort study)	750 GPs[b]	Switzerland	n/a	n/a	*Strategy*: ARMS educational intervention *Findings*: GPs exposed to the intervention showed a significant improvement in diagnostic knowledge of ARMS at 6- and 12-month follow-up (the effect persisted after sensitisation). This was not observed for non-sensitized GPs. Sensitized GPs also improved their knowledge of symptoms of ARMS that are often under-identified (e.g., social withdrawal and functional decline).	3 (medium)
Sullivan et al. (2018)	Strategy to improve identification of ARMS in primary care (RQ2)	To see if a primary care consultation pattern for ARMS can be used to identify patients who later develop psychosis.	Quantitative (non-RCT – Case-control study)	530 primary care practices; 11 690 patients with psychosis and 81 793 matched controls	UK	$M = 51.34$ ($SD = 21.75$)	57.4% [b]	*Strategy*: Examination of patients' medical records *Findings*: *Symptoms*: Bizarre behaviour, suicidal behaviour (strongest predictor), cannabis-associated problems, depressive	5 (high)

(Continues)

TABLE 1 (Continued)

First author (year)	Study focus	Study aim	Study type (subtype)[a]	Number of participants	Country	Age	Females (%)	Study findings in relation to research question	Quality rating – Total
								symptoms, blunted affect, ADHD-like symptoms, OCD-like symptoms, social isolation, role functioning problems, mania symptoms, sleep disturbance, smoking-associated problems. Positive predictive value of symptoms greater for men than women. *Patterns of consultations*: More common GP consultations; increasing number of consultations over time.	
Jacobs et al. (2011)	Barriers/facilitators to identifying ARMS in primary care (RQ3)	Understanding GPs appraisals of ARMS.	Quantitative (descriptive)	72 GPs	US	M = 52.7 [b] (Me = 53.0)	47.6% [b]	*Barriers*: Lack of knowledge about ARMS (i.e., thinking about it as schizophrenia spectrum); lack of diagnostic category to capture the symptoms of ARMS.	3 (medium)
Jacobs et al. (2012)	Barriers/facilitators to identifying ARMS in primary care (RQ3)	Exploring how different practitioners (GPs, clinical psychologists and psychiatrists) treat individuals with an ARMS.	Quantitative (descriptive)	68 primary care practitioners	US	M = 52.6 (SD = 10.9)	48% [b]	*Barriers*: Lack of knowledge about ARMS, its identification and treatment.	3 (medium)
Russo et al. (2012)	Barriers/facilitators to identifying ARMS in primary care (RQ3)	To identify factors that influence the identification of individuals with an ARMS in primary care using theory of planned behaviour.	Quantitative (descriptive)	82 GPs	UK	M = 45.6 (SD = 9.4)	47%	*Barriers*: Thinking that their peers (e.g., psychiatrist) would not approve them diagnosing individuals with an ARMS (systemic barriers); low level of confidence and	3 (medium)

TABLE 1 (Continued)

First author (year)	Study focus	Study aim	Study type (subtype)[a]	Number of participants	Country	Age	Females (%)	Study findings in relation to research question	Quality rating – Total
								perceived control over identification of ARMS, lack of skills. *Facilitators*: Positive attitudes and intentions towards identifying individuals with an ARMS, high personal motivation/interest in ARMS and mental health, knowledge of patient and their background.	
Simon et al. (2009)	Barriers/facilitators to identifying ARMS in primary care (RQ3)	The international GP study on early psychosis - to assess the diagnostic knowledge, treatment practices, attitudes, and preferences for support of GPs in different countries.	Quantitative (descriptive)	2784 GPs	International - Switzerland, Austria, UK, New Zealand, Czech Republic, Canada, Australia, Norway	$M = 46.4$ ($SD = 9.44$)	45.30%	*Barriers*: Lack of knowledge about ARMS (about symptoms of 'functional decline'), lack of low-threshold services to refer individuals with an ARMS to. *Facilitators*: Good knowledge of 'positive symptoms' of psychosis; being a 'gatekeeping GP' (have better diagnostic knowledge than non-gatekeeping GPs), practicing in 'Commonwealth' countries (have better diagnostic knowledge than continental European GPs).	3 (medium)
Smith et al. (2021)	Barriers/facilitators to identifying ARMS in primary care (RQ3)	To understand GPs' comfort and understanding of ARMS; to understand GPs'	Quantitative (Descriptive)	75 GPs	Australia	n/a	n/a	*Barriers*: Lack of knowledge about ARMS (31% of GPs not aware of the concept of ARMS)	3 (medium)

(Continues)

TABLE 1 (Continued)

First author (year)	Study focus	Study aim	Study type (subtype)[a]	Number of participants	Country	Age	Females (%)	Study findings in relation to research question	Quality rating – Total
		interest in specialized training.						*Facilitators*: Motivation for further training (almost all (95%) of GPs interested in further training in YP mental health).	
Strelchuk et al. (2021)	Barriers/facilitators to identifying ARMS in primary care (RQ3)	To investigate GPs views about identifying individuals with an ARMS in primary care. To identify barriers and facilitators related to the identification.	Qualitative	20 GPs	UK	32–63 (M = 46.0, SD = 8.6)	40%	*Barriers*: Lack of knowledge about ARMS, lack of mental health training, diagnostic similarities between ARMS and other mental health problems, lack of diagnostic categories (e.g., ARMS), lack of time (short GP consultations), difficulties making appointment with the GP, high threshold for accessing secondary care, difficulties about getting an appointment in secondary care, fears about labelling patients, patients not seeking help due to lack of motivation, depression and stigma, *Facilitators*: Increasing knowledge about specialist referrals and ARMS treatment.	5 (high)
Tor and Lee (2009)	Barriers/facilitators to identifying ARMS in primary care (RQ3)	To compare attitudes of Singapore psychiatrists vs. GPs about ARMS.	Quantitative (descriptive)	107 primary care practitioners	Singapore	57.9% aged between 30 and 40	51.40%	*Barriers*: Lack of knowledge about ARMS (GPs more likely to diagnose patients with psychosis), lack of confidence in identifying ARMS	2 (low)

TABLE 1 (Continued)

First author (year)	Study focus	Study aim	Study type (subtype)[a]	Number of participants	Country	Age	Females (%)	Study findings in relation to research question	Quality rating – Total
								(less than a third of GPs advocate for screening for ARMS in high-risk groups), low confidence in treating individuals with an ARMS (almost all GPs not wanting to treat ARMS), low tolerance of psychosis-like symptoms.	

Abbreviations: ADHD, attention-deficit hyperactivity disorder; EIP, early intervention in psychosis; ERIraos, Interview for the Retrospective Assessment of the Onset and Course of Schizophrenia and Other Psychoses (German version); n/a, the study did not report participants' gender or age; OCD, obsessive–compulsive disorder; RQ1-3, Research Question 1–3, PCCL, Primary Care Checklist; YP, young people.

[a] Study type as defined by MMAT (quality appraisal tool).

[b] Study characteristics reported in relation to the whole sample (i.e., sub-group statistics were not reported).

Data synthesis began with preliminary synthesis (Popay et al., 2006). This included creating short textual descriptions of studies (i.e., producing a descriptive paragraph for each study), which enabled the reviewers to become familiarized with each study. The following step included tabulation of studies according to their (1) methodology used, (2) study aims, (3) participant group (i.e., GPs or individuals with an ARMS), (4) participant gender, (5) participant age, (6) study results, and (7) implications. Information regarding each study's quality appraisal was also included. This was followed by creating a 'common rubric' (common framework) – organizing the results of all studies in a meaningful way and in relation to the review's aims. For instance, the common rubric for research question 1 included the details about the screening tool used (e.g., screening questionnaire) and main study findings in relation to the utility of the screening tool in primary care setting. The final stage of preliminary synthesis was a Thematic Analysis. Information extracted in 'common rubrics' was treated as codes, which were then grouped and organized in an inductive manner (i.e., without being driven by a set of a priory themes/review's aims). For instance, codes 'sensitivity/specificity issues' and 'false positives' were combined in a family of codes/subtheme called 'identification issues' which then formed a significant part of the main theme (Theme 2). The final set of themes was generated analytically – providing the interpretation 'beyond' the primary review's aims and generating a story about the review's findings (e.g., Thomas & Harden, 2008).

The third step of analysis included exploring the relationship within the studies. For instance, we explored the relationship within a group of studies with the same research question, which included comparison of their findings and exploring the relationship between these studies and identified themes. We also explored the relationships between the studies, which included comparing studies conducted via different methodologies and in different countries. We further explored variability in outcomes, designs, and populations of included studies, and investigated whether this variability affects our main themes identified in the previous step of Narrative Synthesis. Any identified pattern of difference was reported in Section 3.

In the final step of narrative synthesis (assessing robustness) we assessed the robustness of the synthesis by removing the studies with the lowest quality and investigating whether this affected the results.

3 | RESULTS

3.1 | Study selection

In total, 8430 records were identified from databases. After duplicates were removed, 6217 abstracts and 96 full texts were screened. Sixteen studies were identified as eligible and are included in the current review. Study selection was led by the first author (JR), who screened all abstracts and full texts. A proportion of records (20% of abstracts and 25% of full texts) were independently screened by a second reviewer (EI) and the agreement between the reviewers was very good ($\kappa > .81$). The full process of study selection is presented in the PRISMA flowchart (Figure 1).

3.2 | Study description

Sixteen studies were identified, with 15 studies providing quantitative and one study providing qualitative data. Two (12.5%) studies were exploring methods of identifying individuals with an ARMS in primary care, seven (43.8%) studies explored ways of improving the identification of ARMS in primary care, and the remaining seven (43.8%) studies examined barriers to identifying individuals with an ARMS in primary care. Study characteristics are presented in Table 1. Studies are ordered by research question and alphabetically within that.

In the majority (75.0%) of the studies, participants were GPs, whilst in the remaining 25.0% of studies, participants were individuals with an ARMS or first episode psychosis (FEP) patients. Studies varied considerably in terms of country (with 50.0% of studies conducted in the United Kingdom, 12.5% in the United States, 12.5% in Switzerland, 6.3% in Australia, 6.3% in Spain, 6.3% in Singapore and 6.3% across multiple countries); age range in years (from 32 to 63[1] for GP participants and from 14 to 45 for patient samples); sample size (from 18 to 2784 for GP participants and from 20 to 3045 for patient samples); gender (percentage of females ranging from 40.0% to 57.4% for GP participants, and from 37.1. to 40.0% for patient samples). Notably, several (25.0%) studies did not report participant age and the same proportion of studies did not report participant gender.

3.3 | Quality ratings

Studies assessed varied considerably in terms of quality. The majority of studies (62.5%) were classified as 'medium' quality, a quarter of the studies were classified as 'high' quality and one study (6.3%) as 'low' quality. One of the included studies did not meet the MMAT criteria for quality appraisal (i.e., the study did not pass two screening questions for quality appraisal); however, the study was still included in the review. Strengths of the studies usually included appropriate sampling strategies, data analysis methods, and descriptions of measures. Limitations of the studies usually related to absence of detail regarding sample representativeness and lack of information on risk of no response bias.

3.4 | Identified themes

We identified three themes that were common across all included studies. The themes were named (i) Improving GP knowledge and confidence in identifying individuals with an ARMS, (ii) Balancing over- and under-identification of individuals with an ARMS in primary care, and (iii) Supporting GPs as significant stakeholders in early diagnosis and management of individuals with an ARMS. The relationship between the themes and this review's aims is outlined in Table 2 and the content of each theme is summarized below.

3.4.1 | Theme 1: Improving GP knowledge and confidence in identifying individuals with an ARMS

The majority of studies identified a lack of knowledge of ARMS amongst GPs (Jacobs et al., 2011; Jacobs et al., 2012; Russo et al., 2012; Simon et al., 2009; Smith et al., 2021; Strelchuk

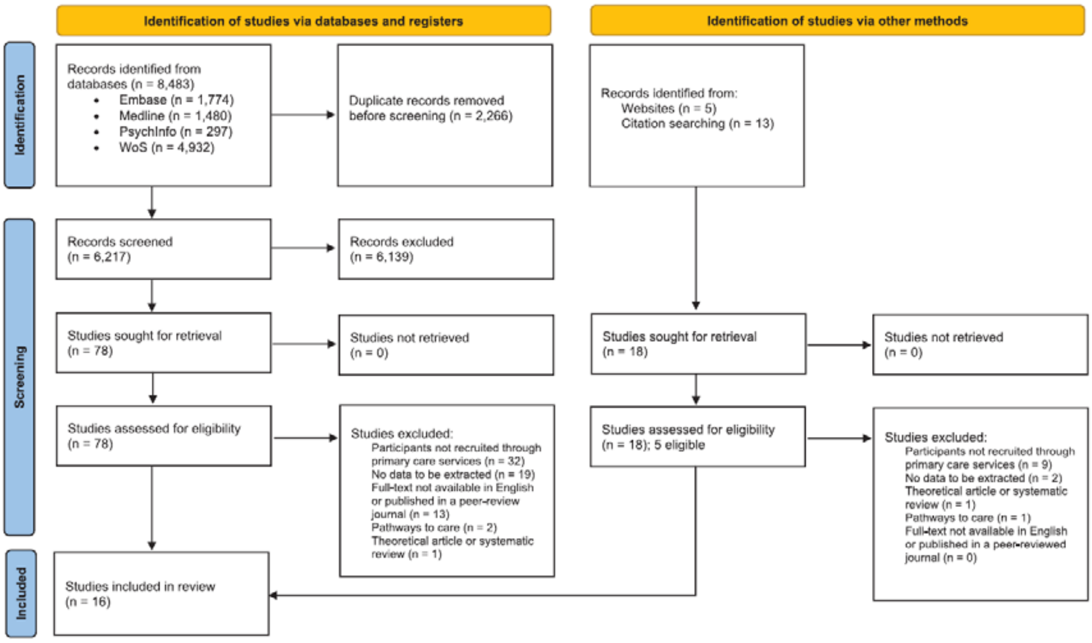

FIGURE 1 PRISMA flowchart of study selection process

et al., 2021; Tor & Lee, 2009). Furthermore, GPs reported not feeling confident about treating individuals with an ARMS (Jacobs et al., 2011; Tor & Lee, 2009) and finding it hard to distinguish ARMS from other common mental health disorders due to a lack of a single diagnostic category and overlap between ARMS and other mental health problems (Jacobs et al., 2011; Strelchuk et al., 2021). GPs seem to be more aware of 'positive' ARMS symptoms (e.g., hallucinations), rather than symptoms of functional decline (Simon et al., 2009). This is important, as studies suggest that individuals with an ARMS most commonly consult their GPs for non-psychosis-specific symptoms (e.g., depression, social withdrawal, obsessive–compulsive disorder-like symptoms) (Chen et al., 2019; Platz et al., 2006; Sullivan et al., 2018). Notably, some studies (e.g., Sullivan et al., 2018) suggest that GPs should be particularly mindful when identifying the non-psychosis-specific symptoms in young men since these symptoms seem to be a particularly strong predictors of ARMS in this population.

TABLE 2 Identified themes in relation to the review's aims

Aim	Results	Theme
Aim 1: The most common methods (e.g., screening tools, interviews) for identifying ARMS in primary care	Two tools identified: PCCL checklist (French & Morrison, 2004) ERIraos checklist (Maurer et al., 2006)	Theme 2: Balancing over- and under-identification of individuals with an ARMS in primary care
Aim 2: Methods of improving identification of ARMS in primary care	Educational interventions for GPs Optimizing cut-off values of existing tools Using medical-record-based prognostic models	Theme 2: Balancing over- and under-identification of individuals with an ARMS in primary care
	Providing specialist input within primary care practices	Theme 3: Supporting GPs as significant stakeholders in early diagnosis and treatment of individuals with an ARMS
Aim 3: The most common barriers to screening for ARMS in primary care	Lack of knowledge about ARMS Lack of confidence in treating ARMS	Theme 1: Improving GP knowledge and confidence in identifying individuals with an ARMS
	Limited time for individual consultations High threshold for secondary care mental health services Long waiting times Patient-experienced stigma	Theme 3: Supporting GPs as significant stakeholders in early diagnosis and treatment of individuals with an ARMS

3.4.2 | Theme 2: Balancing over- and under-identification of individuals with an ARMS in primary care

Simple (e.g., single session) interventions can improve GPs knowledge of ARMS (Simon et al., 2010) and improve GPs' identification of individuals with an ARMS in primary care (Perez et al., 2015; Reynolds et al., 2015). Similarly, clinician-administered ARMS screening checklists, such as the Early Detection Primary Care Checklist – PCCL (French & Morrison, 2004) and The Early Recognition Inventory – ERIraos (Maurer et al., 2006), can potentially help with early identification of individuals with an ARMS in primary care (French et al., 2012; Quijada et al., 2010). However, although GPs seem to be interested in receiving further training on identifying individuals with an ARMS (Smith et al., 2021), research suggests that educational interventions and an ARMS checklist can often lead to a large number of false positives (French et al., 2012; Perez et al., 2015; Reynolds et al., 2015). Modifying the scoring criteria of existing checklists (French et al., 2012), using tailored cost-effective interventions (Perez et al., 2015; Reynolds et al., 2015), and developing a medical-record-based prognostic model of identifying individuals with an ARMS in primary care (Sullivan et al., 2018) all have the potential to outweigh the benefits of over-identifying individuals with an ARMS in primary care.

3.4.3 | Theme 3: Supporting GPs as significant stakeholders in early diagnosis and treatment of individuals with an ARMS

GPs are often familiar with their patients, so they are well placed for identifying individuals with an ARMS (Russo et al., 2012). However, some logistical barriers, such as limited time for individual consultations, high threshold for secondary care mental health services, and long waiting times, represent important obstacles for identifying individuals with an ARMS in primary care (Simon et al., 2009; Strelchuk et al., 2021). GPs also reported concerns about patient-experienced stigma related to identifying individuals with an ARMS in their practices (Strelchuk et al., 2021), and concerns about other colleagues (e.g., psychiatrists) having doubts about GPs' abilities to accurately identify ARMS (Russo et al., 2012). Providing specialist input within primary care practices (i.e., integrated services) has the potential to improve GPs' abilities to confidently identify individuals with an ARMS in primary care (Falloon et al., 1996; Simon et al., 2009).

3.5 | Robustness of the synthesis

To assess the robustness of the synthesis, we removed two studies – the study with the lowest quality rating and the study that did not meet the criteria for a quality appraisal (Falloon et al., 1996; Tor & Lee, 2009) and re-examined the findings in relation to the identified themes. The main study findings and themes remained the same after excluding these studies.

4 | DISCUSSION

4.1 | Main results

This study identified and reviewed 16 studies addressing: (1) existing methods, (2) strategies to improve, or (3) barriers that prevent primary care practitioners from screening for ARMS in primary care. We identified three themes relating to GPs' knowledge and confidence in identifying ARMS in primary care, balancing the costs and benefits of identifying ARMS in primary care, and supporting GPs in early diagnosis/treatment of individuals with an ARMS.

GPs' knowledge about and confidence in identifying ARMS is generally low. Indeed, the findings suggest that GPs are well equipped for identifying PLEs, however, they often overlook the symptoms that are most strongly associated with ARMS, such as low mood, social withdrawal, and reduced functioning. Some strategies of improving GPs' knowledge of ARMS and early identification in primary care could include the use of screening tools (e.g., PCCL; French & Morrison, 2004), reviewing patients' medical records, and attending educational workshops on ARMS identification and treatment. Research suggests that these strategies are associated with higher proportions of correctly identified individuals with an ARMS in primary care. However, they also lead to a high proportion of false positives, which can be problematic, especially given the stigma associated with psychosis and related disorders (e.g., Strelchuk et al., 2021). Providing support for GPs on a systemic level (e.g., integrated services, such as OASIS in London) and developing screening tools that focus on a wide range of symptoms associated with ARMS (e.g., anxiety, low mood, social withdrawal) may lead to higher rates of correct identification of individuals with an ARMS (Fusar-Poli et al., 2013).

The results of this review are broadly consistent with the existing literature. Problems with high rates of false positives and suboptimal sensitivity/specificity ratios of ARMS screening tools have been reported in a systematic review of ARMS screening tools in educational settings (Howie et al., 2019). Similarly, previous research also identified symptoms of affective disorders, reduced neurocognitive performance, functional impairments and non-positive attenuated symptoms (e.g., motor disturbances) to be highly predictive of ARMS (Carrión et al., 2013; Howie et al., 2019), indicating that understanding of ARMS as a concept should be broad and not limited only to psychosis-like symptoms. Previous studies have also demonstrated that using statistical modelling of patients' medical health records to improve the identification of certain mental health problems (most commonly using 'deep learning' – a form of artificial intelligence) has been effective in identifying mental health problems (Pham et al., 2017; Su et al., 2020). However, it is important to be aware of ethical implications of such prediction models as they can undermine patients' and clinicians' sense of agency, and shared decision making (Lane & Broome, 2022). Finally, previous research also identified systemic barriers related to the early identification of mental health problems in primary care, such as limited consultation time and long waiting times for specialist services (e.g., O'Brien et al., 2016), indicating the need for systemic changes in primary care. Expansion of primary-care-based mental health services, such as involvement of mental health professionals in decision making in primary care and integrated medical-behavioural health care models, have both been associated with an increase identification of mental health problems in primary care (Asarnow et al., 2015; Haavet et al., 2021; Simon et al., 2009) and therefore, it is likely they could help GPs overcome barriers associated with identification of ARMS. However, only with the appropriate systemic changes, can we expect that interventions focused only on the GPs (e.g., educational workshops on ARMS) will be truly successful (Gask, 2007).

Our review identified several possibilities for further research. Firstly, there appears to be a lack of ARMS screening tools for use in primary care, and therefore, future research could focus on developing and validating short and easy-to-use ARMS screening questionnaires. Previous research with screening questionnaires for young people demonstrated that symptom impact questions often have a higher predictive value than disorder symptoms themselves (Evans et al., 2017; Goodman, 2001; Radez et al., 2021), and therefore, ARMS screening tools might achieve the optimal sensitivity/specificity ratios if including symptom impact questions. The short version of the Prodromal Questionnaire (PQ-16) (Ising et al., 2012) is an example of a short self-reported questionnaire for ARMS that includes the symptom impact items, and future research could investigate its utilization in primary care. In addition, future research should focus in identifying optimal cut-off values for the ARMS questionnaires identified in current review (e.g., PCCL) for different populations (e.g., adults). Given a rapid expansion of the role of machine learning in mental health, future studies could also focus on further development and implementation of prediction models for identification of individuals with an ARMS based on their medical records and consultation patterns. Finally, we identified only one study that used qualitative in-depth methodology to understand GPs' views about identifying and managing ARMS in primary care, and therefore, future qualitative research should further explore how GPs want to be supported when identifying and treating individuals with an ARMS in their practices.

4.2 | Implications

This review's findings have clear practical implications. Firstly, there is a need to improve GPs knowledge and confidence in identifying individuals with an ARMS in primary care. Developing and validating quick and easy-to-use screening tools and software programs could help GPs identify individuals with an ARMS. Simple (i.e., one session) educational interventions could also aid early identification of ARMS in primary care. Educational interventions should also focus on educating GPs around potential barriers to (over)identification of individuals with an ARMS, such as misdiagnosis and unnecessary labelling of young people. Systemic factors, such as time for each GP consultation and difficulties making a referral to secondary care, need to be carefully considered when implementing identification of ARMS in primary care. Similarly, working closely with other community stakeholders and specialist mental health teams will likely make the above interventions more effective. Further, involving community stakeholders could also help GPs focus on other areas of psychosis prevention, such as reducing the exposure to risk factors (e.g., high potency cannabis use, see Murray et al., 2021) in those who may be at-risk. Finally, our review identified that a lack of a clear diagnostic category for ARMS and use of multiple terms to describe individuals with an ARMS creates further confusion and reduces clinicians' confidence in identifying ARMS. Therefore, using the same name/diagnostic label could be beneficial.

4.3 | Limitations

There are limitations to this review. Due to the high heterogeneity of included studies and reporting methods, it was not possible to conduct a meta-analysis of ARMS screening tools or effectiveness of interventions to improve ARMS identification. Similarly, we were not able to compare study findings quantitatively in relation to the study characteristics (e.g., methodology used, country). Although we used broad search terms, which resulted in a high number of identified abstracts, a significant proportion of papers were identified using other (non-database) searches (e.g., forward/backwards citation searching). This may be related to the nature of the ARMS concept and a wide range of definitions. It is important to acknowledge that none of the included studies investigated how rates of individuals with an ARMS identified via primary care compare to the rates of individuals with an ARMS identified via other settings (e.g., emergency departments, educational settings) and this question remains to be explored. Finally, only one study explored cross-cultural differences (Simon et al., 2009) and therefore, future research could explore this further – in particular as ARMS service models vary significantly between different countries.

5 | CONCLUSIONS

Early identification of those at high risk of psychosis has the potential to prevent or delay the onset of a first episode psychosis, with benefits for the individual, their families, as well as wider society. GPs are particularly well placed to identify individuals with an ARMS; however, as self-identified by the GP participants included in this review, they often lack the appropriate knowledge and tools to do so. There are a number of interventions that could support GPs to identify individuals with an ARMS accurately and promptly, including developing and validating ARMS screening tools, delivering educational workshops for GPs, using machine learning to identify individuals with an ARMS based on their medical record patterns, simplifying referrals to secondary care services, and developing integrated services. Future development and implementation of these interventions may help individuals with an ARMS to access help promptly, and delay or even prevent the onset of psychosis.

ACKNOWLEDGEMENTS

The authors would like to thank Dr Karl Marlowe and Sarah Amani of Oxford Health NHS Foundation Trust, and Dr Silvia Murgia of East London NHS Foundation Trust for providing the details on one of the UK's first ARMS detection services. The authors would also like to thank Dr Sophie Allan of Norfolk and Suffolk NHS Foundation Trust for input into the design of this review. Felicity Waite is funded by a Wellcome Trust Clinical Doctoral Fellowship (102176/B/13/Z).

FUNDING INFORMATION

JR and EI were supported by funding for professional clinical psychology training by Oxford Health NHS Foundation Trust. Felicity Waite is funded by a Wellcome Trust Clinical Doctoral Fellowship (102176/B/13/Z).

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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ENDNOTE

[1] Estimated age range based on reported age ranges of GPs by 7 out of 11 studies.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Radez, J., Waite, F., Izon, E., & Johns, L. (2023). Identifying individuals at risk of developing psychosis: A systematic review of the literature in primary care services. *Early Intervention in Psychiatry*, 1–18. https://doi.org/10.1111/eip.13365

Appendix A.2 – SRL Journal Guidelines

Author Guidelines

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In contrast with mainstream healthcare, early diagnosis and intervention has come late to the field of psychiatry. *Early Intervention in Psychiatry* creates a common forum for researchers and clinicians with an interest in the early phases of a wide range of disorders to share ideas, experience and data. This journal not only fills a gap, but also creates a new frontier in academic and clinical psychiatry.

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Early Intervention in the Real World, a special features section which focuses on issues such as service descriptions and delivery, and clinical practice guidelines (maximum word count for text 3000; abstract 250);

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iv. The author's institutional affiliations where the work was conducted, with a footnote for the author's present address if different from where the work was conducted;
v. Abstract and keywords;
vi. Main text;
vii. Acknowledgements;
viiii. Conflict of interest statement;
ix. References;
x. Tables (each table complete with title and footnotes);
xi. Figure legends;
xii. Appendices (if relevant).

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The abstract should not contain abbreviations or references.

Five key words, for the purposes of indexing, should be supplied below the abstract, in alphabetical order, and should be taken from those recommended by the US National Library of Medicine's Medical Subject Headings (MeSH) browser list at **http://www.nlm.nih.gov/mesh/meshhome.html**.

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Acknowledgments

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References

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Book

Bradley-Johnson, S. (1994). *Psychoeducational assessment of students who are visually impaired or blind: Infancy through high school* (2nd ed.). Austin, TX: Pro-ed.

Internet Document

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Tables should be self-contained and complement, not duplicate, information contained in the text. They should be supplied as editable files, not pasted as images. Legends should be concise but comprehensive – the table, legend, and footnotes must be understandable without reference to the text. All abbreviations must be defined in footnotes. Footnote symbols: †, ‡, §, ¶, should be used (in that order) and *, **, *** should be reserved for P-values. Statistical measures such as SD or SEM should be identified in the headings.

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Appendix B.1 – SIP Journal Guidelines

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CONFIDENTIAL

Dr Louise Johns & Dr Jerica Radez
Oxford Institute of Clinical Psychology Training and Research
Isis Education Centre
Warneford Hospital
Oxford

8 July 2022

Dear Dr Johns and Dr Radez ,

Research Ethics Approval - CUREC 2

Ethics Approval Reference: R80946/RE001

Study title: Improving access to secondary mental health services for young people of minority backgrounds – A qualitative study

Short title: Improving access to mental health services for young people

The above application has been considered on behalf of the Medical Sciences Interdivisional Research Ethics Committee (MS IDREC) in accordance with the University's procedures for ethical approval of all research involving human participants.

I am pleased to inform you that, on the basis of the information provided to the IDREC, the proposed research has been judged as meeting appropriate ethical standards, and approval has been granted for a period of 18 months, commencing on 8th July 2022.

You will be required to submit an annual progress report on each anniversary of study approval, until the study is completed, and your study may be selected for review during an annual audit.

Amendments

Should there be any subsequent changes to the study, you should submit details to the MS IDREC for consideration and approval. Details of changes must be listed on an amendment form.

Yours Sincerely

DocuSigned by:
Leah Butts

Mrs Leah Butts
Research Ethics Administrator

for
Dr Helen Barnby-Porritt
Research Ethics Manager

Appendix C.1 – TDRP Paper

Child and Adolescent Mental Health

Child and Adolescent Mental Health Volume **, No. *, 2023, pp. **–** doi:10.1111/camh.12651

Understanding unusual sensory experiences: a randomised experimental study of a school-based intervention for adolescents

Jerica Radez[1,2], **Louise Johns**[1,2,3] **& Felicity Waite**[2,3]

[1]*Oxford Institute of Clinical Psychology Training and Research, Medical Sciences Division, University of Oxford, Oxford, UK*
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Background: One in ten young people experience unusual sensory experiences (USE), such as hallucinations. From a cognitive perspective, the appraisal of USE determines the impact of these experiences. Negative appraisal, as well as other psychological processes (e.g. thinking flexibility, maladaptive schemas, anxiety/depression), is associated with more distress. Our aim was to (a) develop a universal single-session school-based intervention on USE for adolescents and (b) evaluate the effect of the intervention on appraisals of and help seeking intentions for USE. **Methods:** A randomised controlled experimental design with a one-month follow-up was used to test the effectiveness of the intervention in one school. Students ($n = 223$) aged 12–13 were randomised by class to a single-session intervention on USE or a control intervention (generic mental wellbeing). Participants completed measures of appraisals of and help-seeking intentions for USE at pre- and postintervention and at one-month follow-up. They also completed measures of schemas, thinking flexibility and anxiety/depression at preintervention. **Results:** Overall, 190 adolescents completed the main outcome measures at all three points. The intervention on USE led to a significant ($p < .05$) increase of positive appraisals of USE compared with the control, with effects sustained at one-month follow-up. The intervention on USE did not lead to significantly greater help-seeking intentions for USE ($p = .26$). Adolescents' schemas were associated with appraisals and slow thinking and anxiety/depressive symptoms with help-seeking behaviour for USE. **Conclusions:** A single-session universal school-based intervention shows promise by improving appraisals of USE. Further research is required across different school populations.

Key Practitioner Message

- Unusual sensory experiences (USE) are experienced by up to 15% of children and adolescents in the general population. Although usually transient, they can lead to high levels of distress and stigma for some young people.
- From a cognitive perspective, the way that young people make sense of USE (appraisal) is crucial in determining the distress and impact of these experiences. Psychoeducational interventions aiming to increase normalising and nonthreatening appraisals of USE for young people might reduce the negative impact of these experiences.
- We designed and evaluated a single-session school-based intervention for young people aged 12–13 years. We compared the intervention with a control condition (i.e. generic wellbeing intervention).
- Adolescents receiving the intervention on USE reported more positive appraisals of USE immediately after the intervention and at one-month follow-up. The intervention did not lead to changes in help-seeking intentions for USE. In general, more adaptive schemas were associated with more positive appraisals of USE, whereas lower levels of anxiety/depressive symptoms and slower (i.e. rational) thinking were associated with higher intentions to seek help for USE.
- Results of this study suggest that a simple, single-session psychoeducational intervention focused on adolescents' appraisals of USE has the potential to lead to positive and lasting changes in appraisals of USE.
- Future research should focus on developing and evaluating psychoeducational interventions that also target identified protective factors.

Introduction

Between 10% and 15% of children and adolescents in the community report experiencing unusual sensory experiences (USE), such as visual and auditory

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Louise Johns and Felicity Waite are joint last authors of this manuscript.

hallucinations (Kelleher et al., 2012, 2015). In this study, USE are described as all situations where there is a discrepancy between what is perceived by a young person and what exists in the real world. We focused on multimodal sensory experiences, that is, auditory, visual, olfactory, gustatory and bodily sensations (e.g. Jardri et al., 2014), and other less well-known sensory experiences, such as sensing the presence of another person. Although commonly associated with symptoms of serious mental health problems, such as psychosis, USE for young people usually spontaneously resolve (Bartels-Velthuis, van de Willige, Jenner, van Os, & Wiersma, 2011). However, young people can find these experiences distressing (Parry, Loren, & Varese, 2021) and highly stigmatising (Bogen-Johnston, de Visser, Strauss, Berry, & Hayward, 2019), which is associated with persistence of these experiences.

Cognitive models of USE and similar psychotic-like experience (PLEs) emphasise the central role of appraisals (the way that people make sense of experiences) in determining the impact of USE and predicting the distress and subsequent need for professional help (Freeman, 2016; Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001; Morrison, 2001). Research with adults suggests that personalising, distressing and threatening appraisals of USE lead to higher levels of impact and distress, whereas normalising and supernatural appraisals of USE tend to be associated with a more favourable outcome (Gaynor, Ward, Garety, & Peters, 2013; Peters et al., 2017; Ward et al., 2014). Similarly, recent studies with young people suggest that developing personal meaning-making explanations of USE leads to lower levels of distress than understanding USE through the lens of a potential serious mental health problem (Parry & Varese, 2021).

There are many different psychological processes (henceforth referred to as 'covariates') that are associated with someone's appraisals of USE. One cognitive model argues that dysfunctional appraisals of USE are maintained by reasoning processes (e.g. belief inflexibility), maladaptive schemas (i.e. negative beliefs about oneself, other people, the world), adverse social environments, emotional processes (e.g. anxiety and depression) and secondary appraisal (e.g. stigma associated with mental health and help-seeking) (Garety et al., 2001). Although there is no single accepted psychological model of USE in adolescents, research suggests that psychological processes identified in adult models, such as maladaptive schemas (Anilmis et al., 2015), reasoning processes (Hassanali et al., 2015) and internalising/externalising problems (Lancefield, Raudino, Downs, & Laurens, 2016), apply to young people as well. Understanding the role of the above processes in predicting the distress of USE is important as it can help us develop targeted interventions for reducing (a) the negative impact and (b) the stigma associated with USE for young people (Gin et al., 2021).

Psychoeducation focusing on normalising and destigmatising USE can be instrumental in reducing the overall distress and negative impact of USE for young people (Maijer et al., 2019; Parry & Varese, 2021). Given the high prevalence of USE in the adolescent general population, there is an opportunity to deliver psychoeducational interventions through educational settings (Parry, 1992; Parry & Varese, 2021). However, existing school-based interventions mainly focus on common mental health problems, such as anxiety and depression (Fazel, Hoagwood, Stephan, & Ford, 2014), despite clinicians' and young people's preference for interventions with a transdiagnostic focus (Garralda, 2015; Kapur et al., 2014). The recently developed and evaluated CUES-Ed is a universal school-based intervention, focusing on promoting nonstigmatising appraisals of USE in primary age children. The intervention is delivered through eight school lessons and the preliminary results in preadolescent children are promising (Underwood et al., 2021). However, to our knowledge, no school-based intervention has yet focused only on USE and been provided to adolescents.

In this randomised controlled experimental study, we aimed to develop and evaluate a single-session school-based intervention on USE in adolescents. The study had two primary and two secondary hypotheses. In our primary hypotheses, we predicted that, compared with a control condition, the intervention would (a) lead to an increase in positive (e.g. normalising) appraisals of USE in adolescents and (b) lead to an increase in young people's help-seeking intentions regarding USE. We also hypothesised that these effects would be maintained over time (measured at one-month follow-up). Our secondary hypotheses predicted that the individual's flexibility of thinking, self-perceptions/schemas and anxiety and depression symptoms would be significant covariates of the relationship between the intervention and (a) appraisals of USE and (b) help-seeking intentions regarding USE.

Method

The study was pre-registered at the Open Science Framework (Radez, Waite, & Johns, 2022).

Interventions

Understanding sensory experiences in adolescents (USE-A). The USE-A is a single session (40 min) educational session delivered in school by a mental health practitioner with the aim of increasing adolescents' understanding of USE. The intervention consisted of the following topics: (a) definition of USE including examples of sensory experiences that are odd and unexpected (e.g. optical illusions, auditory hallucinations), and reasons for different sensory experiences (e.g. lack of sleep, drugs, illness, high anxiety, grief), (b) explanation using a cognitive model including examples of how different interpretations of sensory experiences influence the way we feel and act in response to them (e.g. how threatening interpretations of USE lead to higher levels of negative emotions and can increase an overall impact and distress of these experiences) and (c) help-seeking for USE (i.e. examples of when and where to seek help for USE).

The intervention – based on the cognitive models of psychosis (e.g. Garety et al., 2001) – was developed by JR, FW and LJ and modified upon consulting additional researchers and clinicians working with young people. The contents of the intervention were also informed by treatment protocols for managing USE in adults (e.g. Dodgson et al., 2021). In addition, the researchers sought input from mental health charities and secondary school teachers. The final version of the intervention was piloted with young people aged 11–13 to ensure it was understandable and engaging for the target population.

Control intervention. A single session (40 min) educational intervention on general mental health and wellbeing topic was developed as an active control condition. The control intervention was entitled 'Be physically active – 5 steps to mental wellbeing', and this topic was selected by the participating school.

Procedure

This study took place in a large (>1500 pupils) mixed state school in Southeast England. The school distributed parental study information leaflets and opt-out forms electronically to all parents of Year 8 (12–13 years) students ($N = 270$) in April 2022. At the same time, the school also electronically distributed adolescent information leaflets to all Year 8 (12–13 years) students. After 2 weeks, a researcher delivered one of the interventions in person during one school lesson (60-min). All classes ($n = 10$) were randomly assigned to either the experimental or control intervention, with class being used as a clustering variable. Prior to each intervention, adolescents were asked to fill in five brief questionnaires (see Measures), taking approximately 15 min in total. Following initial questionnaire completion, the intervention was delivered, which lasted up to 40 min. Adolescents were then asked to fill the Appraisals Measure and GHSQ immediately after the intervention. All the interventions were delivered within 2 weeks with nine delivered by the lead researcher (JR) and one by another researcher (LJ). For the follow-up, adolescents were asked to fill in the Appraisals Measure and GHSQ after approximately 1 month. This was done using paper forms during the class tutor time. The lead researcher (JR) collected paper forms from the school as soon as they were completed. After data collection was completed, all young people in the control condition were given access to a prerecorded intervention on USE via e-learning. No personal data were collected, and students used anonymised, unique ID codes to ensure that their follow-up questionnaire responses were matched.

Measures

The measures used to assess help-seeking, anxiety and depression symptoms, and schemas have all been developed and evaluated with young people. However, there is a lack of validated measures of appraisals of USE and reasoning processes in young people. Therefore, we adapted the appraisals measure for 'unusual experiences in children' developed by Bradley et al. (2013). To ensure that the final set of outcome measures was appropriate to use with young people, we piloted the questionnaire measures with young people aged 11–13. All young people reported finding the measures appropriate and understandable.

Primary outcome measures. Measure of Appraisal of USE. We generated a 6-item measure assessing appraisals of USE using item-specific response options (see Appendix S1). The 6-item measure was an adaptation of the 3-item measure developed by Bradley et al. (2013). The 3-item measure included questions relating to three aspects of appraisals (externality, agency and threat). For the purpose of this study, we added three additional items reflecting the remaining aspects of appraisals of USE as specified by Brett et al. (2007) – Valence, Abnormality and Controllability. The questionnaire started with a probe (i.e. *Imagine hearing things that other people cannot hear or seeing things that other people cannot see. What would you think about this experience most of the time?*), adapted from the existing measure (Bradley et al., 2013). The probe was followed by six sentences; for each sentence, the young person had to select an ending from five item-specific options. Item-specific response options were chosen due to research studies demonstrating the superiority of this approach over the traditional agree/disagree response options (Saris, Revilla, Krosnick, & Shaeffer, 2010). Item responses were sorted beginning with the ones reflecting more negative appraisals of USE and ending with the ones reflecting more positive appraisals of USE. Each response was assigned a numerical value of 1–5 with higher values indicating more positive appraisals.

Before calculating the total appraisals score, a psychometric evaluation of the measure was performed (see Appendix S2). Following the results of this evaluation, participants' responses to items 1, 5 and 6 (Threat, Abnormality, and Valence) were summarised and are subsequently used in main analyses as a measure of participants' appraisals. Participants' responses to remaining three items were included in descriptive analyses only.

General Help-Seeking Questionnaire - GHSQ (Wilson, Deane, Ciarrochi, & Rickwood, 2005). The GHSQ is 10-item questionnaire measuring help-seeking intentions for mental health problems in young people. For each question, the individual reports how likely they are to seek help from a specific source. The total score is calculated by summing participants' responses to all 10 items. The GHSQ has adequate psychometric characteristics when used in general population (Deane, Wilson, & Ciarrochi, 2001; Rickwood, Cavanagh, Curtis, & Sakrouge, 2004). Questionnaire instructions were adapted for the purpose of this study (i.e. asking adolescents about help-seeking for USE rather than for emotional or personal problems as in the original questionnaire).

Secondary outcome measures. Fast and Slow Thinking (FaST) questionnaire (Hardy et al., 2020). FaST is a 10-item questionnaire measure of reasoning processes. FaST measures fast (e.g. 'jumping to conclusions') and slow (e.g. thorough review of the evidence) reasoning biases that can contribute to the development and distress of a wide range of experiences, including USE (Daalman, Sommer, Derks, & Peters, 2013). The original questionnaire was developed for paranoid thoughts, and therefore, the initial probe was changed for this study (i.e. 'When I have a paranoid or suspicious thought…' was changed to 'When I have an upsetting thought about a situation…') to make the opening more suitable for the general population. The FaST questionnaire has two subscales (Fast thinking and Slow thinking) and adolescent responses to appropriate items were summarised to calculate subscale scores.

11-item version of the Revised Children's Anxiety and Depression Scale (RCADS) (Radez et al., 2021). We used the 11-item version of the RCADS (henceforth referred to as 'RCADS-11'), which consists of six items assessing anxiety and five items assessing depression symptoms in young people. In this study, we used an overall total score, which was calculated by summarising participants' responses to all items.

Schema Questionnaire for Children – SQC (Stallard & Rayner, 2005). The SQC is a 15-item self-report questionnaire of early maladaptive schemas. Each item is rated on a visual analogue scale of 1–10 ranging from 'not believing' to 'highly believing' in each statement. Total SQC is calculated by summarising responses to all 15 items and a higher score indicates less adaptive schemas.

Sample size calculation

We computed a priori power analysis using the 'WebPower' package (Zhang & Mai, 2018) in R Studio. With an alpha level of .05, power .80 and effect size (f) of .25, the required sample size was approximately $N = 156$ for the planned main analyses (i.e. repeated measures ANOVA).

Analysis

Questionnaire responses were entered into a spreadsheet, checked and cleaned. We then analysed the missing data and performed sensitivity analyses. This was followed by calculating item-level descriptive statistics (Means and Standard Deviations) and item-level differences between the experimental and control group (Mann–Whitney U-tests) for the main outcome measures (the Appraisals Measure and GHSQ). We then calculated baseline scale/subscale differences in the main outcome variables and covariates between the intervention and control group (independent samples t-tests with the effect sizes – Cohen's d), and reliability analyses for all included measures. The main analyses included mixed model analyses of variance

(ANOVA) with three different time points (pre-, post- and follow-up) for both main outcome variables (help-seeking and appraisals of USE) as within subject factors and intervention (USE intervention and control intervention) as between subject factors. For our exploratory hypotheses, covariates (thinking flexibility, dysfunctional schemas and anxiety/depression symptoms) were included in ANOVA models. Prior to running ANOVAs, the data were checked to meet all the assumptions to conduct the analyses. To estimate the practical meaning of our findings, effect sizes (partial η^2) were calculated. All analyses were conducted in IBM SPSS 27 (IBM Corp., 2020) and we used the α level of .05.

Results

Missing data analysis

Across the whole sample, the proportion of missing responses on any of the completed questionnaires was low (range 0–5.2%) (see Appendix S3), and therefore, only complete cases were used in further analyses (Scheffer, 2002). Out of 223 adolescents taking part in the intervention and completing at least one of the first two sets of questionnaires, 34 (15.2%) were lost due to attrition at the follow-up.

We performed sensitivity analyses by conducting a series of *t*-tests by comparing means of the main outcome variables between adolescents with full questionnaire responses and adolescents that were lost due to attrition (Twisk, 2013). None of the differences were significant, and therefore, it was concluded that the missing data were missing completely at random (MCAR) (Rubin & Little, 2019). Due to the large sample size and adequate power, and the assumption of MCAR being satisfied, the listwise deletion was used to handle the missing data (Kang, 2013). Figure 1 outlines the process of study enrolment.

Preliminary analyses

Descriptive statistics for individual items included in the main outcome measures across three time points are presented in Appendix S3. Appendix S3 also includes a table of baseline differences in the main outcome measures across both groups. Notably, the only statistically significant baseline difference was observed on GHSQ where participants in the control group reported significantly lower help-seeking intentions ($t(205) = 2.29$, $p < .05$); however, the effect size of this difference was small ($d = .32$).

Reliability of measures

Reliability coefficients ranged from .628 to .912. Table outlining reliability coefficients for all measures across the whole dataset and within each group are presented in Appendix S4.

Main analyses

Effect of intervention on adolescents' appraisals of USE. Mixed ANOVA analysis identified a significant effect of time ($F(1.9, 315.9) = 34.01$, $p < .01$, $\eta^2_P = .17$), a significant effect of interaction between time and type of intervention ($F(1.9, 315.9) = 36.41$, $p < .01$, $\eta^2_P = .18$) and a significant effect of the intervention ($F(1, 168) = 5.11$, $p < .05$, $\eta^2_P = .03$) on adolescents' appraisals of USE. Figure 2 illustrates the nature of interaction between the between-subject variable (intervention type) and within-subject variable (time).

Postintervention, participants in the USE group reported more positive appraisals of USE compared with those in the control intervention. Post hoc comparisons showed that these differences remained statistically significant at the one-month follow-up ($M_d = 1.33$, $p < .01$).

Effect of intervention on adolescents' help-seeking intentions for USE. A significant effect of time on adolescents' help-seeking intentions for USE was identified ($F(1.8, 272.7) = 12.04$, $p < .01$, $\eta^2_P = .07$). There was also a significant interaction between the type of intervention and time ($F(1.8, 272.7) = 5.30$, $p < .01$, $\eta^2_P = .03$), indicating differences in help-seeking intentions between the USE and control group at various time points. However, the effectiveness of intervention itself was not statistically significant ($F(1, 151) = 1.26$, $p = .26$, $\eta^2_P = .01$). Further post hoc analyses showed that the interaction was only significant for time point 1 (before the intervention) ($M_d = 4.27$, $p < .05$) with the differences between both groups decreasing over time. This can be also seen in Figure 3.

Examination of covariates in the relationship between adolescents' appraisals of USE and type of intervention. Correlations between the main outcome variables (Appraisals Measure and GHSQ) and covariates were calculated first (see Appendix S5). Appraisals Measure (across different time points) was significantly negatively associated with the SQC and RCADS-11. There were no associations between Appraisals Measure and FaST-FT/FaST-ST scores, and therefore, these were not included in the model as covariates.

When controlling for SQC and RCADS-11 scores, the effect of time remained significant ($F(1.9, 274.1) = 7.34$, $p < .01$, $\eta^2_P = .05$). Further, the interaction between the type of intervention and time remained significant ($F(1.9, 315.9) = 28.12$, $p < .01$, $\eta^2_P = .16$), whereas no significant interaction was identified between SQC score and time ($F(1.9, 315.9) = .65$, $p = .65$, $\eta^2_P = .00$) and RCADS-11 score and time ($F(1.9, 315.9) = 0.64$, $p = .52$, $\eta^2_P = .00$).

The main effect of intervention remained significant after controlling for the covariates ($F(1, 145) = 4.62$, $p < .05$, $\eta^2_P = .03$), and adolescents' SQC scores were significantly associated with appraisals of USE ($F(1, 145) = 5.63$, $p < .05$, $\eta^2_P = .04$), indicating that adolescents with more positive beliefs about themselves/others/the world reported more positive appraisals of USE. Adolescents' RCADS-11 scores were not significantly associated with the appraisals of USE ($F(1, 145) = 0.05$, $p = .82$, $\eta^2_P = .00$).

Examination of covariates in the relationship between adolescents' help-seeking intentions for USE and type of intervention. GHSQ scores were found to be significantly associated with all covariates, and therefore, all four variables were included in a further ANOVA model.

After controlling for covariates, the effect of time on adolescents' help-seeking intentions was no longer significant ($F(1.8, 218.9) = 1.32$, $p = .27$, $\eta^2_P = .01$), but the interaction between the intervention type and time remained significant ($F(1.8, 218.9) = 4.45$, $p < .05$, $\eta^2_P = .03$). Controlling for covariates slightly increased the observed effect of intervention of GHSQ scores; however, the effect of intervention itself still failed to reach

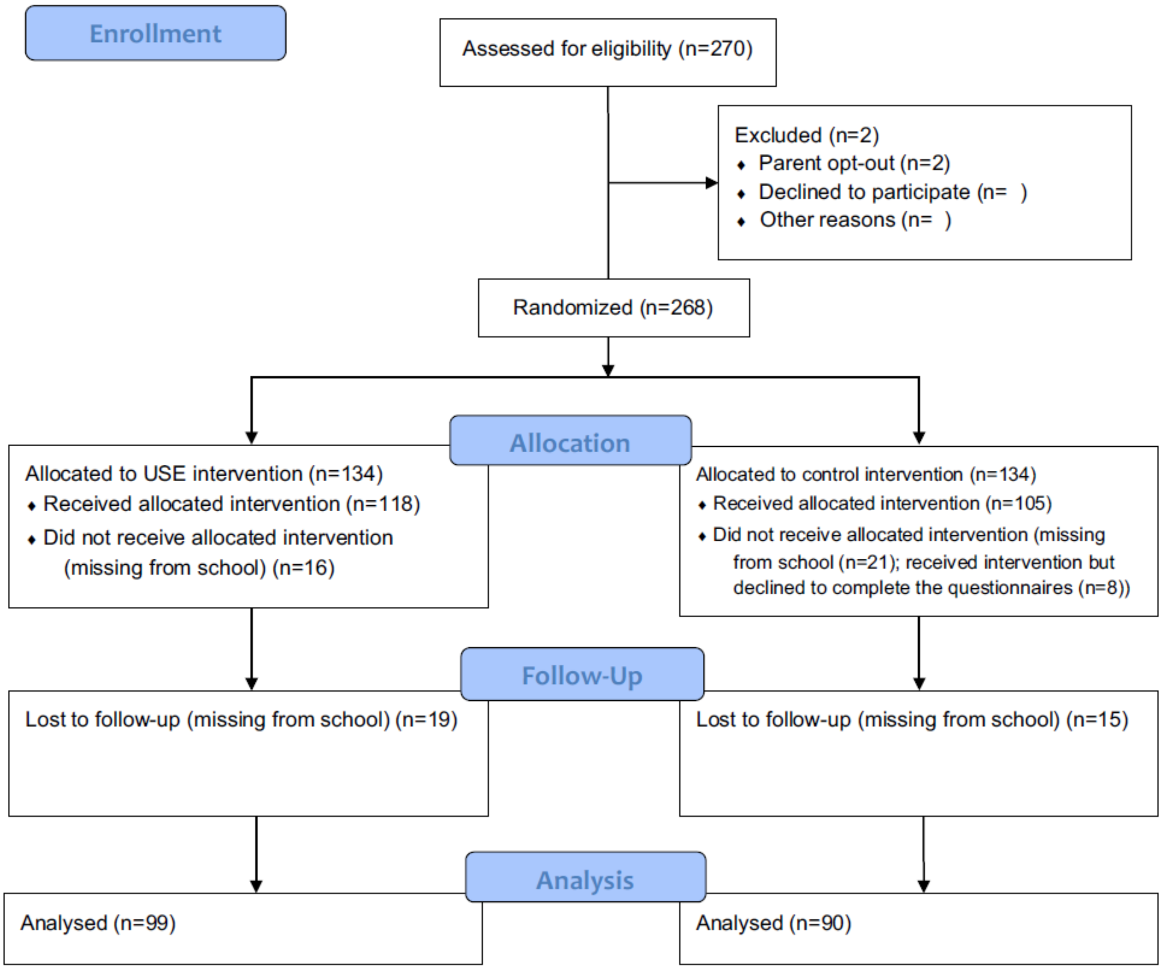

Figure 1. Consort 2010 flow diagram of study phases

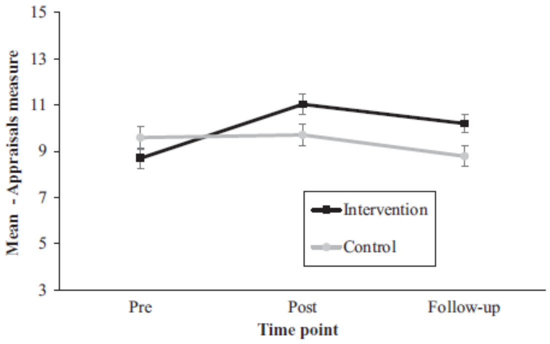

Figure 2. Estimated marginal means for appraisals with 95% error bars for each group and across three different time points

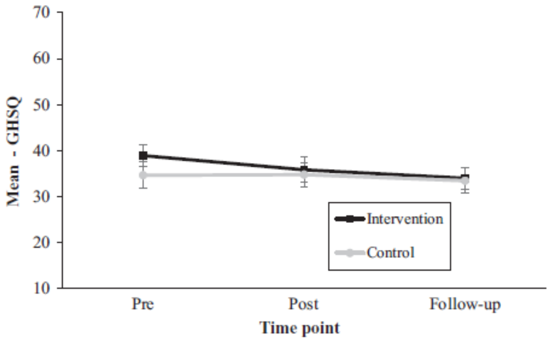

Figure 3. Estimated marginal means for GHSQ with 95% error bars for each group and across three different time points

statistical significance ($F(1, 125) = 2.78$, $p = .10$, $\eta^2_P = .02$). Finally, two covariates were identified as significant – FaST-ST ($F(1, 125) = 9.42$, $p < .01$, $\eta^2_P = .07$) and RCADS-11 ($F(1, 125) = 10.24$, $p < .01$, $\eta^2_P = .08$).

Results regarding covariates indicate that adolescents with slower thinking and lower level of anxiety and depressive symptoms reported being more likely to seek help for USE.

Discussion

We set out to investigate the effectiveness of a universal school-based psychoeducational intervention on adolescents' appraisals of USE and help-seeking intentions for USE. We also explored the associations between adolescents' schemas, cognitive flexibility and anxiety/depression symptoms and appraisals of USE/help-seeking for USE. We found that the single-session intervention was effective in increasing positive appraisals of USE and these effects were sustained over time. Contrary to our expectations, the intervention did not lead to an increase in help-seeking intentions for USE. Finally, we identified significant associations between (a) adolescents' schemas and appraisals of USE and (b) cognitive flexibility and anxiety/depression symptoms and help-seeking intentions for USE.

The results of this study are broadly consistent with the previous research investigating the effectiveness of a similar CBT-based universal school-based intervention delivered over eight sessions with preadolescent children (CUES-Ed; Underwood et al., 2021), where researchers reported an overall reduction of cognitive vulnerability (i.e. a composite measure including negative appraisals of USE, as well as stigmatising beliefs about USE and reasoning biases) following the intervention. The researchers reported particularly high reduction in reasoning biases ('jumping to conclusions') (Underwood et al., 2021). Although results in our study failed to demonstrate a positive effect of the intervention on adolescents' help-seeking intentions, these results were not surprising. The intervention was focused primarily on appraisals of common USE (e.g. hearing a noise when falling asleep) emphasising their normality and generally nonthreatening nature, which could lead to the majority of adolescents thinking that help-seeking for USE is not required. This is consistent with previous research, suggesting that mental health interventions do not necessarily lead to greater help-seeking intentions but can reduce stigma associated with mental health problems in nonclinical populations (Xu et al., 2018). It is also possible that the opening question of the GHSQ was not well-phrased for the purpose of this study, as it asks adolescents about general help-seeking intentions for USE rather than seeking help for *distressing and prolonged* USE. Future research could therefore use a different opening question or include a measure of stigma, which is another psychological process associated with the distress of USE in adult cognitive models (e.g. Garety et al., 2001).

Our study provided some interesting findings regarding the role of covariates in adolescents' appraisals of USE and help-seeking intentions for USE. In line with previous research (e.g. Anilmis et al., 2015), schemas, reasoning processes, and anxiety and depressive symptoms were identified as significant psychological processes in understanding adolescents' appraisals of USE/help-seeking intentions for USE. While previous studies have mainly focused on associations between the covariates and negative appraisals of USE (and other PLEs), this study identified covariates associated with positive appraisals of USE and hence, potentially identified young people's *protective* (i.e. rather than risk) factors. These results highlight the opportunity for universal mental health interventions to focus on building up these positives.

Taken together, our study findings suggest that a 40-min universal school-based intervention on USE can lead to an increase in adolescents' positive appraisals of USE. These findings, along with the findings of the role of covariates, provide preliminary evidence for applicability of some components of cognitive models (e.g. Garety et al., 2001) in understanding USE in adolescents. Furthermore, these results may have clinical implications by highlighting which psychological processes could be targets of treatment in CBT with adolescents with prolonged and distressing USE. This would need further testing with clinical populations. The results of our study also have other clear research implications by providing grounds for optimism for future school-based research, which is currently one of the most important topics in adolescent mental health research (see Department of Health & Department of Education, 2017). In particular, brief psychoeducational interventions targeting less functional appraisals may be most cost-effective, which is particularly important in an educational context, where time and financial pressures are not uncommon. In addition, our identification of significant covariates, such as schemas and anxiety and depressive symptoms, indicates the need for developing approaches that target multiple domains of adolescent mental health and focus on strengthening adolescents' protective factors (Minnard, 2002). This highlights the importance of discussing young people's strengths as a part of the regular school wellbeing curriculum. The CUES-Ed study provides a good example of a universal school-based study addressing different psychological factors of mental health in preadolescent children, and future research could focus on developing similar psychoeducational interventions for the adolescent population.

Limitations

Our study had several limitations. First, all participants were recruited from one school. Furthermore, the school is based in one of the least deprived areas of the UK based on the Index of Multiple Deprivation (IMD; DLUHC, 2019), which limits the generalisability of our findings. Although participants were randomised by class, it is possible that young people from different groups talked to each other about the interventions, meaning that participants' responses at the follow-up might have been affected by contamination bias. Future research could overcome this issue by recruitment of more schools and cluster randomisation by school. We also did not collect any demographic variables (e.g. gender, ethnicity), which might further explain the observed differences in the main outcome variables at baseline. Further, the final composite score used in main analyses only included three items assessing the perceived threatening aspects of appraisals. A more comprehensive appraisals measure that is developed and validated with young people is required. Although the intervention was well-accepted by young people, we believe that adolescents' experiences of the intervention could be further explored using qualitative methodology. Finally, our study did not include a measure of distress or impact of USE or a measure of stigma.

Conclusions

USE are common in adolescence. Appraisals of USE are the main drivers of distress and impact of these experiences, and therefore, interventions aimed at developing more positive appraisals of USE can be helpful. To our knowledge, this is the first study developing and evaluating a universal school-based mental health intervention targeting adolescents' appraisals of USE. We demonstrated that a one-session intervention can be effective in improving adolescents' appraisals of USE. The intervention was well-accepted by young people consulted during the process of the intervention development and by young people taking part in this study. Due to its brevity and easy delivery, this intervention has the potential to be delivered during the regular school curriculum by schoolteachers ensuring wide access and ease of implementation.

Acknowledgements

The authors thank the young people, parents and staff at the participating school. The authors also thank to all members of patient and public involvement. The authors thank Dr Sarah Parry of the University of Manchester, Dr Amy Hardy and Dr Tom Ward of King's College London, the Voice Collective charity, child and adolescent researchers and clinicians at the University of Oxford, and the young people and their parents for their input in developing the USE intervention and selecting the final set of outcome measures. JR was supported by funding for professional clinical psychology training by Oxford Health NHS Foundation Trust. FW is funded by a Wellcome Trust Clinical Doctoral Fellowship (102176/B/13/Z). The authors have declared that they have no competing or potential conflicts of interest.

Ethical information

The study was granted a full ethics approval by the Oxford University Research Ethics Committee (CUREC) (reference R79066/RE001). All participants were required to provide an informed consent prior to taking part in the study.

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Supporting information

Additional Supporting Information may be found in the online version of this article:

Appendix S1. Appraisals measure.

Appendix S2. Psychometric evaluation of the appraisals measure.

Appendix S3. Preliminary analyses.

Appendix S4. Reliability analysis.

Appendix S5. Correlations between the main outcome variables and covariates.

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Accepted for publication: 22 February 2023

Appendix C.2 – TDRP Journal Guidelines

Author Guidelines

Why submit to *Child and Adolescent Mental Health*?

- An international journal with a growing reputation for publishing work of clinical relevance to multidisciplinary practitioners in child and adolescent mental health
- Ranked in ISI: 67/129 (Pediatrics); 121/156 (Psychiatry); 100/143 (Psychiatry (Social Science)); 89/131 (Psychology, Clinical).
- 7,319 institutions with access to current content, and a further 6,696 institutions in the developing world
- High international readership - accessed by institutions globally, including North America (34%), Europe (34%) and Asia-Pacific (11%)
- Excellent service provided by editorial and production offices
- Opportunities to communicate your research directly to practitioners
- Every manuscript is assigned to one of the Joint Editors as decision-making editor; rejection rate is around 82%
- Acceptance to Early View publication averages 5 weeks
- Simple and efficient online submission – visit http://mc.manuscriptcentral.com/camh_journal
- Early View – articles appear online before the paper version is published. Click here to see the articles currently available
- Authors receive access to their article once published as well as a 25% discount on virtually all Wiley books
- All articles published in CAMH are eligible for Panel A: Psychology, Psychiatry and Neuroscience in the Research Excellence Framework (REF)

1. Contributions from any discipline that further clinical knowledge of the mental life and behaviour of children are welcomed. Papers need to clearly draw out the clinical implications for mental health practitioners. Papers are published in English. As an international journal, submissions are welcomed from any country. Contributions should be of a standard that merits presentation before an international readership. Papers may assume any of the following forms: Original Articles; Review Articles; Innovations in Practice; Narrative Matters; Debate Articles.

CAMH considers the fact that services are looking at treating young adults up until the age of 25, with the evidence that brains continue to develop until the age of 25, as well as the fact that a lot of issues that affect young adults and students are also relevant and topical to older adolescents. CAMH offers a discretionary approach and will take into consideration papers that extend into young adulthood, if they are pertinent developmentally to the younger population and contribute further to a developmental perspective across adolescence and early adult years.

Authors are asked to remember that CAMH is an international journal and therefore clarification should be provided for any references that are made in submitted papers to the practice within the authors' own country. This is to ensure that the meaning is clearly understandable for our diverse readership. Authors should make their papers as broadly applicable as possible for a global audience.

Original Articles: Original Articles make an original contribution to empirical knowledge, to the theoretical understanding of the subject, or to the development of clinical research and practice.

Review Articles: These papers offer a critical perspective on a key body of current research relevant to child and adolescent mental health. The journal requires the pre-registration of review protocols on any publicly accessible platform (e.g. The International Prospective Register of Systematic Reviews, or PROSPERO).

Short Research Articles: Short Research Articles should consist of original research of any design that presents succinct findings with topical, clinical or policy relevance. For example, preliminary novel findings from pilot studies, important extensions of a previous study, and topical surveys.

Letters to the Editor: These are short articles that offer readers the opportunity to respond to articles published in CAMH. Letters must only discuss issues directly relevant to the content of the original article such as to add context, correction, offer a different interpretation, or extend the findings.

Innovations in Practice: These papers report on any new and innovative development that could have a major impact on evidence-based practice, intervention and service models.

Narrative Matters: These papers describe important topics and issues relevant to those working in child and adolescent mental health but considered from within the context and framework of the Humanities and Social Sciences.

Debate Articles: These papers express opposing points of view or opinions, highlighting current evidence-based issues, or discuss differences in clinical practice.

Technology Matters: These papers provide updates on emerging mental health technologies and how they are being used with and by children and young people.

2. Submission of a paper to *Child and Adolescent Mental Health* will be held to imply that it represents an original submission, not previously published; that it is not being considered for publication elsewhere; and that if accepted for publication it will not be published elsewhere without the consent of the Editors.

3. Manuscripts should be submitted online. For detailed instructions please go to: **http://mc.manuscriptcentral.com/camh_journal** and c*heck for existing account* if you have submitted to or reviewed for the journal before, or have forgotten your details. If you are new to the journal c*reate a new account.* Help with submitting online can be obtained from the Editorial Office at ACAMH (email: **publications@acamh.org**)

4. Authors' professional and ethical responsibilities

Disclosure of interest form

All authors will be asked to download and sign a full Disclosure of Interests form and acknowledge this and sources of funding in the manuscript.

Ethics

Authors are reminded that the *Journal* adheres to the ethics of scientific publication as detailed in the ***Ethical principles of psychologists and code of conduct*** (American Psychological Association, 2010). These principles also imply that the piecemeal, or fragmented publication of small amounts of data from the same study is not acceptable. The Journal also generally conforms to the Uniform Requirements for Manuscripts of the International Committee of Medical Journal Editors (**ICJME**) and is also a member and subscribes to the principles of the Committee on Publication Ethics (**COPE**).

Informed consent and ethics approval

Authors must ensure that all research meets these ethical guidelines and affirm that the research has received permission from a stated Research Ethics Committee (REC) or Institutional Review Board (IRB), including adherence to the legal requirements of the study county. Within the Methods section, authors should indicate that 'informed consent' has been appropriately obtained and state the name of the REC, IRB or other body that provided ethical approval. When submitting a manuscript, the manuscript page number where these statements appear should be given.

Preprints

CAMH will consider for review articles previously available as preprints. Authors may also post the submitted version of a manuscript to a preprint server at any time. Authors are requested to update any pre-publication versions with a link to the final published article. Please find the Wiley preprint policy **here**.

Note to NIH Grantees

Pursuant to NIH mandate, Wiley-Blackwell will post the accepted version of contributions authored by NIH grant-holders to PubMed Central upon acceptance. This accepted version will be made publicaly available 12 months after publication. For further information, see **www.wiley.com/go/nihmandate**.

Recommended guidelines and standards

The Journal requires authors to conform to CONSORT 2010 (see **CONSORT Statement**) in relation to the reporting of randomised controlled clinical trials; also recommended is the **Extensions of the CONSORT Statement** with regard to cluster randomised controlled trials). In particular, authors must include in their paper a flow chart illustrating the progress of subjects through the trial (CONSORT diagram) and the CONSORT checklist. The flow diagram should appear in the main paper, the checklist in the online Appendix. Trial registry name, registration identification number, and the URL for the registry should also be included at the end of the methods section of the Abstract and again in the Methods section of the main text, and in the online manuscript submission. Trials must be registered in one of the ICJME-recognised trial registries:

Australian New Zealand Clinical Trials Registry
Clinical Trials
Netherlands Trial Register
ISRCTN Registry
UMIN Clinical Trials Registry

Manuscripts reporting systematic reviews or meta-analyses will only be considered if they conform to the **PRISMA Statement**. We ask authors to include within their review article a flow diagram that illustrates the selection and elimination process for the articles included in their review or meta-analysis, as well as a completed PRISMA Checklist. The journal requires the pre-registration of review protocols on any publicly accessible platform (e.g. The International Prospective Register of Systematic Reviews, or PROSPERO).

The **Equator Network** is recommended as a resource on the above and other reporting guidelines for which the editors will expect studies of all methodologies to follow. Of particular note are the guidelines on qualitative work **http://www.equator-network.org/reporting-guidelines/evolving-guidelines-for-publication-of-qualitative-research-studies-in-psychology-and-related-fields** and on quasi-experimental **http://www.equator-network.org/reporting-guidelines/the-quality-of-mixed-methods-studies-in-health-services-research** and mixed method designs **http://www.equator-network-or/reporting-guidelines/guidelines-for-conducting-and-reporting-mixed-research-in-the-field-of-counseling-and-beyond**

CrossCheck
An initiative started by *CrossRef* to help its members actively engage in efforts to prevent scholarly and professional plagiarism. The journal to which you are submitting your manuscript employs a plagiarism detection system. By submitting your manuscripts to this journal you accept that your manuscript may be screened for plagiarism against previously published works.

5. Manuscripts should be double spaced and conform to the house style of *CAMH*. The title page of the manuscript should include the title, name(s) and address(es) of author(s), an abbreviated title (running head) of up to 80 characters, a correspondence address for the paper, and any ethical information relevant to the study (name of the authority, data and reference number for approval) or a statement explaining why their study did not require ethical approval.

Summary: Authors should include a structured Abstract not exceeding 250 words under the sub-headings: Background; Method; Results; Conclusions.

Key Practitioner Message: Below the Abstract, please provide 1-2 bullet points answering each of the following questions:

- **What is known?** - What is the relevant background knowledge base to your study? This may also include areas of uncertainty or ignorance.
- **What is new?** - What does your study tell us that we didn't already know or is novel regarding its design?

- **What is significant for clinical practice?** - Based on your findings, what should practitioners do differently or, if your study is of a preliminary nature, why should more research be devoted to this particular study?

Keywords: Please provide 4-6 keywords use **MeSH Browser** for suggestions

6. Papers submitted should be concise and written in English in a readily understandable style, avoiding sexist and racist language. Articles should adhere to journal guidelines and include a word count of their paper; occasionally, longer article may be accepted after negotiation with the Editors.

7. Authors who do not have English as a first language may choose to have their manuscript professionally edited prior to submission; a list of independent suppliers of editing services can be found at **http://authorservices.wiley.com/bauthor/english_language.asp**. All services are paid for and arranged by the author, and use of one of these services does not guarantee acceptance or preference for publication.

8. Headings: Original articles should be set out in the conventional format: Methods, Results, Discussion and Conclusion. Descriptions of techniques and methods should only be given in detail when they are unfamiliar. There should be no more than three (clearly marked) levels of subheadings used in the text.

9. All manuscripts should have an Acknowledgement section at the end of the main text, before the References. This should include statements on the following:

Study funding: Please provide information on any external or grant funding of the work (or for any of the authors); where there is no external funding, please state this explicitly.

Contributorships: Please state any elements of authorship for which particular authors are responsible, where contributorships differ between author group. (All authors must share responsibility for the final version of the work submitted and published; if the study include original data, at least one author must confirm that they had full access to all the data in the study and take responsibility for the integrity of the data in the study and the accuracy of the data analysis). Contributions from others outside the author group should also be acknowledged (e.g. study assistance or statistical advice) and collaborators and study participants may also be thanked).

Conflicts of interest: The journal requires that all authors disclose any potential sources of conflict of interest. Any interest or relationship, financial or otherwise that might be perceived as influencing an author's objectivity is considered a potential source of conflict of interest. These must be disclosed when directly relevant or directly related to the work that the authors describe in their manuscript. Potential sources of conflict of interest include, but are not limited to: patent or stock ownership, membership of a company board of directors, membership of an advisory board or committee for a company, and consultancy for or receipt of speaker's fees from a company, in the past 5 years. The existence of a conflict of interest does not preclude publication. If the authors have no conflict of interest to declare, they must also state this at submission. It is the responsibility of the corresponding author to review this policy with all authors and collectively to disclose with the submission ALL pertinent commercial and other relationships.

10. For referencing, *CAMH* follows a slightly adapted version of APA Style **http:www.apastyle.org/**. References in running text should be quoted showing author(s) and date. For up to three authors, all surnames should be given on first citation; for subsequent citations or where there are more than three authors, 'et al.' should be used. A full reference list should be given at the end of the article, in alphabetical order.

References to journal articles should include the authors' surnames and initials, the year of publication, the full title of the paper, the full name of the journal, the volume number, and inclusive page numbers. Titles of journals must not be abbreviated. References to chapters in books should include authors' surnames and initials, year of publication, full chapter title, editors' initials and surnames, full book title, page numbers, place of publication and publisher.

11. Tables: These should be kept to a minimum and not duplicate what is in the text; they should be clearly set out and numbered and should appear at the end of the main text, with their intended position clearly indicated in the manuscript.

12. Figures: Any figures, charts or diagrams should be originated in a drawing package and saved within the Word file or as an EPS or TIFF file.
See **http://authorservices.wiley.com/bauthor/illustration.asp** for further guidelines on preparing and submitting artwork. Titles or captions should be clear and easy to read. These should appear at the end of the main text.

13. Footnotes should be avoided, but end notes may be used on a limited basis.

Data Sharing and Supporting Information

CAMH encourages authors to share the data and other artefacts supporting the results in the paper by archiving them by uploading it upon submission or in an appropriate public repository. Examples of possible supporting material include intervention manuals, statistical analysis syntax, and experimental materials and qualitative transcripts.

1. If uploading with your manuscript please call the file 'supporting information' and reference it in the manuscript.
2. Please note supporting files are uploaded with the final published manuscript as supplied, they are not typeset.
3. On publication your supporting information will be available alongside the final version of the manuscript online.
4. If uploading to a public repository please provide a link to supporting material and reference it in the manuscript. The materials must be original and not previously

published. If previously published, please provide the necessary permissions. You may also display your supporting information on your own or institutional website. Such posting is not subject to the journal's embargo date as specified in the copyright agreement. Supporting information is made free to access on publication.

Full guidance on Supporting Information including file types, size and format is available on the **Wiley Author Service** website.

For information on Sharing and Citing your Research Data see the **Author Services website here**.

Original Articles

Original Articles make an original contribution to empirical knowledge, to the theoretical understanding of the subject, or to the development of clinical research and practice. Adult data is not usually accepted for publication unless it bears directly on developmental issues in childhood and adolescence.

Your Original Article should be no more than 5,500 words including tables, figures and references.

Review Articles

Research Articles offer our readers a critical perspective on a key body of current research relevant to child and adolescent mental health and maintain high standards of scientific practice by conforming to systematic guidelines as set out in the **PRISMA statement**. These articles should aim to inform readers of any important or controversial issues/findings, as well as the relevant conceptual and theoretical models, and provide them with sufficient information to evaluate the principal arguments involved. All review articles should also make clear the relevancy of the research covered, and any findings, for clinical practice.

Your Review Article should be no more than 8,000 words excluding tables, figures and references and no more than 10,000 including tables, figures and references.

Short Research Articles

Short Research Articles should consist of original research of any design that presents succinct findings with topical, clinical or policy relevance. For example, preliminary novel findings from pilot studies, important extensions of a previous study, and topical surveys. Short Research Articles will be peer reviewed and authors might be asked to revise and edit their article to acceptable standards for publication. Short Research Articles should follow standard guidelines, such as STROBE for observational studies, CONSORT extension for pilot trials etc.

Your Short Research Article should be 1500 words, excluding references, tables and graphs/figures. Your article should be structured, including the subheadings Introduction/Methods/Results/Discussion. There is a maximum of 1 table and 1 graph/figure. Please do not include more than 12 references.

Narrative Matters: The Medical Humanities in CAMH

These articles are both submissions and directly commissioned papers. They will be peer-reviewed. The articles should be on a humanities topic relevant to those working in child and adolescent mental health. The topics can include but are not restricted to: aspects of child mental health service history; representations of abnormal mental states or mental illness in children and teenagers in film, literature or drama; depictions of child mental health clinicians within popular culture; ethical dilemmas in the speciality. Interest and originality are valued. If in doubt, please contact the section editor: **Gordonbates@virginmedia.com**

The essays should be between 1500 and 2000 words and written for an audience of child mental health professionals. For publishing reasons, there is an upper limit of 8 references for the article. Additional references may be given in the text if necessary.

Letters to the Editor

Letters to the Editor are short articles that offer readers the opportunity to respond to articles published in CAMH. Letters must only discuss issues directly relevant to the content of the original article such as to add context, correction, offer a different interpretation, or extend the findings. Letters will be evaluated for relevance to the index paper, scientific merit, and importance.

Letters should be submitted not later than 2 weeks after publication of the print issue of the Journal containing the paper of interest. Please note - all papers are published on Early View as soon as they are accepted. The letters should avoid personal attacks and unscholarly communication.

Letters will not be peer reviewed. However, the section Editor will review the letters and might consult another Editor before acceptance or rejection.

Due to the short length of this article type, your Letter should be between 500 and 700 words with a maximum of one figure or table. If in doubt, please contact the section editor **c.ani@imperial.ac.uk**

Innovations in Practice

Innovations in Practice promote knowledge of new and interesting developments that have an impact on evidence-based practice, intervention and service models. These might have arisen through the application of careful, systematic planning, a response to a particular need, through the continuing evolution of an existing practice or service, or because of changes in circumstances and/or technologies. Submissions should set out the aims and details of the innovation including any relevant mental health, service, social and cultural contextual factors, and give a close, critical analysis of the innovation and its potential significance for the practice of child and adolescent mental health.

Due to the short length of this article type, your Innovations in Practice article should be no more than 2,200 words including tables, figures and references and contain no more than 8 references.

Debate Articles

Our debate articles express opposing points of view or opinions, highlighting current evidence-based issues, or discuss differences in clinical practice. Although discussion of evidence is welcome, these articles generally do not include primary data. The evidence on which your arguments are based and how that was sourced should be explicit and referenced, and the quality of your evidence made clear.

Due to the short length of this article type, your Debate article should be no more than 1,000 words and contain no more than 8 references. If in doubt, please contact the section editor **Rachel.Elvins@mft.nhs.uk**

Technology Matters

Technology Matters provides updates on emerging mental health technologies and how they are being used with and by children and young people. We aim to cover established technologies such as computer-assisted psychological interventions as well as more novel technologies (e.g. mobile apps, therapeutic games, virtual reality). We will present the evidence base for their use, showcase how they can complement other interventions and are being used in practice and address wider cross-cutting issues (such as technology accreditation, regulation, cost etc.) relevant to practitioners and service funders.

Your paper should be between 1000 and 1500 words. Please do not include more than 7 references. If in doubt, please contact the section editors **Kapil.Sayal@nottingham.ac.uk** or **Jennifer.Martin@nottingham.ac.uk**.

Manuscript Processing

Peer Review Process: All material submitted to CAMH is only accepted for publication after being subjected to external scholarly peer review, following initial evaluation by one of the Editors. Both original and review-type articles will usually be single-blind reviewed by a minimum of two external referees and only accepted by the decision Editor after satisfactory revision. Any appeal of an editorial decision will first be considered by the initial decision Editor, in consultation with other Editors. Editorials and commissioned editorial opinion articles will usually be subject to internal review only, but this will be clarified in the published Acknowledgement section. Editorial practices and decision making will conform to COPE **http://publicationethics.org/resources/guidelines** and ICMJE **http://icmje.org/** best practice.

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Authors will receive an e-mail notification with a link and instructions for accessing HTML page proofs online. Page proofs should be carefully proofread for any copyediting or typesetting errors. Online guidelines are provided within the system. No special software is required, all common browsers are supported. Authors should also make sure that any renumbered tables, figures, or references match text citations and that figure legends correspond with text citations and actual figures. Proofs must be returned within 48 hours of receipt of the email. Return of proofs via e-mail is possible in the event that the online system cannot be used or accessed.

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Correction to Authorship

In accordance with **Wiley's Best Practice Guidelines on Research Integrity and Publishing Ethics** and the **Committee on Publication Ethics' guidance**, *CAMH* will allow authors to correct authorship on a submitted, accepted, or published article if a valid reason exists to do so. All authors – including those to be added or removed – must agree to any proposed change. To request a change to the author list, please complete the **Request for Changes to a Journal Article Author List Form** and contact either the journal's editorial or production office, depending on the status of the article. Authorship changes will not be considered without a fully completed Author Change form. Correcting the authorship is different from changing an author's name; the relevant policy for that can be found in **Wiley's Best Practice Guidelines** under “Author name changes after publication.”

Wiley's Author Name Change Policy

In cases where authors wish to change their name following publication, Wiley will update and republish the paper and redeliver the updated metadata to indexing services. Our editorial and production teams will use discretion in recognizing that name changes may be of a sensitive and private nature for various reasons including (but not limited to) alignment with gender identity, or as a result of marriage, divorce, or religious conversion. Accordingly, to protect the author's privacy, we will not publish a correction notice to the paper, and we will not notify co-authors of the change. Authors should contact the journal’s Editorial Office with their name change request.

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If you select the open access option and your research is funded by certain Funders [e.g. The Wellcome Trust and members of the Research Councils UK (RCUK) or the Austrian Science Fund (FWF)] you will be given the opportunity to publish your article under a CC-BY license supporting you in complying with your Funders requirements.

For more information on this policy and the journal's compliant self-archiving policy please click **here**.

Appendix C.3 - TDRP Ethics Approval Letter

MEDICAL SCIENCES INTERDIVISIONAL RESEARCH ETHICS COMMITTEE
Research Services, Boundary Brook House, Churchill Drive, Headington, Oxford, OX3 7GB
Tel: +44(0)1865 616575
ethics@medsci.ox.ac.uk

CONFIDENTIAL

Dr Louise Johns & Dr Jerica Radez
Oxford Institute of Clinical Psychology Training and Research
Isis Education Centre
Warneford Hospital
Oxford

2 February 2022

Dear Dr Johns and Dr Radez,

Research Ethics Approval - CUREC 1

Ethics Approval Reference: R79066/RE001

Study title: School-based intervention for understanding sensory experiences in adolescents – A pilot study

Short title: Understanding Sensory Experiences in Adolescents

The above application has been considered on behalf of the Medical Sciences Interdivisional Research Ethics Committee (MS IDREC) in accordance with the University's procedures for ethical approval of all research involving human participants.

I am pleased to inform you that, on the basis of the information provided to the IDREC, the proposed research has been judged as meeting appropriate ethical standards, and approval has been granted for a period of 18 months, commencing on 2nd February 2022.

Amendments

Should there be any subsequent changes to the study, you should submit details to the MS IDREC for consideration and approval. Details of changes must be listed on an amendment form.

Yours Sincerely

DocuSigned by:
Leah Butts
Mrs Leah Butts
Research Ethics Administrator

for
Dr Helen Barnby-Porritt
Research Ethics Manager